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- Do I Have To Show Working?

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## Math Trivia

### The Evolution of Teaching Math

#### Teaching Math in the 1960s:

"A logger cuts and sells a truckload of lumber for \$100. His cost of production is four-fifths of that amount. What is his profit?"

#### Teaching Math in the 1970s (the new-math):

"A logger exchanges a set (L) of lumber for a set (M) of money. The cardinality of Set M is 100. The set C of production costs contains 20 fewer points. What is the cardinality of Set P of profits?"

#### Teaching Math in the 1980s ("dumbed-down" version):

"A logger cuts and sells a truckload of lumber for \$100. Her cost is \$80, her profit is \$20. Find and circle the number 20."

#### Teaching Math in the 1990s:

"An unenlightened logger cuts down a beautiful stand of 100 trees in order to make a \$20 profit. Write an essay explaining how you feel about this as a way to make money. Topic for discussion: How did the forest birds and squirrels feel?"

#### Teaching Math in 2000:

A logger sells a truckload of lumber for \$100. His cost of production is \$120. How does an Enron Accountant determine that his profit margin is \$275?





# UETCTM News

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## NCTM CONFERENCES AND MEETINGS

### Annual Meetings

- 2014  
New Orleans, LA. April 9 - 12
- 2015  
Boston, MA. April 15 – 18

### Regional Conferences

- 2013  
Baltimore, MD • Oct 16-18  
Las Vegas, NV • Oct 23-25  
Louisville, KY • Nov 6-8
- 2014  
Indianapolis, IN • Oct 29-31  
Richmond, VA • Nov 12-14  
Houston, TX • Nov 19-21
- 2015  
Atlantic City, NJ • Oct 21-23  
Minneapolis, MN • Nov 11-13  
Nashville, TN • Nov 18-20  
<<http://iem.nctm.org/link.php?M=3004392&N=1763&L=893&F=H>>



# UETCTM News

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## Families + Teachers = Mathematical Success

By Missy Carter-Hyatt

In the fall of every year a wonderful change takes place in our communities...school begins. Families and teachers have an air of excitement on their faces and quickly begin making their preparations for the coming school year. One hope these two groups have in common is their desire to receive the best of each other. Families desire a great teacher. Teachers desire a great educational ally at home. These two hopes can only be accomplished through a partnership. Family and teacher partnerships can be formed

by understanding the advantages of working together, being knowledgeable of the standards that direct students' learning, and sharing the classroom with students and their families.



Many studies have shown that across racial and ethnic groups and across school levels, students performed better in mathematics when parents and children participated in discussions about school and the parents were active volunteers at school (Epstein 2009). As educators we have a great platform to foster a partnership with families that the benefits will remain for years to come. "It takes a village to raise a child," is a quote that was

*As educators we have a great platform to foster a partnership with families that the benefits will remain for years to come.*

made popular by

Secretary of State Clinton in the late nineties and is



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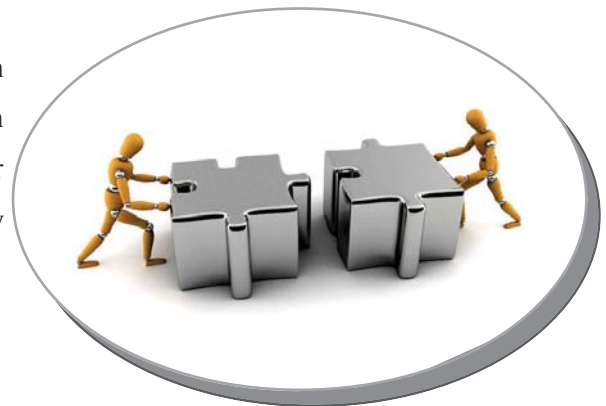
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still pertinent today. Each child has been influenced and instructed by many adults and peers by the time they arrive in your classroom. These interactions, experiences, and teachable moments all come together to guide our students into adulthood. We have the privilege of being a resident in our students' villages for only a short time, make it count.

Over the last several months educators across Tennessee have attended meetings to clarify our new Common Core Standards. We need to in turn educate our families of the changes, particularly in math. The majority of parents I come in contact with view math as they were taught: traditional algorithms, rote memorization of facts and procedures, and pages of abstract problems to calculate. It is our job to help families transition into the "new math". I have found once parents understand why we draw diagrams, break numbers apart, use tools such as the 100's Chart, number line, and numerous manipulatives they are amazed at their child's knowledge of numbers. They are certainly more eager to be an educational ally at home. The partnership begins.

The next step in the partnership is to welcome families into your classroom and to help them welcome math into their homes. Request family volunteers during your math block. Every parent loves to see their child in the spot light. Hold a classroom math night where students can volunteer to model their strategies to our classroom families. Assign your students a family homework assignment. Students simply share a problem they solved during class and teach their new math strategy to a family member. The best way to master a strategy is to teach it to someone else. Include current unit math strategies on your webpage and newsletters. The possibilities are endless. The key is continuous communication and a welcoming environment. The partnership grows.

Being an educator and a mother of three I have seen the growth children make when everyone is working toward a common goal. Mutual respect, hard work by both parties, and a love for children can provide "value added" no one can definitively score.





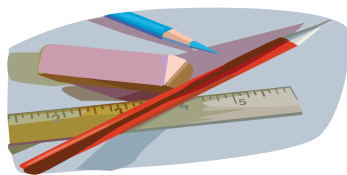
## Think, Plan, Teach

By Philip Fields

One of my favorite channels on cable television is Home and Garden Television, or HGTV. I love HGTV because I love to see how other people live and play. I also love to criticize other peoples' choice on paint, floor covering, or style of house. However, no matter how insidious their paint choice, country where they are buying their vacation home, or size of the backyard one key point always comes out. The one key point that matters more than anything is location, location, location! This key principle holds true in teaching too. This principle was made poignantly clear to me this year.

One of my students' favorite math activities this past year was my supermarket, oh sorry, the grocery store game. This should have been my first clue. When I said we were going to play the supermarket game, some of the students' hands shot up quicker than if I had ask who wanted to go to the playground today. The question all had was what in the world a supermarket was. When I told them they laughed and told me in no uncertain terms that it is a grocery store not a supermarket.

What is the supermarket, or grocery store game? The "grocery store" game is an activity I like to use when we discuss rounding and estimating. At the beginning of the school year, I sent a letter home to all the parents asking if they would save old box containers (crackers, macaroni, cereal, and whatever else they bought) and aluminum cans (make sure they are washed out. I did not think I would have to ask that, how-



ever I am including that in next year's letter). If you do not get a large variety of box or cans you may have to improvise a little like I did this year.

For instance, I included things on the index

cards my family occasionally buys and things I am familiar with from shopping. Here is how the game is played. I take the boxes, cans, and index cards (substituting for boxes



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or cans) and price them just like they were on a shelf in the grocery store. I use yard sale stickers for this task. I always make sure the price is never a whole number since we are working on rounding and estimating. I place the grocery store items around the room on tables and desks or whatever else I can get my hands on. Since I have a small classroom I let the students shop individually; you could easily pair the students for this activity. I give each student \$100 in their classroom play money account. I inform them that since they have moved out into an apartment on their own they must go grocery shopping. The



one thing they MUST remember is no matter what they buy the check they write at the checkout counter cannot be more than \$100 since that is all the money in their classroom bank account. The students are then allowed to go shopping. I also tell the students that the 4th Grade Grocery Store does not allow shoppers to use a calculator; only paper, pencil, and brain. When the students finish shopping they bring their basket to the checkout counter just like a supermarket, oh grocery store. When I have totaled all sales I announce the winner of the activity. The winner this year bought items totaling \$98.45. I need to take that student shopping with me next time.

Here is where my lesson started. I had help making the index cards. My son helped me make the cards and price them. While I was totaling the students' grocery items I noticed a trend in their purchases; what they did buy and what they did not buy. Each one of the students bought home-made sausage, soda, gravy mix, biscuits, bacon, coffee, flour, corn meal, Crisco®, candy, cake mix, potatoes, and hamburger helper. What surprised me was what the students did not buy. None of the students bought vegetables, Kool-Aid®, milk, fruit, rice, noodles, and I-Tunes® gift cards. No one bought an I-Tunes® gift card? My son could not survive without his I-Pod® when we travel. When I asked them about this they told me no one has internet service. Only one student in the class has internet service. When I told my son this he could not believe what I was saying. His question to me was, "How do they survive without X-box® live?"

This activity really got me to thinking. What else was I doing or saying that was not in the contextual realm of my students' world? After this lesson, I really tried my best to step back and look at the topic I was going to present to my students. By doing this I did find out there were times I had to spend 10, 20, or even 30 minutes setting the stage for our next topic of discussion. Another thing this activity has forced me to do is make another sign for my supermarket. It now reads 4th Grade Grocery Store.



## The Alpha Website to Use in Math Classrooms!

By Melissa Trinkle

Today, like most days in Dr. Nivens' Mathlete's classroom, I was introduced to a math tool that made me wonder how I have taught without it for so long. Today's math tool was wolframalpha.com. As Dr. Nivens was showing our class this website I know I was staring in amazement. It is quite possibly one of the coolest websites ever! The ideas to use this website in a math classroom are limitless. I immediately thought, "why has no one showed this to me before and how am I going to use this in my 7th grade math classroom". If you are also behind on this technology, you are in for a treat!

WOLFRAM|ALPHA is an engine for computing answers and providing knowledge. Do not get it confused with a search engine. WOLFRAM|ALPHA uses built-in knowledge curated by human experts to compute on the fly a specific answer and analysis for every query. You can find this information and more by taking the "tour" at wolframalpha.com. Basically, you type in what you want to calculate or know more about, and in seconds, the information is right in front of you. Disclaimer: the site will solve math problems! Teachers might want to keep that aspect to yourself until your students figure it out for themselves. You know they will!

It is somewhat overwhelming thinking of all the ways wolframalpha.com could potentially be used with 7th graders. I could incorporate this website with every standard I teach but it might begin to lose its "coolness" if used too often. Below are examples of how I would use the website in my own classroom.

Anyone who has ever taught in a middle school knows that middle school students are all about themselves. I think my 7th graders would love a project like this. If you go to wolframalpha.com and type in your name it will give you oodles of information about your name. One activity that could be used goes along with how many "Fill in your name" are born each year. I would have students solve using proportions how many of "their names" are born each month, 4.5 months, 10 months, daily, weekly, every minute, etc. You students can discover whose name is most common and whose names are unique. Imagine all the possibilities!

[Examples](#) [Random](#)

Assuming "Melissa" is a given name | Use as a **plant** or a **word** or a **city** or referring to music albums or an **administrative division** instead

Assuming Melissa (female) | Use **Melissa (male)** instead

Input interpretation:

**Melissa** (female given name in the US)

Information for US births:

|          |                           |
|----------|---------------------------|
| rank     | 184 <sup>th</sup>         |
| fraction | 1 in 1131 people (0.088%) |
| number   | 1698 people per year      |

(US data based on 2011 births and other SSA registrations in the US)

**(Computation and Estimation: SOL 7.4-The student will solve single-step and multistep practical problems, using proportional reasoning.)**

Staying on the topic of yourself, if you scroll down the screen you will find different graphs. Each student in your classroom will have meaningful data to use in constructing their own histogram. One graph shows an estimation percent of age distribution. For example, with my name, the average percent between the ages of 0-9 is 0.5% of all Melissa's in the United States.



The highest is ages 30-39 with an average close to 4% of Melissa's in the United States. Instead of percents, I would have them find the actual population. If you aren't sure how many Melissa's are in the United States, guess where you can find the information? wolframalpha.com! Not sure what 4% of 719311 is, you guessed it? Wolframalpha.com!



Input interpretation:

|  |                                   |
|--|-----------------------------------|
| Melissa<br>(female given name in the US) | expected total number alive today |
|--|-----------------------------------|

Result:

719 311 people

 **WolframAlpha** computational... knowledge engine

4% of 719311

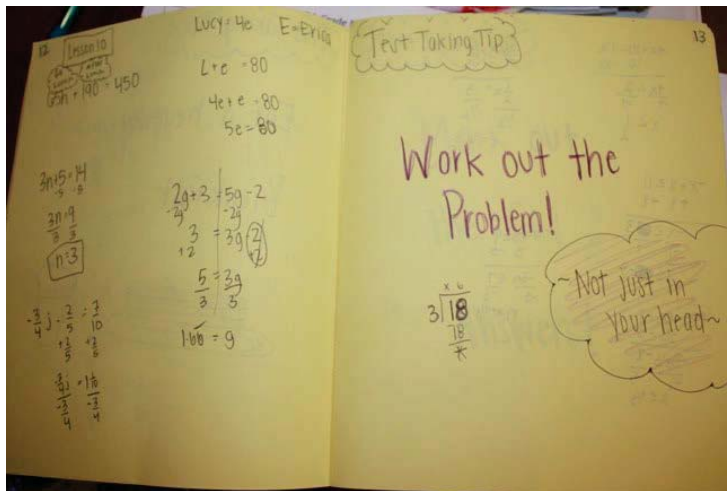
4% of 719311 = 28772.44

(Statistics: SOL 7.11 a-The student, given data in a practical situation, will construct and analyze histograms.

## Do I Have to Show My Work?

By Deborah Smith

This year, for the first time, my colleagues and I observed a significant majority of our students showing their work while taking multiple-choice tests. We witnessed students going back over a test, reworking difficult problems, and checking their work. We noted students doing the easier questions first and return to the more difficult questions later. We even noticed students circling key words, marking out distracting information, and using the process of elimination by marking out answer choices.



In previous years, I had always expected my students to show their work, but few complied willingly. What caused the difference? Why did my students suddenly start using these strategies while test taking? The Vance seventh grade math team collaborated and created a war plan for teaching our students how to take a multiple-choice test, such as a benchmark that the students take every quarter. We wanted to use a basketball theme, and the design resulted in a playbook of sorts. As a team, we matched various test-taking strategies with seventh grade math standards. Students would record the test-taking tip on the left page of their playbook, and use that strategy to complete a multiple-choice assignment on the right page of their playbook.

Nevertheless, in my opinion, the real magic occurred when we incorporated a song, video, or picture book to make the strategy fun and memorable for the students. The seventh grade math team coordinated a math skill, with a test-taking tip and a song. One of my favorites is the U2 song, “Stuck in a Moment”. The chorus pairs well with the strategy of pacing during a test, encouraging students to not get stuck on one problem and losing valuable time. I enjoyed playing the song for the class to see if the students could figure out what the test-taking tip of the day was. After the students discovered the “play of the day”, I would model how to use that strategy before giving the students an assignment for them to practice. The classroom communities improved as students began sharing strate-

gies with each other that they had successfully used then pass those suggestions on to me. After the students discovered the “play of the day”, I would model how to use that strategy before giving the students an assignment for them to practice. The classroom communities improved as students began sharing strategies with each other that they had successfully used then pass those suggestions on to me.

At the conclusion of this unit, my students wrote a reflection piece. Many students stated that having these test-taking strategies in their pocket gave them a boost in their confidence when they sat down to take a test, in not only my class, but also all their academic classes. The students felt that their anxiety decreased because they knew the material and possessed tactics for taking the multiple-choice test. Teachers from other academic areas also commented that the difference was also remarkable in their class.

I have included the results of the collaboration efforts of Vance’s seventh grade math team. You are welcome to use what you see here or adapt it to your needs. All of the songs were available on You Tube when this plan was initially developed. A word of caution, however; when surfing around the web, be sure to listen to each song and view the video in its entirety as if you were a student. Some lyrics are obvious in their unsuitability for use in the classroom, but still other songs may have more subtle lyrics that students may misconstrue.

Please feel free to contact me. I would be happy to answer questions or hear about your success!

| Lesson # | Coach Lesson   | Test-Taking Strategies   | Song   | TCAP Test Prep |
|----------|--|--|--|----------------|
| 1        | Square Roots and Cube Roots  | Pick out the easy questions  | The Easy World Song or Take it Easy by the Eagles      | 2.3            |
| 3        | Comparing Rational Numbers   | Don’t change your answer unless you are sure you need to change it | Change me (YouTube)<br>Perfect- Clean Version- By Pink | 2.2 and 2.4    |
| 4/5      | Adding, Subtracting, Multiplying, and Dividing Rational Numbers          | Get a good night’s rest before the test!                           | Tonight’s <u>Gonna</u> be a good night (YouTube)       | 2.3 and 2.5    |
| 6        | Ratios and Percents  | Double check your answer with the number on the answer key         | I like to move it, move it - Madagascar version        | 2.6 and 2.7    |
| 7        | Proportions  | Eat breakfast  | Breakfast at Ginger’s                                  | 1.1 and 2.7    |
| 8/9      | Simplifying Expressions with Rational Numbers and Evaluating Expressions | No Drama   | Llama, Llama, Red Pajama By Anna Dewdney               | 2.1 and 3.1    |

|            |   |   |  |                  |
|------------|---|---|--|------------------|
| 10/ 11     | Writing and Solving Equations                           | Write on the test, show your work                               | Proficient and I Know It<br>Work It Out High School Musical            | 3.7 and 3.8      |
| 12         | Solving and Graphing Inequalities                       | Process of elimination  | We will Rock You   | 3.9              |
| 13         | Relations and Function                                  | Have the right materials  | That's My Bubble Sheet   | 3.2 and 3.3      |
| 15         | Proportional Relationships                              | Key Words   | You're Important   | 1.3 and 3.5      |
| 16         | Slope   | Think Positively  | Don't Worry, Test Happy<br><br>(YouTube)<br>Teaching Positive Thinking | 3.4              |
| 17         | Solving Linear Equations                                | Answer every question   | You're the one   | 3.6              |
| 18         | Similar Triangles                                       | Do it again if your answer doesn't match                        | I Think I'm a Bunny  | 4.1 and 4.2      |
| 19         | Scale Drawings  | Relax, take deep breaths  | Relax, don't do it.<br><a href="#">Gonna Rock This Test</a> –          | 1.1 and 1.4      |
| 20         | Changes in Area and Volume                              | When you finish, double check your work!                        | Man in the Mirror  | 4.3              |
| 21/ 22/ 23 | Mean and Median; Bar Graphs and Histograms; Line Graphs | Read the directions   | Follow Directions Song   | 5.1, 5.2 and 5.3 |
| 24         | Circle Graphs   | Use your calculator to check                                    | Math Rocks – Calculator Song   | 5.1 and 5.2      |
| 25         | Stem-and-Leaf Plots                                     | Reread the question asked to make sure you answer the question. | Don't you forget about me  | 5.1, 5.2 and 5.3 |
| 26         | Box-and-Whisker Plot                                    | Mark out confusing or unnecessary information                   | I can see clearly now the rain is gone.                                | 5.1, 5.2 and 5.3 |
| 27         | Probability   | Pacing  | Stuck in a Moment by U2  | 5.4              |



## Reading Math

By Stephanie Miller

Extra! Extra! READ all about it! In most people's minds, Reading and Math are two completely different subjects. However, literature can be used in the Math classroom for several purposes. One reason is to reach those students who are naturally better at literacy skills versus math skills. Another reason is to teach students that Math is just a language that must be translated. This in turn can benefit students who are required to take constructed response tests. These are just a few examples of how including literacy skills in a math classroom can maximize student learning.

"Best practices" tells us that integrating various subjects sets a better foundation for comprehension. Not only can teachers connect math to literature, but also to science, social studies, and fine arts. I have found that students, including myself, are typically either Math/Science oriented, Literacy/Social Studies oriented, or artistically oriented. Just to prove my point, I will use my siblings: I see things mathematically or scientifically, my sister is talented linguistically and can pick up any language she hears, and my brother is the artist in the family when it comes to any imaginable instrument. So for the student who is more comfortable with literacy than abstract math skills, using literature with math content puts the concepts into a familiar media that the student can be more successful with. I also recommend incorporating art, music, movement, or anything else that makes the math meaningful to each and every student.

Math can be expressed in many languages – words, pictures, symbols, and numbers. Students need to understand that numbers and symbols are just a mathematician's abbreviation of the written or verbal words. Exposing students to math literature helps them grasp this connection. Any math problem, even a simple computation, can

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be expressed using words. For example,  $2 + 2 = 4$  might mean, "two points plus two points equals four points." As students become fluent in the language of math, they will be able to see words and express it with pictures, numbers, and symbols and vice versa.

The ultimate goal is to get students to develop fluency in translating between each form of math. The Constructed Response Assessments (CRAs) that Tennessee is moving towards almost demand that our students be able to do this. We are no longer interested in, "Can they reach the correct answer?" but also, "Can they explain how they got there?" This requires an ability to verbalize the justification of the answer, even if the answer itself is wrong. Students, and teachers, will need practice doing this in the classroom if they are expected to accomplish on a test.

Math literature is an excellent way to model the process of putting math concepts into words.

It has been said that the best way to know if you understand something is to explain it to someone else. That is what we are asking of our students, and it is our job to model this for them. We need to differentiate our instruction to meet every child's needs, teach them the language of math, and train them so they know what to expect on constructed response tests. Reading math is the optimal way to accomplish all those goals at once.

### HOW DOES IT KNOW?

A physicist, a mathematician, and a mystic were asked to name the greatest invention of all time. The physicist chose the fire, which gave humanity the power over matter. The mathematician chose the alphabet, which gave humanity power over symbols. The mystic chose the thermos bottle.

"Why a thermos bottle?" the others asked.

"Because the thermos keeps hot liquids hot in winter and cold liquids cold in summer."

"Yes - so what?"

"Think about it." said the mystic reverently. That little bottle - how does it know?"

<http://www.onlinemathlearning.com/math-trivia.html>





## Andy, Opie, and Long Division

By Glenda Belitz

Like thousands of others, I was deeply saddened by the recent passing of actor Andy Griffith. Although I admired the wide range of talent he displayed in various movie roles and as attorney Ben Matlock, I have to admit for me Andy Griffith is and always will be synonymous with Sheriff Andy Taylor of Mayberry, North Carolina. Growing up I visited with the Taylors every Monday night, and as a grown-up, I revisit Mayberry whenever TV Land gives me the opportunity.

I seriously doubt that an episode of The Andy Griffith Show exists that I have not watched—numerous times. Just in case you are not a member of TAGSRWC (The Andy Griffith Show Rerun Watchers Club), here is a brief synopsis. Sheriff Andy Taylor is a widower with a young son Opie. Andy's Aunt Bee keeps house for the two of them. The show depicts small-town life by allowing us to see the interactions of the Taylors with friends and neighbors like Deputy Barney Fife, barber Floyd Lawson, and filling station employees Gomer and Gooper Pyle. Some of the show's most popular installments depicted auditioning for a solo part in the town choir, the buying of a first car, and canning homemade pickles. However, it is an episode entitled "Opie Flunks Arithmetic" that can teach us math teachers a few lessons.

Now Opie is a well-mannered, intelligent little boy who usually does well in school. One day Miss Helen Crump, Opie's teacher, stops by the Mayberry Courthouse to let Andy know that Opie has a D in arithmetic. She explains that sometimes a little extra attention is all that is necessary to correct such problems. Andy agrees and tells Miss Crump that he will help Opie with his math. As Miss Crump is leaving the courthouse, Opie stops by. Andy asks his son what seems to be the trouble with arithmetic, and Opie explains that the problem is long division. He tells his "paw" that he makes so many mistakes and erases so much that he tears holes in his paper. Opie is convinced that he could make a better grade if he just had better paper!

Later that night Andy sits down to help Opie with his math homework. The first problem is  $169 \div 14$ . The following is a transcript of the conversation between Andy and Opie taken from a blog by Holly McLeod of Landrum Human Resources Company:

Andy: Put your 14 down, draw a line up and over and put your 169 down there.

Opie: Why do you do that, Paw?



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Andy: 'Cause that's the way you do it.

Opie: When we give an answer we have to tell why we do something.

Andy: The reason you put the 14 down on the left like that is, is, uh, uh, is because, uh... that's the rule.

Opie: She'll ask us why you put it on the left instead of the right.

Andy: She will? Well, uh... we probably better not tackle too much the first night. Now how many times does 14 go into 16?

Opie: Once.

Andy: Put your one on top of there. Ok, now what you got left over?

Opie: Two leftover.

Andy: Bring down the nine. Now, how many times does 14 go into 29?

Opie: Twice.

Andy: Twice, that's it. Now what you got left over?

Opie: One left over.

Andy: That's a time! Now, put down a decimal point and two zeroes.

Opie: Why?

Andy: What do you mean, why?

Opie: Just why?

Andy: Well, uh... you put down your decimal point because you're gonna put down two zeroes after that. (Opie just looks at him.) The reason you put down a decimal point and two zeroes is so's that you can, uh, keep dividing, see, and shove that number on out there, and that way you can keep thinking about it and working on it and everything, until you finally get it done. You understand?

Opie: No.

Andy: It'll come to you. (McLeod, 2011)



Filmed in 1965, "Opie Flunks Arithmetic" portrays the way most children of that generation were taught "long division," including myself. Obviously, the procedures involved are hard for Andy to explain. This is probably because Andy memorized the steps of the algorithm (divide, multiply, subtract, bring down) but attached no meaning to the different steps. It is hard to explain something you do not understand. Watching this episode, I can appreciate both Opie's struggles as a student and Andy's frustrations as a parent.

So how would we approach the teaching of long division today? Using the pedagogy of Dr. George Poole, Professor of Mathematics at East Tennessee State University:





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Opie should have been allowed to construct his own meaning of division by using counters, cubes, and other manipulatives to depict various real-life problems. These problems needed to be of both a partitive (group) nature and a quotative (size) nature. Opie also should have had the opportunity to work with inexact quotients. (Poole, pp. 146-152)

Aunt Bee leaves a jar of her homemade pickles at the courthouse for Andy and Barney. There are 11 pickles in the jar. How many pickles could Andy and Barney eat if they share equally? Would there be any left? (The quotient is  $5 \frac{1}{2}$ .)

Opie's friend Johnny Paul Jason has 37 baseball cards. He buys an album from Walker's Drug Store to store his cards. Each page holds 5 cards. How many pages will Johnny Paul's album need to store all his cards? (The quotient is 7 remainder 2, but the album needs at least 8 pages to accommodate Johnny Paul's cards.)

Once Opie demonstrated understanding of the division principle, Miss Crump should have provided opportunities for him to gain confidence and speed with problems that have exact quotients (the division facts). She then needed to introduce the idea of power ten quotients: dividing larger numbers by using knowledge of the division facts and then subtracting the number of zeroes in the divisor from the number of zeroes in the dividend.

Miss Clara Edwards has won 1200 ribbons for her homemade pickles. She has entered pickle contests for 20 years. How many ribbons does she average winning each year?

$$1200 \div 20 = (12 \div 2) \text{ with 1 zero } (60)$$

Providing Opie a strong foundation in place value would have prepared him for the strategy of breaking apart larger dividends. (Poole, pp. 208-210)

Aunt Bee processes 169 cucumbers. She puts them into 14 canning jars. How many pickles did Aunt Bee put in each jar? One possibility:

$$(100 + 60 + 9) \div 14 \rightarrow (140 + 20 + 9) \div 14 =$$



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$$10 + [(20 + 9) \div 14] =$$

$$10 + [(28 + 1) \div 14] = 12 \text{ with remainder } 1$$

This is the answer to Opie’s homework problem, and I believe Opie, unlike Andy or me, would have been able to explain how he got his answer should Miss Crump ask him.

However, the strategy that I believe would have been Opie’s favorite is one presented by Dr. Poole on July 16, 2012, in his Math 5010 Problem Solving class. This method combines the use of partial quotients and estimation with “bumped-up” divisors and smaller dividends, allowing students such as Opie to “sneak up underneath”

|  |  |   |
|--|--|---|
| $  \begin{array}{r}  2 \\  2 \\  3 \\  14 \overline{)169} \begin{array}{l} \leftarrow 5 \\ \leftarrow 5 \end{array} \\  \underline{-70} \\  99 \\  \underline{-42} \\  57 \\  \underline{-28} \\  29 \\  \underline{-28} \\  1 \text{ (remainder)}  \end{array}  $ | $  \begin{array}{l}  \} \\  \} \text{ 12 (quotient)} \\  \} \\  \}  \end{array}  $ | $100 \div 20 = 5$ $60 \div 20 = 3$ $40 \div 20 = 2$ $29 \div 14 = 2 \text{ remainder } 1$ |
|--|--|---|

Why do I think this strategy would be Opie’s favorite? He would never have to erase!

### Works Cited

McLeod, H. (2011, March 22). *Mayberry Monday--Opie Flunks Arithmetic, Part 1*. Retrieved from Landrum Human Resource Companies Blog: <http://landrumhrblog.com>

Poole, G. (2011). *The Great Conspiracy Behind K-6 Mathematics* (Vol. I). Johnson City: Copynet.



## 2-Digit Addition and Subtraction Using a Hundreds Chart

By Nancy M. Mayberry

Previously I had used a hundreds chart to teach skip counting, greater than and less than, and place value. This year I used a hundreds chart to help my second grade students solve 2-digit addition and subtraction problems. You can count on by tens on a hundreds chart by moving down a row in the same column. You can count on by ones by moving to the right in a row. The same is true for subtraction except you move in the opposite direction. You count by tens as you move up a column to subtract tens and to subtract ones, you move to the left in the row.

Each child in my class had a hundreds chart and after much practice adding tens to 2-digit numbers and adding ones to 2-digit numbers, I asked the students how many rows down they would have to go to add  $54 + 18$ ? Start at 54 and go down 1 row to show 1 ten in 18. Ten more than 54 is 64. Then count on 8 more to the right to show the 8 ones. The correct answer is 72. I continued giving the students problems to solve until they were comfortable with this strategy. The students loved this strategy and used it to solve two digit addition problems with and without regrouping.

After several days of solving addition problems using a hundreds chart I asked the class if they thought they could use the hundreds chart to solve subtraction problems. We thought back to when we began adding using a hundreds chart and one child reasoned that on a number line you count on to add and count back to subtract, and on the hundred chart we had learned to count down to add tens and to the right to add ones, then you must count up on the hundred chart to subtract tens and to the left to subtract ones. To solve  $67-24$ , begin on 67 and count up 2 rows in that column, that is 47. Then count to the left 4 spaces to subtract 4 ones and the answer is 43. We tried the strategy and the class discovered that it worked. They were so excited about a way to solve 2-digit addition and subtraction that was fun and did not require with using pencil and paper. I was excited to see them being successful with a strategy that made math fun. I also found that they had a greater understand of place value after using this strategy.

I found that even after we went on to other standards in math, some students continued to use a hundreds chart to solve 2-digit addition and subtraction problems. Some of my top students were able to take it a step further and utilize their greater understanding of place value to solve these problems mentally. I will definitely continue to help my students discover this strategy in the future. I feel that if I had been encouraged to use different strategies when I was in elementary school I would have had a better understanding of math and definitely enjoyed it more.

### *Resources*

enVision MATH, Scott Foresman-Addison Wesley, Pearson Education, Inc. 2012



## Why Does Math Take The Backseat?

By Chase Watkins

I hear students say all the time, “I can’t do math,” or “I hate math!” Although, rarely do I hear a student say, “I can’t read.” Why is this? Everyone can pick something they like to read about, but can we as teachers find something in math that interests our students?”

In grades K-5, you will find teachers having reading lessons first thing in the morning; the best and most attentive time for learning. We have words of the week; we break down words, use them in sentences, and look in depth at their definition. When we read our stories, we look at the main idea, characters, and relate them to real life situations. Many of our classrooms have thirty minutes set aside for free reading time. If a student finishes his or her work early, the number one response from a teacher is “read a book.”

Do we have to set a schedule that places reading before math every day? In reading, we analyze each vocabulary word. Could we not have a number of the day where we look in-depth at numbers? Numbers could be broken down, showing their place value with expanded form and manipulatives. We could write the number in word form, possibly have spelling tests where students spell the number words. Students have to be able to read to do problem solving, so can we not integrate these two subjects in order to connect the two content areas for a more beneficial type of learning. We could use story problems instead of just short word problems. We could talk about main idea, characters, and solve math problems found within the story. We could also assign our students a certain number to write a story. For example, students could write everything they know about a certain number, as well as, how they see it and how they relate this number to their life.

Math not only takes the back seat to reading in the elementary grades, but even at the college level. While working on my education degree in college, the requirements for reading doubled the math requirements. During the math methods classes, I did not learn effective teaching strategies in order to teach math. Using math manipulatives was rarely mentioned as an effective learning tool.

Why is math in the back seat? I have often wonder if we spent the same time for math as we do reading, would our students be less apprehensive about learning math and possibly more successful in acquiring math skills? We know it would not solve any problems to move math to the front and reading to the back, but could we not let math ride shotgun while reading is in the driver’s seat?



## Bottle Math

By Sherry Strickler

A great versatile math manipulative simply consists of a plastic bottle and lid with dice inside. I like to use plastic juice bottles because they are smaller and easier to store. You can vary the amount of dice inside according to what skill you want to reinforce.

**Addition:** Start with 2 dice inside the bottle. Partners take turns shaking the bottle and adding the numbers inside. They can record their addition sentences and compare who has the greater or lesser sum, odd or even sum, or whichever skill you want to reinforce. For more of a challenge add more dice so the students are able to add 3 numbers, 4 numbers or more. For 2- digit addition use two dice, shake the bottle, point the lid side of the bottle to the left. Partners take turns rolling the dice and recording their numbers, then partners work together to add the addends. This can be changed to any size number.

**Place Value:** Start with 2 dice inside the bottle. Turn the lid to the left side. You could place a sticker on the left hands of the players to help them find the left side. Partners read and record their numbers. Use the greater than and less than symbols. Decide what the winning target will be. (Greater or lesser, odd or even) Circle the number that is the winner and play again. See who won the most out of 10 tries. Add as many dice to cover the place value you are practicing.

**Subtraction, multiplication, and division:** These skills could also be practiced using the dice in the bottle and changed to fit the particular skill.

This is also a nice way to use dice without the pieces being misused (or thrown across the room).





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## Changing Math Ideas

By Valerie Moore

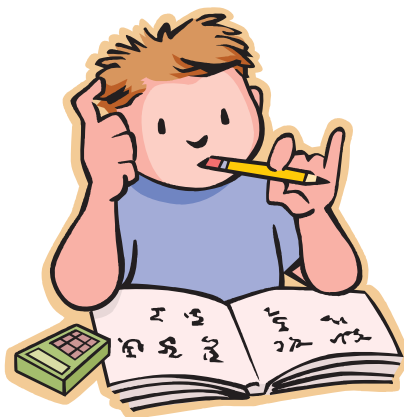
With the changes in our education system and the switch to the common core standards and constructive response tests in Tennessee, we as teachers must make changes in our own thinking and teaching strategies. We no longer should just be satisfied with simply the right answer on math problems, but rather we must question our students on how and what concepts they used in order to get that answer.

Attention to detail in the written answer is the key to student success on the constructive response test, but ultimately the students will be successful if they look closely at the details in the real world applications when everyday problems arise. As math teachers we should show our flexibility by looking beyond one answer. Students will arrive at correct answers to problems by using different concepts and algorithms, possibly with a different method.

The Eastman Scholar Mathlete Program gives teachers the opportunity to broaden their ideas in teaching math concepts while becoming more flexible in teaching strategies. Mathletes are also learning to pay close attention to details when evaluating answers, as well as the problem. This program allows teachers from the area to become a network that provides new and great ideas for teaching math. Using professors from East Tennessee

State University help bridge the gap between what is being taught at the university level to aspiring teachers and what is currently taught in classrooms. Teachers who are involved in this program have learned how to embrace these changes and are fortunate to have Eastman and ETSU as partners in education.

*We no longer should just be satisfied with simply the right answer on math problems, but rather we must question our students on how and what concepts they used in order to get that answer.*





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## A Mathematical Mindset

By Whitney E. Loggans

I never really thought of myself as a math student throughout elementary, middle, or high school. I was actually terrified of mathematics! It was not until college, at East Tennessee State University, that I really thought - "I can do this!" The mathematical mindset can be very intimidating, or at least I thought so. While obtaining my undergrad for Elementary Education K-6 at ETSU, I was required to take a total of three math classes. My mindset, of course, was that of a college student: hurry up and get finished, so I can get my degree and start working! I learned a lot of neat techniques in math, but I didn't really appreciate what was being taught to me. I did, however, begin to feel comfortable with math by the time I started student teaching.

I graduated from ETSU in May of 2009, and I did not receive my first teaching job until June of 2011. I worked as an Instructional Assistant for Kingsport City Schools, and had the wonderful opportunity of being offered a third grade teaching position with KCS. When I first started as a new teacher I was very worried about teaching math, because I was always apprehensive about math as a child. In Kingsport City Schools we use the Math Investigations curriculum. Therefore, when I started teaching math I felt more comfortable because all of those great strategies that I had learned in college were coming in handy! I really love the variety of mathematical strategies that are used within the Investigations curriculum.

*Once I realized that mathematics can be done in a variety of ways, my mindset changed significantly.*

*I can honestly state, now, that I really do love math!*

Despite the fact that I was very nervous about math growing up, it is now my favorite subject to teach. My "this is where it all clicks" point for mathematics was in college and when I actually started teaching the material. Once I realized that mathematics can be done in a variety of ways, my mindset changed significantly. I can honestly state, now, that I really do love math!



## Positive Discipline

By Leslie Miller

The definition that I would use to define positive discipline is “to catch a child doing something good and telling them”. When you hear the word discipline “positive” does not even come to mind. The word discipline come from the word disciple which means to teach, not punish. Unfortunately, the latter is how it is known. “The most effective forms of discipline encourage good conduct by building a mutually respectful bond with the child, letting her know ahead of time how to act, and praising mature behavior” (Zahn-Waxler & Robinson, 1995, pg. 143).

How is a child’s brain affected by positive discipline? Rousseau, a French philosopher, stated “Children are noble savages, naturally endowed with a sense of right and wrong and an innate plan for orderly, healthy growth” (Berk, 2008, pg. 12). Rousseau felt that adults would only harm their inborn traits. He thought children controlled their own destinies. However, in this day and age the environment does not allow children to have this control. “Child development psychologists are discovering more and more about the influence of the environment on children’s brain development, both before birth and during the beginning years of life. The Constructivist belief that children construct knowledge from their interactions with their physical and social world now takes on an even deeper meaning” (Fields & Fields, 2006, pg. 13).

The main goal of using positive discipline is to make sure the children feel that they are in a safe environment, and that they will not be chastised for answering a question wrong or being made fun of in any way. “All people (including children) deserve dignity and respect. A basic principle of Adlerian psychology-- the philosophy of maintaining dignity and respect for all humans” (Nelson, Lot, & Glenn, 2000, pg 24).

“Humiliation and shame are not effective motivators. Over the last decade, a number of professionals concerned with children (such as pediatricians, psychiatrists, and social workers) have formally adopted positions in opposition to spanking or humiliating children in any way. These specialists have paid attention to the research demonstrating that the long-range damage to children far outweighs the immediate advantage of controlling behavior through punishment.” (Nelson, et al., 2000).

Positive Guidance encourages an environment where children make their own decisions and choices. The children





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are learning self-discipline, or moral autonomy.

“Moral autonomy means having the ability to make decisions about right and wrong, regardless of any rewards or punishments, yet taking into consideration the rights and needs of all involved” (Fields & Fields, 2006). Each choice is a continuance that develops the brain. If the child is not behaving appropriately, the teacher must find the cause of the action in order to help that child.

Teachers can use positive discipline in the classroom by learning strategies that include the children in the daily class activities. “Teachers need to teach and encourage not be policemen, judges, and juries. To stimulate the children’s brains the teacher can suggest that the children aid in making the classroom rules, set a daily routine, show respect to his / her students and also conduct class meetings where the children can bring issues to be resolved” (Nelson, et al., 2000).

Positive Discipline is a wonderful concept and plan. I agree with Dr. Nelson’s statement about “humiliation and shame”. I myself was brought up in a society where fear and resentment were the disciplines of choice. We were never given choices, only consequences. If the students did not comply with the rules at school, the students knew that something bad was going to happen. If we got a spanking at school, we could expect a spanking at home. I don’t feel that I respected my teachers. I feared them and my parents.

Positive Discipline effects brain development in numerous ways. We are born with billions of neurons. It is these connections that ensure how we survive. It begins at birth and is continued throughout the entire life span. Positive Discipline gives a child a sense of control in his or her personal chaos. These positive connections that are aided by parents and caregivers give the child the ability to make choices. Children have the right to make mistakes and to learn from the consequence, free from punishment. It is important that they feel that children are in a safe environment so they will attempt to make a decision. Children are also in a safe environment where they are free to answer questions without the fear of humiliation or ridicule. By allowing the children these options, they begin to feel respected. If the children feel respected they will show respect. Teachers have many options to rear children. I feel that positive discipline is the best method. It allows children to be in control of their decisions with the teacher there as a guide. The teacher is not there to punish but to encourage. Will all schools be able to practice “positive discipline”? How long will it be before we see the effects of this method? We as teachers need to become encouragers and help students achieve long term goals, and most of all, strive to become lifelong learners.



## Practically Perfect Pacing: Is it Possible?

By Carolyn Yvelle Mull

Hopefully, at some point in your life, you have been fortunate enough to be in a classroom that was an absolute joy. On the other hand, all of us have been subjected to hours of classroom torture where each minute painfully passed. I recently attended two math seminars scheduled a few weeks apart. One was only a one-day seminar, and the other seminar was a week long class. Sadly, the one-day seminar was torture. However, the other class was one of those great learning opportunities where the teacher knew how to pace the day (No, it was a week!) for enjoyable learning.

What made the one-day class a day of misery? The one-day program was a pre-packaged program. The instructor of the one-day class did not do any type of pre-assessment at the start of the seminar. She made out her lesson for the day without attempting to know if it was appropriate for the group of learners. Sadly,



*...even in the face of difficult circumstances, we have all seen awesome teachers strategically overcome at least a good portion of uncontrollable variables by taking charge of the factors that were within their power.*

ly, it was not. Secondly, the environment was not conducive to learning. The group was too large, the room was too big, and the entire lesson was addressed to the whole group rather than breaking off into discussion groups or partners. Finally, the timing of the lesson was off... way off. Of course, the timing issue was not the instructor's fault. This was a variable that was out of her control. It was the end of the school year. Many of the adult students (teachers) in the class had other pressing issues on their mind. TCAP scores had been released, possible job changes were in the works, and several non-tenured teachers were wanting to know if they even had a job next year. However, even in the face of difficult circumstances, we have all seen awesome teachers strategically overcome at least a good portion of uncontrollable variables by taking charge of the factors that were within their power.

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What changes could have been made to overcome the instructor's obstacles that day? Taking time to get to know the group, pre-assessing prior knowledge, and trying to determine what the learners wanted to learn could have helped her adjust the lesson to make it more engaging. In addition, breaking off into groups and completing activities in small groups could have alleviated many of the environmental factors that were a distraction; thus, creating the opportunity for the teacher to extend learning for the small group divisions. Unfortunately, even when we have



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controlled all possible factors in our power, lessons occasionally nose-dive.

Not one single teacher I have ever met had a goal of trying to create boring lessons or to torment students with meaningless activities paced totally wrong for students. Yet, (I am going out a limb to say this) the majority of teachers still struggle with this at least on some days, during some lessons, or during some “non-teachable” moments. Of course, I do not make this comment as a research-based statement. My thoughts are just based on years of personal experience (as a student and as a teacher) as well as other teachers’ tales of woe.

As educators, we all lament when we feel like students were not engaged, excited, or even remotely interested in the lesson. However, when the stars align and students enthusiastically engage in every learning activity, we, as teachers, are thrilled and jubilantly share the details of the lesson with our teacher friends. These teacher friends then scurry to try the same lesson. After all, we have collaborated, and their students usually have the same areas that need strengthening. Why does the same lesson, then implemented the same way in the other teacher’s classroom not always achieve the same glowing result? The students need the same learning after all, right? They are from the same demographic area, same age, same balance of learners in the room, and so forth.

I will admit this has happened to me more than once. When I hear a teacher rave about how great a lesson went, I think I just have to try it. Many times, fantastic lesson ideas from other teachers will also do amazingly well in my room. However, there are occasions where these same lessons that were gloriously successful with others totally flopped in my room. After a failed lesson, I wonder why does this happen, and why is it that a favorite lesson that has worked wonders year after year suddenly fails the group of students I have now.

This is where teacher math expertise must come into play. First, we need to be able to analyze all the assessment data to see what standards still need to be mastered. That provides one of the important planning components necessary for engaging students. The data will tell us what students are on the ‘cusp’ of learning so that we can engage students without frustrating them. Of course, determining the standards to be taught is only one tiny piece of the puzzle of developing a great lesson.

The vast majority of the problem is considering the seemingly infinite variables that are part of the unique



*Why does the same lesson, then implemented the same way in the other teacher’s classroom not always achieve the same glowing result?*



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classroom equation for success. We have to use our math skills to calculate many variables, determine our probability for success, somehow assign values to abstract personality factors, and mentally calculate the interest factor given the age level and demographics of our students. Once our trial and error calculations are complete and the figures predict an outcome of success for our students, we are ready for a perfectly paced lesson.

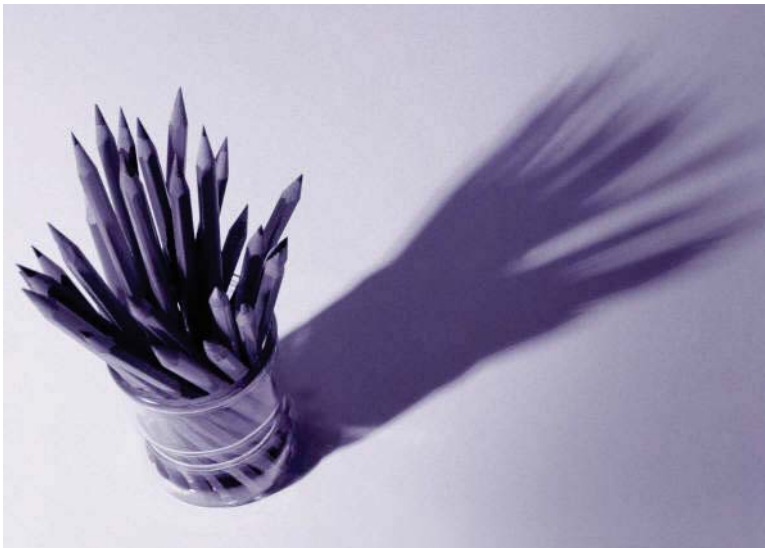
We know from personal experience that enjoyable classrooms are those where the day flows naturally. The teacher relates to the students in a natural, relaxed manner. Why does this occur? Because teachers with perfect pacing know the data, but more importantly, know what students need, know what students like, know how to group students successfully, know how to use classroom resources in the most efficient and effective manner, know when to move on from each lesson segment, and know how to assess at the end of the lesson to plan for making the next perfectly paced lesson. The lessons are perfectly paced because the teacher knows the students. Fortunately, seasoned teachers also know it is okay if the lesson does not go as planned.

As school starts this year, we should, of course, get to know our students' data. However, our biggest challenge is to really get to know our students so that we can adjust and be flexible to meet our students' needs that are ever-changing. The variables will constantly

change, but great educators consistently

adapt to meet those needs. Know, know, know your students! This just might be the most important variable for success in your unique classroom equation this year!

*...teachers with perfect pacing know the data, but more importantly, know what students need, know what students like, know how to group students successfully, know how to use classroom resources in the most efficient and effective manner, know when to move on from each lesson segment, and know how to assess at the end of the lesson to plan for making the next perfectly paced lesson.*





## What's Your Credit Score?

By Dawna M. Owenby

I have never met anyone who isn't interested in money...in getting it, keeping it and/or spending it. That is especially true of kids! Many have watched their parents pull out a credit card and run it through the machine at the store, if they don't have cash on hand, to make a purchase. But do they understand the principle of credit and are they learning to be responsible in paying the bill for that credit card that comes in every month? If you pay your bill in full and on time then you can build your credit score which allows you the opportunity to apply for and possibly receive loans for large purchases should the need arise. However, when you are late in paying your bill or don't pay that month's bill in its entirety, there are some serious consequences. One such consequence is having a low credit score rating which could keep you from being able to get a loan from the bank, credit union, or a car company.

Let's begin building our children's understanding of this in a meaningful way at school which rewards good choices and is a deterrent to poor choices made by students. In a system created by some colleagues of mine in North Carolina and further developed while I was a team member at the school, each child receives a "credit card" made out of cardstock. It is about the size of a credit card and has space for the child's name and a table outlining the twenty weekdays in a one month period (see attached sample). The spaces are left blank so that the dates on the card can be customized each month. Students carry these cards around with them in their pencil pouch or in the cover of their binder to each class. When good choices are made by the student the card is left intact. However, as students make poor choices his or her card is punched by the teacher as a consequence using a small-pinned hole-puncher. At the end of each 20 day period the students are given the opportunity to participate in a special activity set up by the teachers. The idea is that the fewer the punches, the more time the student can spend in the special activity. Therefore, the goal is to get no or at least as few "punches" as possible. If a student receives no punches in the 20 day period, the student participates for the entire hour of the activity. If 1-3 punches are received, students may participate after 10 minutes have expired. If 4-8 punches are received, students may participate after 20 minutes out. If 9-13 punches are received, students may participate after a 30 minute time period. Finally, if a student has received 14 or more punches, the student may not participate in the activity at all. One teacher begins the reward activity and the other teachers take turns taking the groups of students in the other categories and bring them to the predetermined location at the appointed times. While the students are waiting to participate, they will use the time to read material of their choosing or make up late work.

Punches are given by teachers for a variety of reasons. Listed below are some of those reasons and their corre-



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sponding codes for the various infractions. However, they are not limited to the following:

1. No homework – NHW
2. Back to class (unprepared) – BTC
3. Talking – T
4. Not following directions – NFD
5. Not Paying Attention – NPA
6. No Master Card – NMC
7. Misbehavior – MB
8. Lost Behavior Chart – LC



Not only is a student's card punched, but the reason for the punch is written by the teacher on the behavior documentation record (see attached). Note that each teacher is assigned a certain pen color with which to document so that not only does the parent know why the card was punched but also what teacher did it. This eliminates any confusion on the parents' part and also allows the parents to know who they would need to contact if they have any questions.

On Friday of each week, the students take home the Behavior Chart to have it signed by a parent. It must be returned on Monday signed or he/she will be given a punch in the card and one additional punch for every day after Monday that it is still not signed. If a card is lost, a new one will be given and the new card will be punched for having lost the first one. If a second card is lost within the 20 day period, the student automatically loses the privilege of attending the special activity regardless of the number of punches previously given. Therefore, emphasizing to the children the need to be responsible for his/her actions or inactions. At the beginning of each month the students are given a new card and the cycle begins again with a fresh start. Tomorrow is a new day with no mistakes.

Some ideas for reward activities include: watching a movie, kite flying, kickball game, Christmas \$1.00 gift exchange, decorating Valentine bags, board games, free time on playground, Bingo with small, donated prizes, dance, and a beach themed party. The ideas are endless, but the benefits are great. Students focus not only on good behavior, but getting his/her work done, turned in and on time at that.



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Name \_\_\_\_\_

**M**

**T**

**W**

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**F**

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|  |  |  |  |  |

(Master Card sample)



## Behavior Management Chart

Child's Name \_\_\_\_\_ Date \_\_\_\_\_

|                          | Monday | Tuesday | Wednesday | Thursday | Friday |
|--------------------------|--------|---------|-----------|----------|--------|
| <b>Week #1:</b><br>_____ |        |         |           |          |        |
| <b>Week #2:</b><br>_____ |        |         |           |          |        |
| <b>Week #3:</b><br>_____ |        |         |           |          |        |
| <b>Week #4:</b><br>_____ |        |         |           |          |        |
| <b>Week #5:</b><br>_____ |        |         |           |          |        |
| <b>Week #6:</b><br>_____ |        |         |           |          |        |

**Teacher Code:**

- Blue
- Green
- Yellow
- Red
- Black

NHW - No homework  
 BTC - Back to class  
 T - Talking  
 NFD - Not following directions  
 NPA - Not paying attention  
 NMC - No Master Card  
 MS - Misbehavior  
 LC - Lost Behavior Chart

**PARENT SIGNATURE:**

WEEK #1: \_\_\_\_\_

WEEK #2: \_\_\_\_\_

WEEK #3: \_\_\_\_\_

WEEK #4: \_\_\_\_\_

WEEK #5: \_\_\_\_\_

WEEK #6: \_\_\_\_\_





## An Essay by Theresa Howard

When I have an epiphany, as I had today, I literally bubble over with joy at my newfound discovery! I did not uncover the answer to world peace. I did not find the cure for hunger in many parts of the world. So was my experience today something that changed me? For a fact, it did! As a teacher who was somewhat refreshed due to a month-long break in June, I entered Mathletes, a program designed to help teachers be better instructors of mathematics. We began our journey with a look at place value which put me in unknown territory using ORPDA, a system of counting which uses flubs and skoobrats rather than my base ten system of counting that I have been familiar with since the age of two! By unknown territory, I mean that I was totally out of my element with this new way of counting, and it scared me to death! Top that with the fact that I am approaching fifty-five, and my memory recall is not what it used to be! I felt what every child feels when they are totally uncomfortable with a concept they are trying desperately to grasp!

As the two-week Mathletes seminar progressed, we looked at the ticklish subject of long division, also known as “Do it this way because it works! Yes, I know it messes with place value in a big, bad way, but if you will just do it this way, we can move on to our next unit on geometry (or whatever is racing at us next!)” Because I was not in a traditional classroom, we stepped back and examined the process of long division more closely. It began with our instructor emphasizing the fact that we had to look at parts of the problem in “friendly numbers,” something that the student would not be afraid of. This progressed to my neighbor’s method of teaching math using an investigative approach and those “friendly numbers” again. For example, let’s look at this:  $2345 \div 7 = \underline{\quad}$ . In the old days, someone taught me to ask myself if 7 would first go into 2; if no, then would 7 go into 23? If yes, then put a 3 over the 3 in 23 and begin the process of long division-NIGHTMARE for many students!!! Why? This absolutely will work, but it absolutely, undeniably undoes every notion students have learned about place value and what a number really stands for. What if we divided 7 into 2,345 by multiples of 10? I know that 7 times 10 equals 70 and that is not even close to my dividend. In that case, what about 7 times 100 which is equal to 700?



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Now students can see that we are taking a group of 700 (7 times 100) from 2345. What remains is 1,645. If we repeat this process by taking away another group of 700 (7 times 100), we are left with a remainder of 945, and we can repeat the process again with a remainder of 245. Up to this point, we see that 2,345 can be divided by 7- 300 times with a remainder of 245. Again, keeping with the concept of multiples of 10, we know that 7 times 10 equals 70, and what's left is 175. Another round of 10 times 7 will leave us with a remainder of 105, and another round of 70 being taken from 105 will leave us with a remainder of 35. Let's recap thus far: 2,345 divided by 7 will go 300 +30 times with a remainder of 35. We know that 7 times 5 is equal to 35 with no remainder. Therefore

***In all situations, students should begin with the familiar and what makes sense and proceed. It's up to us, as teachers, to help the students find that which is familiar.***

2,345 divided by 7 =  $100+100+100=10+10+10+5$  or 335. Using these steps, we have watched comfortable groups of 7 that we can understand being taken from 2,345 until we are left with no remainder.

As time marches on, some students will realize that we can combine steps and our first amount divisible by 7 is 300 not  $100+100+100$ . That's what we, as teachers, should take great delight in, but the fact is if we, as students, are not comfortable with 300 and are easier with 100 at a time, we will still arrive at the correct answer in our own way that makes sense to us!! We manipulate the numbers; they don't manipulate us!

Am I a warrior with a new cause? You bet I am! In this case, students are using a method of dividing that keeps place value intact and removes groups of numbers that begin with multiples of ten; steps that make division a series of subtracting. In all situations, students should begin with the familiar and what makes sense and proceed. It's up to us, as teachers, to help the students find that which is familiar. Now that makes sense!



## Factoring Quadratics As Easy As a, b, c

By Patricia L. Meyers

Factoring quadratics is essential in algebra. Unfortunately, many students have difficulty mastering this skill. Algebra teachers primarily teach factoring quadratics with different methods, such as guess-and-check, the Box Method, and the British Method. But there are easier methods that can simplify the process. In this paper there is an explanation of three different techniques to help factoring easier: (1) calculating the discriminant, (2) the use of a graphing calculator, and (3) the Bottoms-Up Method.

### Is it Factorable? Calculate the Discriminant:

The first step before trying to factor a quadratic expression is to calculate the discriminant. If the discriminant is a perfect square, then the quadratic expression is factorable. If it is not a perfect square, then the quadratic expression is not factorable and the student only has to determine if there is a greatest common factor (GCF) to be factored out.

|  | FACTORABLE                | NOT FACTORABLE                  |
|--|---------------------------|---------------------------------|
| <b>Example</b>                               | $2x^2 - 14x + 20$         | $x^2 + 8x - 5$                  |
| <b>Calculate the discriminant.</b>           | $a = 2; b = -14; c = 20$  | $a = 1; b = 8; c = -5$          |
| <b><math>b^2 - 4ac</math></b>                | $(-14)^2 - 4(2)(20) = 36$ | $(8)^2 - 4(1)(-5) = 84$         |
| <b>Is the discriminant a perfect square?</b> | $\sqrt{36} = 6$<br>yes    | $\sqrt{84} \approx 9.165$<br>no |
| <b>Factorable or Prime?</b>                  | Factorable                | Prime                           |

**It's Factorable and a = 1 ! Use the Graphing Calculator:** When a = 1, using a graphing calculator can help students who have a difficult time with factoring. Math teachers are observing more and more students who not strong with multiplication facts. Struggling students cannot determine the two factors of the constant (c) and the relationship to the sum of the factors (b). For example, the quadratic expression ,  $x^2 - 7x +$

10, there are students who lack the mathematical skills to formulate that the two factors - 2 and - 5 have a product of 10 (c) and a sum of - 7 (b). A simple technique using a graphing calculator can help these students and offer a quick way for other students to check their work.

The following is a process students can use to find the factors of a number by using a graphing calculator. For this paper, these steps incorporate the commands used on the TI-83 Plus or TI-84 graphing calculators. The process can be adapted to other hand held or internet based graphing calculators.

|   | ALGEBRA   | NUMBERS   |
|---|---|---|
| <b>Quadratic Expression</b>   | $x^2 + bx + c$  | $x^2 + 2x - 8$  |
| <b>Calculate the discriminant to determine if it is a perfect square root and can .</b>   | $b^2 - 4ac$   | $2^2 - 4(1)(-8) = 36$<br>$\sqrt{36} = 6$<br>Factorable      |
| <b>Calculator</b><br><input type="checkbox"/> Indicates a key on the graphing calculator. | Use the function key:<br><input type="checkbox"/> Y=        | Use the function key:<br><input type="checkbox"/> Y=        |
| <b>Type the formula next to <math>Y_1 =</math>.</b>                                       | $c \div$ <input type="checkbox"/> X,T,θ,n                   | $-8 \div$ <input type="checkbox"/> X,T,θ,n                  |
| <b>Generate a table.</b>  | <input type="checkbox"/> 2ND <input type="checkbox"/> GRAPH | <input type="checkbox"/> 2ND <input type="checkbox"/> GRAPH |

| <p><b>Evaluate table for two integers whose product is equal to <math>c</math> and whose sum equals <math>b</math>.</b></p> | <p>Looking for two integers whose product is <math>c</math> and sum is <math>b</math>:</p> <table border="1"> <thead> <tr> <th>X</th> <th>Y<sub>1</sub></th> </tr> </thead> <tbody> <tr> <td><math>p</math></td> <td><math>q</math></td> </tr> <tr> <td><math>s</math></td> <td><math>t</math></td> </tr> <tr> <td><math>m</math></td> <td><math>n</math></td> </tr> <tr> <td><math>l</math></td> <td><math>c</math></td> </tr> <tr> <td><math>c</math></td> <td><math>l</math></td> </tr> <tr> <td><math>n</math></td> <td><math>m</math></td> </tr> <tr> <td><math>t</math></td> <td><math>s</math></td> </tr> </tbody> </table> <p><math>m * n = n * m = c</math></p> <p><math>m + n = n + m = b</math></p> | X                                  | Y <sub>1</sub> | $p$ | $q$ | $s$ | $t$ | $m$ | $n$ | $l$ | $c$ | $c$ | $l$ | $n$ | $m$ | $t$ | $s$ | <p>Looking for two integers whose product is <math>-8</math> and sum is 2:</p> <table border="1"> <thead> <tr> <th>X</th> <th>Y<sub>1</sub></th> </tr> </thead> <tbody> <tr> <td>-2</td> <td>4</td> </tr> <tr> <td>-1</td> <td>8</td> </tr> <tr> <td>0</td> <td>ERROR</td> </tr> <tr> <td>1</td> <td>-8</td> </tr> <tr> <td>2</td> <td>-4</td> </tr> <tr> <td>3</td> <td>-2.667</td> </tr> <tr> <td>4</td> <td>-2</td> </tr> </tbody> </table> <p><math>-2 * 4 = 4 * -2 = -8</math></p> <p><math>-2 + 4 = 4 + -2 = 2</math></p> | X | Y <sub>1</sub> | -2 | 4 | -1 | 8 | 0 | ERROR | 1 | -8 | 2 | -4 | 3 | -2.667 | 4 | -2 |
|---|--|------------------------------------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---|----------------|----|---|----|---|---|-------|---|----|---|----|---|--------|---|----|
| X   | Y <sub>1</sub>   |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| $p$   | $q$  |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| $s$   | $t$  |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| $m$   | $n$  |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| $l$   | $c$  |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| $c$   | $l$  |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| $n$   | $m$  |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| $t$   | $s$  |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| X   | Y <sub>1</sub>   |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| -2  | 4  |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| -1  | 8  |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| 0   | ERROR  |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| 1   | -8   |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| 2   | -4   |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| 3   | -2.667   |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| 4   | -2   |                                    |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |
| <p><b>Write the quadratic expression in factored form.</b></p>  | <p><math>(x + m)(x + n)</math></p>   | <p><math>(x - 2)(x + 4)</math></p> |                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |   |                |    |   |    |   |   |       |   |    |   |    |   |        |   |    |

**It's Factorable, but ! Use the Bottoms-Up Method:**

A method of factoring quadratics not familiar to many teachers is called the Bottoms-Up Method. It is an easy method for students to follow, but the user must be cautious to factor out the greatest common factor (GCF) or a negative if the leading coefficient is less than zero (this will be explained in the next section). Following is how to use the Bottoms-Up Method using algebra and with an example.

|  | ALGEBRA  | NUMBERS  |
|--|--|--|
| Quadratic Express-   | $(ad)x^2 + (bd)x + (cd)$   | $12x^2 + 2x - 4$   |
| Calculate the discriminant to determine if it is a perfect square root and can be factored.  | $(bd)^2 - 4(ad)(cd)$   | $2^2 - 4(12)(-4) = 196$<br>$\sqrt{196} = 14$<br>Factorable     |
| Determine if there is a GCF. If there is one, factor it out, but do not drop it.   | $(ad)x^2 + (bd)x + (cd)$   | $(2 * 6)x^2 + (2 * 1)x - (2 * 2)$                              |
| Multiply the leading coefficient ( $a$ ) to the constant ( $c$ ). Drop the leading coefficient for now, but it will be used later. | $d(x^2 + bx + ac)$   | $2(x^2 + x - 6 * 2)$<br>$2(x^2 + x - 12)$                      |
| Factor the new trinomial. The graphing calculator can be used at this point to determine the two factors.                          | Let $b = m + n$ and $c = mn$<br>$d(x + m)(x + n)$  | $b = 1 = 4 + (-3)$<br>$c = -12 = (4)(-3)$<br>$2(x + 4)(x - 3)$ |
| Divide each binomial's constant by the leading coefficient ( $a$ ).  | $d(x + \frac{m}{a})(x + \frac{n}{a})$  | $a = 6$  |
| Simplify the fractions in the binomials.   | $\frac{m}{a} = \frac{p}{q}$ and $\frac{n}{a} = \frac{r}{s}$<br>$d(x + \frac{p}{q})(x + \frac{r}{s})$ | $2(x + \frac{2}{3})(x - \frac{1}{2})$                          |

|  |  |  |
|--|--|--|
| <p><b>In each binomial move any remaining denominators to be the coefficient of the linear term.</b></p> | $d(qx + p)(sx + r)$                            | $2(3x + 2)(2x - 1)$  |
| <p><b>Check result.</b></p>  | $d(qx + p)(sx + r)$ $= (ad)x^2 + (bd)x + (cd)$ | $2(3x + 2)(2x - 1)$ $= 2(6x^2 - 3x + 4x - 1)$ $= 2(6x^2 + x - 1)$ $= 12x^2 + 2x - 4$ |

**Caution About the Bottoms-Up Method:**

There are two things that must be remembered about the Bottoms-Up Method. First of all, the GCF must be factored out first. The second caution is when the leading coefficient is negative, then a negative GCF must be factored out. Two examples have been provided to show how the improper use of the Bottoms-Up Method will result in an incorrect factorization of a quadratic.

|  | EXAMPLE WITH GCF  | EXAMPLE WITH A NEGATIVE LEADING CO-                    |
|--|---|--|
| <b>Quadratic Expression</b>  | $6x^2 + 28x + 30$                                       | $-4x^2 + 4x + 3$                                       |
| <b>Calculate the discriminant to determine if it is a perfect square root and can be factored.</b>                                     | $28^2 - 4(6)(30) = 64$<br>$\sqrt{64} = 8$<br>Factorable | $4^2 - 4(-4)(3) = 64$<br>$\sqrt{64} = 8$<br>Factorable |
| <b>Determine if there is a GCF. If there is one, factor it out,</b>  | OOPS! The GCF of 2 is not factored out.                 | OOPS! The GCF of $-1$ is not factored out.             |
| <b>Multiply the leading coefficient (a) with to the constant (c). Drop the leading coefficient for now, but it will be used later.</b> | $x^2 + 28x + 6 * 30$<br>$x^2 + 28x + 180$               | $x^2 + 4x + (-4) * 3$<br>$x^2 + 4x - 12$               |
| <b>Factor the new trinomial. The graphing calculator can be used at this point to determine the two factors.</b>                       | $(x + 18)(x + 10)$                                      | $(x + 6)(x - 2)$                                       |
| <b>Divide each binomial's constant by the coefficient of the <math>x^2</math> term (a).</b>  | $(x + \frac{18}{6})(x + \frac{10}{6})$                  | $(x + \frac{6}{-4})(x - \frac{2}{-4})$                 |
| <b>Simplify the fractions in the binomials.</b>  | $(x + 3)(x + \frac{5}{3})$                              | $(x - \frac{3}{2})(x + \frac{1}{2})$                   |



|  |  |   |
|--|--|---|
| <p><b>In each binomial move the any remaining denominators to be the coefficient of the linear term.</b></p> | $(x + 3)(3x + 5)$  | $(2x - 3)(2x + 1)$  |
| <p><b>Check result.</b></p>  | $(x + 3)(3x + 5)$ $3x^2 + 5x + 9x + 5$ $3x^2 + 14x + 5$ $\neq 6x^2 + 28x + 30$ <p>Not the original expression.</p> | $(2x - 3)(2x + 1)$ $4x^2 + 2x - 6x - 3$ $4x^2 - 4x - 3$ $\neq -4x^2 + 4x + 3$ <p>Not the original expression.</p> |

**Conclusion:**

There are many methods teachers and students can use to factoring a quadratic. The techniques described in this paper can be used independently, with each other, and with other methods. The key is students should be provided with many methods to factoring quadratics and allowing them to achieve the correct results. The goal of mathematics is to calculate the correct answer by using sound mathematical techniques. Calculating the discriminant, the use of a graphing calculator, and the Bottoms-Up Method are all techniques which can be used to help reach the correct factorization of a quadratic.

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# UETCTM

## Membership Application



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***Membership Fee: \$10***  
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**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



# UETCTM News

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## MATH FUG

### *A Knight's Tale*

There were three medieval kingdoms on the shores of a lake. There was an island in the middle of the lake, over which the kingdoms had been fighting for years. Finally, the three kings decided that they would send their knights out to do battle, and the winner would take the island.

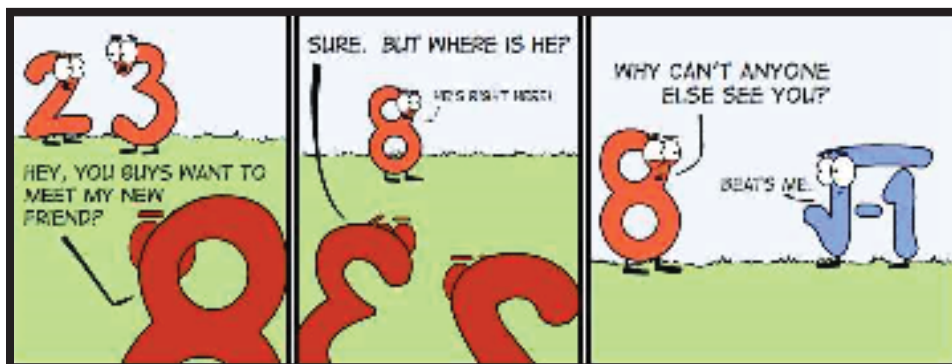
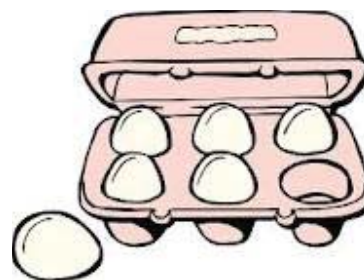
The night before the battle, the knights and their squires pitched camp and readied themselves for the fight. The first kingdom had 12 knights, and each knight had five squires, all of whom were busily polishing armor, brushing horses, and cooking food. The second kingdom had twenty knights, and each knight had 10 squires. Everyone at that camp was also busy preparing for battle. At the camp of the third kingdom, there was only one knight, with his squire. This squire took a large pot and hung it from a looped rope in a tall tree. He busied himself preparing the meal, while the knight polished his own armor.

When the hour of the battle came, the three kingdoms sent their squires out to fight (this was too trivial a matter for the knights to join in). The battle raged, and when the dust had cleared, the only person left was the lone squire from the third kingdom, having defeated the squires from the other two kingdoms, thus proving that the squire of the high pot and noose is equal to the sum of the squires of the other two sides.

### *The Incredible, Edible, and Seemingly Impossible Egg*

*Two fathers and two sons sat down to eat eggs for breakfast. They ate exactly three eggs, each person had an egg.*

*How is this possible?*





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## President's Message



Spring is in full swing and the school year is nearly complete. It is an interesting time to be a math teacher and I hope you are handling the stress properly. There is a lot of news to share so I am putting it in a bulleted list:

This month we have two meetings: April 10 and April 29. Nominations for president-elect should be sent to me before our final meeting this month. Benefits of being president include eligibility to serve on NCTM committees. Please remember to renew your membership each year.

The NCTM Annual meeting is in Philadelphia from April 25-28. Proposal deadline for next year's NCTM annual meeting (to be held in Denver, CO) is May 1, 2012 (less than a month away). TCAP testing is this month. Be sure to keep the stress level low, especially with your students. Speak with words of encouragement. Speaker proposals for this fall's TMTA annual meeting are due May 1 to Jackie Vogel at [vogelj@apsu.edu](mailto:vogelj@apsu.edu).

Be sure and check out all the fabulous essays we have published so far this year. Consider writing one of your own and sending it in. We are expecting large turnouts to our meetings this month! Be sure and invite a friend or bring your student teacher.

Sincerely,  
Dr. Nivens

## MATH TRIVIA

- ★ A 'jiffy' is an actual unit of time for 1/100th of a second.
- ★ There are 2,598,960 five-card hands possible in a 52-card deck of cards.
- ★ Rene Descartes came up with the theory of coordinate geometry by watching a fly walk across a tiled ceiling.



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## Writing in Math

By Alisa Henderson

5th Grade Teacher

Kingsport City Schools



William Zinsser's book, Writing to Learn had a quote that summed up the importance of making writing an integral part of students' learning, "Writing is a way to work yourself into a subject and make it your own" (1988, 16).

I require my students to keep a math journal (or two) by year's end. We use them daily during lessons to take notes, create and solve problems, highlight critical vocabulary, and to explain and illustrate key concepts and problem solving strategies. It is an efficient place for them to represent their thinking and to reflect on the problem solving approaches that worked, or did not work for them. The journal serves as an instrument that promotes "talking math" among peers. The journal becomes a resource students can refer back to and it is evidence of the progression of their learning from the beginning to the end of the year.

Many of the activities we do in math require the use of individual pieces (2D shapes, number cards, flipbooks, gaming pieces, etc.). The journal is great place to keep loose items by making a pocket with glue sticks and construction paper. Students can also glue in special directions, rules, and teacher handouts (minimized or folded). It becomes an organizational tool for students (and the teacher).

I attended a wonderful in-service that highlighted the book Mosaic of Thought, Second Edition: The Power of Comprehension Strategy Instruction by Keene and Zimmermann. One of topics discussed was thinking strategies used by proficient learners. Strategies were broken down into four categories: Readers, Writers, Researchers, and Mathematicians. For mathematicians... writing about their problem-solving process brings clarity to their thinking, they visualize and compose (like writers) by drawing pictures, using charts, and creating equations, and they increase their understanding by hearing from others, different problem-solving approaches.

Math journals and writing in math class support student learning because they require them to organize, clarify, and reflect on their thinking. NCTM's Principals and Standards states that "written communication should be nurtured" (2000, 62) and that math instruction should enable all students to organize and consolidate their mathematical thinking through communication.



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### Some Thoughts on: Teaching with Poverty in Mind: What Being Poor Does to Kids' Brains and What Schools Can Do About It, by Eric Jensen

By Mike Baird

Hawkins Country Schools, 6th Grade



In this book, Jensen discusses supporting a student in all areas of their lives in a variety of areas (medical, educational, etc). It is my opinion that we, as educators, don't just teach to the students, but instead try to see their needs with compassion so we can give support as well as get the students and their families support in other areas of their lives. This may mean helping students connect with services (i.e. food, medical, clothing) or offering the parents/guardians tutoring in academic areas enabling them to help the student(s) at home.

This passage leads me to ask the question: How can I support my Math students? As I consider my initial answers are obvious—offer tutoring, be more caring, listen to their questions, be patient, and so on. After attending Mathletes my train of thought has changed. I realize I need to “get out of my box”. While I think of myself as an “outside of the box” teacher, I have learned that I'm only out of one box—however, I'm still in another. As a result of Mathletes, I have found a few new avenues I can use. I've found manipulatives I can use that can better reach my students.

#### Hard data

Use data to see where students need help; use data to see where I can improve as an educator. Jensen writes that the cycle of continual assessment & adjustment (formative assessment) must be (a) ongoing, (b) purposeful, and (c) customized for your school. Formative assessments show exactly where students stand at any given time. Jensen also writes that if data shows gaps in student learning then educators should focus on skill building to “upgrade students” academic abilities.

I really like Jensen's idea of making the students active participants in their learning by (a) setting goals for improvement, (b) identify students that need extra interventions, and (c) plan interventions. I am thinking I can have students read the objectives for each chapter/section and have them write down their academic goals, administer a pre-assessment, give instruction, post assessment, then help students needing additional learning opportunities. During this process, I hope to be creative enough to develop learning stations allowing the students to grasp and master math concepts but also to find math fun.

As the students read the objectives, I can have manipulatives ready so they can get excited about “a new way of experiencing math”. Notice, I did not say “learning math;” I want my students to EXPERIENCE math so that the students are filled with excitement—to the point that they view math as the “must have” class.

#### Accountability

Teachers usually offer excuses for students' unsuccessful test scores; however, some of the responsibility remains with the teachers. Jensen writes, “You cannot assign a sense of responsibility to teachers. Responsibility is a moral and ethical sensitivity to the effects



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of our actions....Responsibility is a character quality that staff members have to choose for themselves. Accountability, on the other hand, is part of the job description. Every teacher is accountable for his or her actions and can be evaluated with quality data.”

After reading this I began to reflect on my teaching experience (church, classroom, real estate, etc.) to see where I have given excuses for not reaching students/people. Jensen's comments remind me that the educator is ultimately responsible for the learning experiences of the students. As for my accountability, I have started some friendships in which I can cooperate, talk, share lesson plans, and so on. To be honest, I look forward to maintaining contact with my fellow Mathletes.

### Relationship building

Jensen writes that educators can help students build, foster, and improve their relationships with (a) peers, (b) caregivers, (c) school staff/personnel, and (d) teachers. I believe these relationships can, and will, lead to the students' ability to see themselves as a person of value in which an internal desire to succeed can begin and flourish. When a student realizes his or her value, he or she will begin to become someone special. In addition to the relationships, I believe teachers should not rule their classrooms with intimidation, but rather earn the students' respect. This mutual respect can lead the students to achieving their potential as well as improving the way they view themselves.

While manipulatives can be an exciting way to teach and experience math, they will never take the place of the relationship between teacher and student. Although the use of manipulatives may enhance, and possibly even spark, a student's interest in math, this interest can only be strengthened by the teacher-student relationship.

### Enrichment

Jensen says to “Stop thinking remediation and start thinking enrichment. The enrichment mindset means fostering intellectual curiosity, emotional engagement, and social bonding. An enriched learning environment offers challenging, complex curriculum and instruction, provides the lowest-performing students with the most highly qualified teachers, minimizes stressors, boosts participation, and provides students with the support they need to reach high expectations. Essentially, the enrichment mindset means maximizing students' and staff members' potential, whatever it takes. Whether or not students choose to go to college, enrichment programs prepares them to succeed in life.”

Using this definition we could describe “enrichment” as “a learning activity that can be used to prepare students for life”. We, as educators, must remember that we are not just preparing students for testing, but for life. I believe if we can show students that what they are learning in the classroom can translate to real-life they will be more likely to grasp it.

By offering students enrichment opportunities that challenge them, they can (a) see they CAN achieve, (b) they CAN learn, (c) they CAN be successful, and (d) they are amazing people.

As a result of Mathletes, I am looking at the use of manipulatives not only as enrichment, but as a vital part of my lesson plans. I am excited about the upcoming school year and my continued teaching career. I am certain I will be consulting with my “Mathletes buddies” for more new ideas including enrichment.





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## *Getting Parents on Your Side*

*By Liesel Watkins*  
*Kingsport City Schools*  
*Math Teacher*  
*Grade 7*



Today, more and more students are coming to school with severe academic, behavioral, and emotional problems. There are three major strategies and/or concepts that will help educators initiate consistent and positive communication with parents to promote ongoing parental involvement. These strategies include establishing positive relations, conducting successful parent-teacher conferences, and utilizing home+school contracts.

One of the most important strategies to gain parental support is to start the year off right by establishing positive relations. Contacting parents before the school year begins is a great way to launch the year on a positive note. Planning a back-to-school night or open house allows teachers to introduce the curriculum as well as describe their discipline plan and homework policy. Throughout the year, there are other opportunities to communicate with parents: newsletters, progress reports, positive post cards, positive phone calls, and e-mail. Teachers will benefit from this strategy because the more the parents know about their child's school-work the higher the chances are the teacher will get the support he/she needs. Students will benefit because they will know what the teacher's expectations are from the beginning of the year to the end of the year. Establishing early positive communication with parents is one way to get parents on your side; it sets the stage for productive communication all year long.

Effective teachers know that good communication with parents is an essential part of their job. The second strategy to get parents on your side is how to successfully conduct a parent-teacher conference. Parent-teacher conferences are an important component in extending the lines of communication between home and school, keeping parents informed about their child's progress (both academically and socially), and developing strategies that can benefit every student. Taking the "sandwich" approach is an effective way to conduct a conference. Start with something positive, continue with the things that the child needs to work on and finish with something positive.



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Anthony D. Fredericks, author of *The Complete Idiot's Guide to Success as a Teacher*, states that there are three stages of a successful and productive conference: before, during, and after. Before the conference, contact the parent(s) by sending a personal letter confirming the day, time, and place of the conference. Have important documents as well as sample textbooks and other available resources (such as online textbook availability, practice quiz sites, teacher web page with daily assignments as well as homework assignments, and passwords parents may use to access their child's progress report/grade card online). Having all of this information ready beforehand is essential to a well run conference. Fredericks recommends sitting on the same side of the desk as your guests; "you will experience heightened levels of conversation and comfortableness on the part of the parents." He states the following "must do's" every time:

*Provide parents with specific academic information; invite and obtain additional information from parents; listen carefully to parents (sometimes teachers get nervous and take over 90% of the conversation); develop a workable plan of action; ask for parent input, and use those ideas in addressing challenging situations; thank the parent for coming and let parents know that you are always available for follow-up.*

The third strategy that an effective communicator will utilize is the home-school contract. This strategy places the responsibility on the parent, teacher, and student; it focuses on a specific behavior that needs to be changed. A home-school contract is effective because it encourages the parent to give the child positive and negative reinforcements. It is very important for the teacher to stay in contact with the parent while the contract is in effect. Students profit from a home-school contract because they learn responsibility and work toward a goal. Teachers benefit from this type of contract because if implemented correctly, the student will become a productive class member. The home-school contract ensures a parent's involvement in solving a student's behavioral problem. If the home-school contract is implemented consistently and constructively, it is a win-win situation for the trio involved: parent, teacher, and student.

I, along with other educators, face the challenge of educating a diverse student population which is growing up with parents whose numbers include single mothers, single fathers, double-income households, and an increasing number of grandparents raising their grandchildren. By implementing strategies on how to gain parental support, one can feel confident in having the skills necessary to build positive home-school relationships.



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## *Organizing the NON-Mathematical Mind*

*By Denise Strong  
Bristol City Schools  
Grade 7-9 Math Teacher*



As teachers, we all know that some kids are just aren't naturally math minded. These are the kids who see a problem and struggle to even get started, because they don't see the steps. One of the lessons that really highlights this (in my experience) is when it comes to factoring polynomials. After learning how to factor out the GCF the kids usually do rather well on that night's assignment. And after each new method of factoring the same usually goes, they are told what method to use and they can do it. But then the day comes to pick which method to use and you hand out a dreaded mixed problem assignment. All the instructions say is "Factor the Polynomial" (later on this becomes an essential skill with quadratics and rational expressions). I quickly realized all they really needed was a series of hints to prompt their mathematical work. Their math was really quite good, but they looked at the initial problem and wanted to get straight to the answer. So after I repeated the same prompts to many different kids I realized my new task was not only teaching the math, but to help organize their thought process. I reverted back to my memories of earlier education when everything had a step, and with the "hard stuff" it was more of a flow chart to follow the different paths.

Faced with this problem I developed what I call a Factoring Flow Chart, I simply sat down and forced myself to document my mental process so the students could see the process. My first year with this chart I had already taught each method, so I spent a day doing problems with the class asking each question along the way so they could get use to using it. The next time I taught this lesson I went ahead and pointed out the prompting questions without them realizing it, at the conclusion of the individual methods I gave them the flow chart. This time they could use it without instruction, so it acted simply as an aid when they struggled. This could be used very differently depending on how the teacher wants it to be used; I introduced this after the individual methods and allowed its use during class, on homework, and on one of their quizzes (a pop quiz). On tests however they never got to use this because we know it wouldn't be there for them on the all important EOC (End of Course Test). After seeing success with their factoring retention (they begin to prompt themselves without it), I started trying to organize steps and processes for as many topics as needed to help these non-mathematical minds. Making this flow chart obviously took time to create and it needed to be addressed in class frequently. However, I found that most questions could be answered by simply asking "Where is your Factoring Flow Chart". This seemed to really assist their problem solving skills, as well as increase their confidence because they were able to work through their own problems. Creating this type of tool takes time, but the benefit for the students made this well worth it.

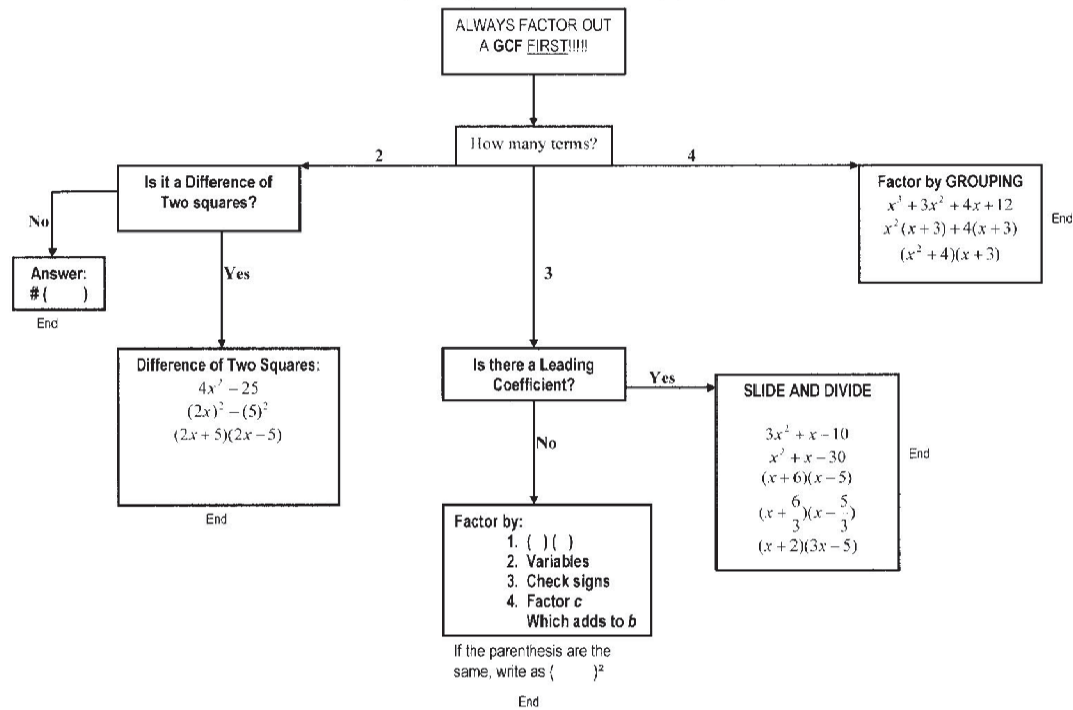


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### FACTORING FLOW CHART



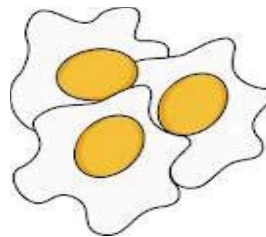
## Problem Solved!

How'd you do on the brain teaser from page 1?

*Two fathers and two sons sat down to eat eggs for breakfast. They ate exactly three eggs, each person had an egg.*

*How is this possible?*

*Answer: A man, his father, and his son enjoyed this breakfast together.*





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## *Confidence: What's the Big Deal?*

By Annette True

9th Grade Math Interventionist

Kingsport City Schools



After an hour and a half wait, 8-year-old Emma finally got her chance. She took off and scampered up the first set of stairs. Then, she headed up the second. She was so excited. She paused for a moment and looked down. She froze. She found herself 25 feet in the air with nothing between her and the concrete floor except a few thin ropes. She had thought she was prepared for this. She had never been scared of challenge in her life. She was a daredevil. However, now all she wanted to do was to exit the ropes course.

Emma wanted to quit. She did not care how long she had waited. She did not care that she would have to sit on a bench and wait for her younger brother while he played in the ropes course. She did not care about anything. She was giving up. She had lost her confidence.

Immediately, we retreated to the first level which was a mere 15 feet off the ground. With some coaching, Emma decided to try one of the lower rope elements. Because she had support and help from her mother and one of the ropes specialists, she was successful. Hesitantly, she tried another... and then another. After several elements, she was ready to make her return to the upper level. Before long, she was scurrying over every element without fear.

What happened? Simple. The answer is one word... *Confidence*. She started with plenty. She lost it in an instant. It took a lot of work, help, and guidance for her to gradually gain it back. As she completed each element successfully, her confidence grew incrementally. Eventually, she believed she could accomplish anything. Consequently, she could.

What does all of this have to do with learning? One of the most important factors in success is confidence. Believe you can, and you will. Believe you cannot, and you will not. This can be seen in every classroom everyday. Unfortunately, confidence is not something that can be given by a teacher. It does not come from a teacher's verbal praise. It has to be developed inside the student. Teachers and parents definitely can and do have an influence on its development. But ultimately, it is the student who must decide if the goal can be accomplished.

How then can teachers help students? Teachers have to provide the environment and appropriate tasks for students to develop confidence. First, the environment has to encourage risk-taking and allow for failure. Students who are not willing to take a risk, will not progress. Students will not take a risk if they are not allowed and even encouraged to fail. Second, teachers must design tasks that allow students to have small successes. Once students are successful at a task, they are ready for something more difficult. When students are presented with a series of tasks that are incrementally more difficult, they experience success. Thus, they build confidence.



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## *Teaching & Learning Elementary Mathematics Conference -St. Louis, MO, May 2-4, 2012*

We would like to make all mathematics educators, administrators, and University students aware of this professional development event and available discounts.

Teacher knowledge has a profound impact on student achievement. The National Math Recovery Conference draws on the research and practice of educators, teachers and administrators interested in promoting research-based K-5 programs that address intervention from a one-to-one, small group and whole class perspective.

US Math Recovery is a nonprofit organization internationally recognized for its early mathematics learning approach that augments classroom curriculum, giving teachers the tools to identify numeracy problems in their students. Years of both academic and case studies have proven the efficacy of the program.

This professional development event features top notch keynote speakers including Dr. Michelle Stephan, North Carolina University; James Burnett, Origo, Australia; Dr. Charles Munter, University of Pittsburgh; Dr. Fran Roy, Fall River Schools. The conference will feature over 30 breakout sessions and a materials show case to take a look at class room resources. Discounts are available for administrators and full time university students. Please check out our 4 day conference program at a glance.

<http://www.mathrecovery.org><<http://www.mathrecovery.org/>>



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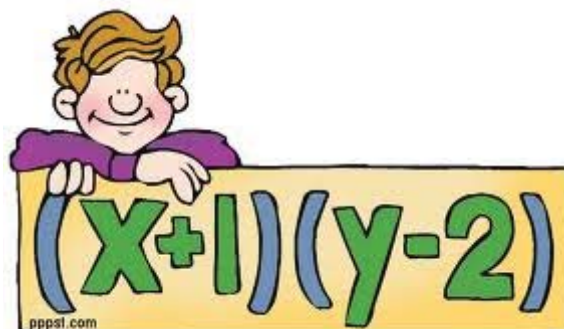
## NCTM News: and Updates:

### Priority Recommendations to Implement CCSSM

With support from the National Science Foundation (NSF), three conferences were held in 2011 to identify actions needed to ensure successful implementation of the Common Core State Standards for Mathematics (CCSSM). These conferences dealt respectively with curriculum, professional development, and assessment. Leaders of the conference projects collaborated to produce a common set of [priority recommendations](#) spanning the three conference themes. These actions are intended to inform the broad mathematics education community as well as agencies, foundations, and other interested parties regarding important steps to achieve the goals of the CCSSM initiative—namely, to improve mathematics learning opportunities for all students.

### Are You Registered for the Annual Meeting?

If you haven't yet registered for NCTM's 2012 Annual Meeting in Philly, there's not a minute to lose to maximize your savings! The Early+Bird registration has been extended just one week, to March 23. Whether you're a classroom teacher, administrator, or preservice teacher, there's plenty to choose from at the Annual Meeting—nearly 700 presentations targeted to your grade level as well as special topics. Both you and your students will benefit from the lessons, activities, and knowledge you'll gain. [Register](#) now for *THE* math education event you can't afford to miss.





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## Submissions Call for 2013 TCM Focus Issue

The editorial panel for *Teaching Children Mathematics* (TCM) invites you to submit a manuscript for the 2013 Focus Issue, "Developing and Empowering Teacher Leaders." Articles highlighting ideas about the diverse roles of teacher leaders and their impact on their school communities will provide teachers and teacher educators with resources to inform and improve their educational practice and further their professional growth. You can read the call for submissions on page 439 of your March TCM or [online](#). Deadline for manuscript submission is July 31.

## Write Gow! Right Gow!

Readers of *Mathematics Teaching in the Middle School* (MTMS) are eager to know what's happening in your classroom. Whether you have something general to share or are writing in response to a [particular call](#) that you've seen in print, now is the right time to write for MTMS. Share your ideas with fellow educators, see your name in print, and earn some bragging rights. Initial decisions on submissions are usually made within 60 days, and you could see your manuscript in print before the end of 2012. [Learn more](#), or contact the journal editor ([mtms@nctm.org](mailto:mtms@nctm.org)) with specific questions. Our readers are our writers, and we want to hear from you!

## Seeking Manuscripts for MT 2013 Focus Issue

The editorial panel of *Mathematics Teacher* (MT) is looking for your manuscript for its 2013 Focus Issue, "Beginning Algebra: Teaching Key Concepts." To learn more, see a recent issue of MT, or visit [online](#) for details. The deadline for submission is May 1.





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**Registration is open!  
Hurry- Space is LIMITED  
for this new event!**

*July 31-August 2, 2012  
Atlanta, Georgia*

*Algebra Readiness for Every Student: An / CTM  
Interactive Institute for grades 3-8 with Extended Online  
Professional Development*

### *Professional Development for the Whole Year*

You need the right tools to build a strong math foundation for your students— and GCTM's Interactive Institute for grades 3–8 offers the latest strategies to give your students the best preparation for high school, higher education, and beyond. Kick off your experience in Atlanta, where you'll participate in face-to-face activities and network with peers from across the country, and then reinforce, expand, and apply what you learn by participating in online keynote sessions and interactive discussion groups throughout the school year.

### *Reserve Your Room*

All two and a half days of face-to-face activities will take place at the Sheraton Atlanta, so you can stroll out of your room and right into the day's first presentation. A special discounted rate of \$159 is available to Institute participants, but you must book your room through GCTM to receive this special rate. The deadline to reserve your room is July 5, 2012, but you must [book your room](#) through GCTM to receive this special rate.

### *Registration Information*

[Register](#) by May 18 to take advantage of our lowest registration rates. [Register online](#) or Call (877) 557-5329 or (972) 349-5855 with your credit card information. Phone lines are open Monday–Friday, 8 a.m. – 6:30 p.m., Central time. Your registration will include 2 ½ days of interactive professional development from leaders in mathematics education, a welcome reception with your fellow participants, free networking lunch during two days of activities, plus online professional development for the whole year!

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens, Newsletter Editor.***

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# UETCTM

## Membership Application



***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_\_ + \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_\_ + \_\_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater TriSCities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



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## MATH FUG

### *Serpentine Mathematics*

The Flood is over and the ark has landed. Noah lets all the animals out and says, "Go forth and multiply."

A few months later, Noah decides to take a stroll and see how the animals are doing. Everywhere he looks he finds baby animals. Everyone is doing fine except for one pair of little snakes. "What's the problem?" says Noah.

"Cut down some trees and let us live there", say the snakes.

Noah follows their advice. Several more weeks pass. Noah checks on the snakes again. Lots of little snakes, everybody is happy. Noah asks, "Want to tell me how the trees helped?"

"Certainly", say the snakes. "We're adders, so we need logs to multiply."



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# UETCTM News

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## President's Farewell Message



First of all, I would like to say thank you to all the members of our organization for making the best of all the changes that have happened over the last several years. Just a few years ago, you managed through the TN Standards 2009/10 implementation. This year you have endured the new TEAM evaluation model for teaching. And now you are all preparing for the transition to the Common Core state standards. However, most of you have kept a positive outlook on the teaching of mathematics and you have continued to make a difference in the lives of our children in this region. I encourage you to continue to roll with the punches of the politics of our time, and continue to improve your lessons year after year. As I turn over the presidency to Tara Harrell this month, I have a few items to discuss.

Since I moved to this region in 2008 and joined UETCTM, things have only improved within our organization. With the continued support of our members, and the addition of new members each year through the Eastman Scholar Mathletes program, our membership is at an all time high. Our budget reflects this increase in membership, and we also benefited from the NCTM Regional meeting held in Nashville in 2009 and from the TMTA annual meeting we hosted in 2011. I have two ideas that I would like to see implemented in the coming years to make good use of these funds.

First, I would like to see us help start up and support undergraduate affiliates of the NCTM at local colleges and universities. Each of these locations will need enough students to support the group as well as a faculty member (who is an NCTM member) to serve as the faculty sponsor. I personally would like to see two faculty sponsors for each group: one from education and one from mathematics. The NCTM provides detailed guidelines for the creation of a student affiliate.

Second, I would like to see the creation of a speaker's bureau whereby local math teachers could be guest speakers at the region's college and university campuses. A small stipend of \$25 or \$50 would provide incentive for our most experienced members to volunteer time to help mentor the next generation of teachers. A request for payment for a guest speaker could be made to the UETCTM leadership on semi/annual basis.

Our area of the state is spread out and roads are not always fast. Historically, our group has been comprised of members from Sullivan, Hawkins, and Washington counties (and their city schools). Recently we have seen several people from Scott County, Va. in some of our meetings. I would like to see Unicoi and Greene county memberships in the future. As we grow, we need to rethink how we plan our meetings and stay connected.



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Over the years, we have seen a large increase in membership and leadership through the efforts of Eastman Chemical Company through their Mathlete program. This program, which provides training and resources to teachers from grades 2 through algebra 1, has become one of the most exciting programs in mathematics education in the region. All of the leadership of UETCTM is or has been affiliated with the Eastman Mathletes program. Another benefit of the program is the number of essays we have seen in our Newsletter each year. Approximately 60 essays are published each year since 2009, and next year looks just as promising. I would like to encourage our past authors to write again, and I would also like to see some new authors not from the Mathletes program become writers.

Next, the Tennessee Mathematics Teachers Association is the state affiliate of the National Council of Teachers of Mathematics. We are a regional state affiliate of the NCTM, and Tennessee is a state that has several NCTM regional state affiliates. Please consider attending the annual state meeting of the TMTA this fall. It will be held in Cookeville which is only about 3 ½ hours from here. Carpooling would make the trip affordable. Many of you who have presented at our UETCTM meetings should submit your sessions to the TMTA for consideration in their program. Presenting at the state level would be exciting and would be a nice way to meet the communication requirements of your evaluation as a teacher.

Finally, I would like to see an increase in the amount of mentoring that we do as a community. If we could have entire schools that volunteered to host student teachers and student interns we could increase the education of our future teachers as well as provide them with the enculturation of what excellent schools look like. Here at ETSU we are involved in the state's Ready2Teach effort to completely reshape the preparation of teachers. Part of this involves a full/year residency within a school under one teacher's supervision. Rather than extensive observations, the resident is to be involved in co/teaching the class. These pre/service teachers will even begin the school year with the teachers, attending the week before school starts in an effort to learn all that it means to be a teacher. Full implementation of this is expected in Fall 2013. For the sake of our K/12 students, I hope that those of you with lots of experience teaching will band together to ensure that you get our residency students.

Sincerely,

Dr. Ryan Nivens

East Tennessee State University



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## Math Trivia

This month, our math trivia section is a shout-out to all of us who may have a student in our lives who has "Lego/Fever".

## LEGO MATH

TAKE A COLLECTION OF AT LEAST 20 DISTINCT LEGO BRICKS OF VARIOUS SIZES AND COLORS (SUCH AS IN THE BACKGROUND IMAGE DISPLAYED). NOW RANDOMLY CREATE AN OBJECT OR TOWER.

THEN, CHANCES ARE THAT THE EXACT CONFIGURATION YOU JUST CREATED HAS **NEVER** EVER BEEN CREATED BEFORE!! (AND LIKELY, WILL NEVER BE RANDOMLY CREATED EVER AGAIN)!

**LET'S DO THE MATH :-)**

LEGO BRICKS WERE INVENTED IN THE 1940'S. THAT GIVES US 70 YEARS OF LEGO BUILDING OPPORTUNITIES. BUT, LET'S SUPPOSE LEGOS EXIST AND ARE USED OVER THE NEXT ONE MILLION YEARS.

IF ONE LEGO CONSTRUCTION USING 20 DISTINCT LEGO BRICKS IS CREATED EVERY SECOND OVER THIS PERIOD OF ONE MILLION YEARS THEN THE NUMBER OF CONSTRUCTIONS THAT CAN BE CREATED IS:

1 construction per second x 1,000,070 years x 31,540,000 seconds/year  
~ 3 x 10<sup>13</sup> lego constructions

BUT USING 20 DISTINCT PIECES (OR MORE), THERE ARE AT LEAST

20! ~ 2.4 x 10<sup>18</sup>

POSSIBLE LEGO TOWERS THAT CAN BE MADE. SINCE YOU COULD CREATE OTHER CONFIGURATIONS, THE NUMBER OF POSSIBLE LEGO CONSTRUCTIONS IS CERTAINLY MUCH LARGER THAN 10<sup>18</sup>.

THUS, IT IS QUITE LIKELY THAT ANY GIVEN LEGO CONFIGURATION USING AT LEAST 20 DISTINCT BRICKS HAS NEVER BEEN CREATED BEFORE! NOR WILL IT BE CREATED AGAIN OVER THE NEXT 1 MILLION YEARS.

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Mathematics based on an identical argument for shuffling a deck of cards: Su, Francis E., et al. "Making History by Card Shuffling." Math Fun Facts. <<http://www.math.hmc.edu/funfacts>>. Image Source: <http://www.flickr.com/photos/13403905@N03/2080281038/> by Alan Chi. Used under a Creative Commons Attribution-Share Alike 2.0 license.

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## *Practicing with Whiteboards*

By **Christina Spooner**

**Johnson City Schools**

**Grades 7-9 Algebra**



“Can we please use the whiteboards today?” is a common question I heard in my Algebra classes last year. My students greatly enjoyed, and benefited, from practicing math problems on my set of mini/whiteboards. Not only did they all work the problems, but they did more work than they would have done had I simply assigned book work or a worksheet. In addition, students were interacting with one another, asking each other questions when they “got stuck” and encouraging each other to keep trying, even the students who didn’t normally talk in class! When problems were answered incorrectly, I was able to give immediate feedback to one particular student, a small group of students, or to the entire class if I needed.

While there are many benefits to using whiteboards in the classroom, sometimes it seems that using whiteboards can be overwhelming and perhaps chaotic. Here are a few ways to keep the chaos to a minimum:

1. Lay out your expectations for white board use before handing them out. I always remind my students that the whiteboards are not meant for drawing pretty pictures and writing notes to a friend across the room. If they won’t do the work on the whiteboards, they will do it on paper instead.
2. Place a marker and eraser (a piece of cloth or a tissue works) in a baggie so that there are fewer items to pass out.
3. Assign a person in each row or group to be in charge of collecting certain items at the end (i.e. one will have all the boards, another all the baggies), then the teacher can collect the items from the designated person or have that person put the materials away.
4. Have a signal for gaining the classes attention. I use the phrase, “I need your attention now” and then raise my hand silently until everyone is looking at me. This usually only takes a few seconds once the signal has been rehearsed. A bell or buzzer may also work well.

While using whiteboards isn’t an instant fix/all for every student (and yes, there will still be those who refuse to do much other than copy), it does help reach those students who need a little more interaction with the math.





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## *You Can Lead a Child to Water, But You Can Make Them Think!*

By Mariann Duff

Kingsport City Schools

Grades 7-9



I have had the privilege of teaching high school students for over twenty years. I believe that once twenty years has past in teaching it really doesn't matter anymore how long you actually have been teaching. If you share that exact number of years, you are either just bragging on your endurance in our educational system or you're just crazy. Through the twenty/some years of teaching, I have been in three different states (California, Arizona, and Tennessee) and in five/different systems (Los Alamitos Unified, Cave Creek Schools, Deer Valley Unified, Hawkins County Schools, and Kingsport City Schools). After teaching that long and in that many different systems, you can't help but make some comparisons: **the students are basically the same.** I do want you to notice I am not going to compare students to hungry baby birds. Who are waiting eagerly in the nest with mouths wide open in excited anticipation that mommy bird will feed them with what they need until the time when they are ready to fly on their own. In case you didn't know, our students are not like that. Therefore, in my opinion, I think they are better compared to horses.

When I was much younger, my father decided to get some land and have horses. He grew up on a farm and actually horses were not just for pleasure but for work. He used them in the fields and as a means of transportation to and from school. However, he just loved horses and at this point in his life he just wanted them for his pleasure, an outlet, or maybe just to escape his six children. I am still not sure which of those best applies. Anyway, I used to help in the barn and would ride with him plus the rest of my family. I learned that horses do have individual personalities just like our students. However, they (horses) have many characteristics or behaviors that are eerily similar to the students in the

### *The Comfort of the Stall*

When we wanted to ride, we would have to get the horses into the barn so we could saddle them up. Running around the eighty some acres with the bridle and saddle trying to corner the horse you were to ride was another option. However, it seemed that idea had me doing an awful lot of work and the horse just thought it was a fun game of keep away. Seriously, if the horse is not bound by a stall or rope, they will let you get within an arm's length of their back and then move. Sometimes, it was just a step. I believe that was just to keep me playing the game. Other times, they would run away or trot around me in circles seemingly to taunt me into continuing this game.



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This is why we would get them into the barn before trying to saddle them. My father and I would stand outside of the barn inside the gated corral and call for the horses by name. It always amazed me; they would immediately come galloping as if they were in a race. As they approached the gate, there would be pushing, bumping, and sometimes even biting at each other while jostling for the best position. Once they entered the corral, my father would shut the gate. Then, he would take the time to greet each one of them patting their neck while saying their name. After managing to calm each one, he would slide open the barn door. Always surprising to me was each one walked calmly to their stall. No more pushing or bumping. They knew which cubicle was theirs and that seemed to comfort them.

### *How does this compare to the students we see every day?*

Let's look at a certain first day of school in some year of my over twenty of teaching. I was late getting to my classroom and the door was locked. As I approached my classroom the students were clustered around the entrance seemingly afraid to move at all and lose their position. As I approached, the whispering started: "Is that our teacher?", "I don't know.", and "Does she have a key?". However, there was still no movement among their bodies. They hardly stirred as I pressed my way through them saying "Good Morning" and "Excuse me" as I positioned my key in the lock and turned. When access was granted, they scurried to the desks. Claiming the ones they wanted. Some of them couldn't make up their minds and wandered without direction or purpose as the desks were being filled. The ones that lagged behind were stuck with the desks in the front, closest to the teacher. Day one had started with absolute chaos.

Now, let's look at one of my other year's first day. I was in the classroom at least a half hour before school was to start. My door was open to my room. As I noticed the first of my students sheepishly peeking through the entrance of the room to determine if it was acceptable to cross the threshold, I went to the doorway to greet each learner as they approached telling them "Feel free to sit anywhere, except at my desk.". I asked some of them their names, shook hands with others, and smiled at those students that didn't want to be noticed. This first day started very calmly with very little, if any, stress.

However, when I announced to both classes that the students would be able to sit wherever they wanted for awhile, cheers erupted throughout the room. Whispers again; "What did she say?","No seating charts?","What?", and so on. However, during the next few days the results were quite interesting. In both cases, within a couple of days all of the students had claimed their permanent desks. Every day thereafter they went to that desk, even if on the first day they had wanted a different desk and that desk was now available to them. They were now content to remain in the front of the room, closest to the teacher. This was their place of comfort and belonging.

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Fascinating though it was to watch them enter my domain and sit in their chosen location, something needed to change. They were, nonetheless, situated in the same position surrounded by the same faces. A lethargic mood began to develop in the classroom. I didn't understand what was happening...Every day seemed to be exactly identical to the previous. The same students would answer my questions, they same ones would be talking to their neighbors, and the same ones would sleep. I was even getting bored with it all. Suddenly it hit me...the comfort of the stall! That which was perfect at the beginning must now be altered. It seemed that, if they are too comfortable, they would stop thinking for themselves. It was time to make them ill at ease.

The next morning, I met them at the door. As they entered, I called them by name and handed them a small slip of paper. On the paper was a simple equation. I instructed each person to solve their equation, then look for that solution on the desks. When they found their solution that was their desk for the day. They hated this! But for me, it was wonderful to watch them use their brain just to find their seat. The next day, they were greeted with a definition and they had to find the matching math term to locate their desk. The day after that I instructed them to sit in their original seat. The learner never knew how the class was going to begin. However, the comfort of the stall in the barn stayed with them throughout the year. I think the key is we want them to be comfortable but not so relaxed that their brain goes into couch potato mode.

***Think about your classroom as a barn with stalls and your students as horses. Are they comfortable just being in your domain? Make sure there is a level of comfort in the classroom. Here are some things to try:***

1. Greet them at the door.
2. Smile at them and say their name as they enter.
3. Let them choose where they sit.
4. Shake their hand.
5. Tell them something personal. Like, how hard it was for you to get up this morning.

***Now that they are comfortable, shake things up. Try some of these until you come up with your own:***

1. Greet them with slips of paper with an equation to solve. The answer is taped to a desk which will be their new seat. (Or vice/versa)
2. Rotate the desks 90 degrees in either direction. Then tell them to sit in the same one they had yesterday.
3. Increase or decrease the number of rows. Tell them to find a seat as they enter the room.
4. Have the desks in groups of 3/5 with colored dots on them. As the student enters, give them a colored dot and tell them to sit in a desk with that color.



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## Math...What Language is That?

By Sarah Renfro

Sullivan County Schools

Grades 7-9



How many languages do you speak? When we think of languages, we think of letters... which form words... which form sentences... which form paragraphs... which finally form a language. But, what does this have to do with math class? In math class, we generally speak in numbers, expressions, equations, etc... How about we call this "math language"? Next, we may want to ask ourselves, "Do our students speak the same math language as us? As each other?" Let me explain by telling a story about a young lady that I tutored in math several years ago.

This young lady had some minor struggles in Algebra and did not want to get behind. So we met a few times to clarify several questions and made sure she was on track with Algebra. In the meantime, as we got to know each other, I learned that she liked to write. She liked to write stories and plays among other things. So I thought to myself, "Hmmm, what does this tell me about her, and how could that possibly relate to math???" Then it dawned on me! Algebra is full of "stories"!

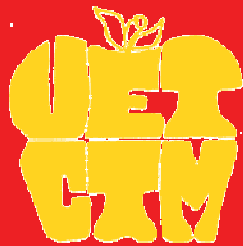
Everything we write is part of a story. So I shared with her that doing her assignments and solving the problems are similar to telling stories. As we write expressions and equations, we are telling stories. For example, one story that is told over and over in Algebra is the "Story Of  $x$ ". It usually has similar endings which look like, " $x = \text{a number}$ ". We constantly demonstrate how to solve for  $x$  in ways that are familiar to us as teachers, but what if our students' math languages are different than ours? How can we know with what languages our students are familiar?

I share that story to emphasize that, as my sister shared in her article last year at the Eastman Scholar Mathletes 2010, it is imperative that we listen to our students.

*"It is my hope that by simply listening, I can continue to build students up and encourage them rather than discourage them by pushing them away. I also hope my students learn that they are important to me, not only as students, but also as people. Their performance in my class improves throughout the school year as they realize that I both SEE and HEAR them."*  
~Luci Creech

If we as teachers opt to avoid conversations with our students (before or after class), we miss out on all that our job has to offer... building relationships with our students. Listening to our students leads to learning about our students which can lead to realizing what their math language is. Can you imagine the feeling of knowing that your math teacher wants to get to know you, learn your math language, so you can be successful in that class?/ Wow!

As they say, "[students] don't care how much you know until they know how much you care." So, how many "languages" do you speak?



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## Breaking Factoring Down to Basics

By Michelle Fore  
Hawkins County Schools  
Grades 7-9



Usually when my classes get to the chapter on factoring, the “do we really have to do this” questions come up, along with “this is too hard” or “I can’t do this.” Over the course of the past few years, I have modified how I teach factoring. Students usually put up a wall if they hear the word, especially if they have already had some exposure to factoring and didn’t quite get it.

I begin with a simple definition of factoring that uses what they know. Factoring is backwards distributive property. By now, they have used the distributive property so much they probably could do it in their sleep. Distributive is now somewhat easy, due to the familiarity with it and practice they have had at it. So factoring so far is based on something with which they are well acquainted.

The first expressions we factor are polynomials (no special trinomials). We go back to sixth grade math and good old GCF. Now, not all students will remember much past GCF standing for greatest common factor, but that is still something we can build on. If we then take a couple of number and break them into their prime factors, we can then circle the ones they have in common. Multiply the prime numbers that are in common and we have our GCF. After the brief review of GCFs, show also how simple it is to find it if the terms have variables

### Example 1: Find the GCF.

$$30x^2y^3 = 2 * 3 * 5 * x * x * y * y * y * y * y$$

$$45x^4y^3 = 3 * 3 * 5 * x * x * x * x * y * y * y$$

$$GCF = 3 * 5 * x * x * y * y * y$$

$$GCF = 15x^2y^3$$

Next, we take a few minutes to review lessons on dividing polynomials and rules of exponents. Even though these two concepts don’t seem closely related, the students don’t usually complain for a lesson that is mostly review. I try to always start off with example of just numbers and after a one or two, move to one that involves variables. If needed us prime factorization again and cancel from top to bottom.



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### Example2: Simplify.

$$\frac{27x^3y^3}{42x^4y^7}$$

$$= \frac{3 * 3 * 3 * x * x * x * x * x * y * y * y}{2 * 3 * 7 * x * x * x * x * x * y * y * y * y * y * y * y}$$

$$= \frac{3 * 3 * x}{2 * 7 * y * y * y * y}$$

$$= \frac{9x}{14y^4}$$

After the review of GCFs and dividing monomials and polynomials, we add a final step to factoring polynomials. Rewriting. That’s all. Watch in the next example.

### Example 3: Factor completely.

$$15x^2 + 6x^4y^6 - 39x^2y^2$$

*Step 1: Find the GCF.*

$$15x^2 = 3 * 5 * x * x$$

$$6x^4y^6 = 2 * 3 * x * x * x * x * y * y * y * y * y * y$$

$$39x^2y^2 = 3 * 13 * x * x * x * y * y$$

$$GCF = 3 * x * x = 3x^2$$

*Step 2: Divide polynomial by GCF*

$$\frac{15x^2 + 6x^4y^6 - 39x^2y^2}{3x^2}$$

$$\frac{15x^2}{3x^2} + \frac{6x^4y^6}{3x^2} - \frac{39x^2y^2}{3x^2}$$

$$5 + 2x^2y^6 - 13xy^2$$

*Step 3: Rewrite for the answer.*

$$GCF(\text{answer to step 2})$$

$$3x^2(5 + 2x^2y^6 - 13xy^2)$$

Now there are three other basic polynomial types that have ways to be factored. The easiest of the factoring methods is different of squares. If the students recognize they have only two terms, both of which are perfect squares and both of which are separated by a subtraction sign, then the solution is short and sweet.

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### Example 4:

$$(9x^2 - 144)$$

$$\text{since } 9x^2 = (3x)^2$$

$$\text{and } 144 = 12^2$$

$$\text{answer: } (3x + 12)(3x - 12)$$

And as with all factoring problems, the solution can be checked through distributive property. The Trinomial with leading coefficient one is simple. The trick to this one lies all in signs of the numbers. Given that our trinomial is of the form  $ax^2 + bx + c$ , If the last sign of the trinomial is a plus (+), then when we set up our two sets we go by the first sign to use in our parentheses.

### Example 5: Factor

$$x^2 + 6x + 8 \text{ and } x^2 - 6x + 8$$

$$(x + 2)(x + 4) \text{ and } (x - 2)(x - 4)$$

*respectively.*

The second case is when we have a subtraction sign for our second sign. In this case, students should still put two parentheses and an x in the front of each. However, students should take the first sign in the equation and give that sign to the larger number.

### Example 6: Factor

$$x^2 + 2x - 8 \text{ and } x^2 - 2x - 8$$

$$(x + 4)(x - 2) \text{ and } (x - 4)(x + 2)$$

*respectively.*

In both cases, the factors chosen were ones that multiplied to give us the last number and added to give us the middle one.

There exists one last case in trinomials with regards to factoring. However, these are the ones that sometimes pose the most problems to students; the ones where the leading coefficient is not one. In this case, I show students step by step how to work the distributive property backwards. I start with an example using the leading coefficient of one, since it is something with which they are already familiar.



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### Example 7: Factor the trinomial: $x^2 + 3x + 2$

**Step 1:** Multiply first and last numbers  $1 * 2 = 2$ .

Find the factors of 2: 1, 2 and /1, /2

**Step 2:** Which factors add to equal 3 (middle number):  $1 + 2 = 3$

**Step 3:** Break middle term up using the two factors that work from steps 1 & 2:

$$x^2 + \cancel{3x} + 2$$

$$x^2 + \cancel{x} + \cancel{2x} + 2$$

**Step 4:** Group 1<sup>st</sup> two and last two terms with parentheses.

$$(x^2 + 1x) + (2x + 2)$$

**Step 5:** Factor out common terms for both parentheses.

$$x(x + 1) + 2(x + 1)$$

**Step 6:** Factor out common term in parentheses and put remaining term in parentheses.

$$x(\cancel{x+1}) + 2(\cancel{x+1})$$

Now we can use this same principle to solve one with a leading coefficient that is not one.

### Example 8: Factor

$$2x^2 + 13x + 15$$

**Step 1:**  $2 \times 15 = 30$

**Step 2: Factors**

$$1 \times 30, 2 \times 15, 3 \times 10, 5 \times 6$$

**Step 3:**  $3 + 10 = 13$

**Step 4: Break apart 13x**

$$2x^2 + 10x + 3x + 15$$

**Step 5: Group with Parentheses**

$$(2x^2 + 10x) + (3x + 15)$$

**Step 6: Factor out what is in common**

$$2x(x + 5) + 3(x + 5)$$

**Step 7: Factor out parentheses in common**

$$\text{Answer: } (x + 5)(2x + 3)$$

\*\*Note that in Step 5, there *always* has to be an addition sign between the two sets of parentheses. My advice to students is that if there is a minus sign, change it to adding a negative. This small step allows the students to put the negative inside the parentheses.

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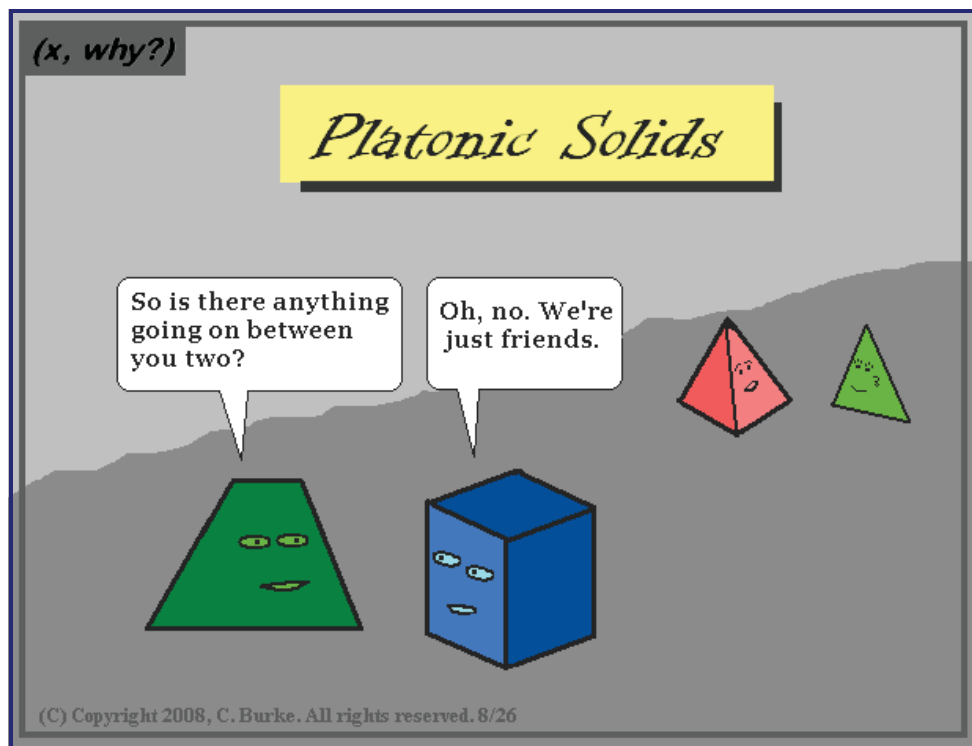
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After the lesson, it's always fun to do some practice on student marker boards. This is a little less formal way of seeing how they are doing without the pressure of having to be perfect for something that will be reflected in their grades. Lastly, I like to show a music video made by another school: [http://www1.teachertube.com/viewVideo.php?video\\_id=223798&title=teach me how to factor rap](http://www1.teachertube.com/viewVideo.php?video_id=223798&title=teach%20me%20how%20to%20factor%20rap).

The video is funny and contains examples of each of these problems shown here except for the leading coefficient greater than one. It's a great conclusion to a lesson that hopefully isn't as hard as what they thought and might have even turned out to be kind of easy and fun!

### References

Teacher Tube: Teach me how to factor rap by Westerville South High School  
[http://www1.teachertube.com/viewVideo.php?video\\_id=223798&title=teach me how to factor rap](http://www1.teachertube.com/viewVideo.php?video_id=223798&title=teach%20me%20how%20to%20factor%20rap)





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## Creating a Trusting Classroom Environment

By Virginia Powell

Bristol TN City Schools

Grades 7-9



In a classroom discussion this week, the professor made the comment that intelligence is encouraged in students, not by teaching them more, but by creating trusting relationships with them. This reminded me of a series of DVDs I was required to watch while working on my Master's degree in 2008, which were produced by Laureate Education, Inc. Although copyrighted 1997, I believe the content still holds true, and echoes the sentiments of the professor of this class.

Dr. Art Costa, Professor Emeritus at California State University, Sacramento, has created the acronym, "S.P.A.C.E." to identify each of five strategies for establishing trusting relationships within a classroom. He also has a slogan: "Gimme space" (Laureate Education, 1997c).

The first strategy for establishing a trusting relationship is *silence*. During the course of a classroom conversation, for example, a teacher might practice this strategy after a student responds to something he or she has said. The teacher's silence will encourage all students to keep thinking. Another example of implementing silence might be for the teacher to remain silent following a student's question, thereby giving himself or herself think time (Laureate Education, 1997c). The teacher could even say, "Hmm. Let me think about this." The professor of this class has demonstrated this strategy repeatedly throughout this course, encouraging a trusting classroom environment.

Dr. Costa's second strategy for establishing a trusting relationship is *providing data* (Laureate Education, 1997c). As might be expected, this strategy encourages the teacher to provide students with sources to which they can refer for information and examples. In this way, information is provided to the students, but they still must find it for themselves. By providing samples of articles, activities, and materials from which we may select, the professor of this course, once again, consciously or otherwise, demonstrated one of Dr. Costa's strategies for creating a trusting classroom environment. We are not told that we must implement anything. The information is simply provided.

*Accepting nonjudgmentally*, Dr. Costa's third strategy, has been demonstrated repeatedly through out this course (Laureate Education, 1997c). For example, the professor often paraphrases what his students have just said. He also simply acknowledges students: "Mm/hm, I see." At times, students have even been thanked for having contributed appropriately to the classroom discussion.

Like accepting nonjudgmentally, *clarifying* has been practiced a number of times in this class. The professor has often probed, pursued, and persisted, to ensure that each member of the class has had an opportunity to speak, and to encourage students to provide reasons for their statements.

In my observation, Dr. Costa's fifth and final strategy has been practiced as well during this course. *Empathizing* has been demonstrated when the teacher says he understands students' feelings of anger and frustration when he will not just tell them answers to specific questions.

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By implementing each of these strategies at least once during this course, a feeling of trust has been created within our classroom. An old proverb says, "Silence is golden." That proverb has certainly held true throughout this course. By implementing it, we, the students, feel unhurried, safe, and free to think—all of which are necessary components of a trusting relationship, which, in turn, is crucial for learning. The teacher providing data for students helps them feel better about their presentations, and generates further ideas. His constant clarification, paraphrasing, and listening to students' rationales indicated to students that he is truly listening to them, which is also part of a trusting relationship. These practices have not only built trust, but also stimulated such characteristics as persistence, precision of language and thought, and questioning (Laureate Education, 2007a).

Likewise, an interesting situation arose for me, shortly after having watched this DVD series. Another teacher sent a student to my classroom, to remove him from the disruption he was creating in hers. She and I have agreed that when we send students to one another, we will ignore that student for the time he is in our class. When this student was brought to my class, I directed him to a table, told him what he needed to do, and proceeded with my own class. Through out the class, this student attempted to access my attention, but failed. At this point, I was refusing to acknowledge him.

As fate would have it, this was my last class of the day, so after I dismissed class, my planning period began, leaving this young man and me uninterrupted. It was during this time that I had the unexpected opportunity to incorporate Dr. Costa's S.P.A.C.E. into the situation. "Miss Powell," the frustrated young man asked, "Why wouldn't you answer me?"

"I don't know, D////," I replied. "Why wouldn't I answer you?" He thought about that for a while, as I straightened up the classroom. I implemented *silence* (Laureate Education, 1997c). After a while, he looked at me with feigned innocence, and said, "I don't know why you wouldn't answer me." He smiled slightly as he told me this little lie. I smiled in return and said, "Well, D////, you're a smart guy. I bet you'll figure it out," and continued with my tidying up. I did not wish to solve this problem for him (Laureate Education, 1997b). More silence. Extensive silence.

In time, he sighed and asked, "Was it because I kept talking in Mrs. C////////'s class, even when she told me not to?" I honestly had no idea why he had been sent to me, but I assumed that he was now enlightening me. I practiced more silence, giving myself think time before responding to his question (Laureate Education, 1997c). In time, I said, "Well, . . . maybe. What else?" I was clarifying by probing, pursuing, and persisting (Laureate Education, 1997c). He dropped his head and admitted that he had also been kicking the desk of the girl in front of him. I smiled to myself, exulting in this unbidden confession, but I coolly responded, "Mm/hmm." This was my implementation of *accepting nonjudgmentally*, and merely acknowledging him (Laureate Education, 1997c). More silence. Then he added, "And I didn't do my work, either."

By this time, quite some time had passed, and my room was in decent order, so I went and sat at the table with him. "So," I said as I made myself comfortable, "What do you plan to do now?"



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"Well, I really want to get my work done, now, but she probably won't let me," he mumbled. "Okay," I said, "so what do you want to do?" He thought. I somehow managed to restrain myself, and remain silent. Then he said, "Well, I didn't get anything done in your class either. Maybe I could do that now."

"Maybe you could," I agreed. We both just sat there, and looked at each other. I knew he wanted me to tell him what to do, but I pretended that I did not. He quickly grew uncomfortable, looked down at the table, rubbed it with his hands, and said, "Yeah, because I never did finish that Bacon's Rebellion thing for our newspaper."

"Okay," I replied, "So you plan to work on your Bacon's Rebellion article for your group's newspaper?" *Clarifying.*

"Yeah," he said.

"Good," I said simply, as I got up, and went to my desk. He sat at the table and did his work, while I sat at my desk and did mine. During this entire incident, my class/room door had remained wide open, and easily accessible to the monitors in the hallway.

This description is not of an activity. Nor is it of a lesson. It does not even involve a class of students, or a small group of students. It was only one student. I share it, however, as a reflection on the thought provoking statement that intelligence in students is not created by teaching them more. It is encouraged, rather, by creating trusting relationships with them in the classroom. The professor of this course has proceeded to demonstrate his statement. I found his statement interesting because it so closely parallels Dr. Costa's observations and resulting acronym. In my own classrooms, I have experienced the validity of this statement. Even when implemented imperfectly, creating a trusting classroom environment can increase students' learning which, in turn, is proven to be an effective means of positively impacting their overall intelligence.



# UETCTM News

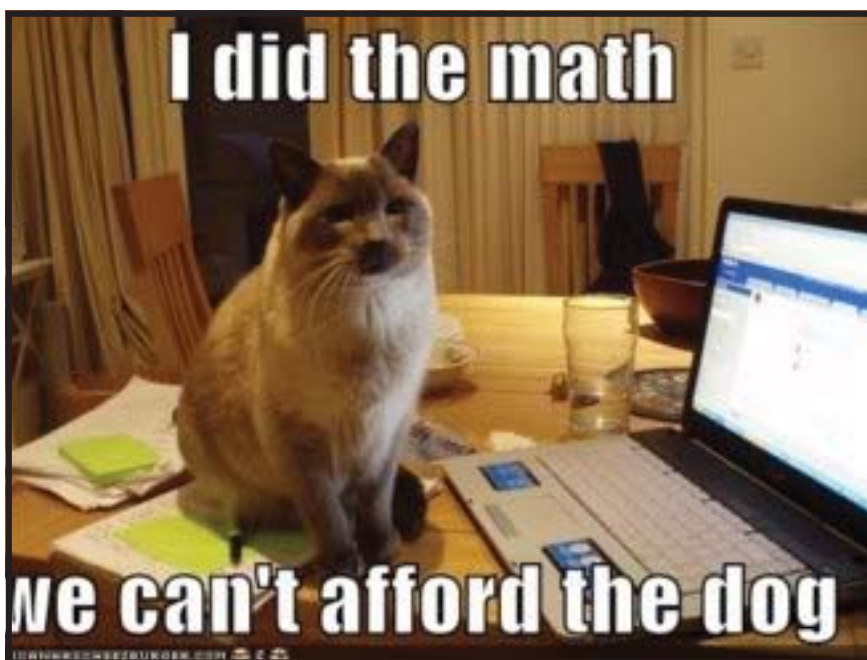
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## *NCTM News: and Updates:*

### **Priority Recommendations to Implement CCSSM**

With support from the National Science Foundation (NSF), three conferences were held in 2011 to identify actions needed to ensure successful implementation of the Common Core State Standards for Mathematics (CCSSM). These conferences dealt respectively with curriculum, professional development, and assessment. Leaders of the conference projects collaborated to produce a common set of [priority recommendations](#) spanning the three conference themes. These actions are intended to inform the broad mathematics education community as well as agencies, foundations, and other interested parties regarding important steps to achieve the goals of the CCSSM initiative—namely, to improve mathematics learning opportunities for all students.





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## Submissions Call for 2013 TCM Focus Issue

The editorial panel for *Teaching Children Mathematics* (TCM) invites you to submit a manuscript for the 2013 Focus Issue, "Developing and Empowering Teacher Leaders." Articles highlighting ideas about the diverse roles of teacher leaders and their impact on their school communities will provide teachers and teacher educators with resources to inform and improve their educational practice and further their professional growth. You can read the call for submissions on page 439 of your March TCM or [online](#). Deadline for manuscript submission is July 31.

## Write Gow! Right Gow!

Readers of *Mathematics Teaching in the Middle School* (MTMS) are eager to know what's happening in your classroom. Whether you have something general to share or are writing in response to a [particular call](#) that you've seen in print, now is the right time to write for MTMS. Share your ideas with fellow educators, see your name in print, and earn some bragging rights. Initial decisions on submissions are usually made within 60 days, and you could see your manuscript in print before the end of 2012. [Learn more](#), or contact the journal editor ([mtms@nctm.org](mailto:mtms@nctm.org)) with specific questions. Our readers are our writers, and we want to hear from you!

## Seeking Manuscripts for MT 2013 Focus Issue

The editorial panel of *Mathematics Teacher* (MT) is looking for your manuscript for its 2013 Focus Issue, "Beginning Algebra: Teaching Key Concepts." To learn more, see a recent issue of MT, or visit [online](#) for details. The deadline for submission is May 1.



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## Registration is open! Hurry- Space is LIMITED for this new event!

*July 31-August 2, 2012  
Atlanta, Georgia*

*Algebra Readiness for Every Student: An / CTM  
Interactive Institute for grades 3-8 with Extended Online  
Professional Development*

### *Professional Development for the Whole Year*

You need the right tools to build a strong math foundation for your students— and GCTM's Interactive Institute for grades 3–8 offers the latest strategies to give your students the best preparation for high school, higher education, and beyond. Kick off your experience in Atlanta, where you'll participate in face-to-face activities and network with peers from across the country, and then reinforce, expand, and apply what you learn by participating in online keynote sessions and interactive discussion groups throughout the school year.

### *Reserve Your Room*

All two and a half days of face-to-face activities will take place at the Sheraton Atlanta, so you can stroll out of your room and right into the day's first presentation. A special discounted rate of \$159 is available to Institute participants, but you must book your room through GCTM to receive this special rate. The deadline to reserve your room is July 5, 2012, but you must [book your room](#) through GCTM to receive this special rate.

### *Registration Information*

[Register](#) by May 18 to take advantage of our lowest registration rates. [Register online](#) or Call (877) 557-6329 or (972) 349-6855 with your credit card information. Phone lines are open Monday–Friday, 8 a.m. – 6:30 p.m., Central time. Your registration will include 2 ½ days of interactive professional development from leaders in mathematics education, a welcome reception with your fellow participants, free networking lunch during two days of activities, plus online professional development for the whole year!

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens, Newsletter Editor.***

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# UETCTM

## Membership Application



***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

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\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_ / \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_  
\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_ / \_\_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater Tri@ities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



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## MATH FUN

### *Worries While Flying*

Two statisticians were travelling in an airplane from LA to New York. About an hour into the flight, the pilot announced that they had lost an engine, but not to worry, as there were 3 left. However, instead of 5 hours it would now take 7 hours to get to New York. A little later, he announced that a second engine failed, but they still had two engines left, which would keep them in the air, but, it would take now 10 hours to get to New York. Somewhat later, the pilot again came on the intercom and announced that a third engine had died. He reassured the anxious passengers by explaining that though it would now take 18 hours to reach their destination, the plane could fly on a single engine. Hearing this, the first statistician turned to the other and said, "I hope we don't lose that last engine, or we'll be up here forever!"

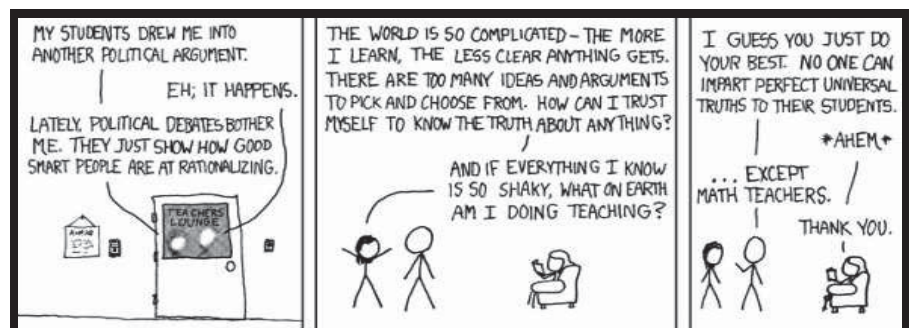


### *Vacation Time!*

March greets us with some warm weather, and a much needed Spring Break. To celebrate, try this brain teaser about vacation time on one of your days off! The solution will appear at the end of this issue.

It was vacation time, and so I decided to visit my cousin's home. What a grand time we had! In the mornings, we both would go for a jog. The evenings were spent on the tennis court. Tiring as these activities were, we could manage only one per day, i.e., either we went for a jog or played tennis each day. There were days when we felt lazy and stayed home all day long.

Now, there were 11 mornings when we did nothing, 17 evenings when we stayed at home, and a total of 12 days when we jogged or played tennis. For how many days did I stay at my cousin's place?





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## President's Message



This spring we are looking for nominees for the next UETCTM President. At the last meeting this spring Tara Harrell from Hawkins County will assume the role of president and I will be moved to past-president.

We will conduct voting online and you will hear more about this in the future. Please submit names (self-nominations are acceptable) to me by email.

Check out the article by Nivens, Peters, & Nivens in the February issue of Teaching Children Mathematics. I am sure you will find it interesting. Don't forget that the NCTM annual meeting is just around the corner. I hope to see you there.

Ryan Nivens

## MATH TRIVIA

- ★ *National Pi Day is March 14, at 1:59. (3/14 1:59)*
- ★ *The largest currently known prime number (as of March 23, 2012) is 12,978,189 digits long; it is  $2^{43,112,609} - 1$ .*
- ★  *$111,111,111 \times 111,111,111 = 12,345,678,987,654,321$*
- ★ *You would have to count to one thousand to use the letter "A" in the English language to spell a whole number.*



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## *Standardized Testing in Mathematics S.U.C.K.S.*

By Mary Alice McClellan

Scott Co., VA Schools



Standardized Testing in Mathematics **SUCKS**. In other words, Standardized Testing in Mathematics Stifles Understanding mathematical Concepts beginning in Kindergarten and continuing through a student's Secondary education. This prevailing problem inhibits a K-12 student's ability to explore varied approaches to problem solving. This situation is a mathematical woe, and this woe results primarily from the No Child Left Behind Act and from new state mandated mathematical standards of learning.

Now, greater emphasis is being placed on teachers to attain high standardized test scores in Mathematics, and teachers are feeling the pressure. This pressure is forcing more and more teachers to "drill and kill" or "teach to the test" which, in turn, is creating less and less learning in Mathematics. The truth is there is little to no time built into a school's day curriculum for teachers to model those real-life applications of grade level specific mathematical concepts. Teachers are forced to quickly move on to new mathematical concepts before students have the chance to truly internalize concepts or actually attain conceptual understanding. So, given time constraints and the stress related to high standardized mathematical test scores, Mathematics teachers are unduly "drilling and killing" or "teaching the test" which ultimately is sacrificing quality for quantity.

Sacrificing quality for quantity inevitably requires remediation of basic mathematical content skills. To alleviate the need for an enormous amount of remediation from year to year, teachers need to think outside the box and change their teaching methods. Teachers need to begin early, as early as kindergarten, laying a strong mathematical problem solving foundation for students to build upon and continuously from K-12 build upon that foundation. With the foundation in place and the yearly building, teachers will no longer see the need for "drilling and killing" or "teaching the test" because good Mathematics will have been taught.

As a result of good mathematical teaching, students will develop, through investigation and self-discovery, critical thinking skills and conceptual understanding that is essential for solving mathematical problems and essential for high standardized mathematical test scores. Thus, the dreadful belief that "Standardized Testing in Mathematics SUCKS" will no longer exist.



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## *People Versus Programs*

By Jane Lao

Bristol, TN City Schools

6th Grade Math



It can seem like a quick fix to buy the latest program or technological gadget out there for our classrooms, but does it really help the students? Call me old-fashioned, but I believe in people over programs when it comes to really helping students grow and improve.

After teaching 2<sup>nd</sup> and 3<sup>rd</sup> grade for six years, I found myself in a completely new environment, a 6<sup>th</sup> grade math class, in a new state with curriculum that I had not seen since my 8<sup>th</sup> and 9<sup>th</sup> grade years of high school. I was also in a school with a high poverty rate and working with students that had severe gaps in their learning. I quickly realized that what my students needed was not another computer to sit at or another game to play, they needed me. They needed me to sit with them, explain, practice, and help them discover their math strengths. The problem was there was only 1 of me and 70 of them.

To be proactive and help students make gains in math, the math teachers at my school decided to try something new. We planned to hire math tutors in each math testing grade to work with us from January until the TCAP tests were given. The tutors had to be certified teachers. The tutors would plan with the teachers daily. It was important for us to hire certified teachers, because we felt they would be better equipped to handle classroom management, assessment of students, and to provide better instruction to the students. It was also important that this not be a volunteer position. Volunteers tend to not be as reliable as employees, especially employees who hope to gain a permanent position in the school system.

My math tutor was a veteran teacher who had moved to the area and was trying to get into the school system. Her background was in middle school math, so she was well equipped to handle the curriculum and my students. Our plan was simple; she was going to run three small tutoring groups for twenty minutes each day on a 10 day rotation. The tutoring groups met before homeroom, during the first part of special area classes, and during the first part of recess. During the tutoring sessions, the students were working on skills from the first and second Benchmark tests. The students were retested on the Benchmarks and if they showed growth, they were dismissed from tutoring. If the students did not show growth, they stayed in tutoring for the next 10 day session. I grouped my stu-



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dents based on the RTI tiers. I tried to keep the number of students in each session low to provide more individual instruction.

My math tutor was also with me during regular class time. To make the most of her time I changed the normal routine of my class. We divided the class in half and were able to provide whole group direct guided instruction in a small group setting. Co-teaching in this fashion was very helpful because we could hear each other's instruction. If one of us provided a different way to solve a problem, we could copy what we had just heard. Once our direct instruction was over, we put the students back into their groups and allowed the math captains to lead the independent practice. This provided us time to walk around and assess the students' progress. We would then come back and decide who needed some extra help and make sure to put them in our guided math groups for that day. Finally, the students would be working in stations. I was able to have two guided math stations with the help of the math tutor. In those stations, the math tutor and I worked with students on the SPI from that day. In the independent stations, students worked on the SPIs from the previous week. This ensured that the students would not need our help to successfully complete the stations, but if they did, there was a math captain in every group to provide extra support.

To be honest, it can be difficult to have a math tutor in your classroom. Lead teachers must be willing to give up some control and math tutors must be willing to follow the instructions of the lead teacher. It is so very important to plan together from the very first day and have open communication. It is not a competition. Both teachers are there for the very same reason, the students.

Having a math tutor in my classroom gave my students the individual attention that they needed and deserved. It gave them another resource to turn to. It gave them someone else who was cheering for them, who cared about them, and it gave them another opportunity to succeed. For me, I will always prefer people over programs.



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## *But...I don't like kids...*

By Misty Armstrong  
Hawkins County Schools  
Math Teacher  
Grades 7-9



I know what you're thinking, a teacher that doesn't like kids?!?

I'm embarrassed to admit it, but, yes, that was me. I love my own two boys, but other people's kids... not so much. So in my first semester of teaching I wasn't thinking about building relationships with students. It was all about me. I wanted to have that perfect classroom that I had pictured in my mind, students sitting in perfectly straight rows with me in front. They would all be waiting patiently for my instruction and would do exactly as I said. I thought I had to be perfect and everything had to go perfectly. I couldn't relax, and the kids could sense it. It was me against them. We didn't interact much. I was on one side of the room, and they were on the other. To be honest it was painful for all.

The next semester was a little easier. I lightened up a little and began to see that these kids were individuals and had personalities; not the blob that had to be controlled. Hey, some days I was kind of enjoying myself! Then one day a student who had worked so hard to prepare for the Gateway test, found out she had passed and was so happy she gave me a hug. I was stunned! Hugging? Oh no, no bodily contact of any kind, I might lose my job or get sued.



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Jump ahead to my fourth year of teaching, I love my job now, and I love my students. My thinking has done a complete 180 since I first started teaching. Now I know I have to be myself and it's okay to make mistakes. I'm never going to have a perfect class. I'm learning that the valuable time I spend getting to know my students and building relationships with them will pay off big time later in the year. They will work harder for me if we have a good relationship rather than "you are the student, I am the teacher so do what I say". And as far as hugs, yes! Sometimes my students just need to know they are loved and cared about. Maybe they are having a really bad day and need someone to talk to. I also have fun now, tell jokes, laugh, high five, if I'm having fun they will have fun. And yes, I not only like my students, but I love them too.





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## *Getting off on the Right Foot in Math with a Beginning of a New Year*

By Penny M. Salyer  
Kingsport City Schools  
4th Grade Teacher



All of us in education are well aware of the changes in curriculum and rigor in mathematics education. Unfortunately, many parents are not. With so much emphasis on high-stakes testing, it is our responsibility to educate them about the changes and the effect these changes will have on their children.

Due to this, my grade-level teaching colleague and I decided to hold a parent meeting during the first week of school. In her book *A Framework for Understanding Poverty*, educational consultant Dr. Ruby Payne states that parent involvement of low-income children is virtually nonexistent due to a number of factors. This was certainly the case at our Title I (92.4 % free and reduced price lunch)1 school. We brainstormed with other teachers and our administrator for a way to ensure that we reached all parents. Past experience showed that offering refreshments resulted in a better turnout, so we used Title I parent involvement funds to purchase cookies and lemonade. In addition, we decided to offer one session immediately after school and another in the evening. Next, we sent home an invitation to all parents. The invitation included the where, when and the why was: "It is important for at least one parent/guardian of each child to come to one of these sessions. If you can't make it, we will be calling to schedule a time for you to come in or for us to make a home visit." A list of items to be discussed followed at the end of the invitation.

The meeting was held in my classroom for a more informal, relaxed ambiance than in the auditorium. After welcoming parents, my colleague and I explained how the math curriculum had changed and offered examples of new standards for our grade level. We also discussed old TCAP cut scores and compared them with the new TCAP cut scores. To further highlight how our world and educational needs were changing, we showed a snippet of the video, "Did you Know?" which can be found and downloaded from YouTube. We also showed an excerpt from a Marilyn Burns video entitled, "Mathematics: What Are You Teaching Our Children?" We even briefly shared some alternative algorithms for mathematical computation.



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Amazingly, almost every 4th grade child had a parent or guardian present. For those who did not, we called and arranged an appointment for them to come in or for us to go to them. Once parents realized that we were serious about coming to their home if necessary, they agreed to come to school.

Parents were very positive about the meeting and acknowledged that they appreciated being informed about the changes in educational requirements for their children. Once they became aware, we experienced increased support with homework return, after-school tutoring, and any other opportunities for the children. There was almost a 100% daily return on math homework in my classroom (unheard of in past years!) and parents seemed more comfortable writing notes or asking for help for their children.

Overall, this initial meeting during the first week of school paid off with high dividends! We plan to continue this routine and will, hopefully, experience continued involvement on the part of parents and guardians in the education of their children.

## *Problem Solved!*

How'd you do on the brain teaser from page 1? The answer is 20 days. Get a different answer? Try this:

-Let x represent the number of days mornings were spent doing nothing. (11)

-Let y represent the number of evenings spent at home. (17)

-Let z represent the number of days on which either tennis was played or a jog was taken. (12)

$$(x+y)+(x+z)+(y+z) = (11)+(17)+(12)$$

$$2x+2y+2z = 40$$

Divide each side by two to get:

$$x+y+z = 20$$



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## "Who Moved my Cheese?"

By Holly Moffit

Washington County Schools

6th Grade Math



Recently I had the opportunity to read a book entitled *Who Moved My Cheese?* by Spencer Johnson. Johnson uses the characters, Sniff and Scurry, to show that how a person deals with change affects how they perform in the workplace, as well as every day life. Sniff and Scurry do not fear change; they deal with it when it presents itself. When a new situation arises, they quickly try to find a new way to overcome the change. Hem and Haw are hesitant to change and adapt only when necessary. The book uses this idea of the mice and little people in a maze to show that there are different ways to deal with change and still be successful. However, those that know change is inevitable and plan for it will be best equipped to turn change into a positive situation while others will not.

As teachers, we must be willing to change our way of thinking and teaching in order for our students to understand and achieve. We must change our attitudes and be willing to try new hands-on approaches to learning. After completing the first week of the Mathletes program, I have quickly learned that I need to incorporate MORE hands-on activities that engage my students. This "change", although a bit scary, is necessary for students to not only understand the concept, but the "why" of the concept.

With school starting in a few short weeks, I am excited, yet nervous, to incorporate new ideas and activities presented throughout this program. I feel confident that by changing my thinking and my approach to math, there will be an increase in student achievement.



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## *Teaching & Learning Elementary Mathematics Conference -St. Louis, MO, May 2-4, 2012*

We would like to make all mathematics educators, administrators, and University students aware of this professional development event and available discounts.

Teacher knowledge has a profound impact on student achievement. The National Math Recovery Conference draws on the research and practice of educators, teachers and administrators interested in promoting research-based k-5 programs that address intervention from a one-to-one, small group and whole class perspective.

US Math Recovery is a non-profit organization internationally recognized for its early mathematics learning approach that augments classroom curriculum, giving teachers the tools to identify numeracy problems in their students. Years of both academic and case studies have proven the efficacy of the program.

This professional development event features top notch key-note speakers including Dr. Michelle Stephan, North Carolina University; James Burnett, Origo, Australia; Dr. Charles Munter, University of Pittsburgh; Dr. Fran Roy, Fall River Schools. The conference will feature over 30 break-out sessions and a materials show case to take a look at class room resources. Discounts are available for administrators and full time university students. Please check out our 4-day conference program at-a-glance.

<http://www.mathrecovery.org><<http://www.mathrecovery.org/>>



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## Registration is open! Hurry- Space is LIMITED for this new event!

*July 31-August 2, 2012  
Atlanta, Georgia*

*Algebra Readiness for Every Student: An NCTM  
Interactive Institute for grades 3-8 with Extended Online  
Professional Development*

### *Professional Development for the Whole Year*

You need the right tools to build a strong math foundation for your students— and NCTM's Interactive Institute for grades 3–8 offers the latest strategies to give your students the best preparation for high school, higher education, and beyond. Kick off your experience in Atlanta, where you'll participate in face-to-face activities and network with peers from across the country, and then reinforce, expand, and apply what you learn by participating in online keynote sessions and interactive discussion groups throughout the school year.

### *Reserve Your Room*

All two and a half days of face-to-face activities will take place at the Sheraton Atlanta, so you can stroll out of your room and right into the day's first presentation. A special discounted rate of \$159 is available to Institute participants, but you must book your room through NCTM to receive this special rate. The deadline to reserve your room is July 5, 2012, but you must [book your room](#) through NCTM to receive this special rate.

### *Registration Information*

[Register](#) by May 18 to take advantage of our lowest registration rates. [Register online](#) or Call (877) 557-5329 or (972) 349-5855 with your credit card information. Phone lines are open Monday–Friday, 8 a.m. – 6:30 p.m., Central time. Your registration will include 2 ½ days of interactive professional development from leaders in mathematics education, a welcome reception with your fellow participants, free networking lunch during two days of activities, plus online professional development for the whole year!

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens, Newsletter Editor.***

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# UETCTM

## Membership Application



***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater Tri-Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



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## MATH FUN



**5** pirates of different ages have a treasure of 100 gold coins. On their ship, they decide to split the coins using this scheme: The oldest pirate proposes how to share the coins, and all pirates remaining will vote for or against it. If 50% or more of the pirates vote for it, then the coins will be shared that way. Otherwise, the pirate proposing the scheme will be thrown overboard, and the process is repeated with the pirates that remain. Assuming that all 5 pirates are intelligent, rational, greedy, and do not wish to die, (and are rather good at math for pirates) what will happen? [www.mathisfun.com](http://www.mathisfun.com)

**SOLUTION ON PAGE 14**



### UETCTM MEETING Monday, November 8

**Sullivan North High School**  
**2533 North John B Dennis Highway**  
**Kingsport, TN 37660**  
**423-354-1400**

#### Meeting Agenda

- **4 p.m. Refreshments**
- **4:30 p.m. Business Meeting**
- **5 p.m. Programs**

2/4

Arlena Miller, 9th. Simplifying roots such as  $\sqrt{32}$  into  $4\sqrt{2}$  using cubes and dot paper. Visually explore why math works the way it does.

4/4

Kyle Loudermilk, 5th. Using music to engage, entertain, and enhance student learning! Mathematics is a language in itself and often can be a foreign language to many students. Using music in your math class can your help students achieve understanding in the language of mathematics. This presentation will not only focus on mathematical songs that can be used, but also on how to use the songs to their fullest potential.

**BE READY TO NOMINATE AND VOTE FOR A NEW PRESIDENT-ELECT**





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## *A message from your President*

*A*s we move well into the school year, it is important to keep the mathematics you are teaching fresh and interesting. One way to do this is to incorporate hands-on activities as part of your daily mathematics routine.

The strand of geometry and measurement offers a natural fit to this type of teaching, and at the same time allows you to cover a topic that frequently has low student scores. Some teachers overlook the value of geometry as they try to focus on number and operation.

My experience has been that geometry provides a wonderful context for practicing the basic facts. For example, I was teaching a lesson on perimeter and area recently. By fixing the area in the problem, we were able to investigate maximums and minimums of the perimeter of many different shapes. Maximums and minimums are a huge focus in 11<sup>th</sup> and 12<sup>th</sup> grade mathematics, but those ideas begin as early as kids begin counting. Using area and perimeter explorations in the 4<sup>th</sup> and 5<sup>th</sup> grades begins to formalize the work in that area. During the activity there were also many addition and multiplication exercises that the students encountered when they had to compute the area and perimeter of each figure they created.

Make a goal this fall to incorporate some activities that are hands-on and minds-on. You will enjoy the time, and your students will, too. Have a happy holiday season and I look forward to seeing you at the spring meetings.

Sincerely,

*Ryan Nivens*



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## MATH TRIVIA

1. What kind of tree does a math teacher climb?
2. What do you have to know to get top grades in geometry?
3. Why was the obtuse angle upset?
4. What's a polygon?
5. Who invented the Round Table?
6. What do you get when you cross geometry with McDonalds?
7. What do your eyes do when you see a tough geometry problem?
8. What did the complementary angle say to the isosceles triangle.
9. Where did Christopher Complementary begin his journey?



## ANSWERS ON PAGE 20

[www.onlinemathlearning.com](http://www.onlinemathlearning.com)



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## UETCTM QUESTION OF THE MONTH

### DOES A CONE HAVE A VERTEX?

By Denise Cox  
Lamar Elementary School, Title 1 Math Teacher  
Washington County School

Does a cone have a vertex? Well, like most things in life, it depends on how you look at it, and how you define it.

If you are looking at a cone as a 3 dimensional, solid shape, you probably conclude that it does not have a vertex. A vertex is generally defined as the point in space where edges come together. An edge is defined as the place where faces come together. Faces are defined as polygons. Polygons are defined as plane (flat), closed surfaces. Therefore, a cone can have no vertex because it has no polygonal faces or edges. I believe this is the most commonly used conclusion among elementary educators like myself.

The disagreement began when I noticed that our school's textbook (which shall remain nameless) gave these very definitions, then contradicted itself by stating that a cone does have a vertex. So, where does the discrepancy come from? A quick search of the internet will show that this is a highly debated subject for a number of reasons. First, not all mathematicians and textbook authors agree on the definitions used above. Some define a vertex simply as a point in space. A second school of thought looks at the net of a cone which consists of a sector of a circle and a circle. The sector of the circle consists of an angle. The point at which the sides of an angle meet is most often referred to as a vertex. I concur that in that case, it is a vertex because a net is not a solid figure. It is important to keep in mind that since nets of solid figures are no longer 3-dimensional, then, different terms apply. A third conclusion in favor of a vertex looks at the cross-section of a cone. By cutting a cone in half a triangle appears, consisting of 3 vertices. Again, that is because it is no longer a 3-dimensional figure.



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When I contacted the textbook company, their reply was as follows:

“We understand your concern regarding both the discrepancy and the seeming contradiction of a cone having no edges, yet having one vertex. The technical aspects concerning these definitions of edge and vertex and how they relate to a cone are beyond the scope of this grade level.

As a reference, the formal definition of a cone from Webster's New World

Dictionary of Mathematics is "a closed surface defined by a closed plane curve  $C$  (the directrix) and a point  $V$  (the vertex, or apex) not in the plane of  $C$ ; the cone consists of the lateral surface of all line segments from  $V$  to  $C$  and the base, which is  $C$  and its interior." By this definition, it is correct to say that a cone has one vertex.”

Webster's definition was not used in their book; however they intend to make the correction to state that a cone does have one vertex, knowing this is above the comprehension of students in that grade level.

Most elementary education mathematics textbooks use the definitions I described above in the second paragraph. These are neat and tidy descriptions which are easily accepted by elementary educators, as well as, easily understood by our students. They apply when looking at a cone as a whole geometric solid, rather than the parts by which it is made. But, are we ill-preparing them for the higher mathematics they will encounter in the future? I think we all agree that the answer is a matter of definition and how you look at it.



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## RESPONSE TO QUESTION OF THE MONTH

By Daryl Stephens

Department of Mathematics and Statistics  
East Tennessee State University, Johnson City, TN

I had not thought of this apparent discrepancy before. I think part of it comes from the fact that in math we use the same word or symbol in several different contexts to mean similar things or even different things. A good example would be parentheses. We often use parentheses as a grouping symbol, as in  $(5 + 4) + 8$ . We also use a pair of parentheses enclosing two numbers separated by a comma, such as  $(4,8)$ . This can mean an ordered pair to represent a point that is above the 4 on the x axis and nearest the 8 on the y axis. But in the context of an inequality, it could mean an interval, meaning all the numbers between 4 and 8. In number theory,  $(4,8)$  means the greatest common factor of 4 and 8. As in all reading, we have to use context clues to help determine which meaning is the appropriate one the author intended.

I checked several geometry books that I have, and every one of them refers to the vertex of a cone. I don't think there's an actual discrepancy. The definition of a vertex as a point where edges come together is probably more accurately described as the definition of the vertex of a prism or vertex of a pyramid. Likewise, when we talk about angles, the definition may say "vertex" but it really is the definition of the "vertex of an angle." Today in my precalculus course we were graphing parabolas (the U-shaped curves that we get when we graph an equation such as  $y = x^2$ ). Guess what? The point where the curve stops going down and starts going up, or vice-versa, is also called the vertex, but it's the vertex of a parabola. We're talking about related terms rather than exactly the same thing.



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## FACTOR BOXES TO THE RESCUE!!

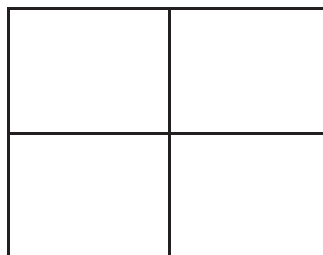
**By Arlena Miller  
Sullivan East High School  
Sullivan County Schools, 9th Grade**



It took me several years of teaching to succumb to the realization that not all students learn like I learned. I had a high school math teacher who in my eyes was right up there with the Greek goddesses I had learned about in middle school. I took every math class she taught and could, with precision, go through all of the 'right' steps and get the 'right' answers.

When I started teaching I thought all of my students would learn like I did as long as I taught like she did. I have finally realized that is not how brains work. I have discovered over the last few years, through workshops, our county math specialist professional development classes, and now my current Mathletes class, that not all students are created equal. This has brought me to try to learn new ways to teach topics that tend to confuse.

One of these topics is multiplying binomials and subsequently factoring trinomials into binomials. This is not my very own idea. I inherited it from somewhere and expanded it as far as I can stretch it. Let's work on multiplying the binomials  $(2x + 3)(x - 5)$ . I have them make a box like below. For most students it starts off familiar because they have already been introduced to Punnett squares in science class.





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Then the two binomials become the 'labels' for the top and left side as shown below. This is also a good time to reinforce that each binomial has two terms and what those separate terms are and that they are separated by + and - signs.

|      |      |      |
|------|------|------|
|      | $2x$ | $+3$ |
| $x$  |      |      |
| $-5$ |      |      |

I learned to multiply using the F-O-I-L method. It served me well; I still use it, and still teach it. However, for many students they get lost in where all of the terms come from and what happens to them. I now ask them what they do to a Punnett square. From here many of them will go on to work it out for themselves without much more instruction.

|      |          |         |            |      |        |       |
|------|----------|---------|------------|------|--------|-------|
|      | $2x$     | $+3$    |            | $2x$ | $+3$   |       |
| $x$  | $2x(x)$  | $3(x)$  | $\implies$ | $x$  | $2x^2$ | $3x$  |
| $-5$ | $2x(-5)$ | $3(-5)$ |            | $-5$ | $-10x$ | $-15$ |

From here, it is clearer why we now have four terms and where they come from. The only thing left to do is write the answer combining like terms resulting in this case as the answer  $2x^2 - 7x - 15$ . I needed a name for my wonder box, so one day I just started calling it a 'factor box'. (It seemed to sound a little more mathematical than 'a Punnett square box thing' that I had been calling it.) After giving students a new tool, I let them use whichever method works for them. For some this is more work, but for many it keeps everything in an order they can keep up with.



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I have taken this even further. When we multiply using algebra tiles, we now point out the correlation between the tiles and the factor box. There are four terms in the factor box and four sets of tiles using algebra tiles. The like terms that we add are also the tiles that are the same. When we factor trinomials I teach them the grouping method, but when we get to the four terms we put them inside the factor box and factor rows and columns to find the two binomials.

I will keep looking for new ways to teach those topics students get lost in. I am a math teacher because I love the language and beauty of math. I hope that through my crazy lessons such as factor boxes they will see my passion and love for the beautiful world around us that is written with math.





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## AN OBSERVATION

**By Gerald Muncie**  
**Sullivan Central High School**  
**Sullivan County Schools, 9th Grade**



In 1975 the atmosphere of a local classroom in Sullivan County was controlled by the teacher. With large classes of up to thirty-five students, individuals could be easily controlled with a look, snapping of fingers, calling the student down by name, or even paddling when necessary.

Students generally came from homes that consisted of married, two parent households. Discipline was instilled in the general student population, which spilled over into the school environment. Children mastered basic mathematical concepts by the time they reached junior high school. Teachers were able to assign 35, 50, or even more problems for homework a night (depending on the concept being covered). There were students who did not complete the assignments, but they usually completed enough problems to have a basic understanding of the material presented.

The "Assessment of Learning" for the students was a widely accepted practice since the students' parents had been evaluated in the same manner when they were in school. Many teachers were instructed to teach using the lesson, homework, pop quiz, and test assessments.

In 2010, the atmosphere of the high school classroom has changed. The number of students per classroom has decreased a little. Many families of the students consist of single parents, remarried parents, grandparents, or the students have been kicked out of their homes and are fending for themselves with possibly a baby of their own. Parents as a whole seem more disinterested in their child's academic progress. Discipline from the home is very minimal, or even none at all. (Some parents expect the school to discipline the students for matters that should be taken care of at home.)



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Students also have many distractions that keep them from working on their studies. Cable television, the internet, cell phones, i-Pods, etc., have hindered children's attention spans and have altered the way they might possibly learn.

Student discipline, behavior in the classroom, and homework studies have suffered. This has forced teachers to become more creative in how they present the curriculum to students. Teachers have to change their styles of teaching, which is difficult to do, more so for the teachers that have been around for several years. Change is not always bad, especially when the change helps the students learn.

The Eastman Mathletes Program, sponsored by Eastman Chemical Company of Kingsport, Tennessee, and hosted by East Tennessee State University, Johnson City, Tennessee, is a program that is helping local math teachers improve their math skills and teaching skills. The class covers a broad range of mathematical concepts that are explored by math educators grouped by grade levels. The teachers work in groups, collaborating on the topics covered. A network of math educators is being formed to promote the exchange and utilization of information and teaching ideas among teachers in Northeast Tennessee.

The Mathletes Program is beneficial to both the rookie, as well as the veteran math teacher. By being a part of this program, teaching strategies, as well as teaching and classroom management philosophies, have been reevaluated. The bottom line is for a more informed and competent math educator, who in turn will create learning environments that are conducive for students to become more mathematically competent.



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## NEW STANDARDS

**By Meri Jean Jones  
Valley Pike Elementary School  
Sullivan County Schools, 5th Grade**



Change is difficult for everyone. Last year was a learning year across the state for teachers in implementing the new state standards. Although Tennessee teachers were aware of these standards, the overall applications were lacking.

Sullivan County's math specialist, Cathy Nester, met every six weeks with all math teachers to discuss implementing these standards. This was helpful to me in discussing upcoming math activities and ways to implement them. These workshops allowed teachers to work through the verbiage and were effective.

I believe the wording in the new state standards sometimes created confusion as to what I was supposed to implement. I will not know how effective I was in teaching these standards until the TCAP scores are released. Then I will be able to see areas of success and improvement.

I was surprised by the TCAP practice material in which multiplying and dividing fractions were embedded throughout it, but was not emphasized in the fifth grade curriculum. I found myself re-teaching and covering this material more thoroughly prior to TCAP's. I can absolutely say that this last year was my learning year.

Change is therefore difficult, but especially so for teachers that like continuity, and not unknowns.



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## WRITING IN MATH CLASS... ARE YOU CRAZY?

By Helen Martin  
Holston Middle School  
Sullivan County Schools, 6th Grade



**W**riting in math class...are you crazy? Actually, journaling can be an important tool in math class. Students must organize and explain their work. They have to think about their thinking. When writing in math, students will self-assess, clarify or reaffirm the lesson, and possibly discover a new way to solve the problem. As teachers, we can use the journals as a tool to evaluate student progress, strengths, and weaknesses.

Effective implementation of journaling can be achieved by following a few simple steps. First, journals should be in a separate section of the math notebook or even a stand-alone notebook kept in class. Journaling does not have to be done every day. Entries should only take 5-7 minutes. Encourage students to keep their pencils moving by setting a minimum number of words and using a timer.

Journal topics can vary based on the lesson. They can serve as an opening to the lesson. For example, "What do you know about...?" Following a group discussion, students can defend their reasoning or even explain someone else's thought process. After a critical thinking problem, students can explain their solution and even write about another way to solve the problem. In regards to a word problem, explain what information was relevant to the solution and what information was unnecessary. For a more difficult problem, have students explain their different attempts at solving the problem and how they finally solved it. Next time they are faced with a similar problem, what would they do differently?



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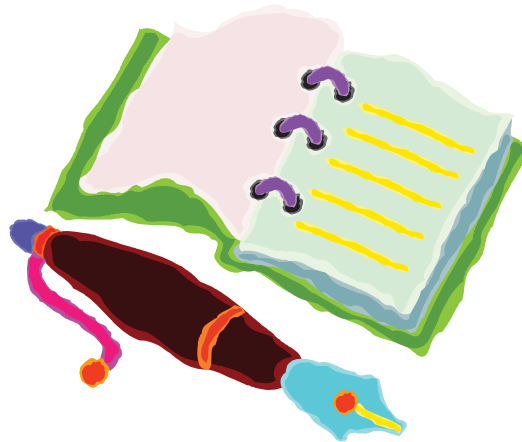
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If students discover a shortcut, have them record it so other students can use it. Have students discuss a real-world application for the skill covered in class. Remind students that there is no right or wrong answer when journaling. Simply ask them to do their best.

Math journals can become a great tool not just for the students but also for the teacher. Students and teachers both gain understanding by writing in math. Students can increase their understanding of math and teachers can gain insight into what and how students are learning. Math journaling is a win-win situation.

Happy Writing!



## MATH FUN—SOLUTION

- The eldest pirate will propose a  $97 : 0 : 1 : 0 : 2$  split.
- Working backwards, splits in terms of younger to older:
- 2 Pirates: Pirate Two splits the coins  $100 : 0$  (giving all to the other pirate). Otherwise, and perhaps even then, Pirate One (the youngest) would vote against him and over he goes!
- 3 Pirates: Pirate Three splits the coins  $0 : 1 : 99$ . Pirate One (the youngest) is going to vote against him no matter what (see above), but this way, Pirate Two will vote for him, to get at least one gold out of it.
- 4 Pirates: Pirate Four splits the coins  $1 : 2 : 0 : 97$ . This way, Pirate One will vote for him, and so will Pirate Two - they're getting more than they would under 3 pirates.
- 5 Pirates: Pirate five splits the coins  $2 : 0 : 1 : 0 : 97$ . This way, Pirate One will vote for him, and so will Pirate Three - they're both getting better than they would under 4.



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## **"THIS IS STUPID...WHY DO WE HAVE TO DO THIS?"**

**By Kim Campbell  
Holston Middle School  
Sullivan County Schools, 8th Grade**



**H**ave you ever heard those words near a middle school math classroom? How about this one; "When am I ever gonna use this in my life?"

It's not unusual for students to question the importance of math lessons, so teachers must be prepared to respond in a convincing way.

What can be said to these active young minds that will convince them of the importance of math? One could try and list specific jobs where the skill in question would be used; for example: "Billy, many carpenters use the Pythagorean Theorem to make sure the walls they build are squared up", or "Sally, pharmacists have to be able to convert measurements for the medicine they dispense." What might follow statements such as these is..."but I'm not going to be a carpenter/pharmacist, I'm going to be a professional athlete" (or singer, or whatever).

Some may try the old "one must pass this class (and many other math classes) to graduate from high school" routine; however, this approach isn't appropriate since educators want students to love math and not see it as merely something to endure. What is needed is a broader, more encompassing reason for the importance of this subject.

Here's an idea, just tell the truth! So, why DO we have to do this? Well, math is about solving problems, and one would have a hard time finding a single person or occupation that doesn't have a problem to solve from time to time. Ok, so your boss is not likely to hand out a worksheet full of word problems for you to have completed by the next morning, but real problems arise in the workplace and have to be dealt with.

Teachers can encourage students to ask their parents what kinds of problems they encounter in their jobs and then see if there is any math involved. Ask students, "How did your parents solve their work problems?" Typically, it's a process of identifying the problem and working towards a solution, step by step. Hmm, that sounds a lot like math class!



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## STRUGGLING FOR PARENT INVOLVEMENT

**Kyle Loudermilk**  
**Akard Elementary School**  
**Sullivan County Schools, 5th Grade**



*J*ust completed my first year of teaching, and I am looking forward to 29+ more years to come!

One area in which I often felt discouraged was with getting parents involved in their child's education, especially with math. A routine had been established where parents dropped off students in the morning and picked them up in the afternoon, and that was the extent of parent involvement. My mission became to find a method to help parents get involved in their child's education.

While many parents worked one if not two or more jobs, I had to create a way to facilitate parent involvement outside of the school building. I found the solution to be a **FREE** resource available to all school systems...Moodle.

Moodle is a software package for producing Internet-based courses and web sites. Internet access has grown rapidly over the past decade. In 2009, 74% of the U.S. population has internet access (Miniwatts Marketing Group, 2008). Moodle provides an avenue for parents to become involved in their child's education and creates a level of transparency between my classroom and parents.

Parents are able to see what we are doing in class, how their child is performing, and monitor their child's progression throughout the school year. Moodle's biggest assets for my classroom are: an online grade book, online student portfolios, secured website for pictures and videos, online student journals and forums, and best of all it can be accessed by parents 24/7!

Moodle has become an instrument in helping students reach their maximum educational success by creating a partnership between my classroom and parents. Students are encouraged and held more accountable by the involvement of their parents through Moodle!





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## WHAT DO YOU DO?

By Luci Creech  
Sullivan South High School  
Sullivan County Schools. 9th grade



How do you answer this question? "I teach." Next question, "What do you teach?" Again, how do you answer? Do you teach a subject, say Algebra, Geometry, Biology? Or do you teach children? Are you really "teaching" them? What are you teaching them?

Enough with the questions! This is my point – we do more than just *teach*. We *model, counsel, encourage, discourage, build up, tear down*... You can add to this list. What would you add to this list?

My eyes were opened in the past when a speaker spoke to us about seeing students as people with lives outside of the classroom. This taught me a lot about "what I do", which I've learned is more than just teach. Are these young people, which I spend many days with, ready for me to do my job? Am I ready to do my job?

If we had knowledge of our students' past 24 hours; past 7 days; past 4 weeks... what would we see? We may not like what we see, but we would be better prepared to do our jobs... effectively.

What has Jamie Student been through? Has he recently accomplished something great? Or has he experienced a crisis? Unfortunately, our students don't arrive to school with a sign saying, "In the past 24 hours, *this* has happened to me." How do we gain this insight into our student's life? What's the value of knowing this anyway? I believe this knowledge will prepare us to do our jobs more effectively.

How often does a student talk your ear off? It's happened to all of us. Before class starts, Susie Talxalot walks up and starts talking. What do you hear? "Blah, blah, blah. Like, blah, blah." Is she complaining or celebrating? Do you





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interrupt her and say, "Not now. We need to get class started"? I've done that – hushed a student for a lame reason just so I don't have to act like I'm listening. I have since realized that I quieted those students because I was afraid of what they might want or need of me. I felt unequipped to handle their problems. Slowly I learned that all I need to do is ... *listen!* That's it! Just listen.

Situation #1: What do you do when you notice some "red flags" in the students' stories? I suggest that when a student reveals information that needs to be addressed by a professional, then let a professional handle it. At your school, there are counselors that are available as well as other adults that you can refer the student to. Forms should be available for the referral so this can be handled privately. Let the student finish his story. You can inform the counselor later in the day.

Situation #2: What if it is time for class to start? I would say to Miss Talxalot that we need to "pause" her story. And she knows that later, we will resume our discussion once class has started. This allows me to begin my lesson, get students on task, and proceed with class. Also, I can be a better listener when the discussion is resumed later in the class period.

In my conversations with students, I've learned to listen for chances to congratulate the child who has accomplished a goal, encourage the one who is down (i.e.: Hang in there, Keep me posted.), or even reprimand the ones who need reminding of what's appropriate. My students learn that I listen and that I will share my opinion or offer a suggestion. The one-sided conversations become two-sided. I have grown from avoiding the student to just listening, and now to participating in the discussion.

It is my hope that by simply listening, I can continue to build students up and encourage them rather than discourage them by pushing them away. I also hope my students learn that they are important to me, not only as students, but also as people. Their performance in my class improves throughout the school year as they realize that I both SEE and HEAR them.

So, What do you do? Teach?



# UETCTM News

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## DRESS FOR SUCCESS. WHO'S SUCCESS?

By Rachel Norris  
Sullivan North High School  
Sullivan County Schools, 9th Grade



Any time the idea of a dress code is mentioned in the realm of education, the typical response is a visualization of uniforms and the mounding research that has been conducted to support standardizing student dress in the classroom. When this visualization belongs to a teacher it is usually accompanied by a moan of disagreement or a smirk of triumph. However, the idea of what is appropriate for teachers to wear is not normally generated by the term dress code. This is evident in the lack of research on the effects of teacher dress and student perception.

A study by Phillips and Smith (1992) compared the perceptions of students in elementary, middle, and high school and how those perceptions were changed depending on the dress of the teacher. They found that moderate and casual dress created a more positive perception of teacher friendliness, fairness, appeal, understanding, knowledge, and classroom discipline. These perceptions were supported by all three levels of education. The only support for conservative dress came from middle school students with regard to the perception of teacher organization.

In my own classroom I have seen the effects of different types of dress and the level of participation I get from my students. The least amount of student to teacher interaction typically occurs on days when I wear a suit or dark slacks and a button-up shirt. This is particularly true with my students that have behavioral issues. I seem to get the most out of my students when I wear khaki pants or blue jeans and a t-shirt.



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I have had the opportunity to network with a broad range of educators in my district, as well as the surrounding districts. I have always been curious about teacher dress codes that are implemented in other school systems. Some systems are very strict with teacher dress, not even allowing any type of denim material to be worn while teaching. Other systems allow blue jeans on Fridays or for special activities at the school. I have to wonder about the true identity of the beneficiaries of these rules. This definitely warrants further research.

Professionalism is a term that is commonly heard among educators. For many educators, especially those in administration, conservative dress is synonymous with professionalism. However, in light of the cited research and my own experiences, I have to wonder if this really creates an atmosphere most conducive to an educational environment which supports student involvement. As educators, we continually receive data and professional development to steer us away from the traditional methods of education. Why do we still dress like traditional teachers?

Phillips, Pamela A. & Smith, Lyle R. (1992). The effect of teacher dress on student perceptions. doi: ED347151.

## ANSWERS TO MATH TRIVIA

1. Geometry.
2. All the right angles.
3. Because he was never right.
4. A dead parrot.
5. Sir Cumference.
6. A plane cheeseburger.
7. They dilate.
8. Nice legs.
9. At the Verta Seas.





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## I HATE MATE!!

**By Sheryl Disney Fake  
Colonial Heights Middle School  
Sullivan County Schools, 6th Grade**



This may come as a surprise to some of you but it is a well known fact among my family and friends. I would not have my degree if it were not for my dear friend, Lora Shuler, and a few departmental finals.

With that said, you can imagine my shock (and fear) when my principal asked me to teach math during the 09-10 schoolyear. I was terrified but what else could I say but, "I'd love to."

Well, I made it through the first year with the help of Tara Peters, our math specialist. Tara took the time to help me understand the "why" behind the math that I had learned to hate.

Now I find myself in Mathletes. It is asking a lot to give up two weeks of my summer but I jumped at the chance. I would try anything that would help me be a better teacher next year. We have finished the first week and I find that I'm actually looking forward to next week. The mysteries of math have been revealed. Well, not all of them but I have had some epiphanies. The hands-on approach to algebra has helped me beyond belief. So...my goal next year is to provide as many hands-on activities for my kids. Even if they can work the problems, the experience will make their learning much more meaningful.

Thanks to all of you that are involved in Mathletes and make it possible for people like me to realize that math is really *PRETTY COOL!*



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## MANIPULATIVES IN THE HIGH SCHOOL CLASSROOM

**By Tara Toler**  
**Sullivan North High School**  
**Sullivan County Schools, 9th**



I recently read an article that stated, "Teachers are always interested in looking for ways to improve their teaching and to help understand mathematics." I immediately agreed, but began to wonder how was I trying to improve my teaching and students understanding of mathematics? Of course I want to be an effective teacher, I want my students to learn, pass their End of Course Exams, and also be successful in their next level of math. I begin to realize that I was not changing any in order to grow as an educator.

I am currently attending Mathletes 2010 at East Tennessee State University and have really been challenged and stretched beyond my comfort zone. The use of manipulatives has been a real eye opener for me. I have always been the teacher that lectures, then assigns practice for the students, and then assesses students with a quiz or test. This was the only method I felt comfortable with. I really did not understand the benefits of using manipulatives until now. I have learned to explore, derive and appreciate many topics in mathematics in such a way that I had never experienced before. As a result, I grasped concepts better, understood where they came from, and enjoyed the process. This is the way I want my students to feel. I can't tell you how many inservices and teacher workshops that I have attended where I have been bored and left there feeling like I wasted my time. These two weeks of hands on exploring and using manipulatives have been one of the best learning experiences of my teaching career.



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Toward the end of the first week of the program, I listened to the instructor read an article about a teacher and an experience she had in her teaching career. This veteran teacher had taught 6<sup>th</sup> grade one year, and the following year she had been assigned to teach 7<sup>th</sup> grade. When her 7<sup>th</sup> graders came to her, she realized that they really did not know a lot. She realized that what she had been doing for many years was not working and she needed to change. So many times we want to blame the teacher before us and never really take a good look in the mirror. Mathletes has made me take a good look in the mirror and realize the changes that are necessary. Children are growing in a different environment than we did, technology is growing and our math standards have changed tremendously. Teachers have to change also. When students use manipulatives they can relate concrete objects to abstract math. The majority of research shows that students' learning increases when they use manipulatives. The proof for me was my own learning.

Improving Mathematics Teaching by Using Manipulatives by James W. Heddens  
Kent State University

International Children's Education "Math Manipulative" by Louise Johnson



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## MAKING MATH CONNECTIONS

**By Whitney Ramsey  
Blountville Middle School  
Sullivan County Schools, 6th Grade**



*I* believe, as a math teacher, I must not only connect with each student, I must show students how math is relevant to their lives, and I must create a safe learning environment.

In order to provide lessons that are both engaging and challenging to each individual, it is necessary to know the students as people. Each individual student comes to my class with their own set of abilities, motivations, attitudes, goals, and cultural background. I feel that getting to know these various facets of my students allow me to excel as a teacher because I can tap into their talents, resources, and knowledge to make the learning environment more interesting, dynamic, and personal.

Mathematics is everywhere around us, and not just for supermarket shopping and balancing a checkbook. Understanding statistics in a news article, communicating ideas effectively, and using logic and reasoning are skills for living in today's society. In my classroom, I present relevant material and use engaging activities. It is our jobs as educators to encourage learning. We need to grab the students' curiosity with instruction and discovery learning situations.

Achieving a student-centered, intellectually challenging, and safe learning environment is not an easy task. It requires a certain amount of trust among each individual in the class, and this must be developed from the first day of class to the last. Learning the student's interests, the activities they enjoy, their academic strengths and weaknesses, their future plans and motivations is important in order to differentiate learning in a classroom.



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There may be students who have certain negative beliefs about math and their own abilities. Getting students to participate in interesting, challenging activities motivates them to work hard. Students become more intrinsically motivated. Instead of not working and not trying for fear of "looking stupid" in front of their peers, students begin asking questions to fulfill their intellectual curiosity and help each other learn.

I use students' natural curiosity and energy as much as possible. Every student has the opportunity to share their knowledge and abilities in class. These lessons energize me, and they inspire me to think about teaching and learning math in new ways.





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## UPCOMING CALENDAR DATES



### UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS

Monday, November 8, 2010  
Sullivan North High School, Kingsport, TN

Monday, February 7, 2011  
Church Hill Intermediate School, Hawkins County, TN

Tuesday, March 8, 2011  
Indian Trail Middle School, Johnson City, TN

Monday, May 2, 2011  
Bristol City Schools, TBA



### NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS 2010 REGIONAL CONFERENCES AND EXPOSITIONS

2011 RESEARCH PRESESSION  
April 11– 13, 2011  
Indianapolis, IN

2011 Annual Meeting and Exposition  
April 13—16, 2011  
Indianapolis, IN

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens, Newsletter Editor.***

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# UETCTM

## Membership Application



***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

Email Address: \_\_\_\_\_



# UETCTM News

## First Meeting on Tuesday, Sep. 9

The first meeting for the Upper East Tennessee Council of Teachers of Mathematics will occur from 4:00 to 6:00 on September 9, 2008 at Science Hill High School in Johnson City.

The evening will open with a social time from 4:00 to 4:30. Refreshments will be available. From 4:30 to 5:00 we will address logistical concerns regarding future meetings such as locations and guest speakers. We will also be taking nominations and appointing a new president-elect.

Three presentations are scheduled for the evening. Ryan Nivens from the Clemmer College of Education at ETSU will be speaking on a topic of interest to high school and college teachers. Tara Peters, Sullivan County's secondary mathematics supervisor will be conducting a program for middle school teachers. The third program will address a topic relevant to elementary school teachers, but a speaker has not been finalized.

Please remember to invite your colleagues! Get the word out, and help UETCTM to grow!

### 2008-09 Meeting Dates

Monday, Oct. 6

Tuesday, Nov. 11

Monday, Feb. 9

Tuesday, March 3

Monday, May 4

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#### 2008 Franklin Math Bowl

The annual Franklin Math Bowl will take place on Saturday, November 8 on ETSU's main campus. This is a competition for students in grades 6-8. For more information, please visit <http://www.etsu.edu/math/fmb>. Registration forms will be available from this site later this month.

## SVCTM Annual Conference

The Southwest Virginia Council of Teachers of Mathematics will hold their annual meeting on Saturday, September 13, from 8:00 am to 1:00 pm, at the Southwest Virginia Higher Education Center on the campus of Virginia Highlands Community College, Abingdon, VA. This year's theme is "Number Sense." Registration is \$10. Keynote speaker is Dr. Charles Thompson of the University of Louisville. More information including a schedule with descriptions of all available sessions and a registration form can be found at the SVCTM website <http://www.mcs.uvawise.edu/svctm/index.php>.

## TMTA Annual Conference

Tennessee Mathematics Teacher Association (TMTA) will have its annual conference Friday and Saturday, September 19-20, 2008, at Austin Peay State University in Clarksville. This year's theme is "Rolling on the River of Mathematics: Anchored in the Standards." Regular registration is \$45 for one day or \$75 for both days until September 7; the fee increases by \$5 after that. Pre-service teacher early registration fees are \$25/\$38. Registration can be done online by credit card. See <http://www.tmta.info> for details, registration, and program information. Tennessee Association of Mathematics Teacher Educators (TAMTE) will meet in a pre-conference session on Sept. 19.

## Mark Your Calendar NCTM Conferences

### 2009 Annual Meeting & Exposition

Washington D.C.  
April 22-25

"Equity: All Means ALL"

### Regional Conferences & Expositions

Oklahoma City - Oct. 2-3  
Preregistration deadline:  
September 5

Cleveland - Oct. 16-17  
Preregistration deadline:  
September 16

Reno - Nov. 6-7  
Preregistration deadline:  
October 6

Events Taken from  
NCTM Newsletter (45.1)

|  |  |   |
|--|--|---|
| <p style="text-align: center;"><b>Officers of<br/>UETCTM for<br/>2008/2009</b></p>   | <p><b>President</b><br/>Dayna Smithers<br/>Division of Mathematics<br/>Northeast State Technical<br/>Community College<br/>PO Box 246<br/>Blountville, TN 37617<br/>(423)354-2502<br/><a href="mailto:dbsmithers@northeaststate.edu">dbsmithers@northeaststate.edu</a></p> | <p><b>President Elect</b></p> <p>To be elected at next meeting</p>  |
| <p><b>Past President</b><br/>Daryl Stephens<br/>ETSU Math Department<br/>Box 70663<br/>Johnson City, TN 37614<br/>Phone: (423) 439-6973<br/><a href="mailto:stephen@etsu.edu">stephen@etsu.edu</a></p> | <p><b>Secretary</b><br/>Guy Mauldin<br/>Science Hill High School<br/>1509 John Exum Parkway<br/>Johnson City, TN 37604<br/>Phone: (423) 232-2190<br/><a href="mailto:maulding@jcschools.org">maulding@jcschools.org</a></p>  | <p><b>Treasurer</b><br/>Floyd Brown<br/>Science Hill High School<br/>1509 John Exum Parkway<br/>Johnson City, TN 37604<br/>Phone: (423) 232-2190<br/><a href="mailto:brownf@jcschools.org">brownf@jcschools.org</a></p> |

If you are reading this newsletter on paper, you're missing out on all the color! Visit our web site ([www.uetctm.org](http://www.uetctm.org)) to see the newsletter as a full-color PDF file with clickable links.

**ETSU**  
**Department of Curriculum and Instruction**  
**Att. Ryan Nivens**  
**Box 70684**  
**Johnson City, TN 37614-1709**

## UETCTM Membership Application

Complete & return to Floyd Brown with a check for \$10 made payable to UETCTM. Completed Application and check may be mailed to Floyd Brown, Science Hill High School, Mathematics Dept., 1509 John Exum Parkway, Johnson City, TN 37604

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

\_\_\_\_\_

Home Phone: (\_\_\_\_\_) \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

\_\_\_\_\_

School Phone: (\_\_\_\_\_) \_\_\_\_\_

Email Address: \_\_\_\_\_



# UETCTM News

## Final Meetings for the School Year

Due to problems regarding finding a site for this month's meeting, UETCTM will instead hold a meeting in April. Please check the [website](#) later this month for information on the date and place of this next meeting.

The last meeting during the school year will still be held on Monday, May 4. The location of this meeting is yet to be determined.

## MATHCOUNTS Hosted at Northeast State

Northeast State Technical Community College held a MATHCOUNTS competition this past February. MATHCOUNTS is a nationwide program that builds skills and promotes strategic problem solving. It challenges students to sharpen their analytical abilities through creative classroom materials and promotes extra-curricular math clubs. MATHCOUNTS also provides the opportunity to bring middle school students together to prompt the lively exchange of mathematical ideas through competition.

For more information on this program, information on how to get involved in the program, and pictures of the local competition, please see the "Information on MATHCOUNTS" article in this issue.

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# The Process Standards Make the Difference

## by Pam Stidham

What should the teaching of mathematics include? What standards should be taught in all mathematics classrooms? The answers which first come to mind will probably include Number and Operations, Algebra, Geometry, Measurement, and Data Analysis and Probability. But how should these standards be taught?

In 1989 the National Council of Teachers of Mathematics introduced the document, *Curriculum and Evaluation Standards for School Mathematics*, which later became known simply as the “Standards”. This document was designed to create a coherent vision of what it means to be mathematically literate in a world that relies on calculators and computers to carry out mathematical procedures and in a world where mathematics is rapidly growing and is extensively being applied in diverse fields. In 2000 NCTM published an updated document entitled *Principles and Standards for School Mathematics* which stated that ambitious standards are necessary to achieve a society that has the capability to think and reason mathematically. The Principles and Standards document answers the question of what the

teaching of mathematics should include and how it should be taught.

Ten standards, descriptions of what students should be able to know and do, are presented in the Principles and Standards document. They specify the understanding, knowledge, and skills that students should acquire from prekindergarten through grade 12. These ten standards are divided into 2 categories, the content standards and process standards. The Content Standards - Number and Operation, Algebra, Geometry, Measurement, and Data Analysis and Probability – describe the content that students should learn. Teachers are familiar with these standards as state standards and assessments emphasize these areas. The Process standards – Problem Solving, Reasoning and Proof, Communication, Connections, and Representation – emphasize the ways of acquiring and using content knowledge. The process standards describe to us how we should teach mathematics. The process standards are equally as important as the content standards but tend to be less familiar and often not emphasized in mathematics classrooms.

Problem solving means engaging in a task for which a (cont. on p.5)

# Information on MATHCOUNTS

Strong mathematical skills are vital to a student's overall education and intellectual development. MATHCOUNTS helps shape student career choices and influences the way math is taught by providing quality curriculum materials to America's middle school math teachers. The program motivates students to do well in math and recognizes and rewards them for achievement.

## Program Information

Analogous to school athletics, the MATHCOUNTS program involves coaching "Mathletes" through the fall season. This prepares teams and individuals for the written and oral components of the competition. In February, up to eight students are selected to represent their school at a local competition. The top finishers then progress to the state level. Results at the state competition determine the top four individuals who earn the opportunity to represent their state, U.S. territory or overseas teams at the national finals.



Since its inception in 1983, over five million students have participated in MATHCOUNTS. More than 6,000 schools in all 50 states, the District of Columbia, Guam, Northern Mariana Islands, Puerto Rico, the Virgin Islands, and the Department of Defense and State Department schools worldwide register annually for the competition phase of the program. Each year over 500,000 middle school students participate in MATHCOUNTS activities in their schools. MATHCOUNTS is one of the country's largest and most successful partnerships in education. It has twice received presidential citations recognizing it as an outstanding private sector initiative and was presented with a Special Recognition Award at the Fourth National symposium for Partnerships in (cont. on p.7)

## The Governor's Academy

The Tennessee Governor's Academy for Mathematics and Science (TGA) is recruiting current high school sophomores to apply for admission. Each applicant must be at least 15 years of age and be a rising high school junior. Applicants must also have been Tennessee citizens on or before Dec. 1 of their sophomore year, and have completed at least two years of college-preparatory science and math classes. There is no tuition to attend TGA. Students will receive room and board, as well as educational supplies and the use of a laptop computer during their time as TGA students.

TGA was founded by Gov. Phil Bredesen and is administered by the University of Tennessee, Knoxville. The Knoxville-based academy furthers Bredesen's vision of making the state of Tennessee a leader in science and math education by taking innovative approaches to teaching while exposing students to hands-on research experience.

Next year's class will include approximately 24 high school rising juniors chosen from throughout the state, based on their achievement in science and math, as well as their creativity, curiosity and desire to be part of what TGA Executive Director Vena Long calls "the scientific life."

"We are looking for students who have more than just a technical proficiency in math and science," said Long, who also serves as the associate dean for research in UT Knoxville's College of Education, Health and Human Sciences. "TGA students need to have a love for learning."

The experience at TGA is unique. Students learn in a cohort setting. They live in cottages on the campus of the Tennessee School for the Deaf (TSD) on the banks of the Tennessee River. In addition, students take part in research work in labs on the UT campus and at nearby Oak Ridge National Laboratory. Other partners in TGA include UT, the Tennessee Department of Education, the State Board of Education, TSD, and Oak Ridge Associated Universities.

The application can be found online at the [TGA Web site](#). Note: the application deadline has been extended to March 13 rather than March 4.



Press Release

## **The Process Standards Make the Difference (cont.)**

solution method is not known in advance. Problem solving is not reading a word problem and choosing the appropriate operation to find the answer. Problem solving requires that students rely upon what they do know to discover a way to find the solution. Multiple strategies may be needed, such as trial and error or working a simpler problem and looking for a pattern to help solve a more difficult problem. Problem solving involves constantly reflecting and monitoring strategies and should be an integral part of all mathematics learning.

Reasoning and Proof should be recognized as a fundamental aspect of mathematics. Being able to reason is essential to understanding mathematics. It involves making and investigating mathematical conjectures which often require students to work together to explore, understand and explain their thinking to prove or disprove a conjecture. Reasoning and proof should be a consistent part of students mathematical experiences starting in elementary school and not just “doing proofs” in a high school geometry course. Reasoning mathematically is a habit of mind that must be developed through constant use.

Communication is an essential part of mathematics. It is a way of sharing and clarifying mathematical understandings – putting one’s thinking into words so that others can analyze and evaluate those ideas. Students can gain insight to their own thinking and enrich their mathematical vocabulary by presenting their ideas to others. Writing about mathematics can help students clarify their ideas. Classroom discussions strengthen mathematical understandings as well as clear up misunderstanding and students learn to become critical thinkers by engaging in “math talk”.

Connections involve understanding how all mathematical ideas are related and build on one another. It is the context in how mathematics should be presented - the “hook” on which students can hang their understanding. Making connections is the opportunity for students to realize and understand how mathematics is used in the real world. It answers the question students frequently ask, “When am I ever going to use this?”. Through connections students can learn to value mathematics education and recognize (cont. on p.6)

## The Process Standards Make the Difference (cont.)

the need to take more and challenging mathematics courses.

Representation can be used to model and interpret mathematical ideas. Some forms of representations, such as diagrams, graphs, and symbolic representations, are frequently used in the study of mathematics. Drawing a picture can help students clarify their thinking by making abstract ideas more concrete. Many representations can be used to help students understand important mathematical properties and process – i.e. the use of arrays to illustrate multiplication and the commutative property. New forms of representation associated with today's technology necessitate that even greater attention be given to this area.

Teaching so that all students learn mathematics with understanding requires emphasis on both the content

standards and the process standards. A classroom in which the process standards are emphasized will look differently than the classroom many of us experienced as learners. Students will be actively engaged, working independently and in small groups, discussing and extending their mathematical thinking while discovering the beauty of mathematics. Teachers will become the facilitator of learning and will no longer be “the sage on the stage”. The content standards provide a good curriculum. The addition of the process standards makes a great curriculum. The process standards make the difference!

*Pam Stidham is the mathematics coordinator of Kingsport City Schools*



## Information on MATHCOUNTS (cont.)

Education. President George W. Bush as well as former Presidents Reagan, Bush and Clinton have all greeted MATHCOUNTS' national competitors at the White House.



### Getting Involved

Volunteers – parents, teachers, and professionals from business and industry – are the key to the program's success. The MATHCOUNTS Foundation recognizes volunteers' need for both a fixed structure and reasonable flexibility.

MATHCOUNTS' volunteers appreciate its regular cycle, clearly defined procedures and nationally supported activities. At the same time, they enjoy unlimited opportunities to personalize and enhance the program at

every level.

MATHCOUNTS provides a unique opportunity for you to stimulate students' interest in math, play an integral role in preparing students to enter the workforce equipped with enhanced mathematical skills, be proud that you help instill the highest values of learning and accomplishment, interact with young people as they learn that mathematics can be a challenging, fun and rewarding activity, and provide additional resources for teachers to demonstrate how math is used in every day life.

Each year, thousands of individuals and organizations contribute their time, talent and resources to support MATHCOUNTS programs in their communities. Exactly what a volunteer decides to do and how much time he or she contributes is strictly up to the individual. Opportunities for involvement in MATHCOUNTS are limited only by an individual's or organization's creativity. Typical volunteer activities for individuals include visiting your neighborhood school to encourage participation and deliver registration materials, coaching a school (cont. on p.8)

## Information on MATHCOUNTS (cont.)

program or serving as an assistant coach, volunteering at a local or state competition, and serving on a committee to organize a MATHCOUNTS program. Volunteer opportunities for organizations usually involve adopting a school program by sponsoring a school's participation in the competition, providing spirit-building t-shirts, or planing a dinner or other special event. Organizations or companies can also get involved by contributing funds or donating services to a local or state program which goes toward printing and postage, awards, lunch, refreshments, transportation or lodging or by challenging employees to become volunteers, coaches, tutors, or school recruiters.

Get started by visiting the MATHCOUNTS' "Volunteer Network" at <http://mathcounts.org>. Program coordinators and schools can post volunteer opportunities with their program or search for interested volunteers in their community. Let your interest and availability be known!

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## Mark Your Calendar NCTM Conferences

### **Annual Meetings & Exposition**

Washington D.C. - April 22-25, 2009  
"Equity: All Means ALL"

### **Annual Research Preession**

Washington D.C. - April 20-22

San Diego - April 21-24, 2010

"Connections: Linking Concepts and Context"

Speaker proposal deadline is May 1

### **Regional Conferences & Expositions**

#### **2009**

Boston - Oct. 21-23

Minneapolis - November 4-6

Nashville - November 18-20

(In Conjunction with TMTA's  
annual meeting)

Events Taken from  
NCTM Newsletter (45.6)

## **Doctoral Opportunities at ETSU**

Currently East Tennessee State University has two doctoral programs which may interest UETCTM members.

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### **Ph.D. in Early Childhood Education**

ETSU has recently started a doctoral program in early childhood education housed in the department of Human Development and Learning (HDAL). Graduates of the Ph.D. in Early Childhood Education will be competent, have an in-depth understanding of Early Childhood, and have the ability to conduct independent, original scholarship that makes a scientific contribution to the field.

Further information and an application are available on the department's [news website](#).

### **Ph.D. in Educational Leadership**

ETSU's department of Educational Leadership and Policy Analysis (ELPA) offers a a doctoral program in Educational Leadership. This terminal degree program is designed for students already holding a Master's or Specialist degree and seeking advanced knowledge and skills in educational leadership and research. It culminates with a research project reported in the form of a doctoral dissertation. Various concentration areas serve teachers who seek greater knowledge related to educational leadership, teachers seeking initial administrative licensure, teachers or administrators seeking further knowledge and skills related to school administration, and professionals seeking knowledge and skills related to leadership positions in higher education, public agencies, or private sector areas related to education.



Further information is available on ELPA's [website](#).



## Franklin Math Bowl Needs Test Writers

The Franklin Math Bowl is a middle school math contest held on a Saturday in the early part of November on the ETSU campus. It is co-sponsored by the ETSU math department and UETCTM. Each year we have a test for 6th, 7th, and 8th grade math plus Algebra I. The test consists of 25 multiple-choice questions. Sample tests can be found on the Franklin Math Bowl web page at <http://www.etsu.edu/math/fmb/>. We need some volunteers to write tests. (Or if you don't think you could write a test, at least contribute some questions.) Obviously we can't use middle school teachers who prepare their students for the test, but anyone else is eligible. Typically we ask writers to have their tests written by early September.



If you would be willing to help, have further questions, or want to see test writer guidelines, please contact Daryl Stephens, director, at 423-439-6973 or by email at [stephen@etsu.edu](mailto:stephen@etsu.edu). Thanks in advance for your help!

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We are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four people to write for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series yet, so the topic of each contribution is up to its author.

If you or someone you know would like to contribute to this column, please contact the newsletter editor, Ryan Nivens.

## UETCTM Membership Application

Complete & return to Floyd Brown with a check for \$10 made payable to UETCTM. Completed Application and check may be mailed to Floyd Brown, Science Hill High School, Mathematics Dept., 1509 John Exum Parkway, Johnson City, TN 37604

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_\_

Email Address: \_\_\_\_\_

## Officers of UETCTM for 2008/2009

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Northeast State Technical  
Community College  
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### President Elect

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If you are reading this newsletter on paper, you're missing out on all the color! Visit our web site ([www.uetctm.org](http://www.uetctm.org)) to see the newsletter as a full-color PDF file with clickable links.

**ETSU**

**Department of Curriculum and Instruction**

**Att. Ryan Nivens**

**Box 70684**

**Johnson City, TN 37614-1709**



# UETCTM News

## First Meeting for the Fall

The first meeting this Fall of the Upper East Tennessee Council of Teachers of Mathematics will be held at Daniel Boone High School. Refreshments will be served starting at 4, with a business meeting at 4:30. By 5:00 the breakout sessions will start and the entire meeting should be over at 6.

Start planning for the Franklin Math Bowl Competition. It will be held on November 14, 2009 at ETSU. Watch the next issue for more information.

And welcome to our new assistant newsletter editor Ashley Bruner. Ashley is a graduate student in ETSU's Master of Arts in Teaching (MAT) program. She is taking the place of Casey Anderson who is student teaching through ETSU's MAT program.

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## **“Using Cooperative Learning to Teach Mathematics to Students with Learning Disabilities”**

In our classrooms today, we as teachers face many obstacles when it comes to reaching all of our student’s needs. All teachers know that a class is set up with many different types of diverse learners. One of the ways to help reach a group of diverse learners is to use differentiated instruction. This reaches all the different types of learners one may have in the classroom. Teachers also face having students with learning disabilities. Many times in teaching, I have found that many students seem to have difficulty in math, but it seems that each year, I always have one or two students that seem to never comprehend any part of a mathematical lesson. Most of the time, these students have learning disabilities that hinder them from comprehending certain skills he or she may need in order to be successful in math. One of the ways to help these students succeed in math is to have them work in cooperative learning groups. Not only will this help students with learning disabilities, but it will also help the entire find their individual “niche” in mathematics.

According to the NCTM, learning environments should be created that promote active learning and teaching. Cooperative learning groups promote active learning through investigations and problem solving. It helps students

understand and make connections between the concrete and abstract levels of instructions. Cooperative learning also promotes communication within a team and organization of tasks that need to be accomplished. Cooperative learning consists of three components: “lesson preparation,” “lesson instruction,” and “lesson evaluation.”

It is very important that each lesson is prepared in a way that students always know what to do to finish the task that is at hand. The teacher needs to always make sure that each person’s role is identified in the group and that the groups are established by the teacher, not the students. This helps with classroom management and also making sure that students are put together in such way that they are not afraid to help and benefit from each other. Teachers need to design activities that promote “practicing, experimenting, manipulating, reasoning, and problem solving.” There are five basic elements that need to be addressed to the students before cooperative groups are formed: “positive interdependence,” “face-to-face interaction,” “individual accountability,” “group behavior,” and “group processing.” Each group member needs to have a role in the team. If each student has a role, it will help the student’s (continued on next page)

self esteem and will also keep all students involved, which sometimes does not happen with students with learning disabilities because they are afraid of being ridiculed.

In order for students to understand the activity that is being completed in the group, the class needs to receive direct instruction by the classroom teacher, before forming learning groups. This gives the students an understanding of the activity that is going to be asked of them to complete. If students have a prior knowledge of what is asked of them, the teams will have a greater success.

Clarification is an important part of learning groups. The teacher's role in instruction is to have students transition quickly after direct instruction, have all materials ready for use, monitor student progress within the groups, and emphasize the occurrence of collaborative behaviors.

Once an activity has been finished, it is very important that each student in the group is evaluated by the teacher and by the students in the group. If students have a role in the learning group, each student should evaluate their team members along with the teacher evaluating the students for their understanding of the lesson. This

gives the students a sense of importance of the lesson. It also shows that he or she is responsible to not only themselves, but all of the other members of the group.

Overall, students with learning disabilities are just like any other student in the class. If students are divided up in learning groups, this gives every student a chance to use what he or she may be strong in to help the group become successful in the task that (continued on next page) may be at hand. Each student has a gift he or she can bring into a group. If a student is able to use his or her gift, he or she may build self confidence and also be able to overcome their learning disability not only in math but also in other subjects.

*~Brandon Mckee is a teacher in  
Washington County at Jonesborough  
Middle School*

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## Mark Your Calendar NCTM Conferences

### Annual Meetings & Exposition

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San Diego - April 21-24, 2010  
"Connections: Linking Concepts and Context"  
Speaker proposal deadline is May 1

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Another section will be included next volume dedicated to mathematics problems. We are looking for people to submit favorite problems focused on various grade bands.

If you or someone you know would like to contribute to this column, please contact the newsletter editor, Ryan Nivens at [nivens@etsu.edu](mailto:nivens@etsu.edu).

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## NCTM Membership and Journal Subscriptions

Are you a member of NCTM (National Council of Teachers of Mathematics)? As an NCTM member you can receive one or more of four outstanding journals depending on your interests: Teaching Children Mathematics (geared towards elementary school), Mathematics Teaching in the Middle School, Mathematics Teacher (for high school teachers), or Journal for Research in Mathematics Education.

In addition, the NCTM web site has a number of members-only features including an online journal devoted to more high-tech tools for all levels, and NCTM publishes many books, monographs, and yearbooks of interest. Now when you join or renew an existing individual membership online, you can choose to have a rebate sent back locally to UETCTM. New NCTM members or members renewing after a lapse of at least a year earn UETCTM a \$5 rebate; renewing NCTM members earn us a \$3 rebate. Go to [www.nctm.org](http://www.nctm.org) for more information, and when you fill out the online membership form, select Upper East Tennessee Council of Teachers of Mathematics from the drop-down menu for the state.

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\_\_\_\_\_

Home Phone: (\_\_\_\_\_) \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

\_\_\_\_\_

School Phone: (\_\_\_\_\_) \_\_\_\_\_

Email Address: \_\_\_\_\_

|  |   |   |
|--|---|---|
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| <p><b>Past President</b><br/>Dayna Smithers<br/>Division of Mathematics<br/>Northeast State Technical<br/>Community College<br/>PO Box 246<br/>Blountville, TN 37617<br/>(423) 354-2502<br/><a href="mailto:dbsmithers@northeaststate.edu">dbsmithers@northeaststate.edu</a></p> | <p><b>Secretary</b><br/>Guy Mauldin<br/>Science Hill High School<br/>1509 John Exum Parkway<br/>Johnson City, TN 37604<br/>Phone: (423) 232-2190<br/><a href="mailto:maulding@jcschools.org">maulding@jcschools.org</a></p> | <p><b>Treasurer</b><br/>Floyd Brown<br/>Science Hill High School<br/>1509 John Exum Parkway<br/>Johnson City, TN 37604<br/>Phone: (423) 232-2190<br/><a href="mailto:brownf@jcschools.org">brownf@jcschools.org</a></p> |

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**ETSU**

**Department of Curriculum and Instruction**

**Att. Ryan Nivens**

**Box 70684**

**Johnson City, TN 37614-1709**



# UETCTM News

## Second Meeting for the Fall

The second meeting this Fall of the Upper East Tennessee Council of Teachers of Mathematics will be held at Sullivan South High School from 4 to 6 pm.

Schedule for the meeting:

- 4:00 – 4:20 Food and Fellowship
- 4:20 Welcome Activity
- 4:30 Newsletter, Attendance; Minutes from last meeting; Treasurers report (take up dues)
- 4:40 Constitution and Bylaw Changes
- 5:00 Break Out Sessions

Middle and High School: Fractals and Cancer – Could The Cure Be In Mathematics?

Elementary School: Teaching Math Using Your SmartBoard

Are you a teacher with a SmartBoard, but not enough time to build your own lessons from scratch? Learn how to make your SmartBoard work for you. This workshop will help teachers in elementary grades use the SmartBoard to teach a variety of math concepts by combining best practices and technology. This in-service is not designed to teach specific SmartBoard skills, but rather how to teach math using a SmartBoard.

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# The Middle School Math Classroom “Under Construction”

*by* Cindy Hayes

New math standards call for a reform in teaching and learning. Not only does it require a complete redesign on the way it is taught but also a new design in the classroom physical environment. In the same way that the environment can impact our lives, it can also contribute or take away from the way a student learns. The environment plays a significant role in the learning process. Everything we have learned about the world has come to us in one way or another through the environment in which we live. Think about what students see as they enter your classroom. Does the desk placement convey the message of cooperative learning to your students? Does the physical layout promote active involvement throughout the classroom? And, does the overall atmosphere encourage a safe environment with team work? To promote actively engaged learning at a higher level we must address these questions.

In a standard classroom, the largest amount of space is occupied by the arrangement of individual student desks. Are your desks arranged in such a way that invites cooperative learning or individual learning? The days of desks lined up in neat rows and facing the teachers are long gone. Students need many opportunities to be actively

involved in cooperative learning through small groups. Create an environment that allows students to discuss mathematics and make sense of mathematics in cooperative learning situations.

Therefore, desks should be arranged in ways that interaction is easily obtainable. For easy discussion and collaboration clustering desks is one possibility. Just remember that experimenting, discovering and analyzing is so much better with input from your peers. So pull those desks together and create an environment of cooperative learning.

Secondly, the physical layout reflects your teaching style. The arrangement of desks, working areas, and materials are very important to the daily routines within the classroom. Engaging students with manipulative materials and active mental involvement to support their learning of mathematics, needs to be relevant by the physical layout. Don't be afraid to pull out those manipulatives and let your students explore. Go find those crayons and color pencils from the younger grades to assist your middle school student to visual see complicated concepts. When a student walks into your math classroom let them see more than just textbooks and worksheets. The moment that student walks in the room let their minds run (continued on page 3)

freely with questions of why the blocks, why the tiles, and why the color pencils. Let them be curious on what does all of these things have to do with math. It is time to take math instruction to the next level. It is time for them to explore math.

And last, what message is the overall atmosphere sending to your students? Is your room warm and inviting? Does it reflect a positive exciting atmosphere? The classroom needs to send the message that portrays a positive attitude and genuine interest in mathematics. So many times we hear parents and students make the comment that math is not their favorite subject and that they never understood it. So immediately you already have a student that has shut down physically and emotionally with anything that has to do with math. A classroom enriched with bright colors, plants, music, motivational posters, math literature, and manipulatives can assist in creating an exciting environment for learning. Let them see that math is not just black and white! It is

up to you and how you present yourself, the math content and your classroom to promote positive active engagement within the classroom.

Creating an environment that engages meaningful, hands-on and authentic, learning experiences takes a lot of thought and planning. Visit other classrooms and share ideas what has worked and hasn't worked. And most of all don't be afraid of change. Remember the standards are stating that students must explore, model, conceptualize, interpret, predict, compare, evaluate, recognize, and use manipulatives. So to meet these goals teachers are going to have to open their classroom to cooperative and hands-on learning. Pull out the manipulatives, display numerous math literatures, display unique math posters, and re-arrange those desks—it's time to get in those small groups and explore!

*~ Cindy Hayes is a teacher at Fall Branch Elementary in the Washington County School System.*

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## The School Website

### A New Kind of Math Homework

by Roseanna Self

Mathematics is a subject that requires various reinforcement activities in order for students to be successful. So the saying goes, "Experience is the best teacher." This is very true for most people. Classroom teachers are continuously looking for a way to make math "stick," to make it memorable and meaningful. Today, teachers are forced to look beyond the four walls of classrooms and the pages

of textbooks in order to help students achieve in mathematics. On a daily basis, teachers use various modes of instruction. However, when the school day ends, most students are sent home with the traditional mathematics homework assignment... repetitive practice, straight from the textbook.

Teachers can take advantage of the recent, rapid advancement of technology in classrooms and in

---

students' homes. Instead of tying students to the textbook to complete practice at home, teachers have the opportunity to make math homework a meaningful experience. There are a vast number of (continued on page 4) websites available to math teachers and students for this purpose. Every day, teachers learn about various, free web resources at professional development seminars. Unfortunately, in the classroom, there is not always time to use them. To get the best use of these free resources, teachers can attach links to resources on their school's website for the students to access at home.

These resources may prove to be more beneficial to students than traditional, skills practice, because web resources can provide interactive experiences. However, there are some things to keep in mind when creating a website. In order for a website to be effective, it is important that the website be in proper working condition. It is essential that the website not be bogged down by various texts and graphics. If a website is slow-loading, people will not respond well. It is important to keep it

simple and make sure it is easy to navigate, in order to be most effective. Another way to ensure that a website is effective is to make sure that it is well-maintained. In doing this, periodically make sure all links are properly working and all information is easily accessible.

As teachers continue looking for a way to help students be successful in mathematics, they may find that the answer is sitting on their desks. Websites are an excellent way for teachers to help students achieve while making sure the students' math education is more than just repetitive practice. Traditional homework can be reformed with a little effort in creating a website that allows students to go beyond the textbook. With all of the web resources available, teachers have a great opportunity to bring students out of the traditional mindset that mathematics is a skill and into the realization that math is a learning experience waiting to happen.

*~ Roseanna Self works for  
Rogersville City Schools.*

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Speaker proposal deadline is May 1

### **Regional Conferences & Expositions 2009**

Boston - Oct. 21-23

Minneapolis - November 4-6

Nashville - November 18-20

(In Conjunction with TMTA's  
annual meeting)

Events Taken from NCTM Newsletter (45.6)

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## **Math With Meaning**

*by Tammy Winger*

Math is a subject that students need to have active learning through hands-on and team-based projects that make math meaningful to the students. I have found that the more real life scenarios you put in math class, the more enjoyable the lessons are for the students. They seem to receive a deeper understanding of the concept that is being taught, and as we all know when something is done with a purpose we remember it longer.

As a huge fan of science, I try to incorporate science in my math lessons and vice versa. These two subjects go together, and as we all know the students need to grasp both of them. I give the students a group

project that takes about a week to finish. This project combines science and math concepts (old and new ones), while teaching the students to work together to finish a job. An example of one project I use is be giving a group a situation that involves them being on a deserted island with a storm slowly approaching them. Their job is to build a shelter that will keep them from getting wet. The group will get together and begin brainstorming design ideas. They have to keep in mind that they have a limited amount of materials on this island (which have already been given to them) and these are the only things they can use. (continued on page 6)

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### **Request for Article Submissions**

We are always looking for people to contribute articles to our ongoing “Math Perspectives” series. Every month, we would like four people to write for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included next volume dedicated to mathematics problems. We are looking for people to submit favorite problems focused on various grade bands.

If you or someone you know would like to contribute to this column, please contact the newsletter editor, Ryan Nivens at [nivens@etsu.edu](mailto:nivens@etsu.edu).

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Once this had been decided, the students will use their sketch to build a scale model of the shelter. Before they can begin to build this model, they have to decide what scale they are going to use for their design. (For example if the real size log is three meters and the craft stick you are using to represent the log in the scale model is twelve centimeters then the scale would be four centimeters equals one meter.) They will do this for all the items they are using to build this model (wax paper, aluminum foil, string, clay, etc.). There are specific requirements that the team must meet. The shelter must be able to house a certain number of occupants and each occupant must have a specific amount of personal space. The teams build their shelter, and after everyone is finished we will discuss the

advantages and disadvantages of each design.

This project can be modified in many different ways according to the skill you are teaching. You can also use this scenario to do different projects that involve other math or science skills. I find that the students enjoy these activities because it involves real life, and it pertains to many of the multiple intelligences. When doing activities that involve group work, the students are learning to work together and teach each other different skills. Let's face it, we all have our strengths and weaknesses, and I love seeing students teaching their peers. Each child will remember the skill much longer so they can build on it the following school year.

*~ Tammy Wininger  
teaches 8th grade at Blountville Middle  
School in Sullivan County.*

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### Quote of the Month

"If in other sciences we should arrive at certainty without doubt and truth without error, it behooves us to place the foundations of knowledge in mathematics..."

— Roger Bacon



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## NCTM Membership and Journal Subscriptions

Are you a member of NCTM (National Council of Teachers of Mathematics)? As an NCTM member you can receive one or more of four outstanding journals depending on your interests: *Teaching Children Mathematics* (geared towards elementary school), *Mathematics Teaching in the Middle School*, *Mathematics Teacher* (for high school teachers), or *Journal for Research in Mathematics Education*.

In addition, the NCTM web site has a number of members-only features including an online journal devoted to more high-tech tools for all levels, and NCTM publishes many books, monographs, and yearbooks of interest. Now when you join or renew an existing individual membership online, you can choose to have a rebate sent back locally to UETCTM. New NCTM members or members renewing after a lapse of at least a year earn UETCTM a \$5 rebate; renewing NCTM members earn us a \$3 rebate. Go to [www.nctm.org](http://www.nctm.org) for more information, and when you fill out the online membership form, select Upper East Tennessee Council of Teachers of Mathematics from the drop-down menu for the state.

---

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Registration is \$5 per student, which pays for trophies and printing the tests. If you didn't receive an invitation in the mail, registration forms are also available on the website <http://www.etsu.edu/math/fmb>.

More information about the contest and copies of some old tests are also posted there. For questions, contact Daryl Stephens at [stephen@etsu.edu](mailto:stephen@etsu.edu) or 423-439-6973. Registration deadline is October 19. The Bowl can always use volunteers to help grade or proctor the tests; if you would be willing to help, please contact Daryl also.



---

**Upper East Tennessee Council of Teachers of Mathematics  
Membership Application**

Complete and return to Jerry Whitaker with a check for \$10 made payable to : **UETCTM**. Completed Application and check may be mailed to:

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
405 W. College Street  
Jonesborough, TN 37659

**Name:** \_\_\_\_\_

**Home Address:** \_\_\_\_\_

\_\_\_\_\_

**Home Phone:** (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

**School:** \_\_\_\_\_

**School Address:** \_\_\_\_\_

\_\_\_\_\_

**School Phone:** (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

**Email Address:** \_\_\_\_\_

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2009/2010**

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If you are reading this newsletter on paper, you're missing out on all the color! Visit our web site ([www.uetctm.org](http://www.uetctm.org)) to see the newsletter as a full-color PDF file with clickable links.

**ETSU**

**Department of Curriculum and Instruction**

**Att. Ryan Nivens**

**Box 70684**

**Johnson City, TN 37614-1709**



# UETCTM News

## Third Meeting for the Fall

**The third meeting this Fall of the Upper East Tennessee Council of Teachers of Mathematics will be held at Sevier Middle School in Kingsport.**

Elementary Break-Out Sessions (choose 1):

1. Classroom Discussions: Using Math Talk in Elementary Classrooms  
Presented by Jan McCall and Lori Seehorn  
Targeted Audience: Teachers in Grades PreK-5

2. Let's Tessellate  
Presented by: Pam Stidham and Penny Salyer  
Targeted Audience: Fourth Grade Teachers

Middle School Break-Out Session

Using Polydrons to Teach Geometry  
Presenter: Kris Krautkremer

High School Break-Out Session

Teaching Statistics in Algebra I  
Presenters: Julia Grecol and Lora Hopkins

Don't forget to attend the Franklin Math Bowl this month (see page 7 for details).

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# What the Heck is a Fractal?

*by Cindy Dye*

A fractal is an object that displays self-similarity or the object repeats over and over. The object doesn't have to be the same structure at all scales, but it must be the same type of structure that appears on all scales. A fractal is a rough or fragmented geometric shape that can be subdivided into parts where each part is a reduced sized copy of the whole item. Fractals can also be defined as any pattern that exposes greater complexity as it is enlarged. There are several structures that are fractals that include the Sierpinski triangle, Koch snowflake, Peano curve, Mandelbrot set, and Lorenz attractive.

Fractals can be traced back to the late 19 century. The term fractal was coined by Benoit Madelbrot in 1975 from the Latin word fractus meaning based or fractured. A mathematical fractal is based on an equation of feedback or recursion. The Mandelbrot set was developed by none other than Benoit Madelbrot. In mathematics, this is a set of points in the complex plane that forms a fractal. This set of numbers is characterized by complex polynomials.

A fractal is made up of a fine structure that is by chance made up of small scales. Fractals appear similar at all levels of magnification and they are considered to be infinitely complex. Fractals also occur in natural objects such as clouds, mountain ranges, lightning bolts, and even vegetables such as cauliflower and broccoli. Other

examples of fractals occurring in nature include natural objects that display fractals in a self-similar structure over a finite scale range include examples of broccoli, blood vessels, and coastlines.

There are four common techniques for generating fractals. The first is the escape time fractals that are characterized by a repetition relation at each point in a space. Examples of this type of fractal include the Mandelbrot set. Another technique for generating fractals is the iterated function system that has a fixed geometric replacement rule. Some examples include the Cantor set, Koch snowflake and the Peano curve. Random fractals are generated by stochastic rather than a deterministic process. Finally, strange attractors are generated by the repetition of a map or the solution of a system of initial value of discrepancy equations that display chaos.

Fractals are a part of our world. Scientists and mathematicians are using fractal technology to better understand topics such as the human body as well as the universe. Scientists also utilize fractals to assist with medical research. In the future, fractals technology may be the key to unlocking many medical mysteries.

*~ Cindy Dye teaches at Colonial Heights Middle School in Sullivan County.*

# Strategies for Drawing 3-D Figures

by Megan K. Blakely

The Tennessee Curriculum Standards are constantly changing in Mathematics to increase the development of problem solving and reasoning skills across all grade levels. Geometry seems to be one of the most difficult standards for seventh grade middle school students to successfully develop and apply. Students are required to master being able to use visualization, spatial reasoning, and geometric modeling to solve problems by constructing and drawing a three-dimensional object from a two-dimensional representation. Most students do not even know the difference between a two or three-dimensional figure. This lack of knowledge makes our job as the teacher even more challenging and important. The ability to draw three-dimensional figures is an important visual thinking tool. “A picture is worth a thousand words,” so my goal is to provide teachers with several strategies in introducing three-dimensional figures, 3-D drawing techniques/tips, and enrichment or extension activities that I have used to aid in visualization and spatial reasoning for middle school students.

In my teaching experience, it is best to introduce the concept of a three-dimensional figure as having a length, width, and depth. A perfect example of a three-dimensional figure would be the cube. Next, I would recommend explaining the three parts of a cube, which are the faces, edges, and vertices. Hands-on manipulatives are a terrific way of allowing students to visually and physically locate these parts of a cube. Teachers should allow students to experiment with isometric dot paper to see how many ways to draw a cube. This experimentation is crucial for students to self-discover the many possibilities of

drawing three-dimensional figures using cubes. Many times, students enjoy creating designs and learning from their successes and mistakes without worrying about failing.

After students have experimented, I would suggest allowing them to demonstrate various techniques they have developed and applied to create their cube drawing. Once students share their tips, I usually present at least six helpful ways of creating a three-dimensional cube on their isometric dot paper. The SmartBoard has isometric dot paper that the teacher can use in their demonstration. One technique students can choose is drawing a sideways rhombus, with two more rhombuses directly underneath the first. The second technique would be to first draw a Y shape, and then draw an upside down V on top of the Y. You will also need to draw two more slightly slanted V shapes on both the left and right sides of the Y to complete your cube. The third tip is basically similar to the second, except you can start out drawing an upside-down Y with V shapes around the figure to create a cube. A fourth design would be to connect the isometric dots to create a hexagon. Then, draw a normal Y shape or upside-down Y inside of the hexagon. A fifth tip is to draw two V shapes directly underneath one another. The student should connect each endpoint on the top V with the endpoint on the bottom V, also connecting the vertexes of both V shapes together. The last step is drawing another upside-down V on top of the figure to complete the cube. The sixth technique is similar to the fifth, except just the opposite. This will create the cube in a different perspective. Most of the time, students can reflect (continued on page 4)

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the drawing and create the cube from various other perspectives such as looking from the top or bottom view. This is where students need to begin practicing, constructing, and drawing a simple three-dimensional figure from different perspectives.

Students will feel more comfortable after constructing and drawing simple three-dimensional buildings using the cubes. Through various teaching mentors, I've learned that labeling a clear, plastic plate with the words "front," "back," "left," and "right" allows for students to construct/stack their cube buildings on the plate, so that they can turn or lift the plate easily for viewing in several different perspectives. Several of these views would be left-front, right-front, left-back, and right-back from both the top or bottom perspective, along with many more examples such as flipping the shape on its side. A common mistake I observe is that students forget to place the "front" label facing them while building their cube design, so please remember to remind them of this. As the buildings get bigger and more complicated, I recommend using the simple steps of drawing individual cubes from earlier in this article. However, I have realized that it is easier for me to sketch a stacked three-dimensional figure by first following its (continued on next page) outline on the plate, while tracing its shape on the isometric dot paper. Then, draw in the edges of each cube inside of your three-dimensional drawing. Remember to only draw the visible edges, not ones that are hidden by other cubes. If students are sketching the bottom perspectives, then I would recommend

having them work with a partner. This will allow for their partner to hold the plate while the other sketches and vice versa. When finished drawing the building, I usually encourage students to shade in either the tops or bottoms of the cubes that are visible. If it is a top perspective, students should shade the tops of their building and the opposite if it is the bottom perspective.

The Geometry Standard of constructing and drawing a three-dimensional figure is an extremely difficult challenge for many middle school students. The teacher needs to practice constructing and sketching several different three-dimensional figures in gaining the confidence needed to demonstrate and assist students with this skill. Most importantly, both the teacher and students need to discover that we do not live in a perfect world, so we should not expect to conquer this skill on the first try. It will take plenty of practice drawing these three-dimensional figures to gain the confidence needed in mastering this visualization and spatial reasoning geometry standard. In addition, please allow for your students to "experiment" first, ask them to share their techniques with one another, and then you can reveal other tips that were not discussed. The "Think, Pair, Share" method is a valuable instructional strategy students can use to self-discover, especially when it involves three-dimensional figures.

*~ Megan Blakely teaches at Holston Valley Middle School in Sullivan County.*

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## **That's Not How I Learned to do Math!**

*by Aleta Compton*

Hands-on math? Manipulatives?? What in the world are these things? That's not how I learned to "do" math! When I was a student, we didn't use manipulatives or play with blocks in math class. I took notes, studied vocabulary, followed steps and rules, did all of my homework, and learned math. Using colored pencils in geometry class was a really big deal. I guess I was lucky that I could learn math in this manner, because that was the only way it was taught.

When I became a mathematics teacher, I began to learn a new way to teach the old concepts. Why? Primarily because today's young generation of learners is a tactile society. If my students can build it, touch it, manipulate it, take it apart, examine its parts, or draw it – whatever "it" may be – true understanding of the concept can be achieved. Educators

are beginning to understand that today's students are accustomed to being in the middle of the action; they are no longer content with "because that's the way it is" or "because Pythagoras said so" as an acceptable answer. They want to understand why and how math works.

Secondly, exploring math concepts by "doing" math also promotes algebraic thinking. What is algebraic thinking? I perceive algebraic thinking as a process that begins at birth. From the first time that a baby stacks blocks in a pattern, sorts colors and shapes, or figures out that a friend has more candy than she does, that child is thinking algebraically. The process is never-ending! Every time a person uses computational skills or allows symbols to represent something else, algebraic thinking occurs; every time a person makes (Continued on page 6)

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### **Request for Article Submissions**

We are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four people to write for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

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numerical comparisons, algebraic thinking occurs. This logical thinking process is enhanced by using manipulatives and other concrete models to solve real-life mathematical situations. I think it's more effective if we teach the way kids learn, and hands-on activities which link concrete models to numerical tasks bridge the reasoning gap. Algebraic thinking lends itself to facilitating thought processes in many other academic pursuits, also.

Finally, using hands-on math and manipulatives in the classroom is just plain more fun than textbook, pencil, paper, drill, drill, drill! Engaging students in learning is more than half of the battle. If students look forward to a class and its activities, they are much more open-minded about the content being taught and much more willing to try to learn.

Professional development programs such as the Eastman Scholar

Mathletes will educate teachers in the use of hands-on instructional techniques, encourage us to gain confidence in our own abilities, and make us more comfortable implementing the techniques in our classrooms. Make no mistake – the use of manipulatives requires practice on the teacher's part. We must be willing to accept change, enthusiastically adopt these ideas as our own, and develop an exciting learning environment for our students. Even though this is not the way I learned to do math, I'm excited about being part of the movement that will allow kids to explore and discover math concepts for themselves and open up a whole new realm of possibilities!

*~ Aleta Compton teaches at Indian Trail Middle School in Johnson City.*

## **Mark Your Calendar for NCTM Conferences**

### **Annual Meetings**

#### **& Exposition**

San Diego - April 21-24, 2010

“Connections: Linking Concepts and Context”

Speaker proposal deadline is May 1

### **Regional Conferences & Expositions**

#### **2009**

Minneapolis - November 4-6

**Nashville** - November 18-20

(In Conjunction with TMTA's annual meeting)

Events Taken from NCTM Newsletter (45.6)

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### **Quote of the Month**

“A mathematician is a device for turning coffee into theorems.”

-- Paul Erdos

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Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
405 W. College Street  
Jonesborough, TN 37659

**Name:** \_\_\_\_\_

**Home Address:** \_\_\_\_\_

\_\_\_\_\_

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**School:** \_\_\_\_\_

**School Address:** \_\_\_\_\_

\_\_\_\_\_

**School Phone:** (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

**Email Address:** \_\_\_\_\_

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UETCTM for  
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**ETSU**

**Department of Curriculum and Instruction**

**Att. Ryan Nivens**

**Box 70684**

**Johnson City, TN 37614-1709**



# UETCTM News

## First Spring Meeting

\* \* \*

**Tuesday, February 9, 2010**

**4:00-6:00**

**Volunteer High School**

**Hosted by Hawkins County Schools**

*\*See Meeting Agenda on Page 2-3.*

## A Message from the *P*resident

I asked a group of teachers recently what they believed about mathematics education. Most were able to respond quickly and confidently. After the group discussed various responses, I asked them if what they are doing in the classroom with their students connected to their response. Of course, as any good mathematician would require, I also asked for proof.

It is easy to say the words we think others want to hear. It is easy to hold a belief system close to our heart. It is not so easy to live that belief. "I told my students \_\_\_\_." The word "tell" rarely is used in a belief statement. "The curriculum moves too fast," comes out of one side of our mouth, while "students do not know their multiplication table," comes out of the other. How often do we give students the opportunity to "clean-up" their act?

I challenge us all to revisit our beliefs in math education and find proof that we practice what we preach. If we cannot find this proof, we need to rethink our practices. If you say all students can learn, then make sure they do. If you say that students don't know their multiplication facts, then become responsible and help students bridge that gap. If you say that the curriculum moves too fast, rethink the presentation of material. Is there a more effective arena in which students can be successful?

Finally, share your successes and struggles. We have a strong group of teachers in Upper East Tennessee. Use the relationships you build to become the teacher that your students deserve.

### Val Love

Middle School Math Coach  
Kingsport City Schools

☎ (423) 943-2704

✉ vlove@k12k.com

### IN Th Is Iss UE

|  |          |
|--|----------|
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## UETCTM First Spring Meeting Location:

**Volunteer High School**  
1050 Volunteer Blvd.  
Church Hill, TN 37642  
(423) 357-3641



## UETCTM Meeting Agenda:

**Tuesday, February 9, 2010**

Location: Volunteer High School Library

**4:00-4:30 Social Time/ Snacks**

\*Snacks provided by HCS presenters and Volunteer High School Mu Alpha Theta student organization

**4:30-5:00 Business Meeting**

Location: Volunteer High School's NEW Freshman Academy Wing

**5:00-6:00 Breakout sessions**

**Session 1: (K-2 Teachers) HANDS ON MATH Room 907**

This hands-on session will consist of two parts. The first will be to play games using cards and dice to help young students be successful in basic operations, number sense, and place value and graphing. These ideas were presented at NCTM Nashville by Jane Felling from Box Cards and One Eyed Jacks, Edmonton, Alberta, Canada. The second part will be to make some ideas for math activities using healthy recipes that students can make themselves. These activities were presented by Cynthia L. Cliché, math consultant from MTSU. Suggestions for math applications as well as literature tie-ins will be shared. Participants will receive a CD of all materials.

**Presented by:** Lori Allen ([allenl@hck12.net](mailto:allenl@hck12.net)), Regina Russell ([russellr@hck12.net](mailto:russellr@hck12.net)), and Karen Sexton ([sextonk@hck12.net](mailto:sextonk@hck12.net)) - Joseph Rogers Primary, Rogersville, TN

**Session 2: (3-5 Teachers) MATH GAMES Room 906**

A compilation of math games learned from the most recent NCTM Nashville conference will be shared/demonstrated (Race to the finish, place value, card games, factoring, fraction island). Teachers will receive a packet with multiple lesson plans/black line masters.

**Presented by:** Laura Feagins ([warnerl@hck12.net](mailto:warnerl@hck12.net)) - Carters Valley Elementary School, Church Hill, TN; Amy Glass ([glassa@hck12.net](mailto:glassa@hck12.net)) - Surgoinsville Middle School, Surgoinsville, TN. Assisting - Carter's Valley Elementary School Math Teachers.

(Continued)

## UETCTM Meeting Agenda: (Continued)

### Session 3: (6-8 Teachers) MATH ACTIVITIES Room 905

A compilation of math activities learned from the most recent NCTM Nashville conference will be shared/demonstrated. Teachers will receive a packet with multiple lesson plans/black line masters.

**Presented by:** Kris Lumpkins ([lumpkinsk@hck12.net](mailto:lumpkinsk@hck12.net)) - Church Hill Middle School, Church Hill, TN; Karen Davis-Beggs ([davisbeggsk@hck12.net](mailto:davisbeggsk@hck12.net)), Morris Rogers ([rogersm@hck12.net](mailto:rogersm@hck12.net)), Molly Bolton ([molly.bolton@hck12.net](mailto:molly.bolton@hck12.net)) - Surgoinsville Middle School, Surgoinsville, TN.

### Session 4: (7-12 Teachers) STATISTICS PROJECTS Room 904

An overview of hands on projects for use in statistics courses as well as supplemental lessons for Algebra 1 and lower grade to meet the new TN mathematics standards Statistics strand.

**Presented by:** Jade Overton ([overtonj@hck12.net](mailto:overtonj@hck12.net)) - Volunteer High School, Church Hill, TN

### Session 5: (7-12 Teachers) SLOPEZEE Room 903

If you like YAHTZEE, you'll love SLOPEZEE. The new TN math standards introduce slope now beginning in 7th grade. However, this skill is used in all future math classes. Teachers will play a slope game modeled after the game of YAHTZEE developed by two area math teachers. Participants will receive handouts on three ability levels. Come play with us:

**Presented by:** Tara Harrell ([tara.harrell@hck12.net](mailto:tara.harrell@hck12.net)) - Hawkins County Schools Math Specialist; Kris Krautkremer ([kkrautkremer@k12k.com](mailto:kkrautkremer@k12k.com)) - Ross-n-Robinson Middle School Math Interventionist.

### Session 6: (Algebra 1 Teachers) THE NEW ALGEBRA 1 Room 902

Here we will concentrate on how to address the changes in the new TN math standards. We will explore ways to make learning algebra accessible to ALL students by using learning tools such as graphic organizers, link sheets, webs, and more. In addition, an end of the year Children's Book Project idea will be shared for that "after the EOC" time. Student work will be shared and all participants will receive a packet of lesson plans/ black line masters.

**Presented by:** Christy Free ([creehc@hck12.net](mailto:creehc@hck12.net)), Misty Armstrong ([misty.armstrong@hck12.net](mailto:misty.armstrong@hck12.net)) - Volunteer High School, Church Hill, TN.

*\* Assisting in today's activities will be the HCS student organization - Mu Alpha Theta math honors society.*



# Alle Anfänge sind schwierig

By *Jessica Willis*

Washington County, Lamar

My first period class my freshman year of high school was German I. My teacher had various common sayings posted around the room, each written in German. The one that immediately caught my attention was "Alle Anfänge sind Schwierig". At the time, I had no idea about the German, but my dictionary skills were phenomenal (I'll take this opportunity to thank my second grade teacher, Mrs. Williams!). So, I used my brand-new, handy-dandy German dictionary to figure out what this phrase meant--All Beginnings Are Difficult. Voilà! I had learned my first German phrase!

In retrospect, I can see that that discovery was full of irony. I have always been a bit resistant to change, to say the least. My memory is filled with examples of my mother trying to convey the message to me: all beginnings are difficult. Some of those times linger in my mind... my first day of kindergarten, my first day of middle school, my first day of high school, my first day of college, the first day of my first real job, my first day of graduate school, the first time I lived on my own, my first day of teaching. After each of these "firsts" I lamented to my mother, convinced that the road ahead was simply too difficult and I would never make it. She always found a way to assuage my doubts and fears, and in one form or another, tried to teach me that "all beginnings are difficult." You know what? Mom was right!

This year in Tennessee, we as math teachers are faced with a "beginning" in the form of new state math standards. It is very easy and even tempting to view this change negatively. Will it mean I have to work harder? Yes. Will I have to spend more time planning? Yes. Will I have to challenge myself? Yes. Will every new lesson go exactly as planned? No. Will it all be smooth sailing? No.

I realize, however, that there is another option. Instead of dreading inevitable changes, I can--and this is such a foreign concept to me--embrace them. So, after much consideration and

some lessons in positive thinking, I am choosing to go against my nature and view this particular change as a much-needed step in the right direction for our students. As I embark on this new journey, though, I will be careful to heed my mother's valuable advice: all beginnings are difficult. With that in mind, I am bracing myself for bumps in the road--for I know that there will be bumps in the road.

This summer I have had the opportunity--through professional development offered by my school system and the Eastman Scholar Mathletes program--to become familiar with the new math standards in a way that would not otherwise have been possible. ■

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## *All Beginnings Are Difficult*

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# Reflection on a Book s tudy

*By Karoline Berg*

Washington County, Jonesborough Middle School

In the spring of 2009, I had the opportunity to participate in a book study within my county. We studied *Math and Literature, Grades 6-8*, by Jennifer M. Bay-Williams, Sherri L. Martinie, and Toby Gordon. This was not your ordinary book study. We did not read a book and then come up with interesting questions or topics to discuss with the group. If you have not seen this book, it is a wonderful resource of lessons that are based on children's literature.

The format of the book study was quite simple. First, we each picked a lesson we would like to teach in our class. We discussed the standards and concepts that would be covered by that lesson with our book study group. Next, we presented the lesson to our students. Finally, we went back to our book study group and discussed how the lesson went--what worked well, what didn't work well, what we would change if we did this lesson again. We each did two lessons from the book.

The first lesson I did was based on *Harry Potter and the Sorcerer's Stone* by J.K. Rowling. The students discussed Rowling's description of Hagrid. She describes him as being "almost twice as tall as a normal man and at least five times as wide." Taking this description, we made a prediction on how large Hagrid is. The students devised a plan to compare their heights to their shoulder widths. They put their results on a scatterplot and estimated the line of best fit and its equation. Finally, they made a prediction for Hagrid's size. In the discussion after making their predictions, the students listed reasons why their predictions would be off. Some of these were there were mostly females in my classes, and Hagrid is a male; they were not all fully grown, and Hagrid is an adult.

The second book I presented to my students was

*The Village of the Round and Square Houses* by Ann Grifalconi. In this story the men live in square houses and the women live in round houses. My task for the students was to find out which house would require more materials if both houses had the same area and each roof had an overhang of 1 foot. The students worked in pairs to do their calculations. There was some discussion on what would be included in the surface area of these figures. Students were able to dissect the houses and the formulas for surface area to calculate exactly what they needed to find the answer.

My students were excited about these lessons. Through using literature, students were presented with real-life problem solving with actual data. This was not repetitive, boring bookwork. The same concepts and standards were covered. Furthermore, doing these tasks required greater understanding of the concepts. It also pushed students' higher-order thinking ability.

This book study was a wonderful chance to collaborate with teachers across our district. Being able to share ideas with other teachers is a great learning experience. My school is so small that it makes it hard to talk with other math teachers. We have many of the same challenges in our classrooms. We were able to share our best practices on how to approach these challenges.

Because of this book study, I was able to see most of the lessons out of *Math and Literature, Grades 6-8*. I would probably not have had the opportunity to read through the book in its entirety. When the opportunity came along, I taught other lessons from this book with the same success I had with my first two lessons. ■

# A Developing Milestone

*By Amanda Barrett*

Kingsport City, John Sevier

As a middle educator, I never took into perspective how important developing essential math concepts and skills and a love for mathematics at an early age was the foundation for a successful math student until two-and-a-half years ago. I have taught middle school mathematics for the last six years and geared my instructional practices to be relevant and rigorous for all students. I focused on what we as educators all focus on, providing a rich classroom environment in which students develop a love for learning and a passion for life-long learning while mastering the necessary concepts at that particular grade level. However, the following question would constantly be posed in the back of my mind: "Why is it that some of my students have that instantaneous drive to be successful and competent in math while others seem to be complacent in being an average or below average math student?"

I wondered if the students who had developed all the necessary math skills at each grade level were the students who loved math and the students who somehow fell behind were the students who despised math. This thought resulted in a small investigation that I began with one of my classes that consisted of twenty-five eighth-grade students. I began to research these students' past history of math back to their years as a toddler. I took a survey to see how many of my students attended child care programs, how many attended pre-school or a pre-K program, how many were read to at home, and how many of them had help with homework. These were just a few of the questions I asked in conjunction with several more questions that I thought might be relevant data. I also analyzed standardized test scores and socio-economic background data trying to find some

correlation where these students either developed the drive to be successful in math or the decision in their mind that they were just average or below average math students.

It wasn't until two-and-a-half years ago I finally formulated my own opinion based on one student's question on why students perceive math differently. The question was quite simple and came from a very intelligent young man in my eighth-grade advanced class. At the time he asked the enlightening question, I was six months pregnant with my first and only child. He asked, "now that you are having a baby, are you going to teach your

child to love math like you have taught us, too?" After his question, I felt honored and somewhat speechless. I thanked the young man for his comment

and informed him that I would certainly teach my own child the importance of math just like I have taught all my students. With his comment in mind, I formulated my hypothesis based on his question.

Regardless of a student's background, it is important as a math educator to teach children from an early age the importance of math and how we use it in our daily lives. Students will then develop their own opinion on how they perceive math, but we can help foster a positive attitude towards math. The students who may dislike math or perform below average may develop a love for math based on one teacher alone. We must strive to challenge students and develop an interesting curriculum that will keep students interested and motivated. All students can be successful and competent in math and we as mathematic instructors must open the door and help to guide all students to be successful, life-long learners with a love of math. ■

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## *A Love of Math*

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## Request for Article Submissions

We are always looking for people to contribute articles to our ongoing “Math Perspectives” series. Every month, we would like four people to write for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next volume dedicated to mathematics problems. We are looking for people to submit favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact the Newsletter Editor, Ryan Nivens.*

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# UETCTM

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***Membership Fee: \$10.00***

***Make check payable to: UETCTM***

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**Email Address:** \_\_\_\_\_



# UETCTM News

## UETCTM Meeting

\* \* \*

**Tuesday, March 9, 2010**  
**4:00 p.m. - 6:00 p.m.**

\* \* \*

### UETCTM Meeting Location:



**Science Hill High School**  
1509 John Exum Pkwy.  
Johnson City, TN 37604  
423-232-2190

\* \* \*

### UETCTM Meeting Agenda:

Refreshments at 4:00 pm in Room 312

#### Breakout sessions

##### **Elementary School - Problem Solving**

**Presented by:** Jenny Reed  
Cherokee Elementary School

##### **Middle School - Rule of 4 (Numeric, Graphic, Analytic and Communicative)**

**Presented by:** Val Love and Kris Krautkremer  
Kingsport City Schools

##### **High School - TI-Inspire**

**Presented by:** Tina Hill  
Daniel Boone High School

## MATH FUN

*When finished..*

1st digit in number also tells how many 0's are in number

2nd digit in number also tells how many 1's are in number

3rd digit in number also tells how many 2's are in number

.....

10th digit in number tells how many 9's are in number

*Examples:*     9 0 0 0 0 0 0 0 0 0  
                  8 1 0 0 0 0 0 0 1 0

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# Eastman s cholar Mathletes

*By Christie Lewis*

Gray Middle School, Washington County Schools

This summer I had a wonderful opportunity to participate in the Eastman Scholar Mathlete Program. It took some consideration since it was a big commitment (two whole weeks of my summer). Even after agreeing to participate, I admit I spent a great deal of my summer wondering why I did commit myself. This was the greatest professional development experience. I walked away from this program with a great deal of knowledge about the new standards, some wonderful friends, and a great sense of confidence going into the 2009-2010 school year.

Through participation in the program, I made some great friends. As we began this year with new standards, I felt this was valuable. I built relationships with other teachers in my system as well as five surrounding school systems. We participated in team building activities on a daily basis. I feel this has helped strengthen those relationships. We shared our experiences in the classroom. Together our class had over 140 years of teaching experience. I had an opportunity to gain a lot from these other teachers.

The professor, Dr. Ryan Nivens, gave me a new perspective on how to present math topics to my students. He has a wealth of knowledge on math methods. I am so glad I had this

opportunity to work with him. He gave us many things to take back to our classrooms. He gave us the opportunity to practice activities with our colleagues. This practice made me feel comfortable in bringing these activities back to my classroom.

Dr. Nivens showed us many activities, and he gave us many opportunities to work with manipulatives. In addition, he showed many resources that would be valuable in a middle school math classroom.

This is beneficial, as we all know, since many of the new standards are not covered in our textbook. Our school system marked the standards as we did activities. It was amazing how many standards we covered in only two weeks. One of the goals I had set for myself at the first of summer was to become familiar with the new standards. This class and the professor helped me meet that goal.

This class was a valuable experience and what great timing as we began to implement these new standards. If you are ever given the opportunity to participate in the Eastman Scholar Mathletes program, do so without hesitation. You will not regret it. The same is true if you ever have the opportunity to work with Dr. Nivens in any professional development program. ■

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## *The Greatest Professional Development Experience*

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# How Is a Calculator like Fine Wine?

*By Kris Krautkremer*

Robinson Middle School, Kingsport City Schools

**B**ecause both are safe for use in moderation! respect and support each other. Period. At all times.

This hotly debated topic has created on-going dialogue since calculators became affordable for the masses. Go to a math department meeting at any school in the nation and it is likely that there will be teachers who are on both sides of the debate. But why is it a debate and why are there sides? Can't we find a way for this technology to live in our classrooms in a way that benefits our students and promotes learning?



Could it be that some of the reason why we have discord among math teachers about this is that we were the first to elevate it to an issue? Often when we view something as debatable, we can become contentious. Just viewing a topic in this manner seems to evoke a need to make our point or to be right or, for lack of a better word, to win.

As teachers, having this mindset can lead us to not value each other as colleagues and can even create an atmosphere of distrust. Our students sense this lack of unity and it is disconcerting and counterproductive to an environment that promotes learning. Students need to see us

We work in an amazing profession. Very few people can say that they work daily with such highly educated co-workers. We share this distinction with doctors and lawyers, however we knew going into this job that we could do just about anything else with all those years of college and make more money, but we did it anyway. We are a very special group and as such, every member of this unique group deserves the respect of their co-workers.

Allowing anything to come between us is a reduction of who we are as a whole. We change lives. We make a difference. So let's see this topic as a way to discover more about each other and ourselves. Let's listen and have conversations, not debates. Let's allow each other to have different opinions and still uplift and support each other. No one will ever be proven right or wrong here. Nothing is worth losing who we are to one another because long after this topic fades away, we will still be working beside each other in a profession unlike any other and influencing every generation in our nation. ■

# Identifiable Characteristics of Linear, Quadratic, and Exponential Equations

*By Rodney Roberson*

Bulls Gap Middle School, Hawkins County Schools

Students should recognize characteristics of linear, quadratic, and exponential equations without having graphs or function tables to observe patterns. There are numerous characteristics that students can recognize from the equation given that will benefit students in determining which type of equation that will be worked with or investigated. The following paragraphs will discuss some of the recognizable qualities that each equation possesses when the equation is written in “y=” format for linear equations, quadratic equations, and exponential equations.

The first equation to be investigated is the linear equation. After a study on linear equations, students will recognize that an equation in “y=” form that has an independent variable with an exponent of one will be a linear equation. In some instances, students will need to solve the equation for the variable (dependent variable) to make this characteristic more obvious. When the equation is represented in slope-intercept form, the students will notice that any number added or subtracted to the independent variable will represent an intercept of the y-axis. They know that this is where the graph of the equation will cross the axis and that this is a place to start the graph using slope-intercept form. Since this is a linear function, a straight line graph will be pictured in the students’ minds. This will lead

them to recall that a straight line has a constant slope. The slope will be found with the independent variable as the coefficient. When students recognize characteristics of the equation of a linear function, they can apply these to function tables and graphs to identify linear equations from other equations.

The next equation of which students should be able to recognize certain qualities is the quadratic equation. The first noticeable difference from linear equations is that the independent variable will have an exponent of two. This power identifies this equation as having a graph that is a parabola. The coefficient of the squared variable will tell students if the graph will curve up or down. The constant number that is added or subtracted identifies where the graph of the quadratic equation touches the y-axis. The power of two identifies that the equation has a degree of two and students know that x-intercepts or roots can be found by using the quadratic equation. The power also relates to students that there is a turning point in the graph, which is called the vertex.

The last equation that has identifiers that students should be aware of is called the exponential equation. This equation is identified as having a variable as an exponent. The graph of an

*Continued on Page 5*





## Identifiable Characteristics of Linear, Quadratic, and Exponential Equations

*Continued from page 4*

exponential equation is a curve, which students identify with this equation because of the variable exponent. The equation also tells students that this graph never touches the x-axis but gets closer and closer to the x-axis. Students can also use the equation to make connections between exponential growth and decay models. The base number lets students know if a growth function or a decay function is being presented. If the base number is less than one, a decay function is being investigated; and if the base number is greater than one, a growth function is identified.

Mathematics is filled with problems that have characteristics that students can use to help find solutions. While linear, quadratic, and exponential equations have similar appearances, the characteristics that students identify can guide them to solutions. It is important to make sure students recognize these characteristics so the characteristics can be applied to solve future problems and the students can be successful in higher level math. Recognizing the differences and identifiers of the equations will help students avoid mistakes later in their math endeavors. ■

## MATH GAB

*Example: Wreck Dane Gull Lores Awl Its*  
*Answer: rectangular solids*

1) Lie Enough Cement Tree

2) I'll Ease Come In Mill Tea Pull

3) Oh Door If Hope Orate Shins

4) Algae Break Axe Press On

5) Pipe Thag Organ The Rim

6) Crate Ask Omen Vak Tore

7) Burpin' Tick Yeller Pie Sick Door

8) Al Gore Is Thumb

9) Sea Imp Love Eye Urine Sir

*Math Gab Answers:*  
 (1) line of symmetry (2) least common multiple  
 (3) order of operations (4) algebraic expression  
 (5) pythagorean theorem (6) greatest common factor  
 (7) perpendicular bisector (8) algorithm  
 (9) simplify your answer

## Request for Article Submissions

We are always looking for people to contribute articles to our ongoing “Math Perspectives” series. Every month, we would like four people to write for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

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405 W. College Street  
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***Membership Fee: \$10.00***  
***Make check payable to: UETCTM***

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\_\_\_\_\_

**Home Phone:** (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

**s chool:** \_\_\_\_\_

**s chool Address:** \_\_\_\_\_

\_\_\_\_\_

**s chool Phone:** (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

**Email Address:** \_\_\_\_\_



# UETCTM News

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- TEACHING STUDENTS HOW TO READ WORD PROBLEMS: CREATING A FOLDABLE
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- USING DICE TO FOSTER BASIC MULTIPLICATION SKILLS
- UPCOMING CALENDAR DATES
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- OFFICERS
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## MATH FUN

After selling cups of lemonade for a quarter each on opposite ends of the neighborhood, Cheryl said to Meghan, “If you give me one quarter, then we will have an equal number of quarters.” Meghan replied with delight, “If you give me one quarter, then I will have double the number you have!” How many quarters did Cheryl have, and how many did Meghan have?



**UETCTM MEETING**  
**Tuesday, Sept. 7, 2010**

**Daniel Boone High School**  
**1400 Suncrest Drive**  
**Gray, TN 37615**  
**423-477-1600**

### Meeting Agenda

- 4 p.m. Refreshments
- 4:30 p.m. Business Meeting
- 5 p.m. Programs
  - $\frac{1}{4}$  Lynn Whitaker (K-2) Math, Music, and Movement
  - $\frac{2}{4}$  Denise Cox (3-5) Tangram Math, Clothesline Math and Matching Square Puzzle.
  - $\frac{3}{4}$  Cindy Hayes & Lisa Armentrout (6-8) Task Rotation Activities Involving Proportions and Ratios
  - $\frac{4}{4}$  Amy Rigsby & Tina Hill (9-12) Name Game (Students at the high school level learn symbols and mathematics. Use these symbols and graphics to “write” their names and

**BE READY TO NOMINATE AND VOTE FOR A NEW PRESIDENT-ELECT**



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## *A message from your new President*

*W*elcome to another wonderful

year of teaching mathematics. For many of you, your first 9 weeks are almost half over! It is hard to believe that fall is here and the sea-

sons are again changing. I would like to thank Val Love for her leadership last year and all the work she has done in updating our constitution. I am the new president and I am looking forward to serving you in the coming year.

This summer I was able to attend the NCTM Affiliate Leadership Meeting in Reston, VA. Part of this 3-day conference included a trip to the NCTM Headquarters. The building is relatively small and unassuming and is actually nestled in the woods, but it is buzzing with activity inside. I took my picture next to one of two beautiful stained-glass windows they have inside the building. At the conference, I was able to share copies of our UETCTM *Newsletter* with affiliates from across the country. People from other states were interested in what we were doing at our meetings, what people were writing in our newsletter, and how we managed to have six meetings per year. With Tennessee's success in the nation's Race to the Top, people are curious about what we are doing. Fortunately for our affiliate, we have a history of progressive work in mathematics education. Looking at our website, you can see an archive of newsletters dating back to 2003. Even the newsletter editor for the Tennessee Mathematics Teacher's Association (TMTA) is inter-



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**East Tennessee State University**



# UETCTM News

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ested in re-printing some of the essays that we have included in our newsletter over the past year or two.

Finally, an exciting opportunity is coming our way. We are hosting the TMTA annual meeting next fall! We're going to need lots of help and there will be ample opportunities for you and your colleagues to present your favorite lessons, projects, and teaching strategies. I encourage you to start talking with your district's mathematics curriculum supervisor about what role you can play as we host a state meeting. In light of the work and coordination required to host a state meeting, it may be best for Fall 2011 to not have our typical 3-meeting schedule. The TMTA meeting is usually a full day and a half of professional development for those attending. I encourage you to make plans now for next fall. The nation's eyes are on Tennessee, and Tennessee's eyes are on the Upper East portion of the state. Keep up the excellent work and professionalism!

Sincerely,

Ryan Nivens

## MATH TRIVIA

If one angle in a triangle is given as 102 degrees and a second angle is given as 56 degrees, which of these book titles corresponds to the value of the third angle?

⇒ "21 Proms" by Daniel Ehrenhaft and David Levithan

⇒ "The Life of Pi" by Yann Martel

⇒ "Catch 22" by Joseph Heller

⇒ "24 Girls in 7 Days" by Alex Brady

The correct answer is "Catch 22" by Joseph Heller. There are 180 degrees in a triangle. In this case  $180 - (102 + 56) = 22$ .

[www.funtrivia.com](http://www.funtrivia.com)



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## TEACHING STUDENTS HOW TO READ WORD PROBLEMS: CREATING A FOLDABLE

By Amanda Phebus  
David Crockett High School  
Washington County Schools, 9th Grade



The 2009-2010 school year held many firsts for me, and a few firsts for my school. Mainly, this past year was my first full year teaching. This was Crockett's first year having the federal program of Title I. Title I is a wonderful program that aids students struggling with mathematics and/or reading. Now, the elementary and middle schools in Northeastern Tennessee have had Title programs in place, as it is my understanding, for quite a while; however, Title I at the high school level is very uncommon. The point that I am meaning to get across to you, dear reader, is that this was an unusual and experimental process that I had to go through.

In getting to know my students, who were selected for my class mainly by middle school TCAP testing scores, I found that they would readily work any problem that was number-based and could be easily inserted into a calculator – even when a calculator was not available. However, when they reached a word problem, they would automatically skip it and many would not go back to rework it. The students preferred losing the points over having to read the block of words that was presented to them.

Many of my students, mostly the boys, were also in the Title I reading program, which was taught by the wonderfully talented and lovely Wendy Whitmore. Almost on a daily basis we connected and talked about the students we shared, and she brought it to my attention that my students might just not know how to read a word problem. I was floored. Now I have to teach reading?!? Yes, math was involved, but ... I have to teach reading? With Wendy's positive attitude and the knowledge that I could always get help from my good friend, the Internet, I left her room determined to teach my students how to read word problems. I do want to point out that I am only teaching them how to read word problems, not work them. That is a different skill set altogether.

Now, I had recently been in a math workshop where I learned about foldables for the first time. If you haven't tried them, try them! They're glorious, but remember that they will not work for everything. So, my introduction to this unit on reading word problems was making a layered foldable. (I was going to write out all the



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instructions how to make a 5-tabbed layer foldable, but then my friend, the Internet, found my this instruction page with pictures: <http://www.registereastconn.org/sblceastconn/foldables/LayeredLookBook.pdf>. This is why the Internet and I are so close.) On the first day, after the students decorated the top page of their foldable, my students and I had a discussion about how math is its own language, and that while we use it when we speak English, that it is a universal language with its own kind of alphabet (numbers and symbols) and grammar (ways to use these symbols in a meaningful way). When reading a word problem, it is the reader's job to decipher the English that is in the problem and translate it into Math. So, we labeled the first tab "Operation Words." This section was divided into four boxes where we wrote "addition, subtraction, multiplication, division," one in each of the four boxes. The students then had to come up with English words or phrases that would fit into these boxes. For example, in the "addition" box, we wrote "sum, plus, add, all together, total, in all, etc." And in going from period to period, I would share what some of the students in my other classes came up with. On the next tab down, we had "Parentheses and Other." This tab contained all the words for grouping the operation words (parentheses) as well as words for equality, inequality, and exponential operations. These words are a little bit subtler, so it was interesting watching the students work together to come up with these words.

Other tabs on the foldable were more straightforward and direct. There was one reserved for "How to Read a Word Problem." Another contained many formulae that the students would run across and be expected to know in order to solve the problem ( $\text{distance} = \text{rate} \times \text{time}$ ). The last tab was about shapes, since in "How to Read a Word Problem" we discuss that drawing a picture oftentimes helps the student visualize what kind of answer the problem is looking for, and having the knowledge of how to calculate the perimeter and area of certain shapes was handy to have.

The foldable is a wonderful tool and I was extremely excited to find something where I could apply it. There are quite a few books on the topic...or you could talk to my friend, Internet, and he can hook you up with some information. Stay tuned – I plan on writing another article on the rest of this unit. It was an awesome unit, by the way, and as we got closer to the end, the kids were just begging me to let them solve the word problems!





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## FOSTERING THINKERS

By Crystal Tibble  
West View Elementary  
Washington County Schools, 4th Grade



I believe that the majority of teachers really want their students to succeed and do well in math. For a lot of teachers, the problem is that we only teach students the procedures of math and not the reasons for why they are doing them. I know that I am guilty of telling a student that they need to regroup in subtraction when the number on the top is larger. I teach them the procedure of regrouping without really teaching them what they are doing. My students will do it because I told them to, not because they know they need to.

Time constraints that are put on teachers, because of all the things we have to cover, often leave us feeling that we do not have the time to dwell on the why. They just need to do it and get it correct.

I have come to the realization that, in order to prepare my students for life, I need to teach them to be thinkers. Teaching them procedures will not teach them to think. Students can only become good thinkers if they have a firm foundation of the basics.

We need to start working with students on a concrete level. They need to see and manipulate the numbers themselves. Students need to work with different manipulatives and be given the opportunity to discover numbers. They are ready to start moving to more abstract ideas of math when they understand the concrete. When they are ready for the abstract, if they have a good number sense, they will be able to develop their own methods to problem-solve. They will not need me to teach them the procedures. When they are able to develop their own methods, I will know that I have taught them to be thinkers.

Students and teachers need to understand that the teacher's role is to give the student the foundation and then offer guidance along their journey.



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## OUT OF THE BOX

**By Marcia Jennings**  
**Fall Branch Elementary School**  
**Washington County Schools, 4th Grade**



As a learner have you ever asked the question why? Why do we have to learn this? When is it ever going to help me? Why this way? Isn't there a better way? Do your students often ask you the same type of questions?

Sometimes you have answers for them and sometimes you don't. Having the invaluable opportunity of being a part of the 2010 Eastman Mathletes program has answered many of those questions for me. As teachers we should be looking outside of the traditional "box." We should get out of our comfort zone of what we have always been taught and explore other, even better ways to teach.

Many times, myself included, we stay in the comfort zone because it's easier. However, as we prepare these students for their future, we are short changing them by staying stagnant. The world is ever changing and we should be also. Explore different untraditional ways to teach math. Teach your students that it's okay to try something differently. Isn't that what we are in this profession for? To encourage children's curiosity, and prepare these children for their future. Then we HAVE to get out of OUR comfort zone.

We HAVE to get out of the traditional box and we HAVE to continue learning and exploring new ways.



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## BUILDING A CONFIDENT MATH STUDENT

By Jenee' H. Peters  
Boones Creek Middle School  
Washington County Schools. Grade 4



The beginning of each new school year comes with the standard checklist: learning new names, beginning of year placement tests, assessing ability levels and learning styles and so on. But before all that, what I look at first is how confident each student seems to be with their own ability to reason and compute math successfully.

What I have found is that many, both girls and boys, do not. The why's to this problem can differ with each student. Some have heard their parents say, —Will, I was never good in math. So, you won't be either.” Some students have had negative experiences in other math classes. Other students struggle with low self-confidence in many areas of their life, not just in math class. Whatever the reason is, I have found that if I make increasing confidence in their ability to be good math students my first priority, all other goals I have for my students come much easier.

Here is a list of steps that I take at the beginning of the year to build more confident math students:

1. I tell students its ok to make mistakes. Students need to know up front that I will not yell or get mad at them if they make a mistake. I make sure to let them know that mistakes can actually be a good thing in math. Mistakes create opportunities to learn. Students also begin to feel more confident when I tell them that most of the time they will be able to correct their mistakes for a better grade.
2. I encourage them to always ask for help if needed. I reassure students that they always have the green light to come to me and ask for help.



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3. I have found it helps to start the school year with lessons from the lighter areas of my standard list. The standards that include basic geometry and measurement concepts are ideal. Students have lots of prior knowledge in these areas of math. This makes understanding and success easier to achieve.
4. I hand out lots of —*At a Boy*” comments especially in the first few weeks of school. I believe that a teacher’s praise creates a more secure student who is more willing to push themselves in some of the more rigorous areas of math.
5. I have a strict but fair discipline plan that is followed by both teacher and student. Discipline needs to be cut and dry, and consequences need to be consistent. If I do this, I have found that I spend less time disciplining and more time facilitating learning.
6. I have a one-on-one conference with those students that really seem to struggle in math or have other issues that hinder them from being confident learners. In these conferences, the two of us decide on a plan that will lead to success in my class and seem achievable to that student. These plans can include one or all of the following: extended time on tests (this helps with certain students that have extreme test anxiety), behavior contracts, set of rewards and consequences uniquely set for each student, constant communication between school and home, and modified assignments. I promise each student that if they really try, they will be successful in my class. The students with extreme cases of low confidence are often students that feel lonely and misunderstood. I have found that if I can get them to believe that I won’t desert them during their math struggles they will take risks.

Today, math teachers feel the pressure to cover all grade level standards. This pressure can be so great that it can cause a teacher to lose sight of their real purpose within their classroom. The real purpose, I believe, is to encourage and motivate students into believing and seeing that they can be successful math students. If students are successful, they become more confident. If students become confident, they can learn any math standard.



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## POSITIVE AND ENTHUSIASTIC TEACHERS

**Jennie Estep**  
**Sulphur Springs Elementary School**  
**Washington County, Grade 5**



As a teacher, you dread hearing those certain words. These are the words from the teachers who teach the grades before you and these words are to be considered your forewarning. What are these dreaded words? —“Wait until you get this group of children.” As teachers, haven’t we all heard these words before and wondered how we were going to get through it, but there are better questions. —“What am I going to do to meet the need of this challenging group of students and what strategy will I use to positively affect the students from the beginning?” In my opinion, the first strategy we need to implement is the attitude of a positive and enthusiastic teacher!

William James said, —“The greatest discovery of my generation is that a human being can alter his life by altering his attitude of mind” (Wong, H., 2004). This quote should inspire the teacher to begin by altering his or her own mind and attitude and then by altering the attitudes of the students and the parents. This attitude needs to be positive! As society changes, so do the students. We must be willing as educators to meet these changing needs in the classroom, and just as importantly, we need to discover strategies to positively impact classrooms from the beginning.

One strategy is that teachers need to become first-class actors and actresses. By the time many children reach the upper grades, they are unfortunately already burned out with their math education. Teachers should strive to rekindle and then keep the spark of desire to learn burning. Anatole France, who was the winner of the Nobel Peace Prize for Literature in 1921, once said, —“The whole art of teaching is only the art of awakening the natural curiosity of young minds for the purpose of satisfying it afterwards.” (John Bartlett, 1968, p.802a)



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I once read an enlightening research based article on the effects of teacher enthusiasm on student intrinsic motivation. This research revealed that the teachers' enthusiasm was the most powerful unique predictor of students' intrinsic motivation (Patrick, B.C., Hisley, J., & Kempler, T., 2000). What a powerful statement! Developing an enthusiasm for learning and being able to influence a child to become a life-long learner is also a major goal and a huge part of being a teacher. I know that as teachers we already know this, but with the pressure of new standards, pacing guides, and etc, it is sometimes easy to push aside. We need to celebrate math, make learning exciting, and have engaging lessons! Our enthusiasm should be contagious!

Patrick, B.S., Hisley, J., & Kempler, T. (2000). —“What’s everybody so excited about?”: The effects of teacher enthusiasm on student intrinsic motivation and vitality. *The Journal of Experimental Education*, 68, 217. Retrieved June 19, 2008 from General One File database.

Wong, H.K., & Wong, R.T. (2004). *The first days of school*. Mountain View, CA: Harry K. Wong Publications, Inc.



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## MATH JINGLES

**By Kristi Sanders**  
**Ridgeview Elementary School**  
**Washington County Schools, Grade 8**



Let's face it. Every student does not enter our classroom with a fondness for math. One of the many challenges then, as teachers of mathematics, is to dig into our bag of tricks to find ways that make the learning more enjoyable and less intimidating. One of the methods I have found useful is singing jingles that are related to math concepts.

I am not a gifted singer by any stretch of the imagination. I confess this to the students up front, and let them know that singing talent is not a requirement for singing math jingles in my classroom. I even encourage them to be a little silly and have fun with the jingles. This often puts the students at ease, helping create a relaxed, enjoyable atmosphere. I believe that when students are relaxed they are more likely to learn.

Another benefit of using jingles is that often they are to the tune of an already familiar song. For example, when working with addition of integers, I use a jingle that I borrowed from a fellow math teacher. It is to the tune of — RowRow, Row Your Boat.” The words are as follows:

Same signs, add and keep.  
Different signs, subtract.  
Keep the sign of the highest number,  
And you'll always be exact.

Another jingle I use that is to the tune of a familiar song helps remember a short-cut for subtracting integers. We sing this to the tune of Aretha Franklin's —Chain of Fools.” The students really enjoy dragging out the words to make it sound like Aretha would. The words are as follows:

Keep change, change  
To subtract...



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Even more beneficial is when the students make up the songs themselves. After using the two songs above, a group of students asked me for a song about multiplying and dividing integers. When I told them I did not have one, they asked me if they could create their own song and came up with the one below to the tune of Black Sabbath's "Iron Man."

If the signs are the same,  
Then the answer is positive.  
If the signs are different,  
Then the answer is negative.

I highly recommend allowing the students to create songs. This generates even more excitement and gives them a sense of ownership. It also allows them to show understanding of concepts in a fun, non-threatening way.

Math jingles are excellent memory devices. There are several times I have noticed students mouthing the words to one of their math jingles while working on an assignment or taking a test. Consider how often adults will hum or sing —"The ABC Song" to themselves when alphabetizing something.

If you are not comfortable writing jingles or songs, or allowing your students to create them, there are many sites on the Internet that have done the work for you. Two examples are listed here:

[www.mathwire.com/music/music.html](http://www.mathwire.com/music/music.html)

[www.songsforteaching.com/mathsongs.htm](http://www.songsforteaching.com/mathsongs.htm)

Using jingles in the math classroom has many benefits. First of all, the students love it. They enhance student learning by addressing different learning styles. Jingles are also useful for helping students commit things to memory. Consider having your students sing and write jingles and reap the benefits of this simple strategy.





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## ROLL UP THOSE SLEEVES

By Cindy Hayes  
Mathematics Coordinator  
Washington County Schools



We are in an age of constant change. Keeping up with change is a daily struggle. When I think of hard workers, the first thing that comes to my mind is seeing people rolling up their sleeves and getting dirty. It's time to roll up our sleeves and get dirty! Keeping up with the change is not going to happen by observing. It is going to require us to get involved and move with the changes. We can't just watch it go by any longer. In the education world, our students need us to help them prepare for even a faster pace world than we have ever experienced.

Teaching mathematics is not necessarily an easy thing to do. We must motivate our students to want to learn the things we want to teach them. We need to bring quality instruction into the classroom that will promote active engaged learners of all abilities in the problem-solving realm. It is no longer effective to teach at the recall level. To keep up with the rigorous state standards and the ever growing economy, students must be able to think as problem solving machines! We need to prepare them for a world that is beyond our expectation. Creating an environment that engages meaningful, hands-on and authentic, high-order learning experiences is a must. Students must not only learn, but understand it and apply it to their world. Yes, it takes a lot of thought, planning and resources and this is where rolling up those sleeves comes into play. The three R's are just not enough in the real world. People are required to obtain more complex skills than ever before, as well as being able to think for themselves in problem solving situations.

Lastly, another thing I remember about watching people rolling up their sleeves and working is that they had a satisfied look upon their face. They enjoyed observing the harvest of what they reaped. We have two choices, ignore the changes and hope they pass us by while our students suffer or roll up our sleeves and make it work! Enjoy the harvest that you reap! Prepare your students for the ever changing world!

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## USING DICE TO FOSTER BASIC MULTIPLICATION SKILLS

By Niki Combs  
West View Elementary School  
Washington County Schools, Grade 5



As I began my first year of teaching, I had the perfect dream that a majority of my 5th grade students had already mastered their multiplication facts. I was in disbelief when I graded the students' first multiplication test. Out of about 60 students, maybe 20 of them knew all of their facts 1 through 12. At this moment, I realized that I had to find an activity that would help my students memorize their multiplication facts. Without this basic understanding, I knew that my students would fall between the cracks.

I began searching through old Scholastic Instructor magazines and to my surprise, I was not the only teacher in this world that was struggling with this problem in the classroom. I found a multiplication activity that I knew my students would love. This activity involves using dice, either 6-sided or 12-sided (Dodecahedron) dice, to learn basic multiplication skills. The activity is called the "Multiplication 500 Race."

Students pair up, and take turns rolling two dice at a time. The multiplication problem will come from the two numbers on the dice that they have rolled. For example, if a student rolls a 2 and a 6 then their score will be 12 points. The goal of this game is to roll the dice, get a product, and keep adding the new product to the products from each go around. The first student to reach 500 points wins the game.

So, I tried this activity with my students and realized that the students enjoyed the game. My main concern was, "Would this activity really help foster multiplication skills for my students?" When I gave the next multiplication facts test, I did not immediately see major results; however, my students would constantly ask to play the "Multiplication 500 Race" every day. I began playing this game with my students almost every week. By the next time that I gave another facts test, I started to see a small progression in their overall scores. I played this game almost every week throughout the year and the gains my students made were remarkable. Students with low scores, mastered, or came close to mastering their multiplication facts by the end of their 5th grade year. I was amazed that an activity, so simple, could leave such a lasting impression on my students.



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## UPCOMING CALENDAR DATES



### UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS

- Tuesday, October 12, 2010  
Ross N. Robinson Middle School, Kingsport, TN
- Monday, November 8, 2010  
Sullivan North High School, Kingsport, TN
- Monday, February 7, 2011  
Church Hill Intermediate School, Hawkins County, TN
- Tuesday, March 8, 2011  
Indian Trail Middle School, Johnson City, TN
- Monday, May 2, 2011  
Bristol City Schools, TBA



### NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS 2010 REGIONAL CONFERENCES AND EXPOSITIONS

- October 7—8, 2010  
Denver, CO
- October 14—15, 2010  
Baltimore, MD
- October 28—29, 2010  
New Orleans, LA
- 2011 RESEARCH PRESESSION  
April 11–13, 2011  
Indianapolis, IN
- 2011 Annual Meeting and Exposition  
April 13—16, 2011  
Indianapolis, IN



### TENNESSEE MATHEMATICS TEACHERS ASSOCIATION

- TMTA Fall Conference  
September 24—25, 2010  
University of Tennessee, Martin



### SOUTHWEST VIRGINIA COUNCIL OF TEACHERS OF MATHEMATICS

- Annual Meeting  
September 11, 2010  
Virginia Highlands Community College  
Any K-16 teacher of mathematics is welcome to attend. New this year will be various vendors showcasing textbooks and educational products. For registration information please go to [www.mcs.uvawise.edu/svctm](http://www.mcs.uvawise.edu/svctm).

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing —Math Perspectives” series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens, Newsletter Editor.***

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# UETCTM

## Membership Application



***Mail completed form to:***

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***Membership Fee: \$10***  
***Payable to: UETCTM***

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## MATH FUN

Christopher entered a marshmallow eating contest at the county fair. Determined to win, Christopher went into training for 6 days. Each day he ate 4 more marshmallows than the day before.



Christopher ate 114 marshmallows while in training. How many marshmallows did he eat each day?



**UETCTM MEETING**  
Tuesday, Oct. 12, 2010

**Ross N. Robinson Middle School**  
1517 Jesse Street  
Kingsport, TN 37664  
423-378-2200

### Meeting Agenda

- 4 p.m. Refreshments
- 4:30 p.m. Business Meeting
- 5 p.m. Programs

- 1/4 Alicia Deal, K-5, "What a Deal!" Develop skills across the curriculum. Participants receive a interdisciplinary games.
- 2/4 Amanda Cole & Pam Stidham, 5th grade, "How Sweet It Is!" Orthogonal views.
- 3/4 Chaka Dorcean, 6-8, "Scavenger Hunt." Mathematical scavenger hunt.
- 4/4 Scott Reis, 6-12, "Circle Investigations." Hands-on activities to find the area of circles.

**BE READY TO NOMINATE AND VOTE FOR A NEW PRESIDENT-ELECT**



# UETCTM News

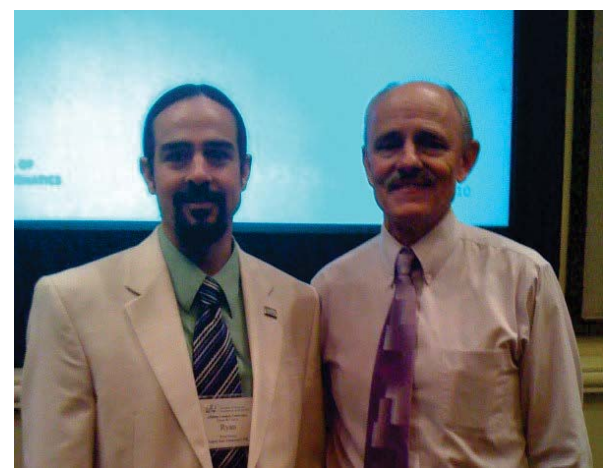
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## *A message from your new President*

*T*hank you for the great turn-

out at the first meeting of the school year at Daniel Boone High School. Your support of our council and your peers shows the dedication we have come to be known for in Upper East Tennessee.



**Ryan Nivens, Ph.D.**  
**Assistant Professor, Mathematics Education**  
**Department of Curriculum and Instruction**  
**Center of Excellence in Mathematics and Science Education**  
**East Tennessee State University**  
*with NCTM President Mike Shaughnessy.*

The presentations by Lynn Whitaker, Denise Cox, Cindy Hayes, Lisa Armentrout, Amy Rigsby, and Tina Hill were very entertaining and informative. I walked into one session just in time to dance the Macarena while skip counting. I also enjoyed a few minutes after a session to discuss organic gardening and bread making with Scott Reis and Kris Krautkremer. I look forward to many other lesson overviews in the upcoming months as well as time to get to know my fellow mathematics educators.

The first nine weeks of the school year have sped by quickly, and I am confident that the students in our region have enriched their math capabilities due to the outstanding perseverance of dedicated teachers such as you. I would like to hear any feedback or challenges you have faced this year in your curriculum or daily lesson plans.

Please keep in mind the annual TMTA meeting that we are hosting next fall. We need volunteers in various capacities, as well as opportunities to present your favorite lessons, projects, and teaching strategies. I would like to see a



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minimum of one lesson presentation from each county and city system in our region. Let's showcase how we are motivating students and giving them the skills needed to succeed at higher level mathematics!

Due to the work and coordination required to host a state meeting, we will not be having our monthly meetings in the Fall of 2011, but we will still communicate via our

- ⇒ [Monthly Newsletter](#)
- ⇒ [New Wiki Space!](#)
- ⇒ [UETCTM Webpage](#)
- ⇒ [Facebook Page](#)

Please let me know if you have any questions, comments, or concerns.

Sincerely,

*Ryan Nivens*

## MATH TRIVIA

1. Why should you never mention the number 288 in front of anyone?
2. Which weighs more? A pound of iron or a pound of feathers?
3. How is the moon like a dollar?
4. What is alive and has only 1 foot?
5. When do giraffes have 8 feet?
6. What coin doubles in value when half is deducted?
7. What is the difference between a new penny and an old quarter?
8. If you can buy eight eggs for 26 cents, how many can you buy for a cent and a quarter?
9. Where can you buy a ruler that is 3 feet long?
10. If there were 9 cats on a bridge and one jumped over the edge how many would be left?
11. If you take three apples from five apples, how many do you have?



**ANSWERS ON PAGE 15**





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## TAKING MATH OUTDOORS

By Scott Reis  
Dobyns-Bennett High School  
Kingsport City Schools, 9th Grade



Adolescents are spending less time outdoors than in previous generations. (Lidberg, 2007) This is due to a variety of factors including busy and structured lives that reduce free time, decreased access to natural spaces due to development, greater focus on electronic activities, and safety concerns associated with unsupervised time away from the home. (Clements, 2004; Lindberg, 2007) Why does this matter? If, as the research suggests, adolescents are spending less time in natural environments, what does this mean for adolescents? What are the implications of adolescents spending less time in natural environments and more time on school, work, computers, and TVs?

Natural environments have several positive outcomes on adolescents, including stress relief (Ulrich, 1983), positive well-being and health (Doucette, 2004), and improved cognitive functioning (Berman, Joindes, & Kaplan, 2008). Natural environments also have a restorative affect on individuals of all ages (Kaplan, 1995).

Current research shows the benefits that natural environments can provide. However, based on current literature, one is only able to infer the implications of spending less time in natural environments. There is little to no research that focuses specifically on the implications of adolescents spending less time in natural environments. While natural environments appear to be a valuable resource for individuals of all ages, it is difficult to compare the benefits of spending time in natural environments with the benefits of other activities; although, many individuals may find that a leisurely walk through the park or even a gaze out of the window can help them stay attentive to the task at hand.



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## READING AN ANALOG CLOCK

**By Crystal Peak**  
**Avoca Elementary School**  
**Bristol Tennessee City Schools, 3rd Grade**



I often find that, in third grade, my students still struggle to read the analog clock in the classroom, especially at the beginning of the school year.

In order to help them and to increase their familiarity with analog time, I create our class schedule with a clock picture beside each item that shows what time we will do each activity. This way, students can learn to recognize the times when they see them, and it cuts down on the questions that I get asking if it is time to go here or there.

By the time we get to our unit on telling time, the students have a good head start at reading analog clocks.





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## MATH FOOTBALL

By **Tim Smith**  
**Vance Middle School,**  
**Bristol Tennessee City Schools**  
**7th & 8th Grades**



An on-going review is crucial for students to retain what is being taught. One game I have found to be successful is math football. I use it the first half of the school year throughout the college football season. I have found that students who are not very athletic as well as students who do not like sports in general seem to enjoy this activity. It is a game in which any student can feel as if they are as athletic as the biggest jock in the class and learn math at the same time.

This activity can be interactive with all class periods by having them compete against one another for the Math Championship. The game runs as follows:

1. Have a model football field or draw one on the board
2. Have each class come up with a team name
3. Break the students into groups of 2-3.
4. One student from each pair comes up and draws out a football scenario (one at a time, of course); e.g., 10 yards, 5 yards, etc. If they draw out a fumble or interception they must go on defense until they answer four consecutive questions to get the ball back.
5. Once the student pulls out the scenario, they are presented with a math problem. If they solve it correctly they get the yardage. If they answer incorrectly they lose a down. Once it is 4<sup>th</sup> down they can go for it or punt.
6. If a team scores a touchdown the person who scored must throw the ball through the field goal post for the extra point.
7. They must then go on defense and earn their way back to offense by answering four questions in a row correctly. They can also get the ball back by pulling out a fumble or interception and answer the question correctly.
8. The total score is kept weekly. At the end of the semester, the two top teams play in the Championship Bowl game. (You may vary this and have a play-off game and use the total scores as seeding)
9. The winning team gets their team name engraved on a plaque and a party of some kind.



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This is a great game to play on Fridays as a way to review what has been taught throughout the week and throughout the year. Typically, the students will be able to work through 20-25 problems in a given class period. I usually use 15 problems to cover the topic I am currently teaching and 10 problems covering other topics that have been previously taught.

5 yards 5 yards 5 yards 5 yards  
 5 yards 5 yards 5 yards 5 yards  
 5 yards 5 yards 5 yards 5 yards

10 yards 10 yards 10 yards 10 yards  
 10 yards 10 yards 10 yards 10 yards

20 yards 20 yards 20 yards 20 yards

25 yards 25 yards

50 yards

Fumble Fumble Interception  
 Interception

5 yard sack 10 yard sac



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## OH THE QUESTIONS WE ASK OURSELVES!!

By **Rebecca Faidley**  
**Anderson Elementary School**  
**Bristol Tennessee City Schools, 5th Grade**



**D**id I explain that well enough? Do my students understand? Have we practiced this skill enough? Will my students know this material next week? What else can I do to help them remember this? These are some of the questions we as teachers ask ourselves every day. We want to do the best job we can do, we want to have the best students we can have, but most importantly these days we want the best test scores we can get. What are we doing to our students? Is this the best way to educate our students for the future?

Having been in education for over thirty years, I have seen the pendulum swing back and forth a couple of times. In the eighties we did —Basic Skills First—. These were similar to the SPIs of today. We were given the basic skills that students should learn in each grade level and those were emphasized and tested. The big difference in what we did then and what we are doing today is that we were not as concerned about test scores as we were the fact that students were actually getting the skills. Today we teach skill out of context in most circumstances and just hope students can remember them until they are tested on them.

We teach students skills that they have no foundation for; therefore, the skill really makes no sense to them in most circumstances. We give the students little practice once we have taught the skills because we have no time, and we have to keep up with the pacing guide.

The most important question we should be asking ourselves is —Are we really doing what is best for our students in the long run?— We are doing a lot of good things in education, but I feel the need to use test scores as the only indicator of success is a failure of our educational system.

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## BUILDING A GOOD FOUNDATION

**By Lori Thacker**  
**Holston View Elementary School**  
**Bristol Tennessee City Schools, 4th Grade**



 elementary school teachers have the monumental task of laying the foundation for a child's mathematics career. Even in Kindergarten, elementary school teachers are beginning to establish practices and habits that will continue on with a student through out their life. Don't believe me? How many times have you done an algorithm because that is the way one of your teachers in third or fourth grade assured you that you should do it and you didn't need to question it.....just do it? When you think about it, how many processes can you think of that you don't know why it works....it just does?

As an elementary school math teacher, it is your charge to teach your students math, but more importantly, to help your students understand why they do what they do. Concrete experiences are important at every elementary school grade level. The more concrete or real you make your students' math experiences, the more they will understand the process that is behind the algorithms. This is your most important job: understanding.

There are lots of ways to provide concrete experiences for your students. Manipulatives are a concrete way to help your students understand abstract concepts. Drawing pictures is also an excellent way for students to work out problems that are too abstract for them to grasp. By drawing out pictures, students can see what is actually happening in the problem and it makes the problem more concrete. Another strategy is to have students break problems that are too difficult down into smaller more manageable pieces (as in multiplication or division). Having students use different strategies to enhance their understanding gives them lots of opportunities to –get it.”

Elementary school teachers need take the time to help ensure that students have a solid understanding of mathematical concepts. Once teachers lay a good foundation for mathematical concepts, students will build on it throughout their mathematical career. The better the foundation, the farther the student will be able to go in mathematics.



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## THE MISSING LINK

By Tara O'Dell  
Fairmount Elementary School  
Bristol Tennessee City Schools, 5th Grade



What teaching strategies are you using in the classroom? As a new teacher, being hired fresh out of college, I wanted to use all the techniques we discussed in my college courses. I wanted to have the students actively engaged in each lesson by implementing hands-on activities, incorporating music and movement, creating games, and keeping them motivated throughout the learning process.

I am currently entering my third year of teaching and feel pretty confident that I use these strategies often in my classroom. However, I also find myself lecturing to the students about various algorithms needed to master specific state standards. As I teach these algorithms I am constantly explaining why we use them and why they are important in mathematics. Still, I feel as though students never fully understand the reason they are using a certain formula or following specific steps in order to solve a problem. There seemed to be a missing link and I struggled trying to figure out what it was.

This summer I have been fortunate enough to become part of a program called Mathletes. For two weeks I attended classes with other teachers in my community. I was not sure what to expect when I committed myself to this program. I figured I would learn a few new strategies and teaching techniques to use in the classroom, but the program offered so much more than I expected. I have been able to form some wonderful relationships with other teachers and create an amazing set of resources. The best part about Mathletes is that I truly believe I found a solution to my missing link: using meaningful manipulatives in the classroom.





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My eyes were opened to the fact that manipulatives give visual reasoning for the algorithms we are learning in the classroom. One of my favorite activities is using base ten blocks for division. You can explain to students that division is the process of taking a large group of items and splitting them into smaller groups where each group has an equal number of items. However, it makes more sense to let students have their hands on base ten blocks and discover how to place them into equal groups. In this case, manipulatives become meaningful in the classroom and students make their own conclusions about a process. This allows students to gradually move from concrete to abstract methods of learning and they finally understand the reasoning behind algorithms.

I am certainly looking forward to beginning my third year of teaching with this new approach. I will actually pull the manipulative kits out of the closet and use them for meaningful learning purposes. I am very thankful for being given the opportunity to attend Mathletes and even more grateful that the program allowed me to find my missing link!



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## MOTIVATING STUDENTS THROUGH TECHNOLOGY

By **Mary Jean Harrison**  
**Fairmount Elementary School**  
**Bristol Tennessee City Schools, 5th Grade**



The role of the students of today is more exciting and challenging than in years past. Students can actively make their own choices on how to obtain information. They no longer have just teacher lectures and textbooks. They are exposed to a wealth of knowledge utilizing a variety of technological tools.

The teachers' roles have significantly changed also. They are no longer the providers of information but stand as facilitators to assist students by giving suggestions and support.

Students are motivated by technology because they feel less threatened, and it enhances self confidence. They like to take an active role in mastering technology-based tasks and this boosts their self esteem. Technology provides additional strategies in which students can demonstrate what they understand.

Students acquire an amazing wealth of skill through the many varieties of technological devices and software for computers. It is empowering to students to learn to embrace technology and use it in ways to associate with real world situations. Students learn to collaborate with each other and work cooperatively, sometimes giving each other pats on the back for a job well done. This certainly could carry over into the regular classroom activities.

The students of today have an abundant wealth of opportunities in multimedia products generated by technology. We need to definitely keep our sights set high for keeping technology based curriculum alive and well in our classrooms.



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## ACCELERATING IN MATH

**By Julia Mitchel**  
**Avoca Elementary School**  
**Bristol Tennessee City Schools, 4th Grade**



**R**elying on a variety of tools to extend and practice mathematical skills taught, the Accelerated Math program is an effective approach that allows students to work at their own pace at a variety of levels on various skills. Its sister program is the Accelerated Reader program that is already widely used in the Tri Cities area which provides enhancement and practice in students reading abilities and comprehension.

The Accelerated Math program is tailored to the students' individual skill level allowing for review and extension of skills. The Computer generated practices and assessments are determined by the students introductory STAR Math test as well as the teacher's formal and informal assessments of students mathematical knowledge.

Using Accelerated Math gives students the opportunity to complete assignments and receive immediate feedback. By getting immediate results, teachers can provide instant praise and seize the opportunity to have individual discussion on missed problems/skills and offer peer tutoring to students of different academic abilities.

This program is user friendly and has shown to improve retention of skills taught, as well as improves students' math scores. The independence this program fosters is another plus for learners. It has created a boost in students' self-confidence and allowed children to find a new way to enjoy math!



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## NUMBER PATTERN GAME

By Jana Baker  
Avoca Elementary School  
Bristol Tennessee City Schools, 3rd Grade



To practice figuring the continuation of number patterns and the rule that goes along with each, we play a game. All students stand behind their desks and I give them a starting number and the rule to the pattern. We go around the room continuing the pattern.

If a student should give a wrong answer, they must sit down. The last student standing is the winner. The rule can start out as easy as +2 or get more difficult, such as +1, -3,  $\times 2$ , depending on the ability of your students.

This is really a fun way to reinforce number patterns as well as math facts.

## ANSWERS TO MATH TRIVIA

1. Because it is too gross ( $2 \times 144 =$  two gross).
2. Both weigh the same.
3. They both have four quarters.
4. A leg.
5. When there's two giraffe.
6. A half dollar.
7. 24 cents.
8. 8.
9. At a yard sale.
10. None—they are copycats.
11. Three apples.





# UETCTM News

## UPCOMING CALENDAR DATES

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### UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS

Tuesday, October 12, 2010  
Ross N. Robinson Middle School, Kingsport, TN

Monday, November, 8, 2010  
Sullivan North High School, Kingsport, TN

Monday, February 7, 2011  
Church Hill Intermediate School, Hawkins County, TN

Tuesday, March 8, 2011  
Indian Trail Middle School, Johnson City, TN

Monday, May 2, 2011  
Bristol City Schools, TBA



### NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS 2010 REGIONAL CONFERENCES AND EXPOSITIONS

October 7—8, 2010  
Denver, CO

October 14—15, 2010  
Baltimore, MD

October 28—29, 2010  
New Orleans, LA

2011 RESEARCH PRESESSION  
April 11– 13, 2011  
Indianapolis, IN

2011 Annual Meeting and Exposition  
April 13—16, 2011  
Indianapolis, IN



### TENNESSEE MATHEMATICS TEACHERS ASSOCIATION

TMTA Fall Conference  
September 24—25, 2010  
University of Tennessee, Martin

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing —Math Perspectives” series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens, Newsletter Editor.***

### Newsletter Editor

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# UETCTM

## Membership Application



***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_  
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Home Phone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_  
\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater Tri-Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



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## MATH FUN

You are on an island and there are three crates of fruit that have washed up in front of you. One crate contains only apples. One crate contains only oranges. The other crate contains both apples and oranges.

Each crate is labeled. One reads "apples", one reads "oranges", and one reads "apples and oranges". You know that NONE of the crates have been labeled correctly - they are all wrong.

If you can only take out and look at just one of the pieces of fruit from just one of the crates, how can you label ALL of the crates correctly?

**SOLUTION ON PAGE 8**



### UETCTM MEETING Tuesday, March 8

**Indian Trail Middle School  
307 Car-Mol Drive  
Johnson City, TN 37604  
423-610-6000**

#### Meeting Agenda

- **4 p.m. Refreshments**
  - **4:30 p.m. Business Meeting**
  - **5 p.m. Programs**
- 1/3* Elementary (Grades 2-5): How can sharing **Best Practices (Professional Collaboration)** increase student achievement?— Stephanie Mann and Dianna Cox (Room 422)
- 2/3* Middle (Grades 6-8): What are the key **Learning Focus Strategies** for teaching math and building student success? — Jennifer Moore (Room 425)
- 3/3* High (Grades 9-12): Why are **Word Problems** are so much easier to explain than “the others” for Algebra II Students? — Guy Mauldin (Room 424)





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## *A message from your President*

Spring is a time for all teachers to finalize their preparations for the TCAP! While working with area teachers I have met two distinct groups: those that get very anxious about the state tests and those that are relaxed. My hope is that whatever feelings the test brings to you that you will trust your teaching. Remember, it is the entire year of teaching that kids need to draw on. Trust your teaching and your students.

Three things you should plan to attend in the coming months:

- 1) The NCTM Annual meeting in Indianapolis in April
- 2) The last meeting of the UETCTM in May
- 3) The fall meeting of the TMTA

Sincerely,

*Ryan Nivens, Ph.D.*

Assistant Professor  
Center of Excellence in Mathematics and Science Education  
Dept. of Curriculum and Instruction  
Claudius G. Clemmer College of Education  
East Tennessee State University



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## STEPPING OUTSIDE THE BOX

**By Allyson Morton  
Haynesfield Elementary  
Bristol Tennessee City Schools, 4th Grade**



Teaching outside of the box has been a recurring theme for me this summer. We all tend to get ourselves into a routine when it comes to just about anything in our lives. In teaching, I've discovered it's very easy to fall into a pattern resulting in the same type of teaching over and over again. This results in lessons that are not very exciting for neither the students I am instructing or for me.

The first event which occurred this summer to motivate me into rethinking my teaching practices was visiting The Ron Clark Academy in Atlanta, Georgia. I was able to encounter a different style of teaching and reaching out to the students. I saw and felt the energy the teachers provided and how it affected the students' enthusiasm for learning. As soon as I walked through the threshold of their school, the entire atmosphere was uplifting and positive. The staff and students greeted me and my fellow teachers singing and dancing. I had never experienced any school quite like it.

For the next several hours, I gained first-hand knowledge of how to become more creative by taking music, instruments, technology, and the students' interests and using it in a manner that made learning more interesting and fun. I knew that teaching students through music was effective, but I never realized how intertwined it was with the curriculum. For example, we learned the pattern of Blues music, and then we developed our own Blues song and sang it to the class. It gave me another perspective about not only how to become a more effective teacher, but also to do it in a style which would promote creative thinking for the students by giving them more open-ended assignments.



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The second event to occur this summer which reinforced the idea of thinking and teaching outside of the box was attending the Eastman Mathletes Workshop at East Tennessee State University. There I was awakened to the realization that I was teaching in a method called “prompt education”. I was not helping my students to think creatively or critically. I was instructing my students to learn the process of solving problems but not really connecting the concepts to make more sense to them. I was prompting them to do something without giving them the opportunity to discover it for themselves. My way of teaching was archaic and I could never understand why the students did not “get it.”

My mission for this upcoming school year is to challenge myself to be more creative and allow my students to realize more on their own and to get away from this outdated form of teaching I have been practicing. I do not expect this journey to be easy and I realize I will definitely not be perfect, but I know that during the process I can become a more effective teacher. I also hope to excite and encourage other teachers in my school to step outside of their boxes and to show them some of the techniques to which I have been exposed this summer. I feel that in order for our students to comprehend the skills we are required to teach them, we all need to step outside of our comfort zones and realize there are always better ways to teach the curriculum.



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## VERTICAL MEETINGS

**By Ana Buckmaster  
Haynesfield Elementary  
Bristol Tennessee City Schools, 5th Grade**



*M*ost teachers will agree that being on the same page benefits students! Flexibility and being open minded are descriptions that should fit all teachers. When teachers work cooperatively, the teaching is more effective and the learning is enhanced.

At our school we have vertical math meetings, which means, math teachers in grades 3<sup>rd</sup>-6<sup>th</sup> meet periodically to discuss what is going on in their classroom. During the meetings we share ideas and methods utilized in the classroom. We discuss ways to build foundations and address any deficiencies. These meetings have created a close bond between us since it gives us an opportunity to share frustrations and triumphs.

Vertical meetings is a wonderful way to stay in touch with the needs of students who will be coming to you and for making sure the ones you send on are properly prepared for the next grade level.



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## THE SINGAPORE APPROACH TO PROBLEM SOLVING

By Beth Belcher  
Holston View Elementary School  
Bristol Tennessee City Schools, 5th Grade



*P*roblem solving exercises are the dreaded part of any math curriculum! However, problem solving prepares our students for real life skills long after graduating from our schools.

Knowing the importance of this aspect of the curriculum, I was amazed when first exposed to model drawing used in Singapore Math, a curriculum geared to problem solving and developed in 1981 in Singapore. The use of bar models in teaching problem solving is regularly used to show and teach one's thinking process in solving an arithmetical problem. This problem solving method can be used across different levels and as a link to algebra at the secondary level. Using this visual method gives teachers the ability to teach students with greater understanding.

Simply putting visual emphasis to a problem while breaking it into parts enables students to follow sequential steps and experience success while solving problems in math class and later in real life situations.

Singapore gained world wide recognition when ranked first in mathematics in 1995 and again in 1999. Knowing this, it might be beneficial to use this bar model method while teaching problem solving in your math class!



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## Using Graphing Calculators and Spreadsheets to Generate Trend Lines

By Chris Estep  
Tennessee High School  
Bristol Tennessee City Schools, 9th Grade



One of the skills that is required by students taking the Algebra I end of course exam is to take a data set, determine the trend line or line of best fit, and make predictions using the equation of this line. By using the TI-83 or TI-84 calculator this should be a fairly easy task.

Students should begin by entering the data set into the calculator. This can be accomplished in the following way:

1. Click on the STAT button and select 1: Edit.
2. Delete any data in the columns labeled  $L_1$  and  $L_2$ . Enter the new data in those columns. The independent variable will be in the  $L_1$  column and the dependent variable will go in the  $L_2$  column. Make sure that the number of elements in each column is the same.
3. Go to StatPlot ( $2^{\text{nd}}$  Y=) and select 1: Plot. There are several options that allow for a scatter plot. First the "On" button must be highlighted. Also the "XList" needs to be  $L_1$  and the "YList" needs to be  $L_2$ . This would change if your data is entered in other lists besides  $L_1$  and  $L_2$ . The "Mark" can be chosen to suit the plot.
4. The next step is to graph the scatter plot. There are several ways to accomplish this. Simply pressing the button "Graph" will work if the Window parameters have been set up correctly. Another method is to select "Zoom" and press either 9: ZoomStat or 0: ZoomFit. This will generate the scatter plot on the calculator screen.
5. In order to see the "Line of Best Fit" select STAT. From that screen move the cursor to CALC at the top of the screen. Select either 4: LinReg(ax+b) or 8: LinReg(a+bx). This will generate the same equation, just in a different form. Once selected, "LinReg(ax+b)" appear on the view screen. Press the ENTER key and the something similar to the following will appear:

$$y = ax + b$$

$$a = .1403333333$$

$$b = 1.171111111$$

This indicates that the equation of the line of best fit in written in slope intercept form would be:

$$y = 0.1403333333x + 1.171111111$$



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6. It is important to know how well this equation fits the data. In order to determine this fact a feature must be turned on to give this level of confidence. To select this feature go the Catalog (2<sup>nd</sup> 0). Scroll through the catalog options and select "DiagnosticOn" and click on ENTER twice. Now repeat step 5. The information will be the same with the addition of two new values:  
 $r^2 = .980893964$   
 $r = .9904009107$   
The "r-value" is known as the correlation coefficient. It has a value of between -1 and 1. A value of zero indicates the data has no correlation while a value that is close to either -1 or 1 indicates a high level of correlation. The "r<sup>2</sup>-value" is known as the determination coefficient. It is found by squaring the value of r. The value is between 0 and 1. An r<sup>2</sup>-value of 0.9809 means that 98.09% of the variation in y can be explained by the linear relation between x and y, in other words, the trend line.
7. It is possible to graph the scatter plot and trend line on the same graph. There are two ways to enter the equation of the trend line. In either case select the "Y=" button. One way is to simply input the equation as it is written in step 5. The other way is to select the "VARS" button, then select option 5:Statistics, move the cursor on the top of the screen to "EQ", and select option 1:RegEQ. This will automatically input the same equation from step 5. Now when the "GRAPH" button is pressed the scatter plot along with the trend line appears.
8. The equation of the trend line can be used to make predictions for data that would not appear on the graph.

The data that was used to determine the trend line above was found in the Tennessee Algebra I End of Course Practice Test. The problem is continues on the next page.

## MATH FUN—SOLUTION

Take a piece of fruit from the "apples and oranges" crate. If it's an apple then you know that is the "apples" crate since ALL THE CRATES ARE LABELED INCORRECTLY. This means the crate marked "apples" must be "oranges" and the crate marked "oranges" must be "apples and oranges".

[www.mathisfun.com](http://www.mathisfun.com)



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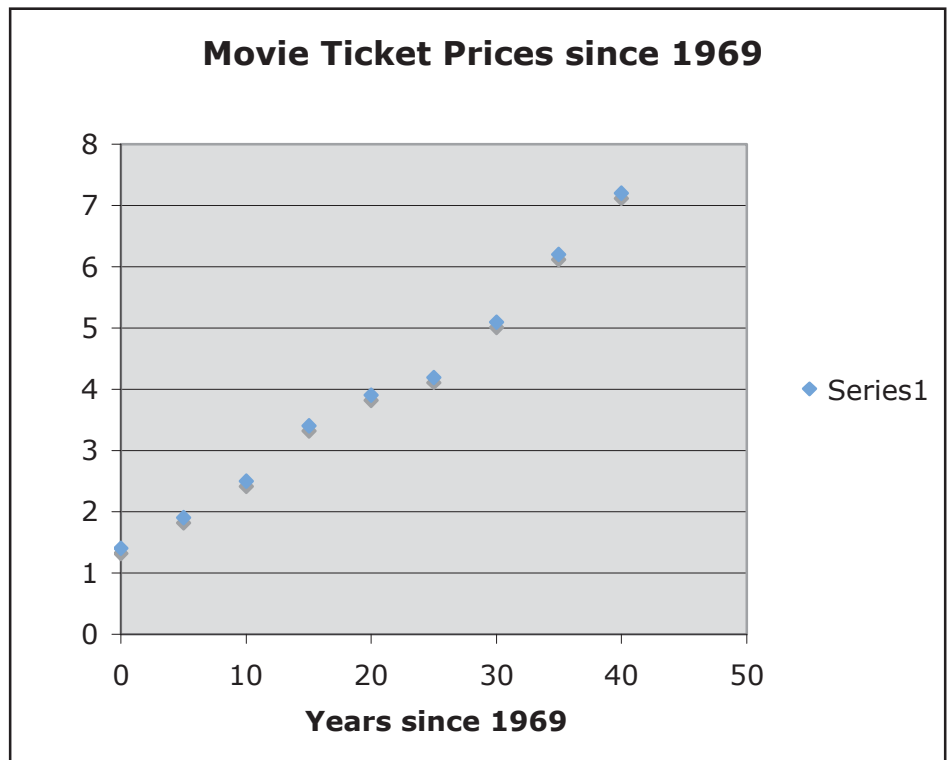
In order to predict the price of the movie ticket in 2024, use the equation of the trend line,  $y = 0.1403333333x + 1.171111111$ , where  $y$  = Average Ticket Price and  $x$  = Number of years since 1969. Since 2024 is 55 years since 1969, 55 would be used for  $x$ . The equation  $y = 0.1403333333(55) + 1.171111111$  yeilds a value of 8.889444444 or \$8.89. That answer is closest to the answer H.

Another method for solving this problem would be to employ Microsoft Excel. The following procedure will produce similar results.

1. Open Excel (or a similar spreadsheet program).
2. Create a table of values similar to the following:

| Years since 1969 | Average Ticket Price |
|------------------|----------------------|
| 0                | 1.4                  |
| 5                | 1.9                  |
| 10               | 2.5                  |
| 15               | 3.4                  |
| 20               | 3.9                  |
| 25               | 4.2                  |
| 30               | 5.1                  |
| 35               | 6.2                  |
| 40               | 7.2                  |

3. Highlight the date from 0 to 7.2.
4. Create a scatter plot of the data by selecting "Insert", then select "Chart", select "XY (Scatter)", and finally select the first choice. Follow the prompts to select the title, x-axis label, and y-axis label. The scatter plot will be similar to the following:





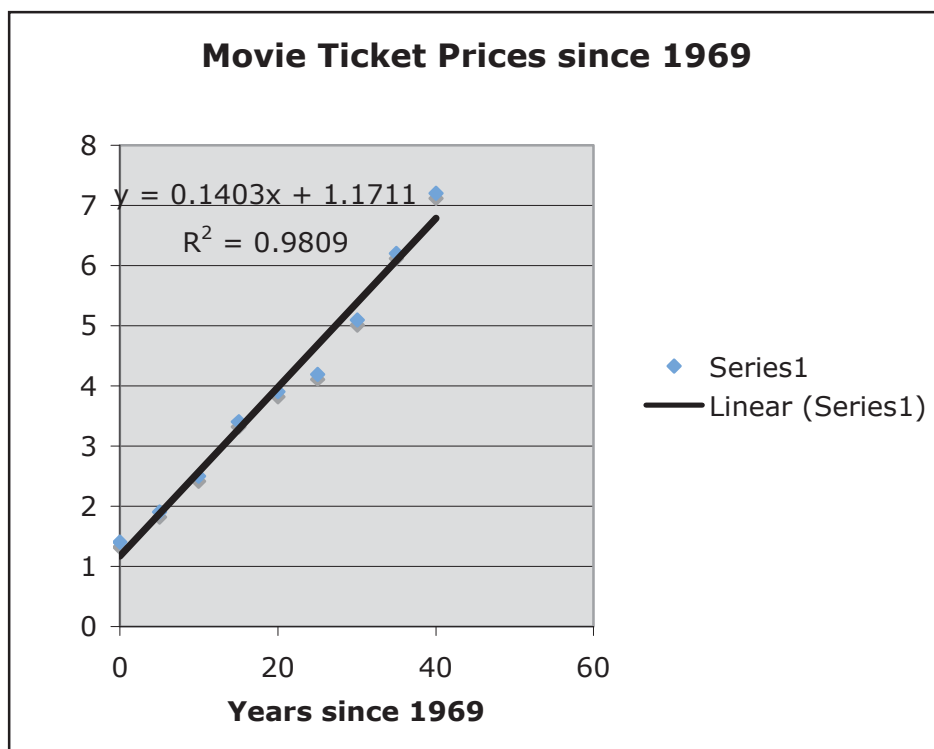


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5. The next step is to add the trend line, equation of the trend line, and determination coefficient. Select one of the points on the scatter plot and click on the point. All of the points in the scatter plot will be highlighted. Select the “Chart” button in the menu and click on “Add Trendline”. Select the “Linear” trendline. In the “Options” tab check the boxes for “Display the equation on the Chart” and “Display the R-squared value on the Chart”. This will produce a new chart similar to the one shown below.



6. The data used in determining the scatter plot is the same data from above. To determine the value of y, simply replace x with 55.

$$y = 0.1403(55) + 1.1711$$

$$y = 8.89$$

Either method yields the same answer. It is important that students be able to work with data using either a graphing calculator or a spreadsheet program. Most college laboratory sciences require a general knowledge of spreadsheets.



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## STRENGTHENING NUMBER SENSE

**By Cynthia Johnson  
Bristol Tennessee City Schools**

Most teachers realize the importance of keeping students actively working to review basic facts, word problems, geometry, fractions, ratios and measurement.

We often provide students with various handouts from a variety of companies. Recently, I attended a strategy-based math workshop presented by Dr. J. Michael Dugan that suggested warm-up activities that promote number sense. The following is a sample of some possible questions:

- My number is \_\_\_\_\_
- What is 300 more than my number? \_\_\_\_\_
- What digit is in the hundred's place? \_\_\_\_\_
- What is 1/2 of my number? \_\_\_\_\_
- Round my number to the ten's place. \_\_\_\_\_
- Is my number odd or even? \_\_\_\_\_
- Is my number prime or composite? \_\_\_\_\_
- Write my number in expanded form. \_\_\_\_\_
- Write my number in 4 different ways. \_\_\_\_\_

Questions can be adjusted for many different skill levels. Students can even take turns selecting their number for the class!



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## ACT MATH...WHAT DO STUDENTS NEED TO KNOW TO BE SUCCESSFUL?

By Deidre Pendley  
Bristol Tennessee High School  
Bristol Tennessee City Schools, 9th grade



Did you study before you took the ACT? A common response to this question from most high school students would be a simple, “No, not really.” After a decade of teaching ACT/SAT Preparation elective classes at Tennessee High School, numerous private tutoring sessions, and even developing a private ACT/SAT “Cram” Review Course, I have developed several strategies for improving ACT math scores. When working with students, my first objective is to familiarize them with specific formulas, share test-taking strategies, and then practice mathematics content from Pre-Algebra through Trigonometry.

When I ask students, “How long has it been since you have had geometry class?” most students will tell me that it has been anywhere from six months to two years. The topic with the largest percentage of questions on the math ACT is geometry. Yet, some school systems are teaching the geometry course to students as early as the eighth grade. Typically, students take the ACT for the first time during their Junior year in high school. This can create a huge gap! Many students have simply forgotten the formulas and, unfortunately for test-takers, the ACT does not provide formulas.

My most prized teaching tool for helping students prepare for the ACT Math Test is my “ACT Math Formula Sheet” which I have developed after extensive experience with a multitude of practice tests. In teaching math courses, it is certainly considered a “Best Practice” to help students discover and develop formulas to ensure a more meaningful experience. However, when preparing for the ACT, students simply must have the formulas memorized to be successful on several of the test items. This formula sheet helps students to narrow down the formulas they actually “need” to know, instead of trying to memorize every single formula within the tested topics.



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The formulas sheet consists of the following: Complementary and Supplementary Angles (Definitions), Distance and Midpoint, Slope, Slope-Intercept Form, Point-Slope Form, Slope of Parallel and Perpendicular Lines, Properties of Horizontal and Vertical lines (slope and equations), Sum of Interior Angles in Polygon, Sum of Exterior Angles in Polygon, Pythagorean Theorem, Pythagorean Triples, Circumference of a Circle, Area of the following: Circle, Rectangle, Triangle, Parallelogram, Trapezoid, Rhombus or Kite, and any Regular Polygon; Special Triangles (Label 30-60-90 and 45-45-90), Ratios to find Area of a Sector and Length of an Arc, Trigonometry (Sine, Cosine, and Tangent), Standard Equation of a Circle, Percent Proportion, Percent of Increase or Decrease, and the Quadratic Formula (However, all ACT quadratics can be solved by factoring).

After reviewing the topics included on the ACT Math Formulas Sheet, students need to become aware of several test-taking tips. If I could give students just one piece of advice it would be to SLOW DOWN! Most students are extremely intimidated by sixty questions with only sixty minutes. The questions increase in difficulty from the beginning to the end of the test, therefore, students need to take their time on those at the beginning (first 30 questions) to avoid careless errors. Students need to realize that with getting merely a little over half of the questions correct (about 32 out of 60); they can achieve the coveted scaled score of a 21 which often guarantees scholarship money!

Additional test-taking strategies include stressing the importance of drawing pictures, underlining, and back-solving. Many questions do not include diagrams, so drawing your own helps represent the question visually (especially those referring to geometric figures). Underlining important information in the test booklet is helpful in keeping the student engaged in the problem and sorting through the language of the test items. Every math question on the ACT is multiple-choice, thus, students are able to try the five answer choices in some problems in order to eliminate incorrect answers and select the one that satisfies the problem.



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Finally, and most importantly, students need to know content from math courses beginning with Pre-Algebra through Trigonometry. Several students are intimidated by the content due to the fact that when they take the test, they often have not completed a trigonometry course. Students' minds can be put to ease in finding out that typically there are only about 2-3 questions at the very end of the test (within the last 10 questions) that would require content from a course such as Advanced Algebra with Trigonometry. The most effective process in preparing for the ACT math test is to PRACTICE taking ACT math tests! After a student has simulated test taking conditions and completed a test, they can focus on those problems they are missing in order to learn the content. After learning the content for incorrect problems, students begin to recognize the "types" of problems typically included on the test.

Taking the ACT is an important step in every student's path to college. Results on this culminating test can play an integral part in determining admission to college, the requirement of "remedial" courses in college (typically below a scaled score of 19 in a particular subject), and the amount of scholarship money available. With so much on the line, students need to PREPARE for this test in advance. Math scores can be improved in several ways including memorizing and applying the appropriate formulas, becoming aware of helpful test-taking strategies, and PRACTICING taking ACT math tests in order to review the content. The investment of time in preparation for the test will certainly pay off in increased scores. When asked, "Did you study for the ACT?" the well-prepared student can be confident and reply, "Yes, I did!"



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## A LEARNING ENVIRONMENT

**By Ellan Kitzmiller**  
**Bristol Tennessee High School**  
**Bristol Tennessee City Schools, 9th grade**



Teaching is an ever evolving learning experience. I work in a school system that constantly encourages academic growth in our field and aides in our search for better and more effective ways to reach our students. My subject area is math and I have been teaching for more than 17 years. This is plenty of time to think you know it all, but then another method of approach to a particular problem comes to my attention that I have never seen before. The mind is so very complex and there are multiple ways that people logically think through a problem. It is important that we listen to our students because they could be correct in their approach even if it is nothing like the “normal” way to find the answer. This is one way that I have learned, through my students’ eyes.

Another way that I have learned is through collaboration with other teachers. I feel very blessed to have the wealth of knowledge that I have around me. Our math department is always hungry for new ideas and we do a great job of transferring knowledge with each other. We have an excellent math department of which I am proud and fortunate to be associated. I am surrounded by teachers that are committed in their field of study. Our school encourages cross-curricular learning. By interacting with other teachers, valuable insight is gained into how math is an integral part of other subject areas. This includes curriculums such as wood shop, interior design, cosmetology, chemistry, business, and art. I consider myself to be a team player and realize that I cannot do it all on my own, so having the support of everyone else makes me a better teacher.



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In the last few years I have been wonderfully overwhelmed with new technology. Wonderful because I am extremely fortunate to have the opportunity to have this technology; overwhelmed because there is so much to learn. I have gone from chalkboards to a promethean board, basic to graphing calculators, and from overhead projectors to document cameras. This technology has been a wonderful addition to my classroom. These new technologies have allowed me to help the more visual and hands-on learners in my classroom succeed. I am continually learning about these tools and utilizing them to help bring math to life for students.

The leaders in our school system have one common vision, which is to maximize our students' success, and as a result they have done a great job helping to maximize the teachers' success. They realize the importance of incorporating the expertise and support of our corporate community partners into the educational environment. The end result is to provide our students with the maximum potential to succeed by developing quality teachers, encouraging corporate partnerships, investing in innovative technologies and techniques, and creating an environment where learning is fundamental.



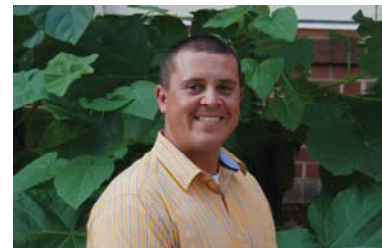
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## MAKING ACCELERATED MATH WORK IN YOUR CLASSROOM

By George Laoo  
Haynesfield Elementary School  
Bristol Tennessee City Schools, 5th grade



Now that you have the Accelerated Math (AM) program how do you deploy it in the classroom? You may have learned that jumping into it was a bad idea. I imagine it was too chaotic! Every time you turned around someone needed your help or the program did not print off a new assignment. This Article will explore several aspects of how I successfully implemented Accelerated Math in my classroom. Most of my strategies came from attending an AM seminar.

### Planning

The key to successful implementation of AM is planning. My planning starts with preparing the materials I need, creating procedures, and ending with management of the actual program. When I started the program I wanted to make sure students kept up with their work. AM really creates a large paper trail and the teacher and student must stay on top of organizing that paper. I found that a two sided folder was a great way to stay organized. I put my students name on the outside, and labeled the inside new assignment side and old assignment side. The next thing I created was a “Whoops Board” and “Whoops box.”

The whoops board is a board that hangs right beside the printer. The board has directions for those students that did not meet a score of 90% on practice. Example: If a student makes below 90% on their practice, that student must go back and rework each problem. They can seek help first in their book, then Google, then teacher. When they are done they will place their AM folder in the “Whoops Box.” The “Whoops Box” hangs right below the “Whoops Board.” When students are done with “Whoops” assignments or do not have anything else to do they should place the folder in the “Whoops Box.” That will let the teacher know without disrupting the teacher that the student needs further direction. It is important to keep a close eye on what the program is printing out for students.





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It will be a big hassle if you wait until AM time to manage student's goals. Prior to school beginning, I take 5 minutes to scan over AM records. Accelerated Math provides an excellent resource, called Classroom Status, to help identify who is excelling and who needs intervention. Prior to the school year, I create a folder which lists all of the Student Performance Indicators for the year. I assign five SPI's at a time to students. Once they have shown mastery level I will test them and assign them five more SPI's. They will continue moving until they have mastered all SPI's.

### Procedures

It is very important to have procedures in place. I take the first two weeks to review my classroom procedures for Accelerated Math. My procedures are as follows:

**Step 1** – Student picks up AM folder when Teacher announces AM time

**Step 2** – Students work on New Assignment. If no Assignment exist the student places folder in "Whoops Box."

**Step 3** – Students fill in Form number on scan card. Then they transfer their answers from test to scan card.

**Step 5** – Students go to 1<sup>st</sup> dot on floor, which is the scan card dot, with AM folder and scan card (Only 3 students up at one time.)

**Step 6** – Students scan card

**Steps 7** – Students slide down to 2<sup>nd</sup> dot, which is the printer dot, and wait for TOPS report printout. Students staple TOPS report to completed assignment. (TOPS report on top). Students wait for new assignment report.

**Step 8** - Student slide down to the 3<sup>rd</sup> dot, which is "Whoops Board/Box dot. If students receive 90% above on assignment/TOPS report that student returns to seat and complete new assignment. Once new assignment is complete repeat STEPS 3-10



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## THINGS TO REMEMBER:

If students receives below a 90% on assignment/TOPS report that student places that report in the “Done” side of folder. Student needs to wait for new assignment printout. Place new assignment in “new assignment” side of folder. Place ACCEL Folder in “Whoops” box.

If your folder is in “Whoops” box you need to work on assignment on “Whoops Board”

Teacher will review all “Whoops Folders” and meet with the student to discuss issues. Once those issues are discussed the student will return to seat and work on new assignment located in the “New Assignment” section.

If no “Whoops” issues, teacher will meet with students that show up on “Status of class Report” that are having difficulties.

Not only do I discuss the procedure with the students, I post the procedures on the wall. It is important to have your computer near the scanner, and the scanner near the printer. As I mentioned in the steps, I have 3 dots in the floor labeled 1, 2, and 3. Only 1 child can be standing on a dot at one time; therefore, that means only 3 students up at one time. If a student is waiting to get on a dot he/she must be reviewing their answers while they are waiting. Dot #1 is in front of the scanner. Dot #2 is in front of the printer. Dot #3 is in front of the whoops board. Marking the stations helps prevent any bottlenecking at the AM area. Remember if a child simply does not know what to do he/she should place folder in “Whoops Box.”

I use AM 4 days a week for 15 minute intervals. On the fifth day I conduct “Guided Math” or you might call it “Activity Station Math.” I have five stations and one of those stations is Guided math. This is when the students come to me and we discuss their AM folders. I review practice tests, ask if anyone is having a problem, and clean out folders. This is a very import part of my program and I encourage you to make the time for small group meetings.



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Every program has its flaws and AM is not perfect. You will constantly be running to computer to un-jam the scanner. To help prevent this problem make sure you spend time explaining the importance of filling out the form number section on students' scan cards. Too often my "Whoops Box" fills with folders because they do not have anything to work on. To avoid this problem make sure you take time in the morning to review each student's status. "I don't know what to do Mr. Laoo." Post those procedures and rules where students can see it. Take the time to explain procedures. Another problem I ran into at first was what students do if their AM folder is in the "Whoops Box?" At first I had them read, but I realized that we can utilize more of our time if they have something mathematical to work on. So I started the rule, if your folder is in the whoops box you must pick up a Coach book and complete a lesson. All students start on Lesson 1 and move forward. Students must read the lesson then answer the quiz in their coach notebook. When I call the students to come get their folder I will look at their Coach notebook exercise.

Accelerated Math is a wonderful teaching tool that allows you to create math assignments tailored to each student's current level. There is no grading, plotting data, or making practice, intervention, or test worksheet. Students and teachers get immediate feedback on how they are doing and what they need to do to master an objective. AM can become a overwhelming, but if you take the time to plan, create procedures, and take the time to be organized the program will be a success in your classroom.



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## POWER

By Gwen Talley  
Vance Middle School  
Bristol Tennessee City Schools, 8th grade



*P*ower' is a word that is often associated with education and learning – “With knowledge comes power!” We need to step back and look at the real power that we as teachers have. In reality, we have the power to make or break a child. We can instill a love of learning along with an atmosphere of respect and concern, or we can squash the innate curiosity of the child by getting wrapped up in the curriculum, and make school seem cold and uncaring. It is also said that with power, comes responsibility. That statement could not be more true.

We all continue to strive to be high-performing teachers. A complete understanding of basic algebra is imperative for academic progress in high school mathematics. These skills are the foundation on which all other future math skills will be built. Because of the emphasis on SPIs and GLEs and standards, teachers are constantly reminded (unnecessarily) of the importance of the content we are to teach. But what we really teach is children. These children have predisposed ideas and expectations. Their respective futures are as open as the sky. We must create a more comfortable and caring environment if we ever hope to see all children stay in school. We also have to remember that they are not all headed towards the same destination. Although many will go to college, others will find more benefit in the life lessons they learn as they grow up and head into the real world.



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Parents have high hopes for their children as they drop them off for their very first day of elementary school. We know that they are trusting us with the most important thing in their lives. They want their child to be nurtured, but at the same time, they expect to see emotional, physical and academic growth. They must be convinced that we care about and believe in their child. We must always be aware of the student as a child first. This is especially true for middle schoolers. A middle school aged child has so much going on. Physically, some pretty big changes are occurring; emotionally, they sometimes appear to be nothing but a bundle of mixed up thoughts and feelings. There are few feelings more powerful than being understood and accepted; before the learning process can even begin, each child must believe in those feelings.

The climate of a classroom also has an enormous impact on the comfort level of individual students. The physical aspects like lighting, temperature, room arrangement, aesthetics, although important, do not compare to the importance of the attitude and demeanor of the teacher who resides within those walls. It should be our initial goal to see that the child is at least willing, but preferably is looking forward to coming back to our room the next day. There is only one chance at making a first impression. Drill and kill, worksheets, class assignments and homework will not create a yearning to participate, live and learn.

As teachers, we hold the power to reach the children that we are given to teach. Ultimately, our goal must be to use that power to reach every last one.



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### UPCOMING CALENDAR DATES



#### UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS

Tuesday, March 8, 2011  
Indian Trail Middle School, Johnson City, TN

Monday, May 2, 2011  
Bristol City Schools, TBA



#### NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS 2011 REGIONAL CONFERENCES AND EXPOSITIONS

2011 RESEARCH PRESESSION  
April 11– 13, 2011  
Indianapolis, IN

2011 Annual Meeting and Exposition  
April 13—16, 2011  
Indianapolis, IN

#### NCTM 2011 REGIONAL CONFERENCES

- Atlantic City, New Jersey—October 19–21
- St. Louis, Missouri—October 26–28
- Albuquerque, New Mexico—November 2–4



#### TENNESSEE MATHEMATICS TEACHERS ASSOCIATION



#### SOUTHWEST VIRGINIA COUNCIL OF TEACHERS OF MATHEMATICS

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens, Newsletter Editor.***

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## Membership Application



***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**





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## MATH FUN

Why are some letters above the red line, and some letters are below the red line?



SOLUTION ON PAGE 4



### UETCTM MEETING Monday, May 2

Vance Middle School  
815 Edgemont Avenue  
Bristol, TN 37620  
423-653-9449

#### Meeting Agenda

- 4 p.m. Refreshments
- 4:30 p.m. Business Meeting
- 5 p.m. Programs

1/4

2/4

3/4

4/4



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## *A message from your President*

*A*nother school year is drawing to a close. Soon the summer will be in full swing and before we know it, a new school year will start. I hope those who went to the NCTM Annual meeting in Indianapolis have had a chance to share all the activities and enthusiasm they gained while they were there. I shared a lesson on Fraction Strips there, and Dr. Poole from the ETSU Mathematics department also shared a session as well. Next year's meeting will be in Philadelphia, PA. I attended the annual meeting held there in 2004, and let me assure you, the location is one of my favorites! I hope you can attend.

As you know, this fall we are hosting the Tennessee Mathematics Teacher Association annual meeting. Rather than having our typical three fall meetings, we will be using this meeting as our only fall gathering. I highly encourage you to attend, and to bring your friends and colleagues in the teaching profession. We are integrating a STEM theme, so please encourage your science education co-workers to attend. The dates are set for Friday and Saturday, September 23-24 at ETSU. Friday night we will hold a banquet dinner for all attendees at the Millennium Center for a wonderful 3 course meal, guest speaker, and student awardees from the TMTA statewide math contests.

Please be sure to keep your membership current and to log in to our wiki space at: <http://uetctm.wikispaces.com/>

Here you will find access to meeting agendas, a place to share lessons and hold online discussions. Please take advantage of this online resource.



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I hope you have a great summer and I am looking forward to all the fine essays that our members will submit for next year's newsletters. This year we had a record number of essays and I am proud of our membership for their enthusiastic participation. Please spend a few hours this summer putting your thoughts and experiences in writing to share with the larger community. If you have already published an essay in the UETCTM Newsletter, consider writing something for the *Bulletin*, the TMTA newsletter. Let's get involved at the state level this year. See you in the fall at the TMTA Annual Conference here in the Tri-Cities!

Sincerely,

Ryan Nivens



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## MULTIPLICATION MAYHEM

By Jason Cross  
Anderson Elementary School  
Bristol Tennessee City Schools, 3rd Grade



Although this will be my first year teaching upper grade math, my issue teaching math in 3<sup>rd</sup> grade was always with the mastery of multiplication facts.

The mastery of multiplication facts is the foundation for skills that I will teach this year as well as throughout the rest of their lives in math courses.

How can one understand and master the concepts of division without the mastery of multiplication facts? We have to develop and devise strategies and plans to ensure that these students have the foundation for the rest of their mathematical careers.

## MATH FUN SOLUTION

All the “straight” letters are above the line, and all the “curvy” letters are below the line.

[http://www.coolmath4kids.com/math\\_puzzles/a1-alphabetsoup\\_sol.html](http://www.coolmath4kids.com/math_puzzles/a1-alphabetsoup_sol.html)



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## MATHEMATICAL LITERACY

By Kayla Perkins  
Tennessee High School  
Bristol Tennessee City Schools, 9th Grade



### Mathematical Literacy: Introduction

*R*achel McAnallen, professor at the University of Connecticut, responded to the teaching of mathematics with the following quote: “We encourage children to read for enjoyment, yet we never encourage them to “math” for enjoyment. We teach kids that math is done fast, done only one way and if you don’t get the answer right, there’s something wrong with you. You would never teach reading this way” (McAnallen, R, NA ). Professor McAnallen’s comment represents an underlying concern with the way mathematics is taught in today’s educational system. Educators need a clear understanding and definition of literacy.

In the narrowest sense, literacy refers to the ability to read, write, speak, and use language. Literacy is not isolated bits of knowledge but in students’ growing ability to use language and literacy in more and broader activities (Martin, 2007, pp. 28).

The definition of literacy is often bound to reading and comprehending literary texts. However, it is crucial to understand that literacy is also represented in other disciplines, such as mathematics. Mathematical literacy plays a vital role in being able to analyze and understand the world in which we live.



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It is essential that educators teach students how to become mathematically literate. Understanding the definition of mathematical literacy, identifying the need for teaching mathematical literacy, and developing methods in which teachers can successfully promote mathematical literacy are essential components of teaching students how to become mathematically literate.

### **Mathematical Literacy: Definition**

The definition of mathematical literacy extends far beyond knowing rules and algorithms to solve simple algebraic problems. Mathematical literacy can be defined as the “ability to reason, analyze, formulate, and solve problems in a real-world setting” (Martin, 2007, pp. 29). Mathematically literate individuals are educated citizens and clever entrepreneurs. They have the ability to analyze and interpret a wide variety of information in which they encounter on a daily basis. This vast array of information comes in the form of newspapers, textbooks, television, radio, internet, bank statements, stock market, etc (Martin, 2007, pp. 29). Mathematically literate individuals are capable of identifying and analyzing the role that mathematics play in the real-world, making sensible judgments, and engaging with mathematics in ways that promote themselves as productive, concerned, and reflective citizens (Yore & Pimm, et. al., 2007, pp. 561).

The National Council of Teachers of Mathematics refers to mathematical literacy as an “individual’s abilities to explore, conjecture, and reason logically, as well as to use a variety of mathematical methods effectively to solve nonroutine problems” (Yore & Pimm, et. al., 2007, pp. 578). The key component of this definition is that mathematically literate individuals can effectively solve nonroutine problems. They possess the cognitive abilities needed to devise solutions to problems and situations that they have not encountered in the past. Upon establishing a concrete definition for mathematical literacy, we must determine the importance of becoming mathematically literate.



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## Mathematical Literacy: Importance

It is not uncommon for students in a mathematics classroom to ask their teacher to explain to them when they will ever use mathematics in their real lives. The teacher's response to this question is vitally important in those children being able to form connections between their curriculum and real life. In order for a teacher to properly explain the importance of mathematical literacy, they must first realize the importance that mathematical literacy plays in our economy/jobs, life skills, work and leisure, and community and civic decisions.

The United States is considered to have an information-based economy fueled by human capital. A vast majority of occupations require that their employees possess a degree of post-secondary knowledge of mathematics (McCrone & Dossey, 2007, pp. 32). This post-secondary knowledge of mathematics enables employees to use quantitative reasoning skills to solve real-world problems. The flux of numbers and statistics in our every day lives calls for a "fundamental broadening of the concept of literacy: mathematical literacy assuming a coequal role in the curriculum alongside language-based literacy" (McCrone & Dossey, 2007, pp. 32).

Reports show that the number of U.S. students who are capable of applying mathematical literacy in a workplace environment is steadily declining (McCrone & Dossey, pp. 32). Employers are looking for employees that have the ability to analyze, reason, and solve problems in a real-world setting. This situation has been summarized by Thomas Friedman, an international economics columnist for the *New York Times*, when he wrote:



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When I was growing up, my parents used to say to me, “Tom, finish your dinner- people in China and India are starving.” My advice to my daughters now is: Girls finish your homework- people in China and India are starving for your jobs (McCrone & Dossey, 2007, pp. 33).

Thomas Friedman’s comment exemplifies the need for employees to be mathematically literate in order to successfully compete for jobs in a global economy.

Mathematical literacy also plays an important role in common life skills. Individuals need to be mathematically literate to successfully buy a new car, buy a new home, sign up for a new mobile phone plan, make a household budget, etc. Without being mathematically literate, they could easily be taken advantage of by paying higher interest rates or by making payments for an overextended period.

Many work, leisure, and civic and community decisions require excellent mathematical literacy skills. These are instances where simply knowing rules to solve equations are not sufficient. Analyzing decisions and proposing solutions to community problems require high levels of mathematical literacy. Individuals must be capable of viewing all data, analyzing situations, and proposing sound solutions. Many individuals possess these necessary mathematical literacy skills. However, they view them as unconnected to mathematics curriculum taught in the education system.

### **Mathematical Literacy: In the classroom**

Once the need for mathematical literacy has been established, we must investigate how individuals can be taught how to be mathematically literate. Mathematical literacy can and should be taught to children. The cognitive processes associated with mathematical literacy should begin at an early age. “Reports of





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what mathematics students know and are capable of applying, along with rapidly changing workplace environments, are raising questions about the level of mathematical literacy in the United States (McCrone & Dossey, 2007, pp. 33).

There have been major reforms in mathematics education in the past decade in hopes of successfully promoting mathematical literacy. The present focus on mathematical literacy is unlike reforms in the past. The present focus places emphasis on bringing relevance and deeper understanding to mathematics students rather than pushing students to study higher and more formal mathematics. The implication of this shift in focus places more responsibility on the student to relate mathematics to their present needs (McCrone & Dossey, 2007, pp.35).

The present focus on mathematical literacy applies to all individuals. Reforms in the past only promoted mathematical literacy for individuals pursuing careers in engineering, banking, or scientists. Research has shown that mathematical literacy is of vital importance in all career paths; thus the change in current educational reform (McCrone & Dossey, 2007, pp. 35).

The reform also broadens the scope of what concepts math classes should include. Reforms in the past placed less emphasis on probability, data analysis, and statistics. However, these skills have become a major part of everyday life, and should be included in courses that promote mathematical literacy (McCrone & Dossey, 2007, pp. 35).

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educational reform (McCrone & Dossey, 2007, pp. 35).

The reform also broadens the scope of what concepts math classes should include. Reforms in the past placed less emphasis on probability, data analysis, and statistics. However, these skills have become a major part of everyday life, and should be included in courses that promote mathematical literacy (McCrone & Dossey, 2007, pp. 35).

Once the framework of the reform has been established, teachers need to learn how to promote mathematical literacy in their own classrooms. One important aspect of promoting mathematical literacy is teaching the mathematical language. This may include mathematical terminology, mathematical discussions, mathematical journaling, etc. "Research has demonstrated that purposeful conversation, discussion, debate, and argument have enhanced students' conceptions of the problem space, inquiry, solution process, alternative solutions, and results (Yore & Pimm, et. al., 2007, pp. 566).

All teachers, nonmathematics teachers as well, have an obligation to promote mathematical literacy in the lives of our students. Mathematical literacy should span across the curriculum (Yore & Pimm, et. al., 2007, pp. 561). It is the duty of every teacher to prepare students in the skills necessary to be successful, productive citizens. If mathematical literacy was promoted across the curriculum, students would be more likely to develop the cognitive processes needed to become mathematically literate. They would encounter a greater variety of situations and instances in which mathematical literacy is necessary to solve real world problems. In 2000 the National Council of Teachers of Mathematics joined the reform to give teachers an outline to promote mathematical literacy. The National



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Council of Teachers of Mathematics current teacher outline fits into the categories of quantity, space and shape, change and relationship, and uncertainty (Martin, 2007, pp. 30-31). The categories that require the strongest sense of mathematical literacy are change and relationship and uncertainty.

All natural phenomena including the growing of organisms, changes in the stock market, or changes in weather patterns or bank accounts, represents changes that can be modeled mathematically. Individuals that can mathematically identify and analyze these types of changes are engaging in mathematical literacy of a higher form. The highest form of mathematical literacy, in my opinion, is uncertainty. Knowing how to deal with uncertainty involves knowing how to analyze, interpret, and predict uncertain phenomena. The world is filled with uncertain phenomena that are continuously changing. The level of mathematical literacy needed to reason, analyze, formulate, and solve uncertain problems in a real-world setting, places individuals at the top of being mathematically literate. The goal of every teacher should be to help each student attain this level of mathematical literacy. "Teachers should consistently expect students to explain their ideas, to justify their solutions, and to persevere when they are stuck and to learn to expect and ask for justifications and explanations from one another" (Yore & Pimm, et. al., 2007, pp. 579).

### **Mathematical Literacy: Conclusion**

Mathematical literacy can be defined as the ability to analyze, interpret, draw conclusions, and propose solutions to real-world problems. Research shows that the number of U.S. students capable of promoting mathematical literacy in industrial settings is rapidly declining. Based on the need for mathematical literacy in



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the workplace, in the economy, and in everyday life, teachers must step up to the plate and promote mathematical literacy in the lives of their students.

The groundwork has been set and outlines have been made by organizations such as the National Council of Teachers of Mathematics to help teachers reform their teaching in a way that promotes mathematical literacy. Once teachers understand the definition of mathematical literacy, the need for mathematical literacy, and how to promote mathematical literacy in their classrooms, our society can move toward greater mathematical literacy. This reformation in the teaching of mathematics should ensure that math will no longer be taught by the chaotic principles outlined by Professor McAnallen. On the other hand, mathematical literacy will be promoted to its fullest extent!

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## CALCULATORS: HARMFUL OR HELPFUL?

By Kelly Crandell  
Vance Middle School  
Bristol Tennessee City Schools, 7th grade



As technology becomes more invasive in everyday life, the effects on the mathematics classroom become more apparent. Computers and calculators are accessible at almost every corner through cell phones, laptops, and other gadgets that are becoming more common at every age group. Since the hand-held calculator was invented in 1967, it has become an ever increasing part of the mathematics curriculum. The reduction in the cost of calculators as well as the changing difficulty and number of skills covered per grade level has led to calculators becoming more popular in the education of our youth.

So the question is whether or not it is helpful or harmful to allow calculators in the classroom. Some research reviews have concluded that experience with calculators in lessons did not harm calculating skills (Hembree & Dessart, 1986). Others feel that the widespread use of calculators is taking the place of students learning and memorizing basic facts.

We know that technology is changing things in our society. Some firmly believe that we will soon become a paperless society. If that happens, is it necessary for students to learn how to give change, or will computers and calculators take care of it all? People do not memorize nearly as many phone numbers in today's society because of cell phones doing it for them. Are basic facts still an important part of our society or should educators focus more on skills that pro-



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and problem solving and let calculators and computers do the basic work? These are questions that many feel are vitally important to our educational system.

The use of calculators in the classroom is a sensitive topic in the mathematics field. There seems to be a major controversy over the use of calculators and whether or not they are helpful or harmful to students. Some feel that calculators cause students to lose their confidence and their ability to think and process mental math. Others feel that calculators give students better conceptual knowledge and students display a more positive attitude when they are given calculators. There are many research studies that take a stand on either side of this issue. The following are some of the studies and articles that support or disagree with calculators in the classroom.

In the article *Let's Abolish Pencil-and-Paper Arithmetic*, Anthony Ralston, who is a professor emeritus of computer science and mathematics at the State University of New York, proposes that calculators should be used exclusively for basic calculations as well as creative explorations and problem solving. He states that there is no significant research that shows calculator usage is harmful and that there is a rapidly declining need to the purpose of paper and pencil mathematics. Ralston (1999) feels that only parental and political barriers keep classrooms from using the technology that is available. He feels that number sense and symbol sense are what is lacking in students today and that ultimately calculators are helpful in developing these skills. Ralston proposes a kindergarten curriculum that has full usage of calculators with an emphasis on learning the mental arithmetic for one- and two-digit calculations.



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In direct disagreement with Anthony Ralston is an article written by Kim Mackey, a mathematics and science teacher in Alaska. He has been awarded the Distinguished Teacher Award from the White House Commission on Presidential Scholars. He wrote an article entitled “Do we Need Calculators?” He believes that calculators in the classroom are detrimental in teaching mathematics due to their limited ability to only produce answers. He states that some of the worst effects of calculator usage are the collapse of arithmetical fluency and the loss of symbolic calculations. He also feels that students are unable to solve two-step problems because they have not been trained to show their work and therefore cannot explain their answers. He strongly feels that calculators lead to mindless “button-pushing” without any understanding of the mathematical process.

Randall Charles, a Professor of Mathematics and Computer Sciences at the San Jose State University feels that calculators help elementary school students reach essential key goals. Calculators are a tool that can help develop conceptual understandings and abilities that underlie strong number sense (Charles, 1999). He feels that it is a teacher’s responsibility to help students become responsible users of calculators. He states that even very young children can use real data to understand concepts, whereas without calculators they would not be able to meet the demands of the computations. Charles feels that calculators can help with patterns, flexibility of numbers, and developing understanding of number relations.



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Some feel that the problem with calculators is not the age that they are introduced or even whether or not they should be in the classroom at all, but the competency and willingness of the educators who are teaching students to use the calculator. A study by the National Assessment of Educational Progress (NAEP) stated that even though technological and scientific changes are having a profound effect in the workforce, this has caused very few changes in the American school-room. Even though the National Council of Teachers of Mathematics (NCTM, 1989) has recommended calculators available to all students at all times, NAEP found very few schools have implemented these recommendations. Only two percent of fourth graders and thirty-four percent of eighth graders were permitted to use calculators when taking tests. It also found that forty-seven percent of fourth graders and twenty-two percent of eighth graders were never asked to use a calculator in the mathematics classroom. (NAEP, 1990). This finding was also seconded by Hembree and Dessart (1986) who stated that they found that calculators have been unsuccessful in redirecting the curriculum and in most classrooms calculators are not even introduced. Even though they feel that researchers have shown that calculators can produce higher achievement scores in basic operations and in problem solving, most teachers are unwilling to utilize them in the classroom. The long term studies on the topic of calculators are very limited. Very few researchers have studied the effects of calculators on adults who were trained without paper and pencil methodology. Most researchers use statistics from short term studies or ones that include students who have been exposed to paper and pencil and then made the switch to calculators.





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Many of the negative aspects of the calculator come from peoples' perceptions and unwillingness to change current educational practices. Whereas you can find one educator who supports calculators, you can find another who does not. One educator will state that they are okay to use with older students; another will state that they are fine even being introduced at the kindergarten level. Reys and Reys (1987) stated that all schools should have a clear calculator policy so that teachers will be using them consistently at each grade level.

Many feel that this is the major flaw within the usage of calculators now. Most schools have no set policy or guidelines to help teachers utilize calculators effectively in the classroom. Even though most teachers do not feel that we are ready for a mandatory calculator policy, effective teacher training would help teachers become more aware of the positive effects of calculators in the classroom. By allowing teachers to see the advantages of calculators and showing teachers the best ways to implement them into their teaching setting, we can dispel common misconceptions about calculators. Setting up guidelines to help teachers use calculators effectively could be used in conjunction with our new Tennessee Math Standards which emphasize the use of technology. If there is going to be an answer to the calculator question of helpful or harmful, a long term study and a set guideline with appropriate training will have to be implemented.



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## WHEN WILL TCAP/TVASS SCORES IMPROVE?

By Kristin Wilson  
Anderson Elementary School  
Bristol Tennessee City Schools, 6th grade



Teachers, principals, administrators, school districts and states all have consequences related to TCAP/TVASS scores. Legislation has been passed that will include test scores as a part of teacher evaluations. Principals and administrators can be hired or fired based on test scores. Schools and school districts can be “Target” or assigned a “High Priority” status if they do not make adequate yearly progress and improvement. States can be denied Federal funding if test scores are not up to federal requirements.

Many people have a stake in students performing well on TCAP/TVASS scores. However, two main groups of people seem to be unscathed by the scores, parents and students. Students sit through hours of lessons, complete or don't complete homework assignments, take assessments and finally complete the TCAP.

The scores received by the students are not included in final grades, they don't determine if the student will be promoted or have a bearing on the student's progress. Parents sometimes get involved by making sure students complete homework and read and study for tests, but in many schools, parental involvement is greatly lacking.



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When test scores are received in late summer or early fall, test scores are sent to parents via their student. Parents are not directly impacted by their child's scores therefore they do not see the importance of performing well on the test.

When students and parents have a concrete consequence from the TCAP/TVASS scores, students will become more involved in their success on the test and TCAP/TVASS scores will improve.



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## BUILDING EFFECTIVE RELATIONSHIPS BETWEEN SPECIAL EDUCATION TEACHERS AND GENERAL EDUCATION TEACHERS OF SECONDARY MATHEMATICS



By Scott Lamie  
Tennessee High School  
Bristol Tennessee City Schools, 9th grade

*R*ecent changes in state-wide educational standards that require students to take four years of mathematics in high school will, most likely, significantly increase the number of students with disabilities who take upper level courses, such as Algebra II or Trigonometry. These changes may lead to increased levels of anxiety for both general education teachers and special education teachers. From the general education teacher perspective, they will be asked to educate an increasingly large population of students who have already experienced difficulties of some kind in the classroom, and they will be asked to do so in courses that many of these students may have opted out of under the old graduation standards due to the abstract and intricate nature of the subject-matter. From the special education teacher perspective, difficulties may arise as they are asked to assist regular education teachers in presenting information to or collecting from students with disabilities, despite the fact that many of these teachers will have limited or no real experience with the information being taught.



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Students with disabilities who attend schools where strong relationships between special education and general education teachers exist will be able to benefit from the combination of the support that they will receive. Sadly, it is not always the case that these relationships are particularly strong or even functional because clearly defined goals for interaction between general education teachers and special education teachers rarely exist. In fact, while there are variety of professional teacher development programs that focus on building strong working relationships with parents and a number of other options that help build strong relationships between teachers and administrators, there is often very little discussion about building strong relationships between general education teachers and special education teachers, particularly in settings where areas of professional expertise are often scarcely overlapping. In practice, it is often the case that these relationships are built solely on interaction among the types of personalities involved. This practice generally leads to teacher relationships that range from supportive to reluctant and, in some cases, to relationships that are outright adversarial. Fortunately, many of these problems are not so overwhelming that they cannot be resolved. In fact, the majority of this friction can be alleviated if teachers stay open to discussion and focus communication on the two critical dimensions of a disability: input and output.

The first major area of concern for teachers when working with students with disabilities is input, which is defined as the ways in which students receive information. Although not as obvious as difficulties with output, deficiencies in the ability to obtain information under certain conditions can often lead to significant frustration for both the student and the teacher. This frustration is exacerbated



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ed when a lack of communication permeates the special education – regular education teacher dynamic. As an example, consider the mathematics teacher who spends weeks working through a variety of mathematical methods to help a struggling student with a learning disability not knowing that the real issue is that the student’s specific learning disability is in the area of listening comprehension and not math problem solving, which is quite possible due to the fact that the state of Tennessee recognizes eight different areas for learning disabilities. Incidentally, the difficulties faced by this student can be addressed using a variety of simple techniques, such as written directions and lecture notes, that are well known by the special education teacher, but a lack of communication between the teachers and the intimidation that the special education feels regarding the concepts covered in Algebra II prevents this communication from occurring in a timely fashion. The solution to this issue is a simply shift in types and depth of information that is provided to and requested by the classroom teacher. Difficulties with input are often well documented by the time students reach the secondary level, so it is important that special education teachers readily provide classroom teachers with information on disability conditions, required accommodations, and any assessment information that is not easily accessible. With that said, it is equally important that the regular education teacher reads over this information, particularly the accommodation information because teachers are legally bound to provide these accommodations whether they think the student needs them or not, and ask for more information if he or she feels uninformed on issues relating to specific students or on issues regarding methods for reaching students with similar learning difficulties. Under these conditions, both teachers feel involved in the



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student's success and are less intimidated when engaging in a process that requires them to work outside of their comfort zones.

Output, the way in which students explain what they know, is the other major area of concern for students with disabilities in regards to academics.

Generally, output difficulties are easy to spot because students with difficulties in output will either provide too little information, too much information, unorganized information, or irrelevant information. The problem with output issues is that they are not always as easy to solve as input issues due to the potential for a variety of factors to be involved. This is especially true considering the increasing variety of output formats with which students are asked to show proficiency.

Due to this, solutions to these difficulties often require some trial-and-error that can involve anything from coaching in organizational strategies to the use of assistive technology. Based on the time-intensive nature of determining appropriate modifications, a classroom teacher who is concerned needs to provide prompt and specific information to the special education teacher so that a solution can be determined. In order for a special education teacher to provide any meaningful assistance; however, he or she must be informed of both the exact nature of the student's responses and the teacher's expectations regarding output. This will allow for complete analysis of output difficulties without a significant discrepancy between the suggested solution and the actual problem, which can alleviate reluctance for teachers to interact in the future. It may also be necessary for the teachers to work together to determine an output method that is reasonable for the student to provide and also mathematically relevant and acceptable. This process will help both in the short-term, as students currently in the classroom benefit, but





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also over the long-term, as teachers are more readily able to link modifications to specific areas of difficulties for students. In short, if a student's work is not meeting the criteria defined by the classroom teacher, it is important that the special education teacher be informed of any concerns in a timely fashion and that the two teachers work together to provide solutions that meet the expectations of the classroom within reasonable parameters.

As a growing number of students with disabilities enroll in upper level math courses, it is increasingly important for the teachers of these courses and special education teachers to communicate more effectively. Students struggling with issues regarding input can benefit greatly from a free exchange of information between special education teachers and regular education teachers at the early onset of their academic year. Similarly, students struggling with issues related to information output will be best served when teachers work together to analyze the student's output methodology and determine acceptable ways in which the student can meet classroom expectations in a way that may be modified but no less mathematically viable. In closing, a strong working relationship of trust and respect developed between a classroom teacher and a special education teacher will provide the most substantial base for success for students with disabilities as they participate in upper level mathematics courses throughout their high school experience.



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## DESIGNING A PERFORMANCE TASK

By Tracy Easterling  
Math Specialist  
Bristol Tennessee City Schools



According to Dr. Carol Tomlinson (2001), an effective performance assessment requires “students to think about, apply, and even expand on all the key understandings and skills of the learning span it represents” (p. 85). Students are motivated to complete a product because they feel a sense of ownership and the product will bear the creator’s thumbprint just as a piece of pottery bears the mark of the artist. Like many of my students, I enjoy learning when I believe that what I am learning will be useful or is interesting to me personally. Thus, developing a performance task that is highly interesting to students is essential. Let’s face it, many of our students can tell us how to beat the latest video game, how to program an IPOD, or how to navigate around a proxy server which requires many more skills and thought processes than solving a basic math problem. The difference is that students are interested in those things. They spend large amounts of time experimenting, failing, and adjusting their strategies until their perseverance pays off – they beat the video game, download their favorite songs, and open the website. An effectively designed performance task will stretch students previously learned skills beyond basic understanding and require them to apply what they have learned to create a product or to express themselves creatively in their preferred learning styles and multiple intelligences.



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We want students to learn the skills and concepts we are teaching for much more than a test or the next math class; we want that knowledge to endure the test of time. Dr. Richard Stiggins suggests that performance tasks should be built around meaningful context, call for thinking and thoughtful application of knowledge, and yield relevant products and performances (Laureate Education, Inc., 2003b). Now, how do you create a performance assessment dealing with the topic of percent?

You are preparing to take a very special trip and want to look your best. A new outfit is a must down to a new pair of shoes and the latest accessories. Your parents told you that they would “think about it,” so you must convince them that your purchases are responsible and not frivolous. Therefore, your task is to purchase a whole new outfit for under \$200. You must comparison shop to find the best deals on shirts, pants, shoes, etc. You may use the Internet, catalogs, or sale papers from the newspaper to find your items. Calculate any discounts and taxes. Make a foldable displaying your purchases with the total cost of each item. To show your parents that you are a responsible teenager, write them a persuasive letter demonstrating how hard you have worked to find the best deals, how much money you can save, and the total price including tax. Do not beg and no pulling out the “pouty” face. State your case and await the verdict.

This performance assessment requires students to use their thinking skills to compare prices, evaluate what they are willing to pay for items, and determine the better deal. After they make their decisions, they may evaluate a classmate’s work and look for errors in their calculations. They may help each other by role-playing the presentation of the rationale to their parents and make suggestions for improvement. When students are convinced their calculations are accurate and their rationale sound, they must present their work to their parents and record their responses to report to the class.



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To differentiate instruction, teachers could allow students to choose the amount of money they will be spending and the items they may purchase. Taxes for Tennessee may be rounded to 10% and 5% for Virginia. In addition, students may use a calculator to calculate their answers. It may be necessary to limit their options to two stores. Other students may purchase items from stores on the Internet and calculate shipping and handling cost.

The focus of this assignment is on solving problems with percent, but this performance assessment integrates language arts skills with the rationale to parents and technology skills through the Internet. Comparison shopping and calculating discounts and taxes are life skills that students need now and in the future. Students love to buy new clothes, so shopping is a high interest activity that even the most reluctant learner will want to participate. This task is in agreement with Dr. Stiggins's (2005) attributes of truly effective tasks because it addresses a specific content, has clear instructions to students, is feasible for use in the classroom, and can be fairly and accurately assessed.

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## UPCOMING CALENDAR DATES



### UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS

- Monday, May 2, 2011  
Bristol City Schools, TBA



### NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS 2010 REGIONAL CONFERENCES AND EXPOSITIONS

- Infusing the Classroom with Reasoning and Sense Making, July 28—30, Orlando, FL
- Algebra Readiness for Every Student, Baltimore, MD, August 9—11
- Atlantic City, New Jersey—October 19–21
- St. Louis, Missouri—October 26–28
- Albuquerque, New Mexico—November 2–4



### TENNESSEE MATHEMATICS TEACHERS ASSOCIATION

- TMTA Fall Conference  
September 23—24, 2011  
East Tennessee State University, Johnson City, TN



### SOUTHWEST VIRGINIA COUNCIL OF TEACHERS OF MATHEMATICS

- Annual Meeting  
September 12, 2011  
The University of Virginia's College at Wise  
Any K-16 teacher of mathematics is welcome to attend. For registration information please go to [www.mcs.uvawise.edu/svctm](http://www.mcs.uvawise.edu/svctm).

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens**, Newsletter Editor.*

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# UETCTM

## Membership Application



***Mail completed form to:***

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***Membership Fee: \$10***  
***Payable to: UETCTM***

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Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



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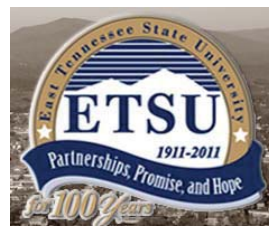
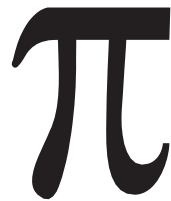
## MATH FUN

How many of the following statements are correct?

1. Pi is the ratio of the Circumference to the Diameter of a Circle.
2.  $\pi = 3.14$
3.  $\pi = \frac{22}{7}$
4. Pi is an irrational number

Only statements 1 and 4 are correct.

**3.14 and  $\frac{22}{7}$  are only approximations for  $\pi$**



**UETCTM MEETING**  
**Friday, Sept. 23—24, 2011**

**TMTA Conference**  
**East Tennessee State University**  
**Saturday, 11:30 a.m., Affiliate Meeting**





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## *President's Message*

*W*elcome to Fall 2011 and the wonderful world of mathematics! This is an exciting year for UETCTM. We are hosting the annual TMTA conference at East Tennessee State University September 23—24, and I encourage everyone to attend. As a co-sponsor of the annual conference, UETCTM would like to thank the Department of Curriculum and Instruction at ETSU for partnering with us to make this a very successful event filled with more than 40 different sessions to attend over the two-day period.

Please check the UETCTM website for future events and meetings. Our monthly newsletter also includes meetings and conferences for math councils in our region and nationally.

Our newsletter article submissions are fantastic this year, as usual, and I hope you enjoy the shared knowledge among our members. This is a fantastic tool for collaboration and includes excellent ideas for differentiating instruction.

Please let me know if you have any questions, comments, or ideas for our monthly meetings or newsletter. I look forward to seeing you this year!

Sincerely,

Ryan Nivens

Center for Excellence in Mathematics and Science Education

Department of Curriculum and Instruction

Claudius G. Clemmer College of Education

East Tennessee State University

## **MATH TRIVIA**

The largest prime number is 13,395 digits long; more than the number of atoms in the universe.

National Pi Day is March 14, at 1:59. (3/14 1:59)

If you need to remember pi, just count the letters in each word in the sentence: "May I have a large container of coffee?" If you get the coffee and are polite and say "Thank you," you get two more decimal places. [3.141592653...]

[www.jayp.net](http://www.jayp.net)



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## MORE THAN ONE WAY TO COOK A CHICKEN

By Buffy Bales  
Johnson City Schools, 4th Grade



Living on a small farm that raised beef cattle, we had plenty of meat. So, each night for supper Mom would cook some kind of beef: roast, hamburger, or any cut of steak. There seemed to be a never ending supply of beef.

Chicken, on the other hand, was not so plentiful. Occasionally my mom would splurge and buy a chicken to fry. Not the kind already cut up, but the whole chicken that had to be severed by a very sharp knife. Mom, and only Mom, could wield this deadly blade. Next, she would season and flour it just right then position it in the skillet to fry. Boy, can she fry chicken! It was always crispy on the outside but juicy on the inside. This was the only way my mom cooked chicken, so I grew up thinking that was the only way to prepare it. I have since learned there are many ways to cook chicken and most are much healthier, too.

Many years ago, when I was a student, we were taught that math should be completed a certain way. Sometimes we might ask, "Why do we do it this way?" The reply, more times than not, would be, "That is just the way you do it." I guess we secretly called it "the math rules". Today my students' parents are intimidated when it comes to helping their child with math. Many have been taught only one way to do math problems and their child is always quick to point out, "That is not the way we do it at school."



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For those parents, I like to let them know early in the school year that we look for multiple ways to solve math problems. I also tell the students that maybe their parents know a way we have not discovered yet. I encourage parents to help at home, even if it means their child learns a new way to do things. When this happens, the student can share their parent's way of doing it with the whole class. This keeps the parents involved and happy, and the student gets the help they need at home. Plus, they get to be the teacher for a while at school. This also improves their confidence in math.

As teachers, we need to keep teaching multiple ways to solve problems. We should never be the ones who answer, "That is just the way you do it." Instead let's say, "That is just one of the ways to cook a chicken."

Mom occasionally still makes her fried chicken, but she also has ventured out and tried healthier ways, too. She knows how important she is to me so she is always willing to make the healthier change. As educators, we should always make changes, too, in order to help students become healthier academically.



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## WHAT DO TEACHING AND FEEDING CHILDREN HAVE IN COMMON?

By Jenny Galloway  
Washington County Schools, 5th Grade



I love my kids, but they don't always want to eat what's good for them. I sometimes wonder if parents of previous generations had this same struggle. There weren't nearly as many fast food restaurants in the 1950s. Did kids wrinkle their noses at anything related to vegetables, other than French Fries? While my own kids are relatively good eaters, I've still seen the need to "sneak in" the good stuff. My son's favorite macaroni and cheese just might have a well shredded carrot or zucchini mixed in; spaghetti...well, let's just say it doesn't just have the traditional veggies in the sauce; those chicken nuggets they love...little did they know they're baked! So what does teaching have to do with this?

Just like the fast food restaurants, kids today are surrounded by technology that wasn't available to kids in previous generations. Sometimes kids need a little motivation to devour the good stuff. So why are we so slow to offer what they want while giving them what they really need? While technology use in the classroom is rising, it doesn't take a genius to see we are behind the technology curve in the classrooms. Just like sneaking vegetables in that beloved macaroni and cheese, we can easily cover several standards by offering a computer based activity or game, it just takes some creativity. By the time they figure out there's "good stuff" in there, they will have enjoyed it so much that they won't care to "clean their plates"!



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Here are a few websites that offer games and activities that cover several standards:

### all subjects

<http://exchange.smarttech.com>

<http://www.arcademicskillbuilders.com/games/>

[www.softschools.com](http://www.softschools.com)

<http://www.bbc.co.uk/skillswise/>

### math specific

[http://www.harcourtschool.com/menus/math\\_advantage.html](http://www.harcourtschool.com/menus/math_advantage.html)

<http://jmathpage.com/JIMSNumberintegers.html>

[www.mathplayground.com](http://www.mathplayground.com)

<http://mathsnacks.com>



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## CAPTURING MATH: A REAL-WORLD PERSPECTIVE

By **K. LeAnn Farthing**  
Sullivan County Schools, 6th



**A**s math teachers, how often do we hear this statement from our students, "When am I going to use this?" During my first year teaching math, I committed myself to finding real-world applications and visuals to show my students where they will use and see math outside of school.

However, this became too tedious and I felt that my students should be involved in this research process of real-world applications. So, I then found myself asking students to draw pictures of real-world applications of the concepts we were learning. Later, I thought, why not take this idea a step further and involve technology?

My idea came together after investigating a website, [www.donorschoose.org](http://www.donorschoose.org) where teachers post their classroom project ideas and their needed supplies. Sponsored companies then choose a project to support and send the selected teacher the needed supplies for the project. In turn, the teacher follows through with the posted project and sends updates through the Donors Choose website for the companies to see a final result!

My proposed project asks for 6 digital cameras and a digital printer with photo paper. I intend to have students divided into teams at the beginning of the year, where each team member will have an opportunity to take home the digital camera and either film and video or take pictures of math in real-world situations. As students bring back the cameras, they will have to defend their pictures and prove that it applies to math in some aspect, whether it is a concept that we are learning or a previous concept they have learned. I feel that this application will broaden my students' sense of awareness for math around them in everyday life.



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I also proposed that teams be graded by a point system for their creativity and connection to real-world math applications using the following scale.

Level 1 (10 points) – The student recognizes a mathematical concept.

Example: A picture of a rectangular prism (tissue box).

Example Relation to SPI: SPI 0606.4.1 Identify, define or describe geometric shapes given a visual representation or a written description of its properties

Level 2 (15 points) – The student understands a real-world mathematical concept by application.

Example: A picture/film of a student determining the best unit price before making the purchase.

Example Relation to SPI: SPI 0606.2.6 Solve problems involving ratios, rates and percents.

Level 3 (20 points) – The student creates an opportunity for a real-world mathematical concept and is able to show application in the creation.

Example: A film of a student determining which basketball team had the best free throw percentage.

Example Relation to SPI: SPI 0606.2.5 Transform numbers from one form to another (fractions, decimals, percents, and mixed numbers).

Throughout the year, the students' photos will be posted on a bulletin board where they can see progress and see the ideas of others. However, they will not be allowed to use the same concept, but they will be allowed to manipulate the concept or take the application to the next level. I will also have a line graph for each team, adding each team's points as they receive them to show progress. Finally, at the end of the year, I will determine a winning team based on the point system.



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As teachers in general, we often feel loaded down and under pressure to teach the essential skills and procedures to help our students move on to the next level. However, we forget that we need to show our students how math applies to everyday situations and that it is all around us!!!

I feel that this project will take my students' awareness of mathematical concepts around them to a higher level of thinking. I also feel that my students will appreciate math more and become more open to learning about new mathematical concepts.





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## DESPERATE TIMES CALL FOR DESPERATE MEASURES! STRATEGIC INSTRUCTION WITH INTERVENTION

By Glynn Warner

Sullivan County Schools, 5th Grade



Devoted educators struggle for the additional time to finish multiple objectives of their day...be it student learning objectives intended to be fully-met or professional duty objectives that best-complete their "to do" list on any given day.

Wouldn't it be grand if you could meet with those students who needed your extra time at the finale of that subject-area lesson at a time that was convenient for both you and the student(s)?

Parents struggle with their schedules to get their children from point A to point B on a daily basis, but what if meeting with your child's teacher was made accessible to them from their home via the Internet? What if students could spend quality instructional time with their teacher from the confines of their home, and parents could monitor and actively participate in the lesson? In addition, what if confidentiality could be preserved by a process that allows for group participation, along with muted, concentrated interaction that allows the student to work with the teacher in a more isolated fashion?



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The “what if” is answered through webinar instructional practices!

Webinar technology enables students, teachers, parents.....whomever, to engage in conferencing sessions for the objective purpose you establish! For example, you may choose a select group of students who would benefit from additional instructional time with your resources that you cannot implement in the course of your regularly-planned learning day. The remedial, or challenging, activities that you wish you could incorporate into your scheduled day may be postponed and re-scheduled as part of this same learning day through webinars! You may learn more by visiting [www.vyew.com](http://www.vyew.com) (they offer a tutorial).

My students generate ideas before the scheduled webinar for which they would like to receive extra help. The area of need does not have to be conducive to other students' areas of need on any given scheduled night or day for webinar instruction. There is an expressed understanding that we may jump around with topics during any given webinar session. Because this is optional, students may sign out of the webinar once the topic does not meet their individual instructional needs.

Initially, the webinar addresses the general topics that I would like to address, based upon the topics that I feel need to be brought to attention. Once I have set up the webinar session, the webinar company sends an email to the invited participants with direct instructions on how to log into the webinar, when the webinar will take place, and the general topic of the webinar. Participants confirm their intention of attending, and Vyew lets me know, in advance, who is attending my webinar.



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I always secure the last 15 minutes of a Vyeview session to present and discuss topics that are not relative to the designated session. This allows students who are curious, inquisitive, or possibly intimidated to ask their question in class to have an opportunity to do so and enhance their learning experience.

When students see their teacher, online from their homes, and willing to help them...it changes things! Oh, and by the way, this wonderful technology enables all webinar participants to see the same computer screen that their instructor sees at the same time! Not only that, but the instructor can open the screen capabilities for the students to interact online with what is being presented on the screen. For example, a particular mathematical problem could be presented, and with the touch of the administrator's allowance (the teacher being the administrator), the students are given full-access to write solutions to the problems, talk about them, demonstrate them, and collaborate with others – online and immediately!

Most of my students have engaged in all that I have presented in this article. This must be presented as an optional activity; you cannot require students to participate in anything after school hours nor in activities that require resources of which they may not have, (e.g., Internet). Not all students participated, but for those that did, they loved this technology, and beckoned when the next webinar would take place! Those same students also accompanied me in teaching other teachers of my school system in professional development sessions, because the benefit of this technology meant enough to them to spend their personal, summer days of vacation to spread the good news of webinar technology!

I hope you will explore the possibilities of webinar technology as a resource to further meet the needs of your student population!



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## UPCOMING CALENDAR DATES



### UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS

Tuesday, October 14, 2011  
Liberty Bell Middle School, Johnson City, TN



### NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS 2011 REGIONAL CONFERENCES AND EXPOSITIONS

Atlantic City, New Jersey • October 19-21, 2011

St. Louis, Missouri • October 26-28, 2011

Albuquerque, New Mexico • November 2-4, 2011



### TENNESSEE MATHEMATICS TEACHERS ASSOCIATION

TMTA Fall Conference  
September 23—24, 2011  
East Tennessee State University, Johnson City, TN



### SOUTHWEST VIRGINIA COUNCIL OF TEACHERS OF MATHEMATICS

Annual Meeting  
September 17, 2011  
University of Virginia, Wise Campus  
Any K-16 teacher of mathematics is welcome to attend. New this year will be various vendors showcasing textbooks and educational products. For registration information please go to [www.mcs.uvawise.edu/svctm](http://www.mcs.uvawise.edu/svctm).

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens**, Newsletter Editor.*

### Newsletter Editor

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Kingsport City Schools

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vlove@k12k.com



# UETCTM

## Membership Application



***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_  
\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_  
\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



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## MATH FUN <http://www.mathsisfun.com/activity/>

Draw a 6-pointed star:



It is three lines!

Why would 2 triangles **OR** 3 lines make a 6-pointed star?

A triangle has three corners, so  $2 \times 3 = 6$

A line has two ends, so  $3 \times 2 = 6$

Now draw it like this:



### 7-Pointed Star

How many ways could we make a 7-pointed star?

Connecting every 2nd corner



Connecting every 3rd corner



### Why is 7 so different to 6?

6 can be made from other shapes, but 7 goes around and around until it joins up again.

Could it be because 7 is a prime number and 6 is a composite number?

What happens when you divide 7 by 2 ... is there a remainder?

What about when you divide 7 by 3?



**UETCTM MEETING**  
**Tuesday, October 4, 2012**

**Liberty Bell Middle School**  
**Johnson City Schools**  
**1308 Pactolas Road**  
**Johnson City, TN 37604**  
**423-232-2192**



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## President's Message

I want to give a big "Thank You" to all the members of UETCTM that were able to attend the annual meeting of the Tennessee Mathematics Teachers Association. We had a large turnout of over 200 people, and approximately 50 presentations, many by our UETCTM members. For several of you, this was your first time attending a state conference. I hope you enjoyed the meeting. We have heard a lot of good feedback as well as some useful ideas for future conferences to be even better. I hope you can attend the state meeting next year at Tennessee Tech in Cookeville, TN.

For the rest of this school year, I hope you make plans to attend the regional UETCTM meetings we have planned. We make attempts to alternate the evenings they occur on to facilitate our busy schedules. Tara Harrell, our president-elect, or I plan to be at the meetings this year. Feel free to share with us your ideas for the future. I hope to see you soon.

The fall semester is alive with color and cool temperatures.

Sincerely,

Ryan Nivens

Center for Excellence in Mathematics and Science Education

Department of Curriculum and Instruction

Claudius G. Clemmer College of Education

East Tennessee State University

## MATH TRIVIA

[http://www.triviaplaying.com/62\\_Math\\_.htm](http://www.triviaplaying.com/62_Math_.htm)

Q: What T-word is defined in geometry as "a straight line that touches a curve but continues on with crossing it"?

A: Tangent.

Q: What geometrical shape forms the hole that fits an allen wrench?

A: The hexagon.

Q: What number is an improper fraction always greater than?

A: One.





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## IT'S ALL ABOUT GROWTH!

By Amber McKee



*A*s I packed up my kindergarten classroom in preparation for my big move to fifth grade math, I experienced feelings of excitement and anticipation as well as anxiety and intimidation. The kids would grow, the desks would grow, and the chairs would grow. These were all very exciting thoughts because I had been waiting for the opportunity to work with the “big kids”.

However, as I packed away the counting cubes, the cute little bear counters, and the bean soup addition game, a wave of nerves rushed through me. At this moment I realized that I was packing these items up to be left behind. My library of manipulatives was now bare. I was starting over! How was I going to teach all of these new, more complex concepts to this “grown up” group of students? I began to feel anxious, overwhelmed, and intimidated. The hands-on style of teaching that I had grown accustomed to while I was teaching kindergarten was beginning to seem almost foreign, and I felt as if I were going to try to coach a sports team without any of the equipment.

At this point I realized how important it was going to be for me, as a teacher, to grow! I began researching on the internet, reading books, collaborating with other teachers, and getting geared up for the Mathletes Program. As I grew (expanded my bank of ideas), I became more comfortable with not necessarily WHAT I was teaching, but HOW I was going to teach it. I was able to discuss new ideas and strategies with other teachers. They shared ideas and offered suggestions on manipulatives and many other activities. My manipulation cupboard is no longer bare and my files are fully stocked with mounds of wonderful resources! I am now confident that I am well equipped and ready to teach my students the math skills necessary for each of them to achieve their own growth!



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## CHANGING YOUR TEACHING: USING RESEARCH BASED STRATEGIES

By Sarah Squibb



Today's youth have become quite bored with the traditional way of learning and therefore, teachers now have to provide a variety of methods for learning that engage all students. As a teacher with over 20 years of teaching experience, I have found it necessary to change my way of teaching math. For years, teachers have used the "kill and drill" method of teaching mathematics. Research has shown that each of the four major learning modalities – visual, auditory, kinesthetic, and tactile – must be incorporated in every learning opportunity to ensure long-term retention. (Tate, 2009) When students are actively engaged in firsthand experiences, they have a greater chance of learning the skill being taught. It is also important to incorporate into your lesson *need, novelty, meaning, and emotion*. If your lesson has at least one of these, the students will be able to make a connection, and it has a good chance of being remembered (Tate, 2009). To accomplish this goal, I have begun using research based strategies to best meet the needs of the students in my classroom. The most effective strategies I have used are games, reciprocal teaching with cooperative learning, and technology. Each of these has been quite helpful in the constant battle of keeping my students engaged in the lesson.



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Games have proven to be an effective learning strategy in my classroom. My students get very excited when they know they will be playing a game in class. They are motivated and engaged in the game, as they want to do well for themselves and their team. These games bring out a spirited competitiveness in all students. There are numerous math games available that provide an effective way to practice and reinforce math skills while participating in a fun activity.

No matter how well you present your lesson, your students will not retain every concept covered, but I have found reciprocal teaching with cooperative learning to be very effective. When students are able to share with a partner or group what they have learned, the students will glean information from each other. Conversations about the skill or concept will reinforce the concept taught. Average or low achievers benefit from peer tutoring and high achievers benefit from being able to teach someone else the skill, as well. People remember 95% of what they are able to articulate to someone else (Glasser, 1990). People learn...

*10% of what they read*

*20% of what they hear*

*30% of what they see*

*50% of what they both see and hear*

*70% of what they say as they talk*

*90% of what they say as they do a thing* (Ekwall & Shanker, 1988)

When a student is accountable to a partner or group, they seem to become somewhat more engaged in the lesson.



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Today, students are exposed to various forms of technology in their daily lives, so it has become necessary for teachers to incorporate technology into their lessons in order to keep them engaged. Youth are very fascinated and efficient with modern technology. It is an effective strategy for presenting math concepts and skills. Calculators are useful learning tools for all students, and are helpful for students who struggle in math. They are especially effective for students with special needs. Calculators and computers are quite beneficial with performing complicated computations and working on real life problems. The students do not get bogged down with computation and can concentrate on the application process instead.

An old Chinese proverb says, *Tell me, I forget. Show me, I remember. Involve me, I understand!* If we, as educators, understand the wisdom of this proverb, we can provide our students with the most effective instruction that will yield outstanding results. Today's highly effective teachers embrace this, and their students reap the rewards.

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## MATH TRICKS TO LEARN THE FACTS *(MULTIPLICATION)*

By Nicky Ward



More and more in my teaching career, I’m seeing that students no longer commit to memory their multiplication tables. With the math curriculum as extensive as it is, teachers cannot give the time needed to ensure that students learn the basic multiplication facts. Parents are partners in the process and will have greater opportunities for their children to succeed in math if they support the learning of the basics at home. Parents can work with their children to ensure that they do not fall between the cracks. They can help their child learn the facts. There are many tricks to teach children multiplication facts in mathematics. Some tricks that I have discovered are listed here.

### The 9 Times Quickie

Hold your hands in front of you with your fingers spread out.

For 9 X 3 bend your third finger down. *(9 X 4 would be the fourth finger etc.)*

You have 2 fingers in front of the bent finger and 7 after the bent finger

Thus the answer must be 27

This technique works for the 9 times tables up to 10.

### The 4 Times Quickie

If you know how to double a number, this one is easy.

Simply, double a number and then double it again!



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### The 11 Times Rule #1

Take any number to 10 and multiply it by 11.

Multiply 11 by 3 to get 33, multiply 11 by 4 to get 44. Each number to 10 is just duplicated.

### The 11 Times Rule #2

Use this strategy for two digit numbers only.

Multiply 11 by 18. Jot down 1 and 8 with a space between it. 1 8.

Add the 8 and the 1 and put that number in the middle: 198

### Deck 'Em!

Use a deck of playing cards for a game of Multiplication War.

Initially, children may need a multiplication grid to become quick at the answers.

Flip over the cards as though you are playing Snap.

The first one to say the fact based on the cards turned over (a four and a five =

Say "20") gets the cards.

The person to get all of the cards wins!

Children learn their facts much more quickly when playing this game on a regular basis.

### Seeing the Patterns

Use a multiplication grid or let your students create one.

Look carefully at all of the patterns, especially when the numbers correspond with the facts, e.g.,  $7 \times 8$  and  $8 \times 7 = 56$

Let students practice the 'fast adding' which is what multiplication is.

When students can count by 3s, 4s, 5s 6s, etc. they will automatically know their multiplication tables.



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**THE ONE-MINUTE MANAGER,  
BLANCHARD & JOHNSON,  
WILLIAM MORROW & CO., 1982.  
**A SHORT-READ REFLECTION.****



**By Z. Bennah**  
**Johnson City Schools**



Although written in 1982, the strategies of “the one-minute manager” are applicable in many current classrooms. Student management skills are applied in three distinct components:

**One Minute Goals** – Clarity and focus of goals must be shared with students. Focus is the key to whittling the time needed to achieve classroom objectives. Time wasters, such a repetition, are eliminated, as much as is possible. Student goals are clear and achievable.

**One Minute Praising** – Blanchard and Johnson recommend praising specific behaviors in a personal way. Telling students not only how good you feel about their actions, but also how good you feel about them personally, enhances the productivity of the classroom.

**One Minute Reprimands** – The authors recommend the following steps in administering this sometimes quite difficult task:

Tell students beforehand that you are going to let them know how they are performing.

Immediately tell students what they did wrong in specific terms.

Tell students how you feel about what they did wrong, in specific terms.



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Stop for a few moments of uncomfortable silence to let them feel how you feel.

Shake hands or touch their arm in a way that lets them know you are honestly on their side.

Remind them how much you value them.

Reaffirm that you think well of them, but not their actions.

Realize that when the reprimand is over, it's over.

Although one minute solutions may or may not be achievable in many situations, the idea may serve as a guide. Many times the situations mentioned are difficult, time-consuming, and emotional. Eliminating time-wasters and implementing focus is helpful. Focusing on attainable behaviors and objectives, as opposed to criticism of students and personalities, is a more efficient approach to serving the needs of the classroom. Most importantly, students are human beings with needs and wants. The dignity, respect, pride, and importance of the student must be recognized and cultivated. The very best classrooms thrive, not only under the auspices of accountability, but also through warm, caring, and genuine human interaction.





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## Why Classroom Discussions?

By Jan McCall

System-wide Mathematics Coach  
Kingsport City Schools



"Do the math!" "That just doesn't add up." "Go figure!" Math talk is common language for us just about everywhere except for in our classrooms. Suzanne Chapin, co-author of *Classroom Discussions: Using Math Talk to Help Students Learn*, would like to see that change.

"Why isn't math talk used more in the classroom?" Chapin asked a room full of math teachers attending the NCTM Annual Conference this year in Indianapolis. We discussed many ideas and listed the following:

- ✦ Math talk can reveal understandings and misunderstandings.
- ✦ Math discussions support robust learning by boosting memory (language is key to remembering).
- ✦ Math talk supports deeper reasoning by linking evidence to claim.

Math discussions support the development of social skills, especially in a high-tech world.

Chapin was making a lot of sense, but from my experience as a math coach, I have found that teachers, often times, think they do not have time for classroom discussions, or that no one will talk. Teachers also worry that their students will not be able to follow the discussion and might shut down.



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Chapin must have been reading my mind when someone asked, "How do we get these discussions started? Our kids expect to *do problems* in math class, not talk about them. How do we get them involved and keep them interested?"

"Good questions," Chapin said and then she laid out a strategy for introducing students to learn to talk about math. She said that we could ease our students into the discussions by asking them simple questions that "will allow students to engage more fully in mathematical thinking and reasoning." Questions as simple as, "Do you agree or disagree and why?" can be used to get students talking about their work.

Chapin then said she could relate to today's math teachers. When she was in school, during math class -- the traditional math class -- there was not any discussion about math. It was "do the problem, get the right answer, and turn it in." She said that teachers today often lack images of what classroom discourse looks like. This is because of teachers' own experiences in math class where discussions about math were all but absent. Teachers have no frame of reference. I could relate, and so could just about everyone else at the conference. She made some great points, and I decided to read her new book when I got back home. I'm glad I did! And you will, too.

Math Solutions recently published the second edition of *Classroom Discussions*. This new edition includes a CD with video clips of math classrooms and demonstrates the tools to having the kinds of math talk that increases student abilities in reasoning, understanding, and problem solving. To get you started, here are Chapin's four steps to productive classroom discussions:



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Step 1: Get your students to clarify and share their own thoughts. Students will get better at saying what they are thinking by getting a simple discussion started. Students can also get used to using the academic math vocabulary. Once the new vocabulary gets internalized and becomes part of their common language, it will have real meaning.

Step 2: Help your students think of other students. We could do a better job of getting students to listen and learn from each other. Students helping students goes a long way in understanding the math.

Step 3: Help your students deepen their reasoning.

Step 4: Help your students engage in the reasoning of others – and respond! Students are working with the thinking of others, which helps them make sense of the math.

*Classroom Discussions* describes how to initiate conversational strategies (talk moves), lists ways to structure the classroom to achieve goals (both social and cognitive), and provides techniques for students to make mathematical conjectures. These strategies promote the students' learning of mathematical concepts and procedures. Research says "instructional methods that support and promote student sharing, questioning, and active listening enhance student reasoning and problem solving" (McREL, 2010).

Chapin and her *Classroom Discussions* have had an important influence in my own classroom and the classrooms of other teachers. I find that students of



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all ages become more confident in communicating and understanding the math when the strategies of talk moves are incorporated. I have Chapin's five talk moves posted in my room where I can see them from anywhere in the classroom.

The five talk moves are listed below.

Revoicing

*"So you're saying that..."*

Asking students to restate someone else's reasoning

*"Can you repeat what (another person) just said in your own words?"*

Asking students to apply their own reasoning to someone else's reasoning

*"Do you agree or disagree and why?"*

Prompting students for further participation

*"Would someone like to add on?"*

Using wait time

*"Take your time...we'll wait..."*

I encourage my students to use talk moves when working in small groups, especially when another student asks for help. Rather than giving students the answer, they now ask more questions. And that's where we want to go!



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In the words of Marilyn Burns, *Classroom Discussions* “has had a direct, positive, and important influence on my math teaching. The ideas are clear and persuasive and I gained new and important tools for engaging students and improving math classroom discussions.”

Math talk is a win-win...a learn-learn...and a talk-talk situation. Go figure!

## References

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## UPCOMING CALENDAR DATES



### UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS

Tuesday, October 4, 2011  
Liberty Bell Middle School, Johnson City Schools, Johnson City, TN

November 2011  
TBA, Washington County Schools

Monday, February 6, 2012  
Mt. Carmel Elementary School, Hawkins County Schools, Mt. Carmel, TN

Tuesday, March 6, 2012  
John Sevier Middle School, Kingsport City Schools, Kingsport, TN

Tuesday, April 10, 2012  
Central Office, Sullivan County Schools, Blountville, TN

Monday, April 30, 2012  
Vance Middle School, Bristol City Schools, Bristol, TN



### NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS 2011 REGIONAL CONFERENCES AND EXPOSITIONS

Atlantic City, New Jersey • October 19-21, 2011

St. Louis, Missouri • October 26-28, 2011

Albuquerque, New Mexico • November 2-4, 2011

Annual Meeting, Philadelphia, PA • April 25—28, 2012



### TENNESSEE MATHEMATICS TEACHERS ASSOCIATION

TMTA Fall Conference  
September 2012  
Tennessee Tech, Cookeville, TN

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens, Newsletter Editor.***

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# UETCTM

## Membership Application



***Mail completed form to:***

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***Membership Fee: \$10***  
***Payable to: UETCTM***

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School Address: \_\_\_\_\_  
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**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**





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## MATH FUN

### A FIRE IN THE ROOM

A physicist and engineer and a mathematician were sleeping in a hotel room when a fire broke out in one corner of the room. Only the engineer woke up he saw the fire, grabbed a bucket of water and threw it on the fire and the fire went out, then he filled up the bucket again and threw that bucket full on the ashes as a safety factor, and he went back to sleep. A little later, another fire broke out in a different corner of the room and only the physicist woke up. He went over measured the intensity of the fire, saw what material was burning and went over and carefully measured out exactly  $\frac{2}{3}$  of a bucket of water and poured it on, putting out the fire perfectly; the physicist went back to sleep. A little later another fire broke out in a different corner of the room. Only the mathematician woke up. He went over looked at the fire, he saw that there was a bucket and he noticed that it had no holes in it; he turned on the faucet and saw that there was water available. He, thus, concluded that there was a solution to the fire problem and he went back to sleep.



### NEW YEAR, NEW PUZZLE

To celebrate the first UETCTM Newsletter of 2012, have some fun with this puzzle from [www.mathpuzzle.com](http://www.mathpuzzle.com)! Here are the rules: You must pass through the operations to get from 2011 to 2012; you may pass through an operation several times, but not twice in a row. Look for the solution in next month's issue!





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## President's Message



With such a mild winter this year it feels like spring is almost upon us. I hope you are enjoying the unusually warm weather. This spring we have several meetings and I hope you can attend one or more of them. With the changes in K-12 education lately, staying connected to other teachers is more important than ever. Having a strong network of colleagues is important for keeping your professional knowledge up to date.

Be sure and check out the essays in this issue, as well as the calendar of events. We would like to see our membership rise in the coming years, and hope that you find our meetings, Wikispace, and newsletters helpful. For those of you looking for ways to communicate with the public, consider writing an essay for the newsletter. I'll see you at a meeting this spring.

Ryan Nivens

## MATH TRIVIA

- ⌘ *The 21st prime number is 73, its mirror, 37, is the 12th.*
- ★ *In 530 B.C., Pythagoras discovered that the morning and evening stars are one and the same.*
- 😊 *Googol, a one followed by one hundred zeroes, was named in 1940 by a nine-year-old, Milton Sirota, after his uncle, a mathematician named Edward Kasner, asked the child what a good name for such a large number might be.*



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## Math You Can Eat

By **Katie Dickerson Walker**

**Bristol, TN City Schools  
6th Grade Math**



It has been my experience that students react positively to hands-on interactions with math. As teachers, we are constantly searching for ways to keep them engaged and involved in discovering answers to problems. There are a few ways that I have found to incorporate food items into our math lessons as math tools. This keeps students very interested and focused!

When discussing Geometry, the terminology and characteristics of certain figures are key to skill mastery. One activity that helps students grasp these concepts is to give them stick pretzels and cake icing to create each geometrical shape. Students start with basic figures like rays, angles, and types of triangles. After their work has been assessed, they are allowed to eat each "math tool". They are then asked to create types of polygons and quadrilaterals as a more advanced form of the lesson. They react positively to this activity and are able to retain the information presented much more effectively. In addition, this exploration reinforces the key concepts of Geometry in a way that the students can relate to, while keeping them engaged and interested in their learning.

Food can also be used in other areas of Math as a "math tool". One example of this is an activity called "M and M ratios". Students are given a pack of M and Ms to use as their data set. The students are asked to count and sort their data. They complete a frequency table using the information they gathered. This reinforces how to correctly interpret and display data, which are important sixth grade skills. Students are then asked to use the table to create ratios based on the different colors of M and Ms. This multi-faceted activity covers a broad range of skills to reinforce mastery.

It is of the utmost importance to keep students engaged and involved in their own learning. This gives them the opportunity to investigate solutions, thus allowing them to have ownership of their own knowledge. Using hands-on activities provides students with various learning styles the opportunity to be successful. This is our ultimate goal as teachers. Using food as a "math tool" or "data set" is one strategy and method that gets us one step closer to reaching that goal.



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## *Are We Teaching Our Children Too Much, Too Fast?*

By **Katina Nantz**

**Hawkins County, TN School District  
6th Grade Math**



Having a child that had struggled in first and second grade math, I knew learning how to multiply was going to be a challenge. To better prepare my daughter Hannah, I began to teach her how to multiply the summer before third grade began. We played multiplication games, practiced flashcards, played computer games, modeled problems using manipulatives and slowly she began to grasp the concept of multiplication. When school began, her teacher introduced the class to multiplication. I was excited because I knew she would be able to do this. Hannah struggled, but slowly I could see she was grasping the concept. Then suddenly, the teacher is teaching division. Whoa! She had not mastered a very important skill and now she was expected to learn something new that involved a concept she had not mastered yet. As you can guess, she started falling behind again. She had no idea how to divide and suddenly she was confused on how to multiply, too. Hannah was only one child in the class. I wondered how many others were having the same or worse problem. I talked to her teacher and heard what I expected to hear, "I had to move on in order to stay with my pacing guide and cover all of my state standards". I have often made this statement myself. I knew exactly how she felt. Thus my question is this....are we teaching our children too much, too fast?

Stop and think how many standards you now teach that are new to your grade? Were they bumped down to your grade from a later grade? Chances are, you are saying, "Yes." We have more and more expectations for teachers and for our students. I can remember being in an eighth grade middle school classroom in 1988. I fondly remember my teacher, Mr. Bellamy, teaching us how to divide. Now division is a skill that is expected to be mastered by the time a student enters the fifth grade. According to our current Tennessee state standards, beginning in second grade students extend their knowledge of the properties of numbers to multiplication. In the third grade, students develop an understanding of multiplication and division facts through multiple strategies and representations. By the time students are in the fourth grade, they are using all four operations - addition, subtraction, multiplication, and division - to solve problems using whole numbers, fractions, and



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decimals. Multiplication and division are supposed to be mastered skills by the time a student leaves the fourth grade. Are we teaching our children too much, too fast?

A bombshell was recently dropped on America. The exam that caused the shockwave is the Programme for International Student Assessment (PISA), which is given every three years to 15-year-olds around the globe by the Organization for Economic Cooperation and Development (OCED), a global group that promotes growth and trade. Among the 65 countries that participated, the US ranked a dismal 31<sup>st</sup> in math. Leading the US was Shanghai at number 1, Singapore at number 2, Hong Kong at number 3, South Korea at number 4, and Taiwan at number 5.

There is a problem somewhere. It could be several things. The problem could be teacher quality. The problem could be that teachers are not setting high enough expectations for their students. The problem could be that we are not reaching students on their level. These are just a few of the many ideas we could express. But, maybe.....we are just teaching our students too much, too fast. That is for you to decide.



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## *Critical Thinking Skills*

**By Jackie Strickler**  
**Hawkins County, TN Schools**  
**Algebra I Resource**  
**Grades 7-9**



Critical thinking strategies have become common instructional methods in regard to students' educational endeavors. These thinking skills have become major components for attaining skills that produce positive results on end of course exams and classroom tests. As the state standards become more complex, students will need to critical thinking skills to answer questions. According to Mary White (2010), "Using instructional strategies that are designed to require students to analyze information critically is a great way to help them develop sound strategic thinking skills that can serve them well throughout their lifetimes"(para. 1). There are several definitions that can be used to describe critical thinking. The definition I use in my classroom can be described as "thinking outside the box". According to Bonnie Potts (1994), "Although there are some quite diverse definitions of critical thinking, nearly all emphasize the ability and tendency to gather, evaluate, and use information effectively"(para. 1).

There are several common critical thinking strategies that have been proven successful in classroom settings. These strategies include allowing sufficient time for students to reflect on a question, asking open-ended questions, explaining "why", and probing for assumptions. By answering "why", students have the opportunity to understand how and why a concept works. This strategy goes beyond a simple answer that can be used in all subject areas across the curriculum. I have used all of these strategies in the special education classroom for students with learning disabilities. These strategies can be used together to produce an environment that is conducive to learning.

The two strategies listed above that I use the most are explaining "why" and giving students extra time to answer the question. Students are asked to explain their thought processes in arriving at an answer. By doing this, teachers can help diagnose where a mistake is made and give hints in completing the problem. In my opinion, the students are understanding how the concepts are used through this process. By giving students extra time, they can take their time and deliberate their response before answering the question. On the bulletin board, there is saying that goes with this strategy, "Always think, think again, and then answer".



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In my Algebra I class, I teach a three-step process that can be used to solve critical thinking problems. A mentor teacher taught me this process 16 years ago and I am still using it today. First, students sort through the numbers and save only the numbers needed to work the given equation. The second step is to determine the actual question being asked. In this process, the student finds the mathematical equation that will best solve the question. The third step is to compare the actual answer to the answer that would make the most sense. Through this process, the students can actually find their own mistakes and make corrections. These strategies can provide teachers with skills that are beneficial in the classroom. By applying these strategies, I have become very cautious in the time provided for students to answer questions. I have found that this extra time provided a more relaxing atmosphere for the student.



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## *Use of Small Group Instruction to Differentiate Learning in a 90-Minute*

**By Sherri Devault**  
**Sullivan County, TN Schools**  
**Instructional Math Coach (7-9)**



Math takes time to teach. Teaching math effectively requires time for engagement, direct instruction, independent practice, exploration, and fun. All of these pieces can be achieved in a 90-minute math block if planned carefully and executed using effective classroom management strategies.

The students entering classrooms today come from incredibly different mathematical backgrounds. A four or five grade ability spread is very typical when looking at a group of thirty students in an eighth grade classroom. The teacher is faced with pulling lower achieving students up, maintaining on-level learning, and providing above grade level material for the students that are advanced. A 90-minute block affords the time needed for several activities that address many levels of mastery. An example schedule might look as follows:

*10 Minutes- Review of previously learned material (bridge to new concepts)*

*30 Minutes- Direct Instruction*

*40 Minutes- Small Group Activities*

*10 Minutes- Wrap Up or Assessment*

Dividing a classroom into four or five smaller common ability groups lends itself to planning activities that are focused specifically on mathematical needs. This group organization would involve planning activities that differ in rigor on the same concept to be completed in a four or five day period. One activity can be directly facilitated by the teacher and adapted to the ability of the group. This small group setting assures the teacher complete awareness of strengths and weaknesses that exist individually. The teacher can address difficulties one on one with students who need that type of setting for mastery.





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Classroom management comes into play when planning the activities that are not directly supervised by the teacher. This works best by having each activity produce something that can be turned in as an assessment. Posting specific instructions and expectations for each activity deters unnecessary interruptions during instruction time. These posted instructions should include where work is placed after completion and a list of acceptable assignments if small group work is finished before the allotted time.

After concluding the cycle of learning stations, students will have had the opportunity to discuss concepts directly with their teacher, identify areas of needed refinement, give and receive peer tutoring, independently practice the skills introduced in whole group instruction, and be formatively assessed throughout the process. A 90-minute math block is necessary for a teacher to effectively teach required material and evaluate individual mastery within the classroom.



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## *New Tricks for Old Dogs*

By **Mona Gordon**  
**Johnson City, TN Schools**  
**7th Grade Math**



With the shift of standards in Tennessee, many veteran math teachers are feeling the same amount of anxiety that novice or beginning teachers often feel. Were we not promised that it would get easier with time? Have you noticed how much energy the students have when the final bell rings compared to the teachers? As a mentor to new teachers, I have found that some of the tidbits that I share with them are just as relevant to veteran teachers who may need to refresh their teaching a bit to “survive and advance” to the next school year.

A few changes can make a big difference in the effectiveness of teaching. First, make sure student engagement is at a high level. If they are engaged in what they are doing, they are less likely to be behavior problems. Next, make sure the tasks the students are asked to do are connected to prior knowledge. If you can get them to make the connection to something they have done before or something they know about, they are more likely to succeed. When teaching the more difficult standards that we are being asked to teach, make sure you model your thought processes. Students need to know how you are thinking when you work a problem. If you only show them how to work it on paper without the thought process that got you there, they will sit quietly and watch. However, when it is time for them to work a problem on their own, they will not know where or how to begin.

Finally, it should be commonplace in a mathematics classroom for students to explain thinking and meaning. In the past, I would call on students until I would find one with the correct answer. Then I would let that student explain how they got their answer. It is just as important to let the students who missed explain how they got their answer. Don't skip this step even when you are rushed for time. Remember that wrong answers are not to be thought of as an interruption of learning; wrong answers are a part of learning, especially in a math classroom!



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## *Teaching & Learning Elementary Mathematics Conference -St. Louis, MO, May 2-4, 2012*

We would like to make all mathematics educators, administrators, and University students aware of this professional development event and available discounts.

Teacher knowledge has a profound impact on student achievement. The National Math Recovery Conference draws on the research and practice of educators, teachers and administrators interested in promoting research-based k-5 programs that address intervention from a one-to-one, small group and whole class perspective.

US Math Recovery is a non-profit organization internationally recognized for its early mathematics learning approach that augments classroom curriculum, giving teachers the tools to identify numeracy problems in their students. Years of both academic and case studies have proven the efficacy of the program.

This professional development event features top notch key-note speakers including Dr. Michelle Stephan, North Carolina University; James Burnett, Origo, Australia; Dr. Charles Munter, University of Pittsburgh; Dr. Fran Roy, Fall River Schools. The conference will feature over 30 break-out sessions and a materials show case to take a look at class room resources. Discounts are available for administrators and full time university students. Please check out our 4-day conference program at-a-glance.

<http://www.mathrecovery.org><<http://www.mathrecovery.org/>>



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## Registration is open! Hurry- Space is LIMITED for this new event!

*July 31-August 2, 2012  
Atlanta, Georgia*

*Algebra Readiness for Every Student: An NCTM  
Interactive Institute for grades 3-8 with Extended Online  
Professional Development*

### *Professional Development for the Whole Year*

You need the right tools to build a strong math foundation for your students— and NCTM's Interactive Institute for grades 3–8 offers the latest strategies to give your students the best preparation for high school, higher education, and beyond. Kick off your experience in Atlanta, where you'll participate in face-to-face activities and network with peers from across the country, and then reinforce, expand, and apply what you learn by participating in online keynote sessions and interactive discussion groups throughout the school year.

### *Reserve Your Room*

All two and a half days of face-to-face activities will take place at the Sheraton Atlanta, so you can stroll out of your room and right into the day's first presentation. A special discounted rate of \$159 is available to Institute participants, but you must book your room through NCTM to receive this special rate. The deadline to reserve your room is July 5, 2012, but you must [book your room](#) through NCTM to receive this special rate.

### *Registration Information*

[Register](#) by May 18 to take advantage of our lowest registration rates. [Register online](#) or Call (877) 557-5329 or (972) 349-5855 with your credit card information. Phone lines are open Monday–Friday, 8 a.m. – 6:30 p.m., Central time. Your registration will include 2 ½ days of interactive professional development from leaders in mathematics education, a welcome reception with your fellow participants, free networking lunch during two days of activities, plus online professional development for the whole year!

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens, Newsletter Editor.***

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# UETCTM

## Membership Application



***Mail completed form to:***

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Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_  
\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_  
\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater Tri-Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



# UETCTM NEWS

SEPTEMBER  
MATH FACT:

VOLUME XIII, ISSUE I

SEPTEMBER 2012

- IN 1752, WHEN ENGLAND ADOPTED THE GREGORIAN CALENDAR, THE DATES SEPTEMBER 3-13 DID NOT EXIST. THE POOR RICHARD'S ALMANAC OF 1752 HAD THE HEADING, "SEPTEMBER HATH XIX DAYS."

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## Girls Rule! ...at Arithmetic!

A recent study published in *Psychological Science*, is shaking the notion many of us have long carried that boys perform better than girls at math. The study, performed in Beijing by Dr. Xinlin Zhou and colleagues, indicates that girls outperform boys in areas of math like arithmetic and numerosity comparison, and cites girls' superior verbal skills as the foundation for this proficiency.

The study was conducted on children ages 8-11 at 12 different primary schools in Beijing. Across the board, girls' performance was superior to that of boys in the areas of arithmetic, quickly recognizing larger numbers, and completing numerical sequences. Boys still had the advantage when it came to problems that involved spatial

reasoning, like deciding which figure would correspond to a rotated three dimensional object.

The key, says Zhou, is that arithmetic and sequencing are things which are learned verbally, for example, the learning of multiplication tables. Words and phrases such as "larger than", "less than", and "times" require verbal reasoning skills, and the concepts are heavily rooted in verbal knowledge.

Ultimately, Zhou and his colleagues hope that the study can help improve mathematics education and performance for both boys and girls. Perhaps by helping girls develop their spatial reasoning, and boys their verbal reasoning, both sexes will improve mathematical ability in multiple areas.



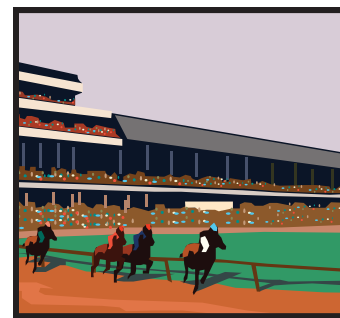
To read the full article, "Girls' Verbal Skills Make them Better at Arithmetic, Study Finds", and learn more about Dr. Zhou's work, visit [Science Daily](#).

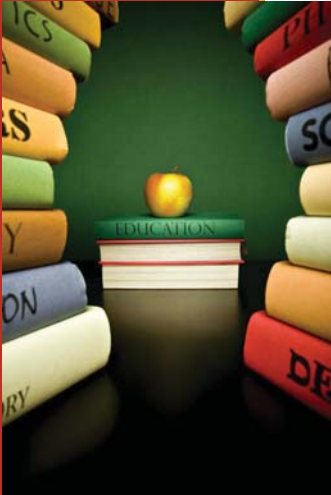
## A Day at the Races

A mathematician and a Wall street broker went to races. The broker suggested to bet \$10,000 on a horse. The mathematician was skeptical, saying that he wanted first to understand the rules, to look on horses, etc. The broker whispered that he knew a secret algorithm for the success,

but he could not convince the mathematician. "You are too theoretical," he said and bet on a horse. Surely, that horse came first bringing him a lot of money. Triumphant, he exclaimed: "I told you, I knew the secret!" "What is your secret?" the mathematician asked. "It is rather

easy. I have two kids, three and five years old. I sum up their ages and I bet on number nine." "But, three and five is eight," the mathematician protested." I told you, you are too theoretical!" the broker replied, "Haven't I just shown experimentally, that my calculation is correct?"





## Former President's Message:

Welcome to school year 2012-13. Hopefully your year is off to a good start, and we're only a few weeks away from the end of the first quarter. I would like to send a warm welcome to our new president of UETCTM, Tara Harrell. Tara brings many years of teaching experience to our group, and has spent the last few years as a math coach for Hawkins County. Be sure and say "hello" to her at any of the meetings you attend this year. She nearly has the schedule of our meetings finalized and you will be receiving that by email and on the website shortly.

This month the annual meeting of the TMTA took place at Tennessee Tech University in Cookeville, TN. Over 400 teachers attended over the two days of meetings. Teachers from our region were there including myself, Pam Stidham of Kingsport City Schools, and Dr. Daryl Stephens of ETSU. Several students from our area were also honored as winners of the state math contests, and I encourage you to look up the TMTA Bulletin to see the list of students, schools, and teachers who placed in the top 10 of the various categories.

I encourage all of you to stay in touch with one another and share ideas. This year we will be publishing almost 70 essays in our newsletters. If you have anything you have written, feel free to send it to me for consideration in the newsletter. It is a great way to document your Communication to your principal in your yearly evaluations, and it allows you to share ideas with others. Have a great year!

Sincerely,  
Ryan Nivens  
Past-President, UETCTM





# Career Opportunity

## Coordinator of Math of Content and Resources

Tennessee sits at a critical juncture in education. As the first winner (along with Delaware) of the Race to the Top competition, we have a compelling vision, plan and goals designed to make our state the fastest improving state in the country in educational outcomes. At the same time, we know we have a long way to go, as our students currently rank 46th among states in math proficiency levels, and 41st in reading based on 2011 4th grade NAEP results. Only 16 percent of Tennessee students are college-ready in all four subject areas on the ACT. And we have a large achievement gap throughout the system along lines of race/ethnicity and income.

**Charge:** The Coordinator of Math Content and Resources is charged with coordinating the content components of the transition to Common Core State Standards in mathematics. This person will be responsible for ambitious goals for improvement in student achievement on the NAEP, ACT and PARCC exam in mathematics and developing a bold strategy to support the course structure and educator resources to support this transition. The Coordinator of Math Content and Resources will work with a group of leading educators from across the state and country to ensure deep state understanding of the expectations of the Common Core State Standards in mathematics and inform all aspects of our transition (including assessment design and training approach and instructional materials.)

### Responsibilities:

- Coordinate and support the development and dissemination of high-quality, resources for common core transition in mathematics
- Spearhead initiative to rethink high school math course sequencing, staffing and supports
- Help shape the agenda for state-wide and local trainings to support continuous improvement of mathematics instruction
- Work with math positions in COREs across the state to support the sharing of best practice
- Coordinate and weigh-in on item review and course review in mathematics

### The key characteristics we are seeking in this person include:

- A track record of dramatically improving results improving student achievement in mathematics
- Evidence of continuous improvement and ongoing learning orientation. Desire to work with educators from across the state and country to deepen perspective of effective instruction. (This is not a position where we are looking for an “expert in mathematics.” While we do seek someone with substantive experience with math instruction we are looking for someone who will coordinate state-wide learning in mathematics, not someone who will serve as a sole specialist for the content area)
- Strong communication skills and a demonstrated ability to communicate complex matters with educators in a clear and empowering manner. Experience working with diverse teams successfully.
- Strong organization skills and track record of managing projects to meet deadlines and achieve milestones over time

The Coordinator of Math Content and Resources will report directly to the Executive Director of Content and Resources and work with a variety of department staff members, vendors and educators throughout districts.

The salary for this position is competitive and commensurate with previous experience.

This position is based in Nashville, TN.





Adam Sikora teaches for Bristol Tennessee City Schools.

*“It finally dawned on me that I had to completely change my classroom environment, and a large part of that centered on me.”*

## “Be Sure To Celebrate the Small Successes!”

By Adam V. Sikora

“Be sure to celebrate the small successes,” declared Dr. Nivens on our first day of Eastman Mathletes training in the summer of 2012 on the campus of East Tennessee State University. This statement echoed throughout the two-week course, as we built a strong class team from a group of mostly strangers. The consistent celebrations quickly established a nurturing environment for creativity and growth.

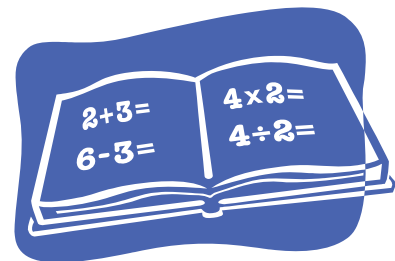
I stepped into the classroom for the first time last fall, coming directly from a nearly ten-year career in the Air Force as a meteorologist. I had zero educational training, as I was licensed through the alternative program at ETSU. This all left me with little to rely on to teach teenagers algebra and geometry. As I struggled to get ahead of the curriculum, classroom discipline problems inevitably began to surface and fester. I managed these issues “by-the-book” with cold resolve, which was inherent from my military background. While this tactic seemed to solve the existing discipline problem, another would soon follow, and it became nearly impossible to spend quality time and effort on the math curriculum. Towards the end of the fall semester, my mentor made a note that I should praise the students more. It finally dawned on me that I had to completely change my classroom environment, and a large part of that centered on me.

I had certainly overlooked the power of positive reinforcement. “Be sure to celebrate the small successes,” resonates a lot more with me now. The program at Eastman Mathletes showed me a lot of other ways to incorporate that in my classroom. For example, we applauded individual efforts in team-building exercises, the whole team’s successful completion of the exercise, individual presentations of a strategy and/or solution to a math problem, and group presentations of posters or activities. Student feedback was framed with more positive and encouraging vocabulary.

Students were given time and space, when appropriate, to develop and discover their own solutions. We frequently celebrated these successes.

Personal development is said to be the direct result of setting and accomplishing goals. Often the goals we set for ourselves are strictly long-term. “Success is the sum of small efforts, repeated day in and day out,” states Robert Collier. By celebrating smaller successes along the way, an attitude develops of “I am successful.” Teens are just learning about the value of setting goals, which hopefully includes passing their math course. A constant series of small “wins” is the perfect formula to strengthen self-esteem and help break down the seemingly insurmountable path to the goal.

Teachers can similarly benefit not only with their own personal successes, such as scoring high on an evaluation, but also in the positive connections with students. The Eastman Mathletes program showcased the power that these positive connections can have, even in the highly scrutinized field of public math education. Maya Angelou embraces this notion with the quote, “I’ve learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.” I intend to make my future students feel great about themselves and subsequently their competency in understanding and practicing mathematics.



# Math and Science Integration

By Lynna Bingham

My 5th grade students love coming in and finding colored pencils or markers on their desks. I try to use them regularly to keep them interested before we begin the lesson. Being a teacher of both math and science, I try to integrate as many standards from each subject as possible. One of my favorite things to teach my students is how to make and interpret a bar graph. Tennessee state standards only require students to be able to use a double bar graph in 5th grade, but for this project I have students create a quadruple bar graph. I build it up as much as possible and have the students all excited about doing a higher level skill before they begin.

For timing purposes this activity is done in science class. In science, the students must see if the ocean currents affect the land temperature across the United States, and in math, the students must be able to predict data representations with bar graphs. Before we begin the project we learn the necessary information in science and then I have students predict what they think the outcome will be and why. They usually present this orally in a small group setting with me present. Then, I give the students a list of several cities across the United States in 3 categories. Students choose a west coast city, an east coast city, a Midwestern city, and their hometown. Students then use weatherbase.com to look up the average temperature for each month of the year at each location and fill in a chart to keep

their data organized. They use that data to make their bar graph. Each location is represented in a different color so it is easy to see the trends. I always have multiple examples for them to reference throughout the project. When the students are finished with their graphs, they are required to write two paragraphs

explaining the effects they see that are caused by the ocean currents. We also discuss the effects as a class and why they saw what they did as well as other variables that could have caused some of the results.



I display the student work on our classroom walls and the students are proud to see their finished product. By doing this lesson in science, many students are surprised when I mention the math skills they have been utilizing. Between the setting, colored pencils, hype about the skill, and presentation, this is one of my students and my favorite activities/lessons of the year.

*Lynna M. Bingham teaches for Washington County Schools.*





Carolyn B. Harris teaches for Kingsport City Schools.

*As teachers, we must support and encourage students to practice "math talk" in the same way we encourage "book talk".*

## Let's Talk Math, by Carolyn B. Harris

When visiting most elementary classrooms during literacy instruction, conversations abound. Readers respond to teachers' questions and talk with classmates about what is being read. Why do you think the author chose that title? If you could write a different ending for the story what would you write? Can you explain the details from the story that helped you draw that conclusion? Students often share the strategies that they used to help read an unknown word or which comprehension strategy helped them understand the story. Students and teachers join in conversations to help clarify understandings, give opinions, and make inferences about what is being read. Students are encouraged to explain their thinking by sharing supporting details from the text. Teachers listen and ask probing questions to encourage the reader to practice higher order thinking skills. Teachers monitor student discussions to evaluate student progress and plan for helping individuals strengthen their skills.

Why then, do such conversations stop being so prevalent during math instruction? Why should students' only focus be on listening to the teacher

explain concepts and strategies, rather than being active participants in the conversations about mathematics? As teachers, we must support and encourage students to practice "math talk" in the same way we encourage "book talk".

In *Lightbulbs Happen*, Nikki Faria-Mitchell emphasizes the importance of making students aware of the value of each others' ideas; having a classroom that is a safe place to learn and take risks; and the value of learning from peers. Routines must be put into place so that students have clear understandings of how to listen respectfully, ask questions of fellow students, and ask for help from the teacher and from classmates. Students must also learn how to present their ideas about strategies so that others can understand their thinking, whether they are working with a partner or presenting their thinking to the whole class. Explaining their thinking to others and justifying their methods helps the students more fully understand their own strategies. When several students share, connections are made and classmates benefit from being exposed to multiple ways of solving a mathematical question.

The teacher must purposefully plan for how to guide discussions so that learning is maximized for all students. When students are allowed time to express their ideas, the teacher validates the importance of the students' ideas as worthwhile. Through careful questioning, the teacher can help students discover why their strategy worked or needs revising. Having time to work through their thinking with others, empowers students to gain confidence in their ability to solve things on their own and develop persistence to challenge themselves to direct their own learning. During this time, the teacher should listen and monitor for learning that has been mastered or still needs refining.

When teachers understand the value of "math

talk" among students, they will make the time for this vital part of math instruction. Students will participate in conversations about why a strategy works or doesn't work; how their understanding connects with another student's understanding; or how they can prove their conclusions so that others understand. Having a math classroom community that values students' ideas and abilities to communicate their thinking enhances the learning of all students.

References:

Faria-Mitchell, Nikki, (2009). Lightbulbs Happen. In Judy Storeygard (Ed.), *My Kids Can*, (pp. 113-125). Portsmouth, NH: Heinemann.

## September Math Challenge!

This month's math challenge comes from [www.wuzzlesandpuzzles.com](http://www.wuzzlesandpuzzles.com), a marvelous site where teachers and math enthusiasts can find hours of fun puzzles and brain teasers for all ages!

**Try to fill in the missing numbers.**

- Use the numbers 1 through 16 to complete the equations.
- Each number is only used once.
- Each row is a math equation. Each column is a math equation.
- Remember that multiplication and division are performed before addition and subtraction.

|    |   |    |   |    |   |     |     |
|----|---|----|---|----|---|-----|-----|
|    | / |    | + |    | / |     | 4   |
| +  |   | +  |   | -  |   | -   |     |
|    | / |    | - |    | + |     | 9   |
| -  |   | X  |   | /  |   | +   |     |
|    | - |    | / |    | + |     | 20  |
| +  |   | +  |   | -  |   | X   |     |
|    | - |    | X |    | - |     | -73 |
| 14 |   | 61 |   | -3 |   | 116 |     |



Susan Davidson teaches for Hawkins County Schools.

*“You can focus your teaching on your PASSION, whether it be math, reading or science. There’s nothing like dreading “that subject” the one that always seems to get cut short or brushed to the side for another day.”*

## Departmentalized vs. Self-Contained Classrooms

By Susan Davidsom

Having spent the last ten years in a self-contained classroom, I was somewhat apprehensive to the concept of being departmentalized. I couldn’t have been more wrong! Departmentalization was the best thing to happen to this teacher. It made me take a look at how and what I was teaching and allowed me to focus my energy into becoming a better teacher. Classroom organizational structure has been debated for years. Higher education has traditionally been departmentalized. However, this concept of team teaching has been introduced into the elementary grades. I would like to take this opportunity to focus on the pros and cons of departmentalized vs. self-contained.

### Pros of Departmentalized

- You can focus your teaching on your PASSION, whether it be math, reading or science. There’s nothing like dreading “that subject” the one that always seems to get cut short or brushed to the side for another day.
- Planning for fewer subjects allows you to create more focused, well thought-out and exciting lessons.
- It allows students to see teachers with different personalities and teaching styles throughout the day. The kids benefit from the change of scenery. This change can also ease any student-teacher personality conflicts.
- You become better at time-management. If you only have 90 minutes, you’re more likely to be focused on your objectives for the day.
- The kids don’t get as “restless” because they know they will only be there for 90 minutes.
- You get better each time you teach a lesson...remember, practice makes perfect!
- If you have a difficult class, you get a break. You’re not locked inside a little room all day long with the same “little darlings.”
- Less “shock” to students when they go to middle school. They have that experience of changing classes, taking what they need with them to that class, and working with multiple teachers.



### Cons of Departmentalized

- You get tired of saying the same thing multiple times a day. By the time you teach the same lesson four times, you may forget important details.
- You don't have complete control over your schedule. It makes it more difficult to follow that "teachable moment" when your time is strictly enforced.
- It leaves less time for remediation. Having the opportunity to steal moments throughout the day to reinforce skills that may need extra time.
- Switching classes can be difficult for students who are not mature enough to handle several transitions. Students forget assignments, materials, and supplies. This can be especially hard for those students with high distractibility disorders.
- If you are the only one in your grade teaching a particular subject, it can feel lonely. You are solely responsible for the planning.
- More record keeping.
- Transition time can be difficult.



The intent of departmentalization is to use the teacher's strengths to teach content. I team teach with one other teacher and there are two teams in my grade. So, I have another math/science teacher to plan with and bounce ideas around with. We meet often to discuss planning and how lessons went. Communication is KEY! Departmentalization can work with any schedule; this is part of the joy of departmentalization, making it fit your needs and work for you. This will hopefully help with any concerns you may have had about departmentalization.

## September Math Trivia

- **2 and 5 are the only primes that end in 2 or 5.**
- **1 and 2 are the only numbers where they are the values of the numbers of factors they have.**
- **If it were possible to drive through space at 75 mph (120 km/h), you could reach the sun in a little over 142 years.**
- **If "Septem" is the Latin word for seven, then why is the root, "Sept" used to denote the ninth month of the calendar year?**



Diana Harris teaches for Bristol Tennessee City Schools.

*“At this moment in time, in this ideal, perfectly put together classroom, where nothing could go wrong, I was speechless.”*

## Diversity + Differences = A Masterpiece

By Diana Harris

A youthful and energetic teacher bounced into her classroom on the first day of school during her first year of teaching. Eager to meet her new students and inquire about what they had done over the summer, she quickly began giving instructions for an assignment. She asked her students to write about their summer vacations. The students were given twenty minutes to work on the descriptive writing. Next, the students were instructed that they would share the writings with their classmates. Twenty minutes of thought and reminiscing passed. The children gathered on the new rug at the front of the classroom, mildly interacted, and the reading began. An animated, curly headed, Caucasian girl enthusiastically volunteered to share her story first.

She began, “This summer my parents took my sister and me to Disney World. My daddy had to go for a business trip. We flew to Florida and then stayed in a fancy hotel for a week. I got a princess crown when I ate lunch with Cinderella! I have been to Disney three times before, but I thought this time was the best!” The second reader, a male student, tall and athletic, began to confidently articulate his story. “My parents took me to the beach. I love to surf. I got to use my new board. We went surfing, water skiing, and ate lots of food. It was the best trip ever because I am the best surfer!” Finally, it was time for the last student to share. He was a quiet and homely looking youngster. His shaky and withdrawn soft voice began to speak, as he slowly lifted his paper up closer to his eyes. “This summer, I done took a va-

cation to visit my dad. My Mamaw took me. He stays at jail in the mountains. It’s far away. We sit in a big room. Dad buyed me and my brother drinks from the machine. I love my dad.”

At this moment in time, in this ideal, perfectly put together classroom, where nothing could go wrong, I was speechless. The youthful and energetic teacher was me. The students reading those stories were mine. A realization and sense of reflection overwhelmed my heart and mind. Understanding that diversity illuminates our lives on a daily basis, do we slow down and acknowledge it? Do we get caught up in our own lives and place our attention on making things comfortable and ideal for ourselves? As a new teacher, was I forgetting that each student learns in a unique way askew from the “norm”? I was promptly reminded that my path did not bring me to this place only to serve as a teacher, but to be a self-sacrificing advocate who embraces, acknowledges, accommodates, and respects diversity. The power of knowledge and the process of learning would not occur unless I took a moment to slow down and realize that I must break things down into smaller pieces. The differences among my students’ background knowledge and prior experiences were evident. The value of a family trip to a beautiful beach or high-paced theme park was understandable and expected to some, yet, absurdly unreachable and impossible for others. Social, economical, emotional, physical, and spiritual differences splashed all around my mind like a young child playing in the water. Children



come from such dissimilar places, yet are unified in one place - school.

Beyond the walls and structure of this place called school is an ultimate hope to learn. It can be found when one puts on the glasses that enhance the vision of viewing humanity with a critical prescriptive. In order to inspire young individuals, teachers must continue to reflect upon practice and remember that children can take different routes to find a solution. Safety, security, warmth, and acceptance draw close together and describe an environment that provides all students with a chance to blossom in all subject areas. In order to venture away from depriving my students, I deemed to set up a classroom structure that welcomed and accepted all types of learners. Math instruction and sound design are rooted from the consideration of diverse students. In order to make teaching possible, true dedication and hard work had to bubble up to the surface. In creating a secure place, diverse learners feel a part of the whole. Each precious life that enters through the door may relax knowing that each diverse individual counts. As a new teacher, this cultural transformation reminded me of countless important elements of the educational conceptual framework. Have an open-mind, embrace and care for diversity, and have an empathetic heart are merely a few of the pillars that hold the framework together. Self-efficacy serves as a proactive response to the needs of all learners, diverse as they may be. Children come from black, white, or maybe even gray backgrounds and enter into the classroom with one hope, that the teacher will love and care for them, regardless of who they are.

In order to successfully teach math to students, we as teachers, must allow students to take risks, make mistakes, and collaborate while problem solving without the fear of judgment. If a trusting relationship can be built, all diverse characteristics fall into place; not to be forgotten, but to be respected. I must be sensitive to the ideas and per-

spectives of others to promote a positive relationship. Regardless of prior experiences, financial status, race, gender, religion, ability, performance level, age, or family life, students enter into a math classroom in order to help and to be helped.

Diverse learners are within every classroom. An ultimate responsibility of mine is to integrate diversity into the daily math curriculum. Therefore, altering the way in which instruction is conducted and tailoring activities to meet each child's needs is vital. If both teachers and students remember to take diversity into consideration and act upon it, all students will be able to achieve educational successes, regardless of the contrasting differences. The integration of hands on, visual, musical, artistic, natural, and auditory activities and engagement will help establish a union between the material being taught and the learners' preferred learning style. As a result, all students can achieve a goal, even if the goals are different. Rather than judge others and their math strategies, celebrate the differences among each student as well as the commonalities.

In conclusion, one of the best parts about diversity is that each individual has a gift to share with another. When this is gift, exchange takes place and a strong connection is built that helps to generate one solid team or family. Astoundingly, diversity is what we all have in common and can uplift each other by sharing experiences. Therefore, as an elementary school teacher, I am called to care for, respect, and deeply reflect upon how I can help unify and establish openness and risk-taking within the walls of my classroom. Holistically, I aspire to promote community among my students, enrich awareness of diversity, and model for each child that differences define our unique true colors, which together paint a vibrant masterpiece.

# Math Pinspirations, by Lauren Gladson



Lauren Gladson teaches for Hawkins County Schools.

*“One day, a fellow coworker sent me an invitation to Pinterest. I thought, ‘Pinterest? What the heck is this?’”*

Have you ever been working on your math lesson plans, and wondered “How can I make this fun?” As a first year teacher I found myself asking this quite frequently. My stash of math activities and resources was VERY low, so I always tried to find something that would make math a little more fun and interesting to my students. I personally Google everything, because it’s a sure fire way that if someone has posted anything on the internet to do with the math topic you’re working on its going to come up when you search it. The problem I would run into was I would find something at home or on my phone and I would have to keep a list of all the websites. This got extremely frustrating.

One day, a fellow coworker sent me an invitation to Pinterest. I thought, “Pinterest? What the heck is this?” Once I checked it out, I was hooked. Pinterest is like an online bulletin board where you can “pin” all sorts of things. I found this to be the answer to keeping up with my growing lists of websites; I could organize all the activities I found onto a Pinterest board (Keep in mind, Pinterest has more than educational things on there). Now, the addicting thing about Pinterest is that you have access to thousands, maybe even millions, of pins from other people; so needless to say you can find just about anything you are looking for. Being a first year teacher, with limited math resources, this became my best friend. I could find activities to go along with everything I was/would be teaching.

Now my reasoning behind naming this article “Math Pinspirations” is because I would find activities to use, but I would use them as more of an “inspiration” and tweak the activities to make them my own or bring it down to my kids’ level. All in all, Pinterest is a wonderful online tool for teachers to use to organize any ideas they have for their classroom.

Teenager Post #6615  
 During a math test: Me:  
 my answer = 23 Answer  
 choices: 17, 19, 26, 36.  
 Me: well 26 is closer to 23,  
 that must be the answer.

/teenagerposts.tumblr.com

*From Pinterest: Humor*

# The Building Blocks of Math, by Kathy Jarnigan

When a child is old enough to hold a block, most parents will say you have a block. The parent will begin to call the block by the shape and say you have one block. So building on prior knowledge has begun. Most parents will continue this process with blocks and other items the baby is familiar with such as fingers. Using finger puppets to count numbers from 1 to 10 is a good example.

Children acquire knowledge and skills from their own experiences. Bath time for toddlers can be used to introduce the concept of volume by filling and emptying containers of different sizes. Many children learn the names of shapes by riding in cars and seeing road signs.

Preschool children can begin to understand the concept of addition and subtraction. Games in which you are put into groups, board games, and card games are very helpful. Counting turns and calculating point scores reinforce these math concepts.

So when a child enters school, the teacher and the parents continue to build on the child's prior knowledge. The child will begin to understand place value enabling them to understand larger numbers. Every type math problem should be presented to the child as a way to solve a real problem in everyday life. This will help them understand the problem and also allow them to see how much math is used. The child will understand that math is not just used by scientists and architects. The child will see that we use it to plan a family budget, balance a checkbook, measure right amount for recipes, and build houses.

We, teachers and parents, need to encourage children to explain their answers. In other words, explain their figuring. How did they figure out the problem? We need to continue to build on their prior knowledge and give them the opportunity to think and explain. Eventually we should have students that are ready for whatever job may be in their future.



*Kathy Jarnigan Teaches for Hawkins County Schools.*

**Works Cited:**

*How to do Everyday Math* [www.ehow.com](http://www.ehow.com)

*PBS Parents* [www.pbs.org/parents/math/](http://www.pbs.org/parents/math/)



### Featured Speakers

**Stephanie Greenstein Buehler, Ed.D.**, is a Professor in the Department of Teaching, Learning and Leadership, Center of the Institute for the Development of Education in the Advanced Sciences and Director of Secondary Science Education at Middle Tennessee State University. She researches and teaches science curriculum, epistemology and education in work, technology and science. In honor of understanding the role for the construction processes and identifying the role technology plays in the process of learning are one of her many publications exploring issues of curriculum, computers and assessment.

**Jennifer Kay Williams, Ph.D.**, Professor in the University of Georgia, is a leader in mathematics education. Her book includes the author of *Elementary and Middle School Mathematics: Teaching Developmentally*, *Developing Essential Understanding of Addition and Subtraction*, and *Math in the Real World*. She is a member for the NCTM 2012 National and is Past President of the Association of Mathematics Teacher Education.

# 21st Century Teaching and Learning

The community of constructivist educators is gathering for 2012 Annual ACT Conference to share their work related to research, theory, and practice of constructivist approach to learning.

**Johnson City, TN**  
**October 19-20, 2012**

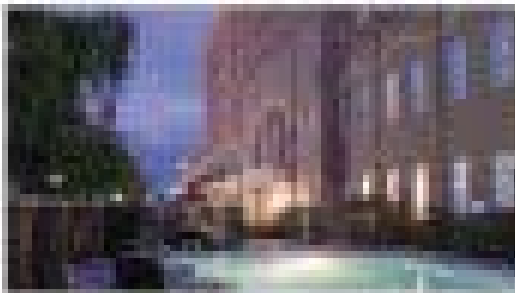
## 2012 Annual ACT Conference

### Where

The conference will be held at the Millennium Center, a premier conference center offering the best in 21<sup>st</sup> Century learning and communication technology. The facility has a central Garage Hotel annex to the Center.

Two nights \$199 + tax per room.

The hotel provides double rooms from 12:00 AM-10:00 PM for a fee. Make hotel and airport double reservations by calling 423-977-0400.



The additional pleasure of enjoying views of the city through a large glass atrium.

Millennium Center Conference Center

Phone: 423-977-0400 [www.millenniumcenter.com](http://www.millenniumcenter.com)

### Who should attend?

- Teacher Educators
- Classroom Teachers
- School Administrators
- Education Researchers
- Children's Families
- Others



**Registration Fees (Pre-Paid)**  
for members for your participation:  
**September 25, 2012**

### Individual Registration and Fees

|                       | Member   | Non-Member |
|-----------------------|--|------------|
| Thu. 19 (Wed)         | \$199  | \$299      |
| Fri. 20 (Thu)         | \$199  | \$299      |
| Sat. 21 (Fri) (Hotel) | \$75   | \$99       |
| Sat. 22 (Sat)         | no conference participation of hotel program unless required (Hotel) |            |

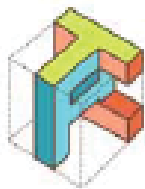
### Become ACT member and more!

Special benefits include: early access and information, Pre-ACT online for on-site registration information and more.

**\$299** - 1-year membership + Friday Afternoon Reports

**\$374** - \$25 for Friday Reports + \$75 for ALL DAY Saturday PLUS 3-year membership!

Contact Carley Landy for your tickets for this special offer: [cld1@actnct.com](http://cld1@actnct.com)



ASSOCIATION FOR  
CONSTRUCTIVIST  
TEACHING



Johnson City, Tennessee  
October 19-20, 2012  
Sessions: 8:00 AM to 5:00 PM

## 2012 Annual ACT Conference

### *21st Century Teaching and Learning*

Come join the community of constructivist educators gathering in Johnson City, Tennessee to share their work related to research, theory, and practice of the constructivist approach to learning.

#### Friday Afternoon Keynote

**Jennifer Bay-Williams, Ph.D.**, Professor at the University of Louisville and co-author of *Elementary and Middle School Mathematics: Teaching Developmentally*, *Developing Essential Understanding of Addition and Subtraction*, and *Math & Non-fiction: Grades 6-8*.



*Helping Students Learn Mathematics in the Era of the Common Core: What connections can we make between constructivist learning theory and the Common Core State Standards (CCSS) Content and Mathematical Practices? We will explore this question across the grades, considering how we can best help students become mathematically proficient.*

#### Saturday Morning Keynote

**Jacqueline Grennon Brooks, Ed.D.**, is a Professor, in the Department of Teaching, Literacy and Leadership; Director of the Institute for the Development of Education in the Advanced Sciences; and Director of Secondary Science Education at Hofstra University. Her research and teaching focus on constructivism, epistemology, and education in math, technology and science. *In Search of Understanding: The case for the constructivist classroom* and *Schooling for Life: Reclaiming the essence of learning* are two of her many publications exploring issues of curriculum, instruction and assessment.



*Education and Learning in the 21st Century: A Simple Proposition:* Our national policy makers have made a serious miscalculation about what generates improved student learning. We must stop sacrificing the promise of real student learning for the illusion of student achievement. If we really are serious about reforming our nation's schools, it important that we, as educators together, place our emphasis on student learning, and explore the constructivist proposition and ways to put this proposition into practice.

#### Pre-Conference

Thursday, October 18, 2012

8:00 AM - 3:00 PM

See local early childhood programs in action as they engage children in scientific inquiry using Ramps and Pathways physical science activities.

#### Registration Fees (Early Bird Rates)

The deadline for pre-paid registration:

**September 30, 2012**

**Includes breakfast and lunch**

For additional information and registration contact Dr. Julie Dangel at [jdangel@gsu.edu](mailto:jdangel@gsu.edu)

Association for Constructivist Teaching

Phone: 423-439-7695 [www.constructivistassociation.org](http://www.constructivistassociation.org)

# UETCTM

## Membership Application



Mail completed form to:

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 179  
Blountville, TN 37617

Membership Fee: \$10

Payable to: UETCTM

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_  
\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_  
\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

Email Address: \_\_\_\_\_

The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities- region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

## IN THIS ISSUE

- UETCTM MEETING
- WHEN WILL I EVER USE MATH?
- USING MATH STUDY JOURNALS IN THE CLASSROOM
- A TEACHER'S ROLE AS THE DELIVERER OF IMPORTANT CONTENT
- MATHLETE 2012
- A TEACHER'S PARADIGM
- ASK, DON'T TELL
- DISADVANTAGED FROM THE "OLD SCHOOL"
- ELAINE HILLMAN'S ARTICLE
- AN INTERACTIVE BULLETIN BOARD
- RISE OF THE AMERICAN STUDENT

(CONTINUED ON PAGE 2)

## MATH FUN



One day a farmer called up an engineer, a physicist, and a mathematician and asked them to fence off the largest possible area with the least amount of fence. The engineer made the fence in a circle and proclaimed that he had the most efficient design.

The physicist made a long, straight line and proclaimed "We can assume the length is infinite..." and pointed out that fencing off half of the earth was certainly a more efficient way to do it.

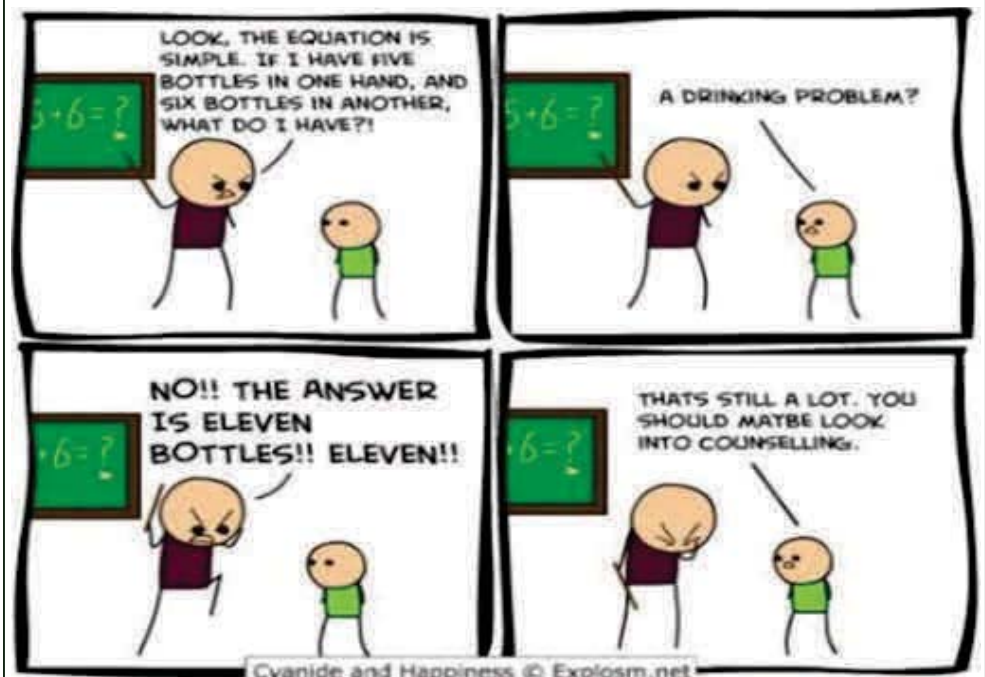
The Mathematician just laughed at them. He built a tiny fence around himself and said "I declare myself to be on the outside."

(<http://www.mibba.com/Forums/topic/95339/Nerd-Jokes/>)



### UPCOMING UETCTM MEETING

◆ Tuesday, March 5, 2013  
John Sevier Middle School  
1200 Wateree Street  
Kingsport, TN 37660



Cyanide and Happiness © Explosm.net



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

## IN THIS ISSUE

- SO YOU WANT TO BE A MASTER TEACHER
- COMMUNICATING LEARNING THROUGH WRITING
- LAUREN MALNTIRE'S ARTICLE
- MAKING MULTIPLE CHOICE QUESTIONS MEANINGFUL
- LUCKY YOU
- LYNZIE HAYWOOD'S ARTICLE
- FAIR OR UNFAIR — WHO IS THE WINNER
- MUSICAL MATH
- UPCOMING NCTM MEETINGS AND CONFERENCES
- UETCTM OFFICERS
- MEMBERSHIP APPLICATION
- MEMBERSHIP

## When will I ever use math?

*By Bobbie Nave : Sullivan County School District*



As I sat in my pre-algebra class, many years ago and completely lost, I continuously asked myself this one question, “When will I ever need or use this math?” The more I asked the question the less I really cared if I understood it or not. Even in elementary school I thought, “I’m not gonna build a house, so why do I gotta know how to use this ruler?” Of

course as I got older, I soon realized that kind of thinking was completely wrong. I needed to be able to count money, cook a meal, or simply tell time. Then, when putting a new carpet down and having to pull out that ruler I ranted about so long ago, the connection was finally made! When do we NOT use math?

As a second grade teacher, when I begin a new skill, I try to always explain to the students the importance of addition, subtraction, measurement, etc. I want them to make the connection between when they may use this particular type of math in “the real world.” I honestly feel that elementary teachers have a huge influence on students when it comes to math. We, as elementary math teachers, build on prior knowledge and set a foundation for our students for the next grade level. If we fail in doing this, the repercussions could have a major impact on how they feel about math

As I thought about this question again, I came across a very interesting article from the Wall Street Journal. Most of the highest paying jobs in 2012 were professionals who had to know math! A mathematician was on the top 10 list





UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

making over ninety thousand a year! (see table below)



Wall Street Journal April 2012

If I showed this information to my own college/high school aged children would it make much of a difference? I seriously doubt it. However, as educators, if we share our findings and spark some mathematical interest in our students, they may feel what is being taught is more relevant to their life. We need to help our students answer this age old question... “When will we ever use this math?”



## UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS News



*Connie Clanton is a  
teacher in the Johnson  
City School District*

### Using math study journals in the classroom

*By Connie Clanton*

**H**ere they come...a new group of third graders all ready to learn! Third grade is a big year, and they will be faced with new challenges. This is the first year they will be using a planner to keep track of their assignments. They will also be changing classes for the first time, and will have to keep up with the things they need for both classes. Even though I tend to forget that they are still second graders when they come to me, it doesn't take long for them to get into the routine and "become" third graders.

Another big change in third grade is the TCAP. This is the first year they will have to take this test, and there is a lot of anxiety for students and parents. They are used to taking the Benchmark tests where they have to remember what they have learned for a whole nine weeks. The TCAP however, requires them to remember what they have learned for the entire year! One of our jobs, as teachers, is to help them be less anxious or stressed about this test. If we can teach them the skills they are required to know in a way they can remember what they've learned, then they will feel more confident.

One of the tools I started using about 4 years ago is a Math Study Journal. This has helped my students organize their learning. There are many effective ways to set up and use study journals in the classroom. You just have to find what works best for you and your students. I have changed mine a little each year.

**(continued on page 5)**



**UPPER EAST TENNESSEE COUNCIL OF  
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I use the black and white composition books that have the sewn pages. The first page is a “Table of Contents” page that we add to as we begin a new concept. I make tabs that are attached to the side of the first page of each new concept. This makes it easy to find the section they are looking for.

**Daily use**

At the beginning of each lesson, the students write the essential question at the top of the journal page. As we progress through the lesson, they write down vocabulary, examples of problems, strategies used, and anything else that helps answer the essential question for that lesson. We may also glue in a flip book, chart, or some other foldable. By the end of the lesson, the essential question is answered and they have all the information they need to review for a test. As we move to another concept, we will write it in the table of contents and add a new tab.

**Use throughout the year**

The students quickly become very attached to their study journals. They can take them home at any time to help with homework. I will usually make a study guide for a test and they can use their study journals to help them answer the questions. Since the journal is organized by concepts, it is easy to find which section to study for the test. They are great to use as review for Benchmarks. We can do a scavenger hunt where they have to figure out which section to look in to find the answer to a review question, or they can ask a partner questions from their journal. To review for TCAP I gave each student a section. They had to write 2 or 3 review questions from their section on an index card. We used a few cards each day as review. They often refer back to a concept in their journals as we are learning new skills. It helps to revisit these concepts. I often hear, “Oh, I remember how to do this now!”

The Math Study Journal is a way of helping students organize the concepts they have learned over the year. They are able to revisit these concepts as we review for TCAP or Benchmarks. I have found that they will use their journals even when we do DOM (Daily Oral Math) each morning if they have forgotten how to work a certain problem. I have seen an increase in test scores since using these journals. Parents have also commented on the benefit of the journal. It is a great source for them to help their child at home. I will probably make changes or add things each year, but I will continue to use them.

**UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News****Mathlete 2012**

*By Alicia Moser*



**Alicia Moser teaches for  
the Sullivan County  
School District.**

*“For learning to be easier and  
more meaningful to the  
student, I believe that it must  
be easier and more meaningful  
to the teacher”*

**T**hirty five years plus have passed since I was a young college student. My career as a teacher has spanned almost the same number of years. During these years I have watched many educational trends come and go. Some trends have been more helpful than others. I have always tried to learn and implement any strategies that would make learning easier and more meaningful for my students. For learning to be easier and more meaningful to the student, I believe that it must be easier and more meaningful to the teacher.

Since my teaching career began so many years ago, I have taken courses and attended many in-services. Of the courses I have taken, two really stand out. While participating in these courses I learned a tremendous amount and enjoyed doing so in the process. One course was a Science class in which the professor actually took us out to observe stream life and check the ph. of the soil in a forest. He seemed interested in every student. I could tell that he cared about every student's learning, so I made every effort to oblige. I don't think I have ever studied so hard for a test in my life. The other course that really stands out is the one in which I am currently involved. The class that I am referring to is the Mathletes 2012 class taught by Dr. George Poole. Dr. Poole wants us, his students, to learn and take the strategies he is teaching us back to our students. He has given me new strategies for teaching the operations of addition, subtraction, multiplication,

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**‘Thank you Eastman, my principal, Cathy Nester for giving me the opportunity to attend Mathletes 2012, fellow Mathletes, and to Dr. Poole for being so passionate about Mathematics.’**

and division to use with second graders. I am looking at and thinking about math in a different way. Much learning has taken place and I will use these strategies in August 2012 with my new second graders. These children will not be carrying or borrowing.

Thank you Eastman, my principal, Cathy Nester for giving me the opportunity to attend Mathletes 2012, fellow Mathletes, and to Dr. Poole for being so passionate about Mathematics. It is my hope that many future teachers will benefit from this course.



**UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News****A teacher's role as the deliverer of important content**

*By Ashli Chapman*



**Ashli Chapman teaches for the Washington County School District.**

**“A big mistake we make as teachers is that we do not take the time to get to know our students as individuals.”**

In most Education programs at the college level aspiring teachers take a course that teaches child development. In that course you learn the importance of how a child develops at specific stages. A teacher's role as a deliverer of educational content is to first know how the students in our classrooms learn. Learning how children develop is key to helping us as teachers understand our students' attitudes towards learning which in turn helps the teacher figure out how to teach on their developmental level. This same concept is true when teaching students the content of the state standards. We need to know how our students are progressing at their developmental level and what better way to do that than to use formative assessment. In this article I will address why it is imperative as educators that we study and become familiar with our students' interests, learn and become comfortable with the content that we teach and successfully assess the growth of our students.

A big mistake we make as teachers is that we do not take the time to get to know our students as individuals. Why would it be important to get to know our students as individuals? What if you have a group of students who really enjoy sports, you would create small group lessons that incorporate skills focused around an athlete's performance, or maybe the

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**“Accomplished teachers have a rich understanding of the subject(s) they teach and appreciate how knowledge in their subject is created, organized, linked to other disciplines and applied to real-world settings.”**

outcome of a game. This same concept applies when we plan each lesson. To create learner focused lessons, we should use our students’ learning styles to guide the structuring of the lesson so that quality learning takes place in the classroom.

A comment I hear often with my colleagues who are still in their apprenticeship like myself is, “I know this information but how do I teach it.” You might be saying to yourself, “You’re the one who took on this profession you better know how to teach it.” Sometimes that is easier said than done. With an ever changing curriculum, sometimes you just feel inadequate. According to National Board of Professional Teaching standards, “Accomplished teachers have a rich understanding of the subject(s) they teach and appreciate how knowledge in their subject is created, organized, linked to other disciplines and applied to real-world settings.” So what do we have as apprentice teachers that can equip us with the knowledge of our subject areas? Well you have your teacher’s manuals, DUH? Isn’t that what we have those things for is to teach straight from the book. I DON’T THINK SO! Although the teacher’s manuals are a resource, it should never be your primary source of teaching. I believe we should first begin by changing the standard into a child friendly wording which is sometimes referred to as the “I CAN STATEMENT.” By changing the broad standard into an “I CAN” statement it allows us to think as our students and

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**“Accomplished teachers have a rich understanding of the subject(s) they teach and appreciate how knowledge in their subject is created, organized, linked to other disciplines and applied to real-world settings.”**

understand what the big learning point should be. It also helps to weed out some of that fluff in our broad standard that does not make sense unless you are maybe a rocket scientist. The next important step I think is thinking “how can I apply this to real world experiences that are meaningful to my students.” Then I believe you have to familiarize yourself with how your students learn based on the differentiation of your learners. Finally you take the knowledge of how your students learn and you create a quality lesson based on the strategies that we know as best practices, our background knowledge of the concept, real world experiences and incorporate those top components into each lesson.

The final concept I am going to discuss is the importance of using formative assessment in your lessons. The quality of your assessments better helps the teacher determine students’ learning of the content. Carol Ann Tomlinson says, “Informative assessment isn't an end in itself, but the beginning of better instruction.”

Her words are correct. We do not just use formative assessment at the end of a lesson, but it is used throughout the lesson. Formative assessment is used as a way for teachers to understand if the students are understanding the concepts so that through knowing how the students learn best the teacher can plan lessons to take the student to the next level, or take time to re-teach. An important part of using formative assessment is to think about



**UPPER EAST TENNESSEE COUNCIL OF  
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**"Formative assessment is an integral part of the planning effective instruction for our learners. Use the information to bring your students to the next level of learning or to give a second chance at grasping a concept.."**

how you will incorporate it into the lesson. Will it be as a knee-knee partner, thumbs up for I am comfortable, thumb sideways for I need clarification, or a thumbs down for I do not understand and need help, maybe it comes in the form of group work and the teacher uses a check list? No matter the type of formative assessment you may choose for your lessons, it should be carefully thought out during the planning process and documented in your lesson plan. Judith Dodge suggest keeping a folder for each student for which you would insert any quick notes that you write down as you are walking around the room (Dodge). Formative assessment is an integral part of the planning effective instruction for our learners. Use the information to bring your students to the next level of learning or to give a second chance at grasping a concept.

In this article I have addressed the importance of the teacher's role in delivering important content. In order to meet our students' needs we must first get to know their interests. Next we must take into consideration our students learning styles when we plan lessons that are meaningful to our students. In order to properly meet the students individual needs we must include differentiated learning coupled with formative assessment not just at the end of our lesson but throughout the lesson.

**UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News****Disadvantaged from the “Old School”**

*By Jessica Helton*



**Jessica Helton is a teacher in the Sullivan County School District.**

**“At first I was a little skeptical. “How in the world was I going to make that 5 on my evaluation and incorporate these toys?”**

Many, many moons ago when I was in school we did not use manipulatives to help solve math problems. The only tools we used then were a ruler and occasionally a calculator. I made decent grades in math because I could always use the formula that needed to be memorized or remember the trick that went along with that type of problem. I never really enjoyed math because using the “tools” that the teacher betrothed on us were boring.

Last year I got the gut clenching news that I would be teaching fourth and fifth graders math. My previous teaching years had been filled with fun and exciting science experiments and social studies projects. I was not excited to be going on this journey, but it was a must for various reasons. I stumbled through last year with the help of our math interventionist and several very patient co-workers. It was during these tutoring sessions I learned about the wonderful world of new tools. These were bright and colorful pattern blocks, tangrams, geo-boards, cards, counters, and various other things. At first I was a little skeptical. How in the world was I going to make that 5 on my evaluation and incorporate these toys? I assumed the students would want to just play.

Needless to say, I was wrong. As I began using these toys in my lessons not only was I gaining a deeper understanding of the concept, but the students were learning as well. I soon realized these would have been so beneficial to me if I would have had instruction with these. As I begin thinking about this upcoming school year with math I don’t feel nauseated this time. I feel excited!



## UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS News

### A teacher's paradigm

*By Dalynda Winstead*



Dalynda Winstead teaches  
for the Washington County  
School District.

Do you still have an 8-track stereo system? Does your car have a cassette player? Have you ever heard of a floppy disk or VHS tape? Has anyone ever wondered where we would be today, if we had not developed CDs, cell phones, laptop, ipads, or hand held video cameras? Technology is changing quickly and education is not exempt from this paradigm shift. As teachers, we need to make sure we are keeping up with the changes and can accommodate student learning to promote fairness in the growing competitive society of technology, learning, future success and worldwide job compatibility. A teacher's paradigm is in the making for today's student progress and success for our future leaders.

A paradigm is a person's way of thinking about something. It is the process of "thinking outside the box". As teachers, we need to change our way of thinking to spark student interests to effectively enhance and promote meaningful learning experiences. Applying multiple computation strategies are invaluable to effective teaching methods. Properly implementing effective strategies will promote metacognition and work as a mapping process that organizes individual thought patterns. This process will allow students to configure and solve for the product/answer quickly and more accurately. Strategies are necessary for visual representation of student comprehension of numbers and a tool used to assess student's individual thinking ability, reasoning, and learning. The differentiated methods and strategies are different for everyone. Not everyone learns the same way and its okay. As long as a student can express or share his/her thinking process of obtaining the correct answer; using the compensation strategies that work for him/her is okay. A teacher's environment, actions, assistance, and engagement amplify or decreases student learning. Promoting additional strategies or adding manipulatives can make the counting process easier, quicker, and meaningful to the student will promote student success in math. Teachers need to be open to new strategies to increase mathematical concepts to enhance student learning. Old

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**“A twenty-first century teacher leader uses a variety of strategies to enhance, organize, engage and promote meaningful learning to ensure lesson/topic comprehension, which is necessary to reach each individual student's optimal growth and development.”**

habits or traditional teaching strategies can stifle, stagnate and deprive effective learning and teaching opportunities.

Therefore, teaching students in a 21st century classroom has become a priority. The approach to teaching students of the 21st century, to many, seems increasingly overwhelming and vastly differentiated with the continuous ever-growing melting pot of America. The times are changing and education is feeling the effects of the rising demands of competitive teaching and student's expectations. Today's student population express a huge variety of developmental level challenges and wide range of individual student learning styles, within each classroom range of diversity, varied cultures, emotional challenges and various capable technology driven students.

Currently, many students are not able to think for themselves. The future generations of leaders need to become more critical thinkers and problem solvers. They need to be more prepared for survival of the competitive nations within job expectations and personal future success. Teachers need to believe in their students and embrace the paradigm for teaching students to become metacognitive thinkers and self-sufficient leaders of tomorrow. The ability to facilitate students learning begins by understanding the basics of information processing, implementation of multiple strategies, promoting fundamental basics and principles for learning. As teachers, we need to ensure our students become the best that they can be and believe they are the best.

As an effective teacher leader, one needs to be ready for all challenges that may become a learning barrier and make it a building block in teaching. The ability to help students to count and measure in an increasingly faster and more efficient way is necessary to promote confidence in students' ability to conquer their fear of math. A teacher's ability to use a variety of applicable math strategies to effectively guide students to a quicker and more efficient way of adding, multiplying, subtracting, and dividing through critical thinking or reasoning strategies is the paradigm of teaching. Incorporating principles for learning, which incorporates a student's capabilities for body-based learning and knowledge, will bring

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**“A Table Array strategy uses friendly numbers, makes it easier to find your answer and check for mistakes. It gives you a quick and isolated glance of your problem, which can provide an obvious computation error and your mistake would be clearly visible.”**

modification for enhancement to ones teaching strategies. This process expresses how the mind senses, processes, stores and recalls information. "In this rapidly changing world, the challenge of teaching is to help students develop skills which will not become obsolete. Metacognitive strategies are essential for the twenty-first century." (Blakely & Spence, March 24, 2010, p. 4) The ability for teacher leaders to be flexible and versatile to enhance all students learning will promote optimal learning. A twenty-first century teacher leader uses a variety of strategies to enhance, organize, engage and promote meaningful learning to ensure lesson/topic comprehension, which is necessary to reach each individual student's optimal growth and development.

A way to begin the adventure to promote optimal student growth and confidence in numbers is to divide and conquer basic math computations by modifying with friendly numbers. Implement student friendly strategies that they can relate to and personally explain their way of thinking. A great mathematician once shared, "A teacher's goal is to help kids to count and measure in an increasingly faster and more efficient way." Teachers need to get their students to the point where they can quickly solve mathematical problems or equations effectively. Students need to use personal strategies to get their answer and then be able to explain the reasoning for their answer. The students should give compliments to a strategy with reasoning responses to explain or backup the strategies they used. The importance of wanting students to get the correct answer in the quickest way is the focus on finding strategies that work for the individual to get the most of their thinking and reasoning capabilities.

Multiple strategies are helpful in many ways. For example, if you needed to add 215, 438, 689. You can add the traditional way or go the route of using the place value concept through expanded notation. This particular strategy for addition is the Table Array. A Table Array strategy uses friendly numbers, makes it easier to find your answer and check for mistakes. It gives you a quick and isolated glance of your problem. Which can provide an obvious computation



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"Teachers need to open

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implementation.

Remembering what works

or one may not work for

others."

error and your mistake would be clearly visible. If you used the traditional carrying process and made a mistake in the borrowing or carrying process, you generally have to rework the whole problem to find your error. Look at the following problem. See how it was broken down from the original form into place value or expended notation form, then added?

|              |                   |
|--------------|-------------------|
| 215          | $200 + 10 + 5$    |
| 438          | $400 + 30 + 8$    |
| <u>+ 689</u> | $+ 600 + 80 + 9$  |
| 1200         | $1200 + 120 + 22$ |
| 120          |                   |
| <u>+ 22</u>  |                   |
| 1342         |                   |

What if I made a mistake: (Can you find the mistake?)

|              |                  |
|--------------|------------------|
| 215          | $200 + 10 +$     |
| 438          | $400 + 30 + 8$   |
| <u>+ 689</u> | $+ 600 + 80 + 9$ |
| 1200         | $1200 + 120 + 2$ |
| 120          |                  |
| <u>+ 2</u>   |                  |
| 1322         |                  |

It was easier to see the mistake was in the ones place. Due to familiarity of carrying, I forgot to add the 20. This way, instead of recalculating the whole problem using the carrying method of addition, it was easier to see that the ones place did not add up correctly. Would we get the same answer with both the traditional way and this way? Yes, and that is okay.

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**“Building on the background knowledge or basic math fundamentals, students become more productive problem solvers from second grade and beyond. Students will be able to apply these mathematical principles and number concepts to become better critical thinkers and efficient problem solvers of tomorrow.”**

Strategies, it is all about manipulating strategies to make sense of numbers and computation methods that work for each individual learner. Teachers need to open doors to new ways of thinking to support teaching moments and promote student learning through multiple strategy implementation. Remembering what works for one may not work for others. Teachers and students have to embrace, comprehend, and understand a variety of addition, subtraction, multiplication, and division principles to solve mathematical concepts or tasks. The development to understand number representations and value concepts develop through background knowledge of basic numbers beginning in kindergarten. The number sense awareness grows in complexity and matures through first and second grade.

Building on the background knowledge or basic math fundamentals, students become more productive problem solvers from second grade and beyond. Students will be able to apply these mathematical principles and number concepts to become better critical thinkers and efficient problem solvers of tomorrow. Students will be able to apply strategies to process complex and everyday mathematical concepts to find the product or target group. In addition, students will develop an awareness of its uses in daily life skills and the real world. The strategy process is not a mandatory expectation.

However, it should be viewed as an implementation or variation on representing the number sense concept correctly and efficiently. It is a work in progress serving a purpose for finding a way that works for all differentiated students and differentiated teachers. This is our new way of teaching, a teacher’s paradigm.

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**Ask, don't tell**

*By Denise Cox*



Denise Cox teaches for the Washington County School District.

“Instead of telling the students how to solve a problem, the teacher should ask questions which guide the student to finding the solution on his or her own. When a student solves a problem this way, it becomes more personal.”

This summer, I have had the privilege of participating in two very informative professional development classes offered by the Washington County, Tennessee school system. The first one was Unpacking the Common Core Standards for Mathematics by Dr. Terry Rose of Western Carolina University. The second was The Eastman Scholar Mathletes Program taught by Dr. Ryan Nivens. In both classes, the underlying theme was the same – teachers tell students too much. Too often math teachers model how to solve a math problem, ask for questions, and then give the students similar problems to practice. This way of learning is temporary and superficial. Teaching this way does not allow the students to make connections to prior learning, deeply understand the mathematical concept, or retain the information long enough to apply what they have learned to a new concept. This way of teaching makes almost constant review necessary, wasting valuable class time.

Both Dr. Rose and Dr. Nivens emphasize reducing the role of the teacher. Instead of telling the students how to solve a problem, the teacher should ask questions which guide the student to finding the solution on his or her own. When a student solves a problem this way, it becomes more personal. He/She takes ownership of the learning, and therefore, is more likely to apply what he/she has learned when a new situation arises. It might take longer for a concept to be taught, but since it is retained longer, the need for review is minimal.

One example of teaching this way is to begin with the solution and work back-



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As Dr. Rose said,  
“Without temporary  
confusion, I have learned  
nothing new.” Of course,  
the teacher must find the  
proper balance between  
confusion and frustration  
to keep her students from  
getting too discouraged or  
giving up.



ward. In both classes I attended, division of fractions was used as an example. As math teachers, we all knew to invert and multiply. We had memorized that rule. But then, when we were asked to create word problems and models to go along with the problem we had just solved, most of us struggled. This is because we had memorized the procedure through repeated practice, but did not have a deep understanding of what it really means to divide by a fraction. It was only when Dr. Rose helped me to relate division of fractions back to division of whole numbers (previous learning) that I was able to come up with a model that properly represented division of fractions. I believe we were all frustrated at some point; however, we now have a deeper understanding of division of fractions and can apply the concept when necessary. As Dr. Rose said, “Without temporary confusion, I have learned nothing new.” Of course, the teacher must find the proper balance between confusion and frustration to keep her students from getting too discouraged or giving up.

One simple way I apply this technique in my classroom is with vocabulary words. Instead of having the students look up the vocabulary words, I draw a T chart on the board. For example, one side of my T chart says “polygons” and the other side says “not polygons”. I draw a few shapes on each side of the chart until the students make a guess at what a polygon is. If they give an incorrect definition, I simply draw a shape on the side that disproves their definition. They will then refine their definition until coming to the conclusion that a polygon must be a closed figure with straight sides. This gives the student ownership of the learning because they came up with the definition themselves based on the information they were given. This method takes the boredom out of vocabulary.

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**“As teachers, our role in the classroom should be facilitators of knowledge, not dispensers of knowledge.”**

I have used this method for many grade levels and concepts. Another example is to use a T chart for the divisibility rules. One side of the chart lists numbers that are divisible by 3, 4, 5 or whatever fits your grade level. The other side of the chart lists numbers which are not divisible by that same number. The students can often figure out the divisibility rule themselves by looking at the chart. I have found that they may not always remember the divisibility rule for 3, after all, it is just a short cut, but they do remember that it is different from the others and not as easy to figure out from looking at the T chart. Again, this might take more class time than just telling the students the rules but they will certainly retain the information longer, reducing the need for class time review.

I also suggest applying everything you teach in math to real life problem solving. When teaching the divisibility rules, I tell my students they are professional party planners for Taylor Swift (or whoever is popular at the time). A good party planner must be able to take any number of guests and quickly know if those guests can be divided into groups of 3, 4, 5, and so on. This leads to further ownership of the learning in order to apply it to new situations.

As teachers, our role in the classroom should be facilitators of knowledge, not dispensers of knowledge. We need to ask thought provoking questions which guide our students to use their own understanding and thought processes. rather it is to show students their potential as problem solvers, and to allow our students to be active learners.



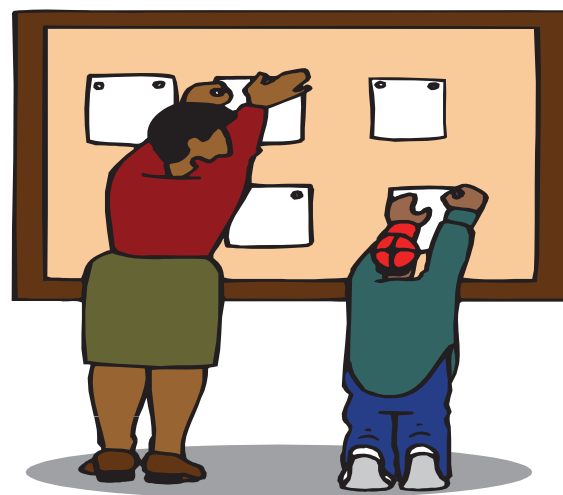
## An Interactive Bulletin Board Place Value Pumpkin Patch

*By Elaine Hillman*

Often when one hears the phrase “student engagement” the first activities a teacher thinks about include interactive white boards, computer games, and tablets. However, activities that get students engaged and actively learning don’t always have to be high tech. I have used interactive bulletin board activities successfully in my classroom. Students enjoy not only working with these activities, but also creating them. The Place Value Pumpkin Patch is an interactive bulletin board that allows students to practice place value and different representations of three-digit numbers. It also provides an instant-feedback, self-checking activity. Creating the bulletin board is simple and also a learning task for the students.



Elaine Hillman teaches for the Hawkins County School District.





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Give each student 3 identical pumpkin cut-outs and the following instructions:

### Place Value Pumpkin Patch

Use the three pumpkins to create a part of our next bulletin board display. Remember to write neat and large enough to be seen from the first row of seats.

Pumpkin 1 – Write any 3-digit number (example 123)

Pumpkins 2 and 3 will look alike. Write the same clue to your 3-digit number on both pumpkins. Pumpkin 3 will be the clue and pumpkin 2 will be hidden under the number as the answer. You can represent your 3-digit number any way you choose. For example – if the number on pumpkin 1 is 123 then your clue on pumpkins 2 and 3 might be  $100 + 20 + 3$ , or 1 hundred, 2 tens, and 3 ones, or you might draw hundreds, tens, and ones blocks to show the number, or you might write “I have a 2 in the tens place, a 3 in the ones place and a 1 in the hundreds place.” Write exactly the same clue on pumpkins 2 and 3 and return your pumpkins to class tomorrow.

- Tape pumpkin 1 on top of pumpkin 2 so that pumpkin 1 will make a flap over pumpkin 2.
- Attach the number / answer pumpkins to the board so that students can raise pumpkin 1 to reveal the answer written on pumpkin 2.
- Make a pocket on the bulletin board to hold all the clue pumpkins (pumpkin 3). A sandwich or quart size plastic baggie works great. Attach this pocket to the bulletin board and put all the clues (pumpkin 3) in the pocket.
- Add green ribbon and leaves to create a pumpkin patch effect.

A student comes to the board and takes a clue from the pocket. The student then finds the pumpkin in the “patch” with the number that matches the clue. To check his or her answer, the student simply raises the top pumpkin and reveals the answer that is hidden below. If the clue from the pocket matches the clue under the pumpkin, the student has chosen correctly. If they don’t match, the student should re-read the clue and pick another pumpkin. After making a correct choice, the student puts the clue pumpkin in the back of the pocket and chooses the next number in the pocket or goes to the back of the line if several students are playing at once.

My students have always enjoyed this activity and when they have mastered the place value objective, I can use the same idea to create a new board with new math skills.

**UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News****Rise of the American Student**

By Annalee Gross

**KEYWORDS** Cognitive Guided Instruction; teaching**Annalee Gross teaches for the Sullivan County School District.**

**ABSTRACT:** Cognitive Guided Instruction insists that the student makes sense of a problem and persevere in problem solving. Students are given various word problems, and are asked to solve them in ways that make sense to them. Some students will use a variety of tools, while others may use counting strategies to solve the problem. The common thread among Cognitive Guided Instruction students are that they make sense of the problem, and they persevere in problem solving.

Teachers are being asked across the curriculum to have students show their thinking. In mathematics we observe how children solve problems. Often, this is accomplished by using various manipulatives or by drawing pictures. Students then develop combination drawings, number sentences, number lines, and writing. By examining the students' thinking, instructors can assess the situation and move to appropriate steps, which may entail intervention strategies. By the student showing his or her thinking, instructors can determine misconceptions and undeveloped skills. If a child simply records a number, we know nothing about the child's number development. Educators need to know the students' thinking process in order to guide the student properly, in the right cognitive direction.

The way teachers formulate questions can support students to provide more explicit and detailed explanations for their work. (Sfard & Kieran, 2001). It is clear that supporting students' explanations requires teachers not only offer sufficient time and appropriate tasks, but also press for justification and explanation. Failure to ensure that students justify answers can result in truncated answers that are underdeveloped. (Kazemi & Stipek, 2001; Silver 1996; Silver & Smith, 1996). Teachers frequently take notice of student responses in a variety of ways. One way a teacher can follow up is an individually focused manner over a series of interactions. Another method of feedback could ask a specific question related to

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an inquiry the student has asked previously. Some instructors asked a general question to prompt the student to give additional explanations; at other times they asked leading questions.

Asking follow-up questions does not always guarantee further student explanation. The questioning practice of asking a probing sequence of specific questions frequently helps students provide a correct and complete explanation, after they initially provide an answer that is incorrect and incomplete. Most importantly uncovering details of the students' strategies often require multiple specific questions, each one focused on an element of a student's explanation. The teacher needs to focus on what the student said in relation to the critical mathematical ideas and press students to make his or her thinking explicit. When students' initial explanations are incomplete the teacher's more focused questions helps the students to make sense of his or her ideas in relation to the mathematics and thus provide a more complete and correct explanation.

Classroom interaction for Cognitive Guided Instruction follows a standard structure: The teacher poses a problem, students discuss the solution within a smaller group of two to four students, and then the teacher leads a discussion of the problem with the entire class before moving onto the next problem.

Four types of questioning practices that a teacher can use to help make a student think explicitly about a problem are as follows: general questions, specific questions, probing sequences of specific questions, and leading questions. General questions are not related to anything that a student said; specific questions address something specific in a student's explanation. Probing sequences of specific questions consist of a series of more than two related questions about something specific that a student said and include multiple teacher questions and multiple student responses. In leading questions, the teacher guides students toward a particular answer or explanation and provides opportunities for the students to respond.

Teachers should ask consistently that students explain their thinking. When a teacher poses a problem he or she needs to show that he or she expects the students to share their thinking. As teachers, we should expect American students to rise up out of their seats and take an active role in their education!

**UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News****“So You Want to Be a Master Teacher?”**

*By Jeffrey Millard*



Jeffrey Millard is a teacher in the Hawkins County School District.

**“Every teacher should have the same self expectations as those expected from students.”**

As Tennessee is making known its desire to move up in the ranks of education, so should every teacher make known their desire to move up in the ranks of teacher effectiveness and become a “master” teacher. The term “master teacher” is not an official term recognized by the state agency with a certificate or license, but is becoming more widely used to describe teachers who are having an enduring impact on a student’s education. A master teacher goes beyond what good teachers have accomplished and always strives to improve their teaching skills. Every teacher should have the same self-expectations as those expected from students. If we desire students to become life-long learners, shouldn’t we, as teachers, be life-long learners? If a teacher desires every student to gain mastery in the subject being taught, does it make sense that every teacher should be working toward gaining mastery themselves?

According to the Tennessee Educator Accelerator Model (TEAM), a top rated teacher is one who consistently receives the highest rating in three areas: observations and conferences, achievement measure, and growth data. Teachers will be observed and scored based on an extensive rubric given by a trained evaluator, and then they will be given immediate feedback on the score given along with ways to improve. This will count for 50% of the TEAM score. Teachers will then be scored on a school wide achievement measure which will count for 15% of the score. The last component of the TEAM evaluation is the growth data. Growth data is a statistical method that compares each student's actual growth to

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**“Good relationships with students plus high expectations minus a negative classroom environment plus superior content knowledge multiplied by a drive to seek personal development to the power of number of years of experience then divided by the attitude of the student equals better student performance which in turn makes a master teacher.”**

his/her projected growth and this will count for 35% of teachers score (Tennessee Department of Education).

I feel this evaluation model is the most comprehensive and should be considered by every teacher as their own measure of effectiveness which, in turn, will constitute a master teacher. In the observation component of the model is a rubric that is available to every teacher that will describe all expectations from teaching to planning to the environment of the classroom. The achievement measure brings the overall school into to a community by holding everyone accountable for different achievements made by the school as a whole. This component connects every teacher with every aspect of the success of the school and not just the success of their classroom. I feel the last section of this model is the most important, but is incomplete. This component incorporates the growth potential of students into evaluating teachers. Every student should grow in knowledge each year. This model has come up with a way to calculate a growth potential for each student based on past performance. The formula for this growth potential is not easily understood and could be argued as to the validity of the results. Even though I think the formula is lacking, I believe the theory behind this measure is on target.

Taking into account my research, my experience as a teacher, and advice from other teachers, I am developing my own formula for a master teacher that will continue to evolve throughout my teaching career. Since math is my subject area, I couldn't resist making a formula of what I believe makes up a master teacher. The formula is: Good relationships with students plus high expectations minus a negative classroom environment plus superior content knowledge multiplied by a



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**“Negativity only takes away from the productivity of any environment. A positive classroom environment will give students a place they will feel safe and comfortable which will promote student learning.”**



drive to seek personal development to the power of number of years of experience then divided by the attitude of the student equals better student performance which in turn makes a master teacher.

My formula includes good relationships with students. I feel this is important because when students make a connection with a teacher they are more likely to work harder for that teacher. In establishing a good relationship, a master teacher will convey the high expectations they have for the students and see results. The next term in the formula is the absence of a negative classroom environment. Negativity only takes away from the productivity of any environment. A positive classroom environment will give students a place they will feel safe and comfortable which will promote student learning. In continuing the learning process, a teacher must add superior knowledge of the material being taught so students will feel confident in their learning process.

The next factor of the formula is multiplied because of the impact personal development has on the students. When students see a teacher bring new teaching methods into the classroom, they are more apt to emulate this behavior. This drive should be raised to the power of the number of years experience because the teacher that has seen more in the classroom should offer exponentially more to their students. The last part of this formula takes into account the attitude of the students. A negative attitude divides the results and makes it harder, not impossible, to get better student performance, and a positive student attitude will only make it easier to get better performance.

These factors were put into a formula because they all work together to make a master teacher. If any factors are omitted, the result will not be achieved. This formula is not a checklist of do's and don'ts, but an ongoing process that must be



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adjusted to meet the needs of the students. A master teacher must be able to automatically analyze every action they make and how it affects the student, and then analyze the actions of the students to determine the next step in the learning process. This cross-analysis must happen quickly and often while with a group of students, then adjust teaching techniques, pace of the class, and classroom environment. Just the mere efforts of trying to achieve master teacher will make a better teacher .

**Illustration of made up formulas:**

|                               |                               |                           |                        |              |
|-------------------------------|-------------------------------|---------------------------|------------------------|--------------|
| Good                          | High                          | Negative                  | Superior               |              |
| relationship<br>with students | + expectations<br>of students | -classroom<br>environment | + content<br>knowledge | = REEK Score |

$$\text{Better student Performance} = \text{Master Teacher}$$

|   |
|---|
| $\frac{\text{(REEK Score)} \left( \begin{array}{l} \text{Drive to seek} \\ \text{personal} \\ \text{development} \end{array} \right) \text{(Years of experience)}}{\text{Divided by the attitude of the students}} = \text{Better student Performance}$ |
|---|

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**UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News****Communicating Learning through Writing**

*By Kendra Cline*



**Kendra Cline teaches  
for the Bristol City  
School District.**

Personally connecting to the skills that students are learning is key in completely understanding them. For thousands of years people in every part of the world have been writing their thoughts, discoveries and feelings to help them better understand what they are encountering. Just like the people of the past and present who value writing and personal reflection, administrators and educators throughout the country are finally finding the value in this task. Incorporating writing in class through various methods is becoming increasingly important in today's education system.

**Reasons to Incorporate Writing into Your Math Classroom**

With the adoption of the Common Core standards comes a higher responsibility for students to fully grasp the math tasks they complete. The Standards for Mathematical Practices state that communication is one of the key elements for mathematical understanding. Students need to be able to express the meaning of the mathematical terminology (symbols, numbers, graphs, etc.) they use. Through writing students can use words, which they are typically very familiar with, to express abstract math ideas. By composing their ideas and practices to written pieces of work, the students have communicated the math skill in more than one way giving the students a more concise comprehension. Not only will the student benefit from their writing as a form of self-assessment, but the teacher will also have more information to analyze the student's work. Students will also gain insight from other students' composition because the mathematical process that is at hand will be described in terms that might be more attainable than abstract symbols and numbers.

With the implementation of the PARCC assessment students will be required to not only solve varied math problems but also include pictorial representation representations and writing to describe the process they used. Many students are

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**“When mathematical terminology is continuously referenced to in class students must have a firm grasp of the terms before truly comprehending any math task. When students use the essential vocabulary in various forms of communication they will begin to have a better understanding of the terms true meaning”**

not accustomed to writing down their mathematical ideas. Students should receive plenty of practice in describing their thoughts in multiple ways. The more familiar we make our students with explaining their mathematical thinking, the more comfortable they will become in expressing themselves in this method. Furthermore, frequently exposing students to the ideal of communicating math concepts will better prepare them for constructive response assessments.

Understanding vocabulary is a necessity to success in math. When mathematical terminology is continuously referenced to in class students must have a firm grasp of the terms before truly comprehending any math task. When students use the essential vocabulary in various forms of communication they will begin to have a better understanding of the terms true meaning. Expecting students to use mathematical language will force them to become more accustomed to defining terms and using them in appropriate ways. Writing is a tool that assists students to become creative and more acquainted in using arithmetic texts.

Therefore, you can give your students the traditional 30 problems to practice over and over again, or you can use a new approach. Try giving them only a few practice problems and then have them assess the process they used to solve the exercises. They should then creatively reiterate that process in some form or fashion through writing. There is an endless amount of ways to incorporate writing into your math classroom. The sky is the limit and creativity is key.

**A Few Ways to Start Incorporating Writing into Your Math Classroom****Math Journals-**

Math journals are an excellent way for students to practice and compile mathematical writings. Students can use them as a daily exercise in creating a deeper understanding of the skills that are being covered. Whether it is an assigned topic and writing method or a choice of their own, students will receive the practice needed for them to excel. To further connect the students' comprehension, require the students to include drawings to represent the skill and/or topic covered. You could also have them fold up and paste the sheet where they

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“Writing plays gives  
students the  
opportunity to really get  
their creativity flowing”

completed their practice into the journal. Making these connections ensures deeper understanding of the information being presented. Looking through these journals would also provide an excellent review.

**RAFT Writing Assignments-**

RAFT writing requires the students to become extra creative and is nicely structured. The students must take on an assigned Role for a specific Audience in the required Format while focusing on a particular Topic. Last school year I assigned my students the role of a percent. They were instructed to write a letter to a relative telling about himself/herself, a percent. For example, most of them wrote to their friend, Fraction or dad, Decimal. My students enjoyed the task so much that they requested that all of the publications be posted and voted for best all around.

**Plays-**

Writing plays gives students the opportunity to really get their creativity flowing. Since a script has to be created, the students are presented with another opportunity to better understand the skill that the play is based around. It not only enables students to reiterate their knowledge on paper but also allows them to use more forms of communication which allows them to reach a higher comprehension.

**LIVING MATH LIMERICK**

I ONCE THOUGHT THAT MATH WAS A BORE;  
ARITHMETIC GROSS TO THE CORE. 1 3  
MY TEXTBOOK I TOSSED;  
TO TESTS SAID, “GET LOST!” 2  
AND NOW I LIKE MATH MORE AND MORE.



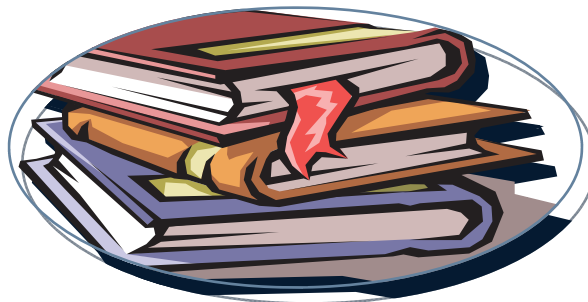
By JME

**UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News****An article by Lauren E. McIntire**

**Lauren McIntire is a  
teacher for the  
Johnson City School  
District.**

**I** love teaching math and I have no desire to teach reading/language arts, but I never turn down the opportunity to incorporate reading into my math lesson. Children of all ages love to be read to and I find the math concepts are more meaningful to my students when a story brings them to life. Below is a list of books I incorporate into my math lessons:

- ◆ Spaghetti and Meatballs for All: A Mathematical Story by Marilyn Burns – Area and Perimeter
- ◆ The Greedy Triangle by Marilyn Burns – Transformations, but can be used for other Geometry topics
- ◆ The Sneetches by Dr. Seuss – Function Tables (Input/Output)
- ◆ Funny and Fabulous Fraction Stories by Dan Greenberg – Fractions
- ◆ A Place for Zero by Angeline Lopresti – Number Sense, Place Value
- ◆ Chimp Math: Learning About Time from a Baby Chimpanzee by Ann Whitehead Nagda – Time
- ◆ Tiger Math: Learning to from a Baby Tiger by Ann Whitehead Nagda – Graphing
- ◆ A Remainder of One by Elinor J. Pinczes – Division
- ◆ Amanda Bean’s Amazing Dream by Cindy Neuschwander – Multiplication
- ◆ The Best of Times by Greg Tang – Multiplication



UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News**Making Multiple Choice Tests Meaningful***By Leanne Sanders*

**Leanne Sanders teaches for the Washington County School District.**

**This also creates awareness that the answer choices on the multiple choice tests are well planned by test makers. Typically each choice could be found as a solution by making a simple mistake in solving.**

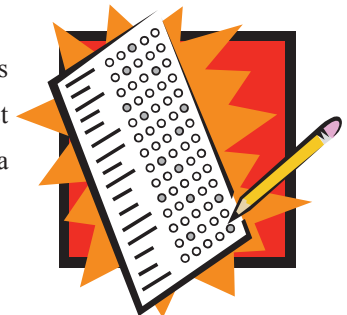
As all teachers know, education has turned toward a “teach to the test” mentality. I can see both pros and cons to this thinking. If a test assesses the state standards then a teacher should be “teaching to the test” in regards to teaching the material that will appear on the assessment. However, the downfall to this idea is seen when teachers only teach the tested curriculum and they don’t teach the students how to think for themselves. Often times the material tested is only a small piece of the big picture.

In my classroom, I use both open-ended, constructed response tests and multiple choice tests. Giving a multiple choice test does not have to be an opportunity for a student to feel like they have a 25% chance of getting a question correct. These assessments can still be used in a way that the student is held accountable for his/her thinking skills.

Error Analysis is a huge part of my teaching style. By the time students reach 8th grade math, they are usually set in their ways and it is hard to break those incorrect habits. When taking a multiple choice test, my students are not allowed to give the correct answer. They must explain to me why the other three answer choices are not correct. This strategy forces the students to use thinking skills, not just play a guessing game.

As an added twist to error analysis, I have my students find the solution to a problem and also give me 2-3 other answer choices that they think their classmates may choose. I practice this with students because I think it makes them mentally break down problems into steps by using processes. They give the incorrect solutions by evaluating the problem and anticipating common mistakes that their classmates could make. This also creates awareness that the answer choices on the multiple choice tests are well planned by test makers. Typically each choice could be found as a solution by making a simple mistake in solving

This also creates awareness that the answer choices on the multiple choice tests are well planned by test makers. Typically each choice could be found as a solution by making a simple mistake in solving .



**UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News****Lucky You!**

*By Lori A. Smith*



**Lori Smith teaches for the Kingsport City School District.**

**Teaching is a professional career that is constantly changing and requires those involved to consistently learn, alter instruction to align with new curriculum and miscellaneous needs, and efficiently manage and prepare diverse student populations for the future.**

**Teachers are the luckiest professionals!** As teachers, our work day ends at 3:30, we have the summers off, and we can't do anything else, so we must teach! However, teachers know the real truth, a truth a vast majority of the population does not understand. Teaching is hard work! I don't know about you, but if I leave the school house by 5:30 P.M., it is an early day! Those summers off...well, many summer days are spent participating in professional development, reading text on the newest trends in education, organizing or changing classrooms, thinking/worrying about the next school year, etc.! It would most likely be a shocking revelation for an individual who is not in the education field to shadow our day. Teaching is a professional career that is constantly changing and requires those involved to consistently learn, alter instruction to align with new curriculum and miscellaneous needs, and efficiently manage and prepare diverse student populations for the future. Teaching can be an extremely stressful and demanding job that requires dedication and often comes with numerous sacrifices.

Education appears to be increasingly more stressful each year, and although it may not seem like it, the strife and conflict found in education is not limited to the current times. *The Thread that Runs So True* is an autobiography written by Jessie Stuart that describes his twenty-year teaching career that began around 1930. Stuart was a great teacher like many of us who fostered strong communities within his classrooms, worked diligently to provide high quality education to the students, involved the community, and was a true advocate for the educational process. However, the book clearly demonstrates the significant sacrifices Stuart endured in order to provide the best education possible for his students. Stuart devoted massive amounts of personal time for his classes. In one situation, he talks of how he "had to go home and work long



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**“almost every  
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living our lives and  
making choices” (p. 46).  
I am definitely living life  
then! How about you?**

hours in the evenings" to ensure that he knew his lessons for the next day (p. 86). Stuart postponed marrying the woman of his dreams due to not making enough money in education even when he was in administrative positions. During his years in education, Stuart experienced times when individuals even wanted to kill him over his professional decisions! Toward the end of the book, Stuart states "I'm leaving [education] because it has left me." (p. 297).

While my life has not been physically threatened in my nine years of teaching (although I think there have been several threats to my mental health), I can identify with his other struggles. The quote Stuart wrote at the end of his book haunts me. There have been times due to the excessive demands and stress of teaching, I have felt overwhelmed and discouraged enough to just want to walk away. I could be wrong, but I do not think I am the only one who has ever considered finding the red EXIT sign!

In Michael Fullan's *What's Worth Fighting for in the Principalship*, he highlights that it is not just the teachers that are at the end of their rope. On the second page of the book, Fullan quotes a study by Evans (1996) in which he surveys and questions principals. Most of the administrators encountered noted that his/her work has become increasingly complicated and less satisfying leading many to question if the job can be done and if it is worth it (p. 156). Fullan goes on to describe the unreasonable demands and poor circumstances surrounding education. This book also identified that many educators share the same struggles; feeling the pressures of education and the unrealistic demands expected of those who dedicate immeasurable amounts of time to the cause.

Despite the ominous tone to this article thus far, there is a light at the end of the tunnel. Fortunately, Michael Fullan does not only present a book that reveals the depressing realities of education; he goes on to provide practical advice for those willing to learn to lead and teach with better results. Fullan states "managing time

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- \* **Fullan, Michael. (1997). What's Worth Fighting For in the Principalsip. New York, NY: Teachers College Press.**
- \* **Maxwell, John C. (2002 ). Leadership 101. Nashville, TN: Thomas Nelson, Inc.**
- \* **Stuart, Jesse. (1949). The Thread That Runs So True, A Mountain School Teacher Tells His Story. New York, NY: Touchstone.**

is related to attitude and technique” (p. 38). He is encouraging about the mounting pressure when he says “almost every important learning experience we have ever had has been stressful...Stress and anxiety are an indication that we are living our lives and making choices” (p. 46). I am definitely living life then! How about you?

More guidance and strategies for the overworked and crazy stressed educator (and basically anyone who wants to live a fulfilled life) can be found in John C. Maxwell’s Leadership 101. Maxwell’s book had more encouraging information than I have time or room to write. Therefore, I am going to list some of the uplifting comments and counsel of Maxwell’s book.

- You cannot overestimate the unimportance of practically everything. P. 36
- Efficiency is the foundation for survival. Effectiveness is the foundation for success. P. 41.
- Too often we learn too late what is really important. P. 43
- You need to have the right attitude. P. 89
- There is no success without sacrifice. 103
- Life is too short not to be fun. “Take this job and love it!” p. 36

**\*\*My favorite!!!\*\***

Last but not least, Stephan Covey, the author of numerous books on achieving personal greatness has some powerful recommendations in his book titled Principle-Centered Leadership. Covey gives realistic, no-nonsense advice on becoming a leader in your job and home. He relates how individuals must focus on their personal and interpersonal relationships in order to be the best at anything done in life. Covey states that "no single hour of your day will return as much as the hour you spend sharpening the saw" (p. 38). Sharpening the saw means taking care of ourselves and making sure to carve out time for the activities, hobbies, and people we love. Trying to balance the increasing demands of education as well as a life outside of school can seem nearly impossible. Never-

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- \* Fullan, Michael. (1997). *What’s Worth Fighting For in the Principalsip.* New York, NY: Teachers College Press.
- \* Maxwell, John C. (2002 ). *Leadership 101.* Nashville, TN: Thomas Nelson, Inc.
- \* Stuart, Jesse. (1949). *The Thread That Runs So True, A Mountain School Teacher Tells His Story.* New York, NY: Touchstone.

theless, in order for us to continue to be the amazing teachers we are, it is imperative to live a life that is filled with more than work. I have been guilty of not "sharpening the saw." Maybe you are guilty of that as well. I truly believe by devoting time to the things we enjoy outside of teaching, we will be happier personally and professionally.

Jessie Stuart did leave education...but not really. He remained an activist for education by working as a professor, writer, and a traveling lecturer. Stuart believed "good teaching is forever and the teacher is immortal." I feel confident in assuming that while many of us get disheartened in our career, we remain unwavering in our position. Why? No matter how tiring our day is, we continue to teach and put our best selves and effort into our careers. We are simultaneously realists and idealists. The true realities of a teaching career can be gloomy, taxing, and downright hard. Yes, we work long hours, there is truly not a lot of time off, and sacrifices are often made for the goal of quality education. However, I think most teachers are hopeful. Teachers are believers and strive for the best. We want to see success and love to witness the results of our labor. As Stuart says, "Each of us-teachers and pupils-become a little, unknown part of the vast educational assembly line" (p. 294). Our career is important, and its implications and effects are endless. That’s why we are all still teaching. That’s why I haven’t left teaching. That’s why you haven’t left teaching. That’s why we are the luckiest professionals!





## UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS News



Lynzie Haywood  
teaches for the  
Johnson City Schools  
District.

“.....we should help all  
our students to develop  
a back up plan for when  
they can't remember a  
fact. As teachers it is  
our job to help build  
self-esteem.”

### An article by Lynzie Haywood

**Third grade!** I don't remember a whole lot about when I was in the 3rd grade but what I do remember is something that hurt my self-confidence for many years.

I was one of those kids that got everything. I loved school and learning new things, until I hit the 3rd grade and was told that I had to memorize multiplication facts. Our teacher had a 'system'-you were to study flash cards until you got it, and then you took a timed test. We had those awful timed test at least once a week. I was scared to death of the moment that our teacher said, "Clear your desk of everything but a pencil. Leave your paper face down until I say go. You will have one minute to finish the test." She also had a reward system and if you met the goal of knowing all facts 0-12 by a certain date then you got a prize. Guess what... I never got that prize!

Now, I did memorize several facts by the end of 3rd grade, but it didn't end there. I quickly learned that I would need those facts in the 4th grade as well. I knew that I had to find a way to solve for the facts that I just couldn't remember despite how hard I tried. I began to investigate the multiplication facts, and found patterns and ways to solve using facts that I could remember then doing some adding and subtracting to get to the correct product. I couldn't get them quite as fast as some kids, but I could find the answer. Even though I was able to solve for these facts and rarely ever had any other troubles in math after the 3rd grade, I always felt very ashamed and embarrassed that I could not always recall facts from memory.

I say all of this because I was reminded during the Eastman Scholar Mathletes program this summer, by Dr. George Poole that students should have a back up plan and that students shouldn't have to feel dumb or not as smart as their classmates just because they cannot memorize their multiplication facts. Instead we should help all our students to develop a back up plan for when they can't remember a fact. As teachers it is our job to help build self-esteem. If we can do this by teaching our students other ways to help them find the product of multiplication facts then we should do so. As a student that had to develop this all on her own and felt like a failure for many years, please help your students to never feel the way that I felt for so many years.



## UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS News

### Fair or Unfair – Who’s the Winner?

*By Mary Beth Vaughn*



Mary Beth Vaughn is a teacher in the Scott County School District.

I may receive a lot of flack from my opinion on this topic, so please keep an open mind to the subject of Inclusion. Is Inclusion fair or unfair to the students? Do we need Inclusion? Is there a right or wrong way to use Inclusion?

To me, as a Seventh Grade middle school Math teacher, I feel our Inclusion classes at my school are unfair. I want all my students to be successful and being in an Inclusion class does hamper with the various ability levels of students. To give you an insight, at my particular school we have one math resource teacher for our entire Middle School, grades 7 – 9. This past year, two seventh grade teachers had Inclusion classes during the same block and shared the same resource teacher. We each had 26 students with eleven Inclusion students in each class. We all worked as a team and in the end our students were not as successful as we wanted. They all could have performed better in the classroom setting and on our State Standardized Test. We tried numerous groupings, team - taught, pulled out for tests, you name it-we tried it. We were simply out numbered.

It seems as if we have regressed back to the one room school. As an educator it is really tough to meet the needs of each student in a classroom. At my school it is impossible. It is not the students with IEP’s that get left out. We are required by law to adhere to their IEP’s. It is the “regular” students who suffer the most. In my situation it is difficult to find the “perfect” balance with my Inclusion and regular students. Many factors exist in our situation; one, funding to hire more resource teachers; two, time being split between two math classes; and three, large classes with varying ability levels.

One of my own children happened to have a class that was an Inclusion class. I did not take her out of this class because she liked the teacher. Through out the semester she would compare what her class was working on to what the other classes were working on. She commented that although she liked helping

**UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News****Is there a right way  
Or a wrong way to  
teach an Inclusion  
class?**

others and liked challenges, she would prefer to work at a faster pace. She felt as though she was cheated since she could not work at that faster pace. She was and is a straight “A” student.

Now, do we need Inclusion? Yes. We all learn at different paces and styles. Some students do well in Math but not so well in English and vice versa. Generally in Inclusion classes, the material is covered at a slower pace. An IEP may be written that if he/she fails a test they can retake the test. When this happens you lose class time where as you could have moved on to another lesson. On the flip side when a resource student needs to retake something, that student should have a better understanding of the material.

Is there a right way or a wrong way to teach an Inclusion class? This is a difficult question to answer. To do it right and build students’ confidence with the material, I would group students in classes according to ability. At the end of the year, students could take a series of tests, aside from state testing that would be used to determine which type of class the student would be the most successful in. Would this influence career choice? I think not. Determination and work ethic are more of an influence than what type of class you are in.

A wrong way is perhaps the way our school has to approach Inclusion. No fault of our school or school system, it all comes down to funding and the inability to have more resource teachers to accommodate our students’ needs.

I am sure some parents would have a “hey day” with grouping. Some would say we are “labeling” the classes. We are already doing that. They are called an “Inclusion classes”. The important thing we, as parents and educators need to do is stay focused on what is “best” for our children. We should all desire our children to be successful no matter what learning group they are grouped with. The end result is what counts. We are winners!



## UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS News



**Lauren Downs teaches  
in the Washington  
County School System.**

### **Musical Math**

*By Lauren Downs*

When students are asked to recall most mathematical procedures, common responses include blank stares and a few “ums”. However, when students are asked to sing a popular song, imaginary microphones and backup dancers appear in their minds as they belt out the melody they have heard so many times on the radio. Who said that learning could not induce this same emotion in students? Music can and should be used as a tool to encourage students to think about as well as enjoy their learning.

How can music be incorporated in a classroom? When should it be utilized? Will the students respond in a positive way? Using music with students can promote relaxation, creativity, and could aid in memory formation.

It is important to choose the situation and type of music to use for different settings. Using classical music promotes relaxation and encourages creative thinking. Music that is more upbeat proves to be more appropriate for movement and activities where students are working together to problem solve. Playing soft melodies when reviewing information promotes memorization and helps students focus. Your music choice should depend on the type of students in the classroom and your own preference. You will learn that when using music, students will begin to enjoy listening and will even miss the music on days that you choose to not use music. Music does not have to stay in the background; it should be incorporated into lessons. As previously stated, students remember melodies and choruses from their favorite songs on the radio. When you turn your lesson into a melody, you will be surprised as to how many students will begin to remember and recall the information.

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In my classroom, we use chants, melodies, and raps to remember simple mathematical procedures. This has proved to be extremely beneficial, especially for my students who have trouble with memorization and recall. For example, to remember the steps in division we chant the following: Divide, Multiply, Subtract, Bring down. Divide, Multiply, Subtract, Bring down. To give more rhythm and interest to this chant, we include hand motions that represent each part. Students enjoy getting out of their seats to participate in this activity. By the end of the lesson, many students will be found whispering the chant as they complete their independent work.

More ideas can be found by searching the web to see other students incorporate math in music. An exciting math music video titled 4th Grader Raps about Place Value found on youtube.com can be used to encourage students to create their own math songs. Many other similar videos can be found to fit almost all subjects.

In conclusion, music is a wonderful tool that can enhance the learning experience for your students. The types of music and the timing in which music is used will differ from classroom to classroom, but when a good combination is found, the effects are great.

Below is a list of a few songs that I have used in different stages throughout my own lessons.

**Beginning of a lesson** lively, cheerful music:

- ◆ Fantasia, Disney
- Toy Symphonies, Haydn
- ◆ The final movement of Mozart's Piano Concerto No. 9 in E-flat

**During the lesson** soft melodies:

- ◆ Barefoot Ballet, John Klemmer
- ◆ Classical guitar
- ◆ Classical piano music
- ◆ Wonderful world

**During Activities** upbeat, fun music:

- ◆ Disney music
- ◆ Kidz Bop
- ◆ Shout

**After Lesson** celebration music:

- ◆ Sitcom theme music
- ◆ Celebrate
- ◆ Students' choice







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## UPCOMING NCTM CONFERENCES AND MEETINGS

### NCTM Future Annual Meetings

- 2013  
Denver, CO. April 17-20  
<<http://iem.nctm.org/link.php?M=3004392&N=1763&L=4993&F=H>>
- 2014  
New Orleans, LA. April 9 - 12
- 2015  
Boston, MA. April 15 – 18

### NCTM Future Regional Conferences

- 2013  
Baltimore, MD • Oct 16-18  
Las Vegas, NV • Oct 23-25  
Louisville, KY • Nov 6-8
- 2014  
Indianapolis, IN • Oct 29-31  
Richmond, VA • Nov 12-14  
Houston, TX • Nov 19-21
- 2015  
Atlantic City, NJ • Oct 21-23  
Minneapolis, MN • Nov 11-13  
Nashville, TN • Nov 18-20  
<<http://iem.nctm.org/link.php?M=3004392&N=1763&L=893&F=H>>

## Organizations we are affiliated to:

### **National Council of Teachers of Mathematics (NCTM)**

<http://www.nctm.org/>

### **Tennessee Mathematics Teachers Association (TMTA)**

<http://www.tmta.info/>

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# UETCTM

## Membership Application



***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



# UETCTM News

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- MATH JOURNALS
- GETTING THE MOST OUT OF STATIONS
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- EMPOWERING STUDENTS TO THINK
- SPIRAL REVIEW IN MIDDLE SCHOOL MATHEMATICS
- A SHIFT IN TEACHING
- PARENTS AND COMMON CORE MATHEMATICS
- "MIDDLE SCHOOL BRAINS = CREATION STATIONS"
- PRIORITIES
- MAKING MULTIPLICATION MATH FACTS FUN
- STUDENTS ARE PEOPLE TOO!

(CONTINUED ON PAGE 2)

## Brain Teaser!

Sachin Tendulkar bought a red ferrari with a strange 5 digit numbered plate. When the number is rotated 180°, it appears to be a number that is 78633 more than the car number.

All the digits of Sachin's car number are distinct.  
What is the original number on Sachin's number plate?



**Solution on page 17.**

Adapted from: <http://dailybrainteaser.blogspot.com/2013/03/sachin-red-ferrari-number-riddle.html>

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## Upcoming UETCTM Meeting

**Tuesday April 9**

**Time: 4:00 PM - 6:00 PM**

**Blountville Elementary School, Sullivan County**

**Address: 155 School Ave, Blountville, TN 37617**

**Phone:(423) 354-1650**





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## IN THIS ISSUE

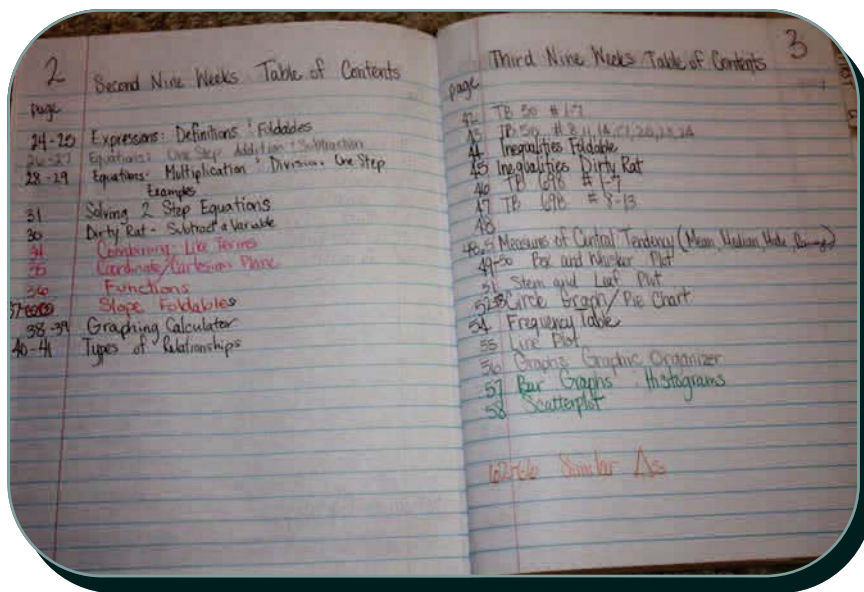
- AS TEACHERS HOW CAN WE MAINTAIN INTERDEPENDENCE WITHIN COOPERATIVE GROUPS
- "IT'S MY WAY OR THE HIGHWAY!"
- "WHAT NOW?" MATH WORK STATIONS THAT REALLY WORK
- MULTIPLICATION MATTERS
- CULTIVATING A TEAM CULTURE: TEAMWORK IS BETTER THAN ME-WORK!
- GET OUT! WHO KNEW MATH COULD BE FUN?
- UPCOMING NCTM MEETINGS AND CONFERENCES
- UETCTM OFFICERS
- MEMBERSHIP APPLICATION

## Math Journals

By Deborah Smith

I have used journals in math before, but never like this. This past year, the students essentially created their own textbooks, complete with a table of contents and glossary. I have included many pictures because I think the visual is better than any description.

I request that students use the black and white composition books for their math journals. It seems that these stay together better than the spiral bound and wireless counterparts. The first week of school, I will have the students label the page numbers in the composition book in the upper left and right corners. The first few pages are reserved for the table of contents. I have found that one page per grading period is typically adequate. The students fill in the table of contents as they add information into their journals. Following the table of contents is a page where students record their partner appointments, or partner clock. I strongly encourage my students to use colors as they enter information into their journal. I have also learned that it is necessary to carefully watch students at the beginning of the year as they begin their journal entries. Some students need more supervision to ensure that the information is entered on the next consecutive page. Keeping notes in order will aid the students in knowing

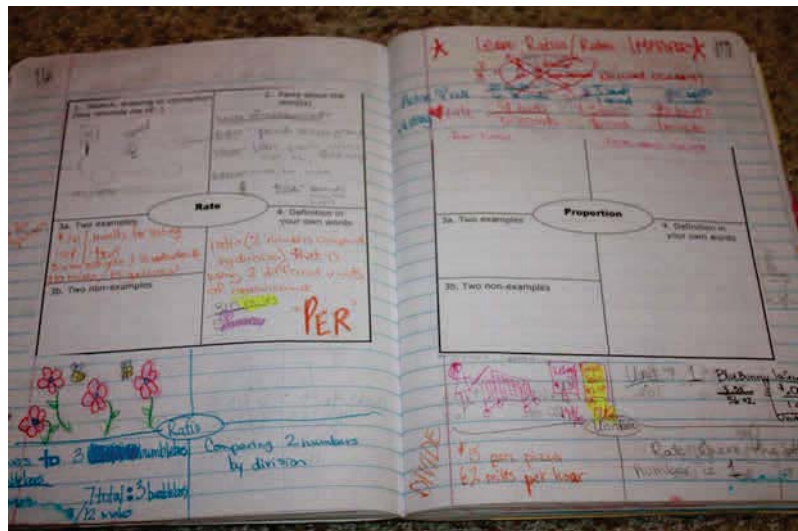




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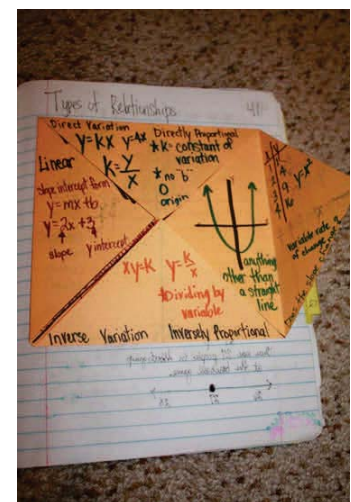
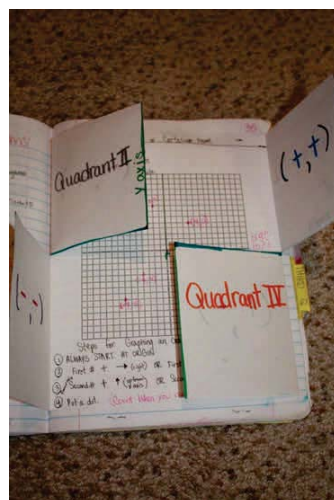
(Below) A Frayer Model for vocabulary may be cut out and glued, or may be drawn in the journal as pictured here.



I have included many pictures because I think the visual is better than any description.

This shutter fold is a perfect fit with legal-size paper.

Types of Relationships foldable

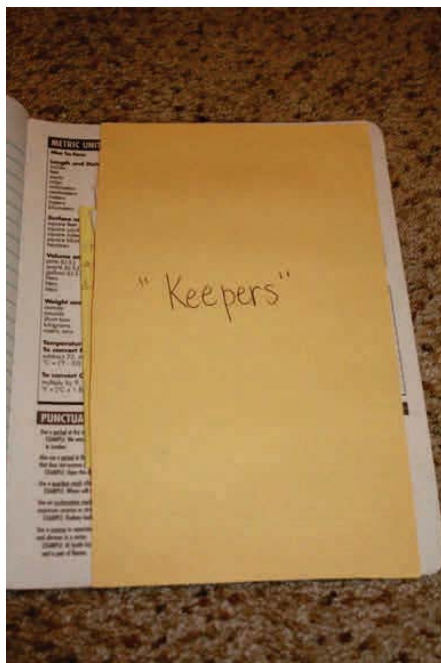
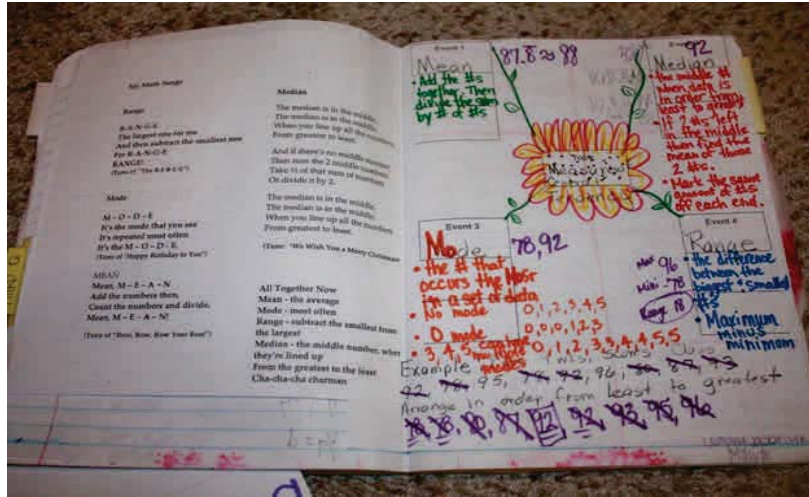




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I discovered that copies can also be added into the journal. This can be done by trimming the top or bottom of the copy then folding the margin over an inch or so. Add glue to the margin and stick into the journal. The students enjoyed labeling this page as page 91.5 in the table of contents.



(Left) This piece of card stock was glued on the outer three edges and created a pocket for the students to keep important handouts, such as the word problem rubric.

The last thirteen pages of the journal were used as a glossary, allowing two letters per page. This would also be a great place for an appendix, such as test-taking strategies or calculator entry instructions.

The students and I were very excited to see the finished product at the end of the year. I encouraged my students to save their journals as they moved on to eighth grade.



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## Getting the Most Out of Stations

By Ginger Davis  
Bristol TN City Schools

Like most teachers, I found the beginning of the 2011-2012 school year overwhelming. I knew group work was a big focus, but so was problem solving, thinking, differentiation, and many more sections of the TEAM model. After several in-service days of the Tennessee TEAM Educator Rubric as the focus, I began searching and thinking of ways to make it more manageable. I focused on the significantly above expectations column, level five, with a goal of combining areas if possible. I recalled the Thoughtful Classroom Professional Development program by Strong and Silver Associates. I was inspired by their focus on learning styles and by their method of allowing students to practice a concept in multiple ways. I created a group work/station procedure that has been very successful for students and for “checking off” the bullets in the level five column.

Primarily, I use a combination of activities as practice, after the concept/lesson has been established. I begin by placing students in groups of 4 or 5. Then the students select roles: timekeeper, on-task person, facilitator, speaker, and scribe. A few of the roles may be combined or omitted to fit your needs. I sometimes omit the scribe and have all of the students record the results. It depends on how I plan to grade the activity. The timekeeper does just that – keeps time. I set a limit on the amount of time per station; therefore, it is an important role. The on-task person helps keep the group focused. The facilitator moves the folders/activities and reads instructions. The speaker is in charge of raising her hand for the teacher and speaking at the end during reflection. The scribe records results for the group. Please remember: students may struggle with these roles the first time, but, as with everything, practice does make perfect.

Now to the meat and potatoes! Typically I have 4 to 5 different activities, depending on class size and lesson. I design activities to accommodate different learning styles. I compile questions, problems, and ideas that are conducive to a particular learning style for each different activity. One activity will consist of practical application of the lesson. This activity will focus on students using, applying, practicing repetitively, recalling, and following a procedure. The second activity will consist of a more analytical thinking. It will focus on students comparing/contrasting, evaluating/explaining, justifying solutions, finding errors, making predictions, or improving a given solution. The third activity will feed the creative minds. This activity will require students to create, design, use art, song, or poetry

“Necessity is the  
mother of invention” –

Plato





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to express an idea. The fourth activity allows students to connect their learning to past experiences, observations, feelings, or situations. This is a great time to answer that inevitable question, “When am I ever going to use this?” The teacher will make that extension to real-life scenarios, or the students will research and make the extension themselves. Lastly, the fifth activity is the hands-on portion. Typically I use this station to encourage inquiry and curiosity about the topic of study. Frequently I use the SmartBoard and a variety of great on-line programs to satisfy whatever need, but you may use any great hands-on activity. This is great because many times materials are limited. And restricting the materials to 5 students at this station is more cost effective.

One of the best aspects of this station is that the students can manipulate a figure to various conditions to better understand how the constraints affect it. Students can ask, “what if I do this?” Then they can measure and verify that all the properties hold true. At the beginning it may seem like a daunting task; however, with a little practice the process gets easier. Basically all I do is identify similar problems then “cut and paste” those problems together for a folder. As you can see the possibilities are endless to the types of activities you can create.

Now the plan for execution within the classroom is crucial. The first several times I did this activity I had the student groups move around the classroom to stations. However, my classroom is small and I found my students did not move from station to station as quickly as I saw fit. Therefore I placed each activity in its own colored folder and the folders moved around the classroom. Students are still required to move to the hands-on station, but all of the other activities moved to the students. I require the facilitator in each group to pass the activity folder in a certain direction. This keeps it more organized and the students can manage their activities more easily.

The observable successes were many! The main goal for students learning the concept was accomplished. I saw amazing teamwork; students really worked well as a team to complete the task at hand. The most gratifying observation was seeing different students “step-up” during various activities and lead. Even my harshest critics enjoyed at least one of the activities that day. I enjoyed seeing many students, who usually sit quietly, teach another student in their group. After a couple times of explaining my expectations, the students had mastered the overall procedure. Then I could place just about any activity in the folders and the students completed it with little direction from me. The successes based on the TEAM evaluation rubric are great. This group work concept achieves in motivating students, lesson structure and pacing, activities and materials, questioning, teacher knowledge of students, academic feedback, grouping students, thinking, problem-solving, student work, assessment, expectations, managing behavior and environment. It provides for a win/win situation where the students are succeeding and the teacher is meeting more of the TEAM model’s requirements.



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Extensive research supports that students learn best when they are engaged in hands-on activities and the information is connected to real world experiences (Jegede, Olugbemi J & Taylor, Peter C, 1995).

## The Power of Integrating Science and Math

By: Heather Hobbs  
Kingsport City Schools

Have you ever asked yourself,  
“How can I maximize my instructional time, and enhance student learning?”  
Of course you have! Now, have you found the answer?

One possible solution is integrating your math and science curriculum. Math and science naturally fit together, as math is the language of science. So why not take advantage of this natural connection when instructing the minds of our students? Extensive research supports that students learn best when they are engaged in hands-on activities and the information is connected to real world experiences (Jegede, Olugbemi J & Taylor, Peter C, 1995).

Below are some practical ideas that allow you to do just that!

### Measurement

- \* Owl Pellets: Allow the student to measure the pellet and the bones inside. Hold a contest to see who can find the longest or shortest bone.
- \* Mass various objects around the room. Make it a scavenger hunt to see who can find objects with a mass of one gram, one hundred grams, one thousand grams, and so forth.
- \* Position thermometers around the school. Collect and record the temperature throughout the day. After you collect the data, graph the results and look for patterns.
- \* Create a model of the solar system built to scale.

### Ratios & Proportions

- \* Find the ratio of the length and width of various objects (Cawley & Foley, 2002).
- \* Use food color in water to achieve certain shades. As students work to create these colors, have them record the amounts of food color needed to achieve these results (Cawley & Foley, 2002).



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## Multiplication

- \* Experiment with the equation  $\text{Force} \times \text{Distance} = \text{Work}$  (Cawley & Foley, 2002). Have students construct scenarios to illustrate and solve this equation.

## Fractions, Percentages, and Probability

- \* Record the weather daily. Periodically discuss what fraction of the week was cloudy, rainy, etc.
- \* When explaining moon phases give each student some Oreos to demonstrate what fraction or percent of the moon is visible. You may also use cotton rounds to illustrate this principle.
- \* Discuss heredity and explore the work of Gregor Mendel.
- \* Experiment with genetic traits of parents to determine the traits of the offspring.

## Sources:

Cawley, J. F., & Foley, T. E. (2002). Connecting math and science for all students. *Teaching Exceptional Children*, 34(4), 14-14. Retrieved from <https://login.ezproxy.etsu.edu:3443/login?url=http://search.proquest.com/docview/201140540?accountid=10771>

Jegede, O. J., & Taylor, P. C. (1995). The role of negotiation in a constructivist-oriented hands-on and minds-on science laboratory classroom. Retrieved from: <https://login.ezproxy.etsu.edu:3443/login?url=http://search.proquest.com/docview/62627853?accountid=10771>





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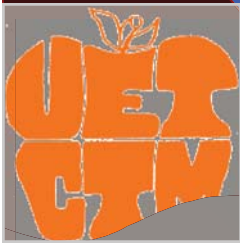
**“My goal when teaching math to my students is to empower them to think and investigate freely”**

## Empowering Students to Think

By Karen Kitzmiller  
Kingsport City Schools

A friend and I were talking about some of the experiences that we had when we were in elementary school. One of my most vivid memories is from the third grade. We were working on adding large numbers together. I completed the worksheet that my teacher had given me, and I brought it for her to grade. When she handed it back she had put an X next to the problems that weren't correct. I was told to correct the paper, and bring it back to her. As I was making my corrections, I came across a problem that seemed to be correct. I asked my teacher why she marked the question wrong when the answer was right. Her response has stuck with me all these years: “Karen, it's wrong because you didn't complete the problem the way that I asked you too. The answer is correct, but you didn't work the problem out the way we do in third grade.” According to my third grade teacher, it was her way or the highway. You were either right, or you were wrong. There was no room for free thinking or investigating. As a third grade student, I remember thinking that there must be more than one way of doing math.

As a teacher, I understand that all children learn differently. What works well for one student may confuse another student. My goal when teaching math to my students is to empower them to think and investigate freely. Often times I will give them a problem, and I will ask them to find any way they can to solve the problem. If they have attempted to solve the problem and are still stuck, I will often ask them questions to get them thinking about how to start solving the problem. “What would happen if you started adding here first? What do you notice about this problem that you may have seen before?” It is amazing what they can come up with when they are given the opportunity to think for themselves. After my students have had a chance to work, we will come together, and I will let them share their



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thinking with the class. As the students are sharing, I will ask them questions about what they were thinking or where they got a certain number. I also give their peers a chance to ask them questions. I often hear students whisper, “I get it! I see how he/she got that answer.” Sometimes they can learn more listening to and watching their peers than they will learn from me. My goal is for my students to understand why the math works. I don’t want them to ever think that they are doing something “wrong” because they did it differently than someone else. There are many ways to solve math problems, and I want them to investigate to find the way that works best for them.

My third grade teacher was a wonderful lady, and I have many fond memories of being in her class. Unfortunately, she wasn’t given the opportunity to empower her students to be free thinkers. We all knew how to add two-digit numbers together, but none of us knew why we were carrying numbers. We did it because we learned a procedure. We didn’t learn the how and why of math. I encourage you to empower your students to investigate and think freely about math. Their knowledge will surprise you.





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**Student success on standardized testing in mathematics is dependent not only on the ability to reason but also the ability to recall standard mathematical concepts and rules.**

## Spiral Review in Middle School Mathematics

By Lawrence A. Nussio  
Hawkins County Schools

Student success on standardized testing in mathematics is dependent not only on the ability to reason but also the ability to recall standard mathematical concepts and rules. Middle School Mathematics textbooks organize material by individual concepts and sets of rules. Once a chapter is completed, previous material is rarely revisited. A simple method such as distributed practice can help improve long term retention of mathematical concepts and rules. Controlled implementation of spiral review in the middle school classroom is one such form of distributed practice. Distributed practice through spiral review can improve student recall of mathematical procedures and contribute to improved testing scores.

The processing of algebraic expressions relies on knowledge of mathematical rules that guide and direct students to a solution. Distributed practice is a technique used for study which relies on many short practice sessions initiated over defined time periods. The distributed practice technique is often compared to massed practice or cramming in which the student relies on one long session of study. Research on learning in general indicates a benefit for practice that is

distributed across time, as contrasted with the same amount of practice massed in a single session, (Pashler, Rohrer, Cepeda, & Carpenter, 2007). Their work reviewed distributed practice vs. massed practice including a discussion to the application of mathematics. The course work results suggest that the distributed review and integration of material across years contributes to the retention of the material throughout adulthood. Traditionally, distributed practice is commonly found at the college level. Additional research by Donovan and Radosevich (1999)



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suggests a 67% memory increase over those just using massed practice from primary age students to those in college. Distributed practice as a technique of study should be considered as a potential benefit for middle school mathematics students.

Distributed practice has been considered an independent studying technique commonly found in college level courses. Spiral review is a distributed practice technique which relies on revisiting and practicing previously taught concepts.

With regard to middle school mathematics and standardized testing, one of the key features of success is the ability to recall and apply math concepts and rules accurately and efficiently. When students have acquired conceptual understanding in an area of mathematics, they see the connections among concepts and procedures and can give arguments to explain why some facts are consequences of others. They gain confidence, which then provides a base from which they can move to another level of understanding, (Kilpatrick, Swafford, and Findell, 2001).

Controlled spiral review is a distributed practice technique which does not leave the responsibility for organization and implementation on younger students but is established by the teacher. In a controlled spiral review, students are provided several opportunities to review and revisit topics previously presented. For example, daily lessons can include spiral review of topics previously taught. The reviews should be short (between five and eight questions), easily completed with time constraints, and provide immediate feedback. Exams would primarily focus on current topics but include several questions from previous topics. In the beginning consider referring students to specific content but gradually move toward preparing the students to expect and be prepared for anything. Finally, periodically provide activities and review of concepts and rules taught over a specific period of time, say four to six weeks worth. Provide a series of activities which can illustrate the connection between the topics previously taught. This approach can identify sources of common errors among student quickly and efficiently allowing the teacher to identify and address student difficulty. Controlled spiral review as applied to middle school mathematics has the potential to benefit students' performance by increasing recognition and speed of application needed to be successful on standardized testing.

As schools are faced with high stake achievement test scores for their



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**“...fluency and retention is more clearly achieved with distributed practice including the area of mathematics.”**

annual AYP or SIP, the demand for teachers to develop mathematical proficiency in reasoning skills and recall among students is at a paramount. Data based instruction

is a current trend which allows teachers to plan based upon student needs. Spiral review of mathematical concepts and rules is another tool available to assist teachers in the development of proficiency. During the 2011-2012 school year, distributed practice through spiral review was implemented and proved to be a significant factor in the yearly performance of my students. Integrated as part of daily instruction, it was titled, The Daily8. Composed of eight questions based upon the reported data needs from benchmark testing, as well as classroom testing, students wrote their constructions for each problem, (figure 1 & 2 ), and bubbled answers for scoring. Results from initiation, to middle of year, to just before standardized testing indicate a positive learning trend. Often, think-pair-share and other think aloud strategies were utilized for students to discuss clear understanding of the problems presented.

While in attendance at the ETSU Mathletes summer session, 2012, it became apparent that those students who made connections or pulled from prior knowledge were the first to excel in completing the investigative tasks. Those individuals were then able to share and communicate with group members on attack strategies, vocabulary, and clarifying the concepts. On average they lead the groups into the discovery of the activity. While not the only technique used to enhance student learning of mathematical concepts and rules, spiral review has encouraged the development of proficiency and fluency among my middle school mathematics classes.

At all ages, there are several ways to improve the functional capacity of working memory. Research has shown fluency and retention is more clearly achieved with distributed practice including the area of mathematics. Controlled spiral review is a distributed practice technique which does not leave the responsibility for organization and implementation on younger students but is established by the teacher for the benefit of the student. The most central of these is the achievement of automaticity, that is, the fast, implicit, and automatic





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retrieval of a fact or a procedure from long term memory. ... For other types of information, including much of mathematics that is taught in school, automaticity is achieved only with specific types of experiences, including practice that is distributed across time (Cooper & Sweller, 1987). Clearly, techniques such as spiral review can be yet another tool for teachers to encourage success among their students.

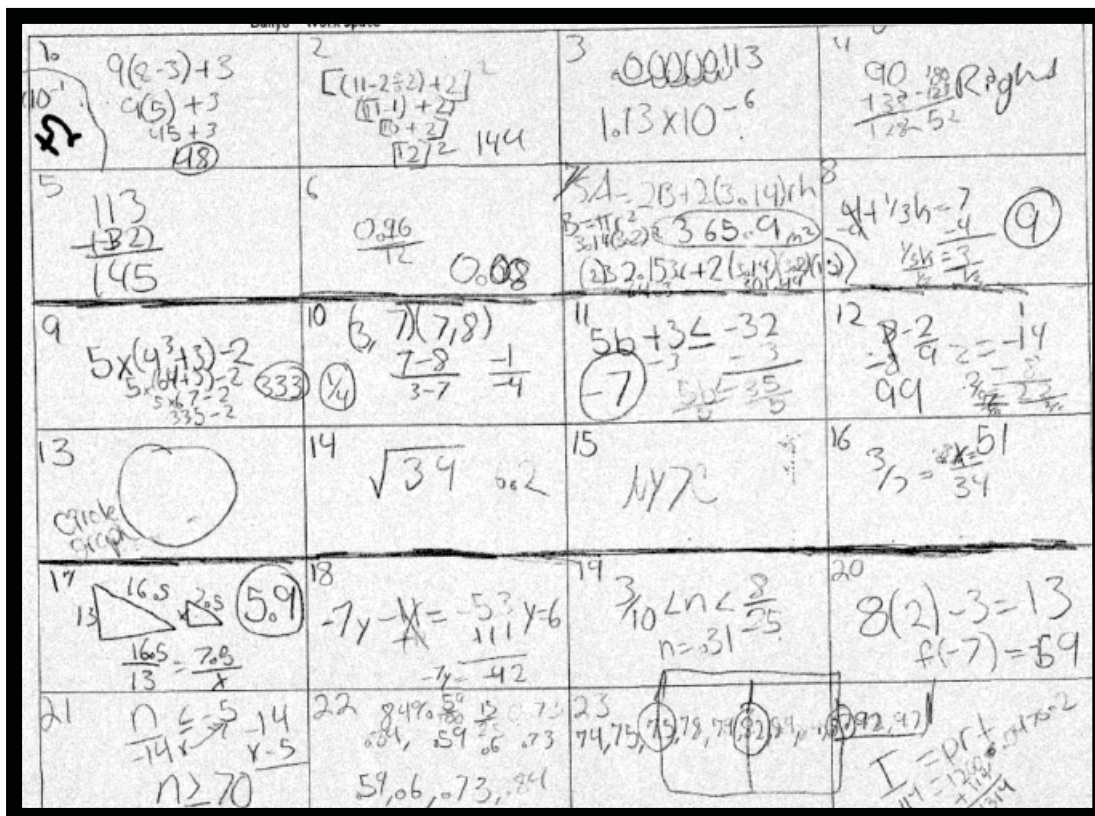
| Scientific notation   | Surface area cylinder   | Percent of a #  | Inverse Variation   |
|---|---|---|---|
| $3.50 \times 10^5$<br>53.) $0.00802$<br>$8.02 \times 10^{-3}$   | $SA = 2B + PL$<br>$SA = 2B + PL$<br>$B = (3.14)(7^2) = 153.9$<br>$SA = (2)(153.9) + (0.40)(6) = 277.96$ | $57.) x = \frac{619}{100} = 412.17$<br>$x = 1.5$                      | $58.) \frac{5}{1.25} = \frac{10}{2.5}$<br>$12.5$<br>$12.5$                                    |
| $51.) 10(6-2) - 10$<br>$10(4) - 10$<br>$40 - 10$<br>$30$  | $[3+5 \times 4] - 3 = 51$<br>$[6+20] - 3$<br>$[26] - 3$<br>$23$<br>$23^2 = 529$                         | $56.) x + \frac{1}{2}x = 25$<br>$+15$<br>$1.5x = 40$<br>$x = 26.67$   | $54.) \frac{0.96}{12} = \frac{x}{1}$<br>$x = 0.08$  |
| $59.) m = \frac{y}{x}$<br>$60.) m = \frac{y}{x} = \frac{65}{85}$<br>$m = \frac{5-6}{8-6} = \frac{-1}{-2} = \frac{1}{2}$                                     | $59.) 8x(2^3+7) + 7 =$<br>$8x(8+7) + 7$<br>$8x(15) + 7$<br>$120 + 7$<br>$127$                           | $61.) 5b + 2 < -23$<br>$b < -5$                                       | $62.) \frac{9-3}{10} z = -15$<br>$\frac{6}{10} z = -15$<br>$\frac{3}{5} z = -15$<br>$z = -25$ |
| $63.) \sqrt{60} = 7.7$  | $64.) \frac{3}{5} \times 2 \frac{7}{10} = \frac{19}{10}$  | $65.) 6, 15, 18, 20, 21, 22, 24, 25, 26, 28, 29, 30$<br>$30 - 6 = 24$ | $66.) 23 \text{ Median}$<br>$19 \text{ low median}$<br>$27 \text{ High median}$               |
| $V = \frac{1}{3} B h$<br>$B = \pi r^2$<br>$V = \frac{1}{3} (\pi r^2) h$<br>$V = \frac{1}{3} (\pi (3.14)(6.5^2)(4.7) = 207.9$<br>$B = (3.14)(6.5^2) = 132.7$ | $67.) 130$  | $68.) -5q - 8 = -38$<br>$q = 8$                                       | $70.) 42\%$<br>$0.42, 0.57, 1, 3, 4, 3$   |
| $71.) \frac{1}{4}x + 3 > -\frac{1}{2}$<br>$x > -14$   | $72.) \frac{1}{12} = \frac{x}{96}$<br>$x = 8$   | $73.) \frac{x}{100} = \frac{2}{22}$<br>$x = 9.09$                     | $74.) V = 6^3$<br>$48 \text{ in}^3$   |

(figure 1) The Daily8 Student Sample



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(figure 2) The Daily8 Student Sample

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## A Shift in Teaching

By Lori Allen

Hawkins County Schools

The shift has begun for teachers to move from predominately textbook based teaching to more performance based learning for students. Not only is this type of learning more exciting for students, but it also puts the responsibility of learning back on the students. The saying goes that students should be the ones leaving the classroom in the afternoon tired not teachers. By implementing performance based learning/tasks teachers will go home ready to enjoy the evening and students will be the ones ready for a nap. This is a much needed and welcome change from the classrooms of the past.

There are many sites available with performance tasks so teachers can easily implement these in their classrooms. Tasks that students seem to enjoy doing are ones that have many solutions to one problem, so students have to work and come up with multiple solutions. These tasks can be done individually or as a group. Tasks can be done in as little as 5 minutes or as long as 5 days, depending on the complexity of the task and the time allowed to work on the task.

Below you will find links to sites that have quality tasks available for teachers.

<http://www.rda.aps.edu/mathtaskbank/start.htm>

This site has tasks that are arranged by grade level and by math strand and also has grading rubrics available for each task.

<http://fcit.usf.edu/math/resource/perftasks.html>

This site has tasks created by the State of Florida for Algebraic Thinking.

<http://www.k-5mathteachingresources.com/>

This site can be searched by grade level and/or mathematics strand for great tasks for students grades k-5. I have personally used this website when planning lessons to teach to my students.



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<http://www.fi.edu/school/math2/index.html>

This site has open-ended math tasks for intermediate students, but the tasks can be easily adapted for younger students.



Remember when students are doing performance tasks always have them explain their thinking. Writing and explaining how they arrived at an answer will help them with the precision of their thoughts. When students explain how they arrived at an answer then the teacher will know if they

truly understand what they are doing.

Performance tasks are a fun and different approach to teaching and learning mathematics, students will be so busy and they will be having so much fun they will not even realize they are learning!

### **Brain Teaser Solution**

**Sachin's car number plate is 10968**

**Rotated 180° is 89601**



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## Parents and Common Core Mathematics

By Nikki Manning  
Hawkins County Schools

As schools have implemented the new Common Core State Standards (CCSS), teachers and administrators have been overwhelmed with questions and complaints. Parents don't understand why we are shifting the teaching of Math. Some of the questions and comments include: "Why are you writing the problems across instead of up and down?", "Why does my child have to do the problem this way? Why can't they carry and/or borrow like I did?", "I don't understand the homework so I taught my kid this way." and many others. These questions and misunderstandings are going to lead to many confused students.

The new Common Core encourages students to think about Math in a new way. These standards will lead to a greater understanding of the concepts of Math, but in the beginning may look like impractical explanations to parents who feel they can show their child a quicker or easier way to solve the problems.

As teachers we must help our parents understand the importance of implementing strategies that encourage thinking and understanding instead of memorizing procedures. Many websites offer useful tools for teachers to share information with parents. Education Northwest, PTA, and TeachHub are three of the websites that offer help.

TeachHub provides an overview of the Common Core State Standards. This is a resource for teachers to access in order to gain support about explaining the standards to parents. The website offers suggestions and examples from varying grade levels. Also very helpful is an explanation of ways teachers can communicate with parents to aid understanding of the testing and evaluation that goes with the CCSS. (Sindelar)

Education Northwest offers a printable series that will inform parents about the Common Core. This printable entitled "Spotlight on the Common Core State



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Standards – What Do Parents Need to Know?” shares information about the background of Common Core as well as how these standards will help our students. The printable is a nice overview that covers all grade levels. (Education Northwest, 2011)

The National Parent Teacher’s Association (PTA) website offers several resources to help teachers assist parents with this implementation. A downloadable presentation is available on the PTA website which offers an overview of the Common Core State Standards. Also available are printable, grade specific guides that teachers can send home with students that explain the Common Core Standards. These guides give parents examples of problems, activities to do at home, and conversation starters for parents and teachers. (National PTA)

Teachers have a busy year ahead of them implementing these rigorous standards. In order for our students to have success, we must encourage parents to help us implement these high standards and encourage our children to think and explore. Parents will need to help their children reach a level of understanding that has never been asked of students before, but as we move toward full implementation of the CCSS, the benefit of a generation who truly understands numbers will be worth the effort.

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## “Middle School Brains = Creation Stations”

by Peggy Bishop,  
Hawkins County Schools

“Ready, set, action!” At the prompting of these words from my class, a nervous 8th grader begins to sing to the tune of “Don’t Worry, Be Happy” by Bobby McFerrin:

Here’s a little song I wrote  
It’s the equation for finding slope  
 $y_2$  minus  $y_1$  over  $x_2$  minus  $x_1$   
Doo, do, do, dodo, dododododododo  $y_2$   
Dododododododo minus  $y_1$   
Dododododo over  $x_2$  minus  $x_1$

It only took two times through before the whole class was singing. After a few minutes of singing the song, the students knew the formula for finding the slope of a line when given two points  $(x_1, y_1)$  and  $(x_2, y_2)$ . Why? Because one of their peers took on the challenge to create a way to help students remember the formula. The best part was months later, as TCAP review began, the students recalled the familiar jingle when a question was asked about finding slope when given two points on a line.

We teachers are always looking for creative elements to add to our lessons. What I have found is that I have 20-30 creative geniuses sitting in each of my classes. If I ask them, “how could we make this concept/standard easier to understand,” they will give me ideas. Even the students who are disengaged want to be involved. Students love to show that they can be creative and are excited that you will tell the other classes about the ideas they have come up with. Some creative elements that have been added to my lessons include: jingles/songs, games, illustrations, comics,



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## Priorities

By Julie Smith  
Bristol TN City Schools

If someone would have told me 17 years ago I would be teaching math to special needs kids, I would have laughed at them and told them I could barely balance my own checkbook. There was no way I would be teaching (much less math!) to any kids. Today, I couldn't see myself doing anything else.

You see, because all students learn in different ways, special needs students are the exception. Some days they just plain ol' do not get it. No matter how many different ways you show them. Even with numerous manipulatives, real-life examples, or the ever-boring written examples on the board, I will get blank stares. But that is how some special education students are. Some days they will get it, and it is not just a "light-bulb" or "ah-ha!" moment. It is a celebration. Because for my kids, finding out what

(  $-535.021 + -5 \times -43$  ) is equal to is not as important as finding out if given \$8.00, do they have enough money to buy milk, bread and sandwich meat in order to eat that week.

Priorities change for what I teach them and for me as well. I cannot evaluate (  $-535.021 + -5 \times -43$  ). But I can tell you if I have enough money to buy groceries to feed my family this week .





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and riddles. Our students are truly creative geniuses! I love to see the sparkle in kids' eyes, hear the excitement in their voice, and witness the joy they have as they share their creation with you and the class.

Be ready if you do this! Be ready for the students to go above and beyond what you could have ever expected them to dream up. They might just blow your mind! This past year, a group of students created a board game for TCAP review. The game board was a replica of my classroom right down to the laptop on my desk, and the game pieces were the 8th grade teachers and LuLu. LuLu is Mrs. Watts', the 8th grade Social Studies teacher, dog who is practically the mascot of 8th grade. The desks were a path that represented the journey through 8th grade with a diploma at the end signifying a successful finish. Here is a photo:



By incorporating students' ideas, it has helped them take ownership in the class. They love that their ideas may be used in years to come. May I suggest that you take a chance! Ask your students to offer their creativity. Then, sit back, relax, and be ready to be blown away by their response.



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## Making Multiplication Math Facts Fun

By Rachel Horton  
Hawkins County Schools

In 3rd grade, multiplication math facts are a yearlong effort for our students, and as we know, we will soon lose their interest if we do not keep them engaged. How do we do that? I have found two websites that are fun and engaging while being useful to drill these facts that I would like to share with you.

Xtramath.org is a free website available to all teachers. This website is funded by a grant, and will be a great resource for you in your classroom. Teachers can sign up for a classroom account and their students will each be given an account with a pin number. Teachers can also choose which facts they would like to drill: addition, subtraction, multiplication, division, or a combination of any of these. Teachers can also print a take home sheet with directions for how the students can access their accounts at home. The first time students login, they will be given a pretest that will determine where they should start with the drills. From then on, students will work at their own pace through the multiplication facts. Once a week, after signing up for their account, teachers will receive an email that will give a progress report for their class. I use this site in my class as a center or I allow students to rotate to the computers during seat work. I try to make sure the students visit the site at least three times a week.

[www.multiplication.com](http://www.multiplication.com) is a website full of games that drill all the math facts up through the 12s. The games in this website are great to use as hooks, center activities, or wrap up activities on the Promethean board or on computers. Also, this website provides timed math drills that automatically grade the quiz after it is complete. The quizzes can be printed out or completed on the computer. My students beg to go to this site whenever they have computer time. The games are engaging and fun. Your students will love this site!



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**As teachers, we can fall  
prey to forgetting that  
students are people.  
Just because they are  
young people does not  
translate into they have  
no lives or thoughts.**

## Students are people too!

By Richard Greene  
Bristol TN City Schools

I once observed a teacher lecturing to a class consisting of a mixture of 25 sophomores and juniors in high school. I sat in this teacher's classroom for one block period, 90 minutes, and listened to this teacher expound on the virtues of slope and its many graphs and names. It was in the last 2 minutes of class that this particular teacher turned to the students in the class and asked if anyone had anything to add or perhaps a question. The students said nothing. The teacher gave the homework assignment and class was over.

During this class time I had the ample opportunity to observe not only the teacher, but the students as well. I noticed that most of the students were busily trying to write down as many notes as they could catch from the teacher's speaking as well as the teacher's writings on the board. Some students had their head down on their desktops. Most students had a glazed look in their eyes, with a few sleeping. They were not connected to the class or material in any way. In other words, they were bored.

As luck would have it, I was attending a workshop/seminar in which this same teacher was also in attendance. The presenter happened to be giving a lengthy talk about a program they felt would benefit teachers in the classroom. This particular teacher remarked that the presenter "talked too much" and "there was not enough engagement" of her audience. I found these remarks hilarious and sad at the same time. This teacher was complaining about exactly what went on in their own classroom.

As teachers, we can fall prey to forgetting that students are people. Just because they are young people does not translate into they have no lives or thoughts. Too many times teachers forget there are individuals in the classroom other than ourselves and that we need to engage those individuals. So, how do we do that? Is it as simple as coming up with different activities, games, or projects that allow those individuals to discover a new concept or topic? Unfortunately, it is not that easy.



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If it was, everyone would be doing it.

How do we get to know someone? How do we discover what makes some individual tick? What gets them excited? We have to talk to them. We have to have a conversation, usually more than one. But in the fast-paced, assessment driven classroom, this human interaction has all but disappeared. “We don’t have time! I do not even have enough time to cover all the material; much less lose class time having a heart-to-heart with my students.” This kind of thinking is what is driving the classroom to boredom and lack of comprehension. These teachers may produce wonderful test takers, but they will not produce wonderful seekers and lovers of knowledge.

I have learned from experience in my own classroom that when I have taken the time to get to know my students through interactions with them, I have gained so much more student performance in and out of my classroom. This tells me that if teachers take that extra time to build their knowledge of the students, the students will build their knowledge of the material. Students try harder and do more when they feel you are personally invested in them. Teachers can design more applicable activities and projects that students will want to do as well as benefit from. Students will be vested because the teacher is vested in them.

I wish I would have written to that teacher: “Remember the golden rule.” Teachers should never forget it: Especially in the classroom.





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## As Teachers How Can We Maintain Interdependence Within Cooperative Groups

By Shannon Adams  
Washington County Schools

When students work in cooperative learning groups, they sometimes get caught up in- group achievement instead of individual responsibility. As a teacher, it is important to make sure that students realize their individual importance to the group.

To develop interdependence within the group, there are several activities that you can administer within groups. As a teacher, you can assign specific jobs to each group member. Some of the jobs that students can perform are reader, checker, recorder, and materials gather. When students are assigned specific jobs, they are in charge of something and can actually understand what they are doing within their group.

Sometimes when I give group assignments I assign students within the group different topics to research. Once students have researched their particular topic they meet with their groups and present their findings to their entire group. Then as a group they decide how they are going to incorporate it within their project. By allowing students to work in this way students become confident and proud of what they are able to give to the group. They are confident that they have accomplished what they have set out to do.

I can enhance individual student behavior, within a group, by having students write in a Journal after each group meeting. Within the journal students can describe how their group is doing. If there are any problems students can write down what is happening. At the same time if all members of their group are working well together they can share all the positive things that are occurring. Then I can take their journals and read them and know exactly how their group is performing as a whole. At this time, I can see if I need to step in as a facilitator to help the group with any problems that they may be having.

Another way to ensure individual student responsibility is to have each child participate when the group is presenting an assignment to the class. I can ask each group



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member questions about their assignment so that I can make sure that each student was involved in the assignment.

As a teacher, when I see problems beginning to arise, I try to take care of any problems right away. Through observation, student journals, and questioning I am usually able to tell when a problem is beginning to arise within a group. At this time I try to meet with the entire group or individually with each group member. When I meet with the entire group I try to act as a Facilitator. I let the students know that I am there to listen, but at the same time I want them to think about what the problem is and brainstorm, as a group, alternative ways that they can solve the problem. Hopefully, by the end of the meeting each group member will agree to an alternative approach to solving the problem that is at hand. If I see that the students need assistance in developing ways to solve the problem, I will make suggestions to help the students decide what method they need to use.

When I am having problems with individual students within the group, I sometimes meet individually with each group member. At this time I discuss with each student what the problem is and why the problem is occurring. If I see that the problem is occurring because a student is not doing his/her part, I discuss with each group member why he or she thinks that this is happening. I encourage each group member to make sure that they are including each student within their groups. I also meet individually with the student who is having a problem within the group. I have him/her discuss openly why they are having problems within their group. I try to help the student think of ways that they can prevent their problem from occurring. After I feel that the student realizes what they need to do differently I have him/her continue to work within the group. I continue to monitor the group and meet with the group to supervise any problems that may continue to arise.

I like to do a lot of cooperative learning groups within my class. I try to stress to my students to work together in a cooperative way and try as a group to solve problems that may arise. I try to act as a facilitator to my students so that they can try to figure out what needs to be done differently or how they can go about to solve group problems. This is an excellent way to teach students peer collaboration so that when they get older they realize the importance of getting along and working together.



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## “It’s my way or the highway!”

By Sophie Phipps  
Bristol Tennessee City Schools

Imagine heading to a destination you’ve never been before. You only have one tool to use to help get you there. If that one tool fails you, you have no back-up plan. What are you going to do? How are you going to feel?

That is how many students feel when facing math problems. I know because I was one of them. I looked at math as being a one way street. I understand the feeling of getting stuck and having only one way to solve a problem. Until I attended Mathletes did I realize it doesn’t have to be that way. Mathletes opened my mind and freed me from all the one way streets I had traveled down for so long.

As a young student I could tell you that  $3 \times 7$  is 21, but I couldn’t have explained in pictures or words the concept that was behind  $3 \times 7$ . I also didn’t have a back-up plan if I had forgotten the product. I didn’t know I could use  $7+7+7$  to find the same answer because I lacked the multiplication principle, along with others at the time. Some of my former teachers taught me their ways to find solutions; yet, they never offered the information that there are other avenues that lead to the same answer. They also didn’t provide time for me to explore so I could discover the idea behind the skill being taught.

I am determined NOT to let that happen in my classroom. I am looking forward to beginning this school year with a math class that provides a rich learning environment for my students. It will include the following aspects:

- Time to explore math concepts with manipulatives so they will get a solid foundation of a skill.
- The freedom and flexibility to use whichever strategy works for them to solve a problem.

Math shouldn’t feel like a one way street for you or your students. Give them time, freedom, and flexibility within their math. It’s not “my way or the highway” anymore. Loosen up, step- back, and watch your students explore because that’s where learning begins.



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## “What now?” Math Work Stations that Really Work

by Stephanie Perry  
Kingsport City Schools

“I’m finished! What can I do now?” an eager second grader named Joshua interrupts as his teacher is just getting started with Joshua’s classmate, Beth, who is on the brink of tears with the same math problem. “See if you can find another way to work this one, Joshua,” she tells him. A few minutes later, Joshua is back. His teacher looks at his paper. Yes, he’s shown his thinking and solved the problem in more than one way. “Joshua, see if Adam is finished, and the two of you can play Get to 100,” she tells him. She’s thinking about Beth and three other students she needs to work with more closely but also knows that Joshua and other students like him should be involved with meaningful learning tasks that enrich and expand mathematical thinking. Joshua is happy to play the math game, for a while. But soon he and several others are back with more “What now?”

It’s a dilemma faced by nearly all elementary math teachers, especially those taking a constructivist approach to teaching math. With programs like Investigations and Everyday Math, keeping all students engaged in meaningful learning can be challenging for even experienced and skilled educators. No doubt, balancing the needs of all learners becomes quite a feat, a real juggling act. Yet, we can imagine and even strive for that “well-oiled” elementary math classroom where students know what to do and do it; where learners work independently to expand their thinking and understanding of math concepts; and where teachers work with small groups and individual students to provide differentiated instruction. One approach to getting closer to this ideal classroom involves the concept of math work stations. According to Debbie Diller in *Math Work Stations, Independent Learning You Can Count On*, K-2, “Math work stations are areas within the classroom where students work with a partner and use instructional materials to explore and expand their mathematical thinking.” She explains that through a variety of work station





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activities, students are able to reinforce and enrich their mathematical thinking about prior instruction. Math work stations have two central benefits. First, a math work station format provides children a time for practicing problem solving, through reasoning, representing, communicating, and making connections among mathematical topics. In addition, the teacher is able to observe and interact with individuals or small groups of children to provide differentiated instruction.

Diller points out that today's math work stations are vastly different from the traditional math centers of previous eras. In the past, teachers were responsible for creating and maintaining the centers which usually were changed out weekly. Today, the focus of work stations is on teacher modeling and on students taking responsibility for their own learning. For example, Diller notes that students should share in making decisions about when to change materials, and they should be allowed to suggest ideas for what they'd like to try at each station. Also, in contrast to the traditional center concept, math work stations allow teachers to differentiate for the various levels within their classrooms. "Instead of assigning the same tasks to all children, you can suggest different activities or materials for particular children so as to better meet their needs at a particular station," she explains.

To successfully launch the work station concept involves a great deal of thought and planning and preparation. It takes time to effectively model and teach students how to use materials and what the expectations are at each work station. Yet, teachers who truly incorporate math work stations into daily instruction find that the benefits of establishing a well-managed and organized math block far worth their efforts. For teachers who are ready to take the plunge, Diller provides excellent, step-by-step, detailed instructions and photographs in her book. In addition, teachers should keep the following points in mind as they look forward to enjoying success with math work stations.

- Organize materials.
- Clean out cabinets.
- Remove items that you no longer need.
- Organize everything.

It sounds obvious, but it is a crucial part of making it work. Diller offers advice for



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storing and organizing math materials. The goal is to get everything set up in a way that will make daily life in the classroom easier.

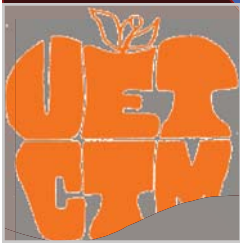
Model, model, model. Young students need lots of modeling and practice before they can be expected to work independently in work stations. Diller reminds readers to model even the most basic steps in a process. For example, students need to be taught not to dump out all the counters in a container, but to take a just a handful.

Go slowly. It can be tempting to introduce the stations quickly. There's just so much to do! However, too much information will overwhelm students. It's better to introduce each station only after having modeled the task with materials several times. When students are able to handle one station, others can be gradually introduced.

Share experiences. Teachers are always trying to refine and improve their practice. One of the best ways to do this is by sharing the successes and "ah ha" moments as well as the struggles with others. Whether it's in the classroom next door, down the hall, or on the web, sharing experiences with fellow teachers make all aspects of teaching more rewarding. For work station discussions based on Diller's book, visit The Stenhouse Blog at <http://blog.stenhouse.com/archives/2011/05/26/join-the-discussion-about-math-work-stations/>

### References:

Diller, D. 2011. Math Work Stations Independent Learning You Can Count On, K-2. Portland, Maine: Stenhouse Publishers



# UETCTM News

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## Multiplication Matters Observing Correlations between Middle School Students ability to be proficient in Mathematics vs. Success at Multiplication Facts

By Steve Humphrey  
Sullivan County Schools

“So, Samantha, do you know your multiplication facts, yet?” This is a question I readily asked my 8 year old niece whenever I visited her being quite aware that she was currently knee deep in her 3rd grade math curriculum. In fact, this is the question I asked my twin nephews upon reaching the same grade the following year. Truth be known, this is the question I find myself asking any third grader I get the chance to talk with. Quite typically, this is the one and only question I will ask them, effectively ignoring interest in any other math they might be learning about in school. I suppose the question stems from a firm philosophy that has been confirmed through both teaching and observation, that rigorous study of the multiplication facts from 0 to 12, and having the ability to recall them with no more than a 4% error by the end of the 3rd grade year sets the foundation for confidence and success in mathematics for all the grades to follow.





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Susan Jarema in her article, “The Importance of Memorizing The Times Tables” (online article, Jarema, 2007) states that “students who have mastered multiplication gain a solid foundation in mathematics that will help them throughout middle school, high school and beyond.” She goes on to explain that by learning and memorizing the times tables, students establish the building blocks for higher order learning such as long division, fractions and algebra, the latter two of which are a central focus of the 6th grade mathematics curriculum. She also emphasizes how knowing the times tables will be used frequently in daily life such as determining a discount at a store or figuring out expected arrival time when traveling (things that happen when we obviously don’t pull some calculator out to figure these “real world” problems out). Jarema furthermore points out that all students should be able to and need to master this skill in third grade. Those who don’t or struggle to may actually be an early indicator of learning difficulties, not only in math but other subjects as well. This could lead to early intervention in the students’ education rather than waiting until much later when the student has fallen behind in their skills (a trend I observe quite often at the middle school level).



In the two years I have taught math on the middle school level, I have observed a strong correlation between students who could recall their facts with a level of accuracy and their ability to grasp more difficult concepts and complex calculations requiring calculators than those who could not. This past year, I gave a 100 question multiplication test at the beginning of the school year to all 48 of my 6th grade math students. About 35 of these students could score a 98 or higher in a time span of about 5 minutes. At the end of the year, all of these students ended up scoring proficient or advanced on the Terra Nova math test. Of the 10 students who scored Basic, 8 scored below a 96 on the test and were ones I used intervention with throughout the year to improve their score (my goal was for every student I taught be able to score at least a 96 on a 100 fact test within a 10 minute time frame by the time they left 6th grade). Of the 2 remaining, 1 student had an IEP with slight autistic tendencies. He was able to master a skill such as recalling multiplication facts but struggled with more abstract concepts such as algebra and geometry. The other student was able to successfully do his facts, but throughout the year, he demonstrated an inability to achieve



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success in any class on the 6th grade level (failed to turn in homework, lack any sustained focus, performed poorly on all tests, etc.) He demonstrated an immaturity for 6th grade and thus, this student not only failed mathematics but 3 other classes as well.) Furthermore, 1 or 2 of these students could eventually get the correct answers but took well over 10 minutes to do so. Both of these students scored Basic because they could not answer all of the questions in the allotted time for the test.

Three of my 48 students struggled with their multiplication facts, but with successful intervention not only pulled their score up to a passing level (by my standards) by the end of the year but also scored Proficient on the Terra Nova. (Two of these were in my “more advanced” class and the other was repeating 6th grade). This showed me that with a little more emphasis by their 3rd grade teacher of their parents, they would already have been a multiplication facts mastery level. Finally, the one student who scored Below Basic on the Terra Nova also had the most difficulty mastering his multiplication facts. At the beginning of the year, he was scoring on average about a 65 and could not even make a guess at the facts that challenge most students – namely 7’s, 8’s, 9’s and 12’s. His math level was evident throughout the year. Knowing it would be a challenge for me to get him to master the 6th grade curriculum at a proficient level, I made it a point to focus on improving this “gap” in his mathematics learning. By the end of the school year, he was able to pull his score up from a 65 to a 96.

So, what does all this mean to me as a middle school math teacher? And, why do I find myself asking that question to every 3rd grader I see? It demonstrates the challenges higher grade math teachers face in developing mathematically proficient students who have moved on through their curriculum without mastering this basic and essential skill (important for all of the reasons expressed by Jarema in her article). At the 5th and 6th grade level, teachers need to do their best to try and make up the gap deficiencies observed. Multiple programs exist on the computer as well as the APP Store for all i-pad saavy users to help students drill the facts where they struggle (some in fun and creative ways). Reintroducing tricks (or perhaps teaching them for the first time) helps as well such as “The 9 Times Quickie” (which utilizes the fingers) to master the 9’s. Along with reminders of some of the tricks to learning facts such as 9’s and 11’s, Deb Russell suggests in her article “Tricks to Learn



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**“Parents are partners in the process and will have greater opportunities for their children to succeed in math if they support the learning of the basics at home.”  
(Russell, 2012).**

the Multiplication Facts” how crucial it is for parents to be involved in the process. This may be even more crucial at the 6th and 7th grade levels when these students who failed to master their facts in 3rd grade are now also trying to keep up with a curriculum that grows ever more difficult each year. “Parents are partners in the process and will have greater opportunities for their children to succeed in math if they support the learning of the basics at home. Work with your children to ensure that they do not fall between the cracks.” (Russell, 2012).

Even faced with the challenges of teaching the 6th grade math curriculum and getting my struggling students to understand and master it, I did what I could to fill in the “multiplication gaps” if nothing more than to develop a more mathematically confident student. My student who scored “Below Basic” was a good example of this characteristic, a very low confidence in being able to grasp grade level math concepts. It is my belief that I at least strengthened his ability to master the 3rd grade concept that alluded him so that he might find more success in 7th grade. I believe the evidence is overwhelming both in my classroom and in the research that in this day and age of students leaning on calculators as they try to work out test questions, that a mastery of the facts in 3rd grade leads to a base proficiency and confidence from which Middle School math teachers can build on.

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- Jarema, Susan. “The Importance of Memorizing the Times Tables”. Online, 2007.  
Russell, Deb. “Tricks to Learn the Multiplication Facts”. About.com guide, 2012.



# UETCTM News

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**“The teacher is the driving force behind the team environment.**

**Just as a coach does for a sports team, the teacher initiates, models, and guides appropriate behavior.”**

## **Cultivating a TEAM culture: Team-work is better than me-work!**

**By Tanika Hardin  
Bristol TN City Schools**

Being a part of a team has always been an important part of my life. Playing organized team sports helped prepare me for the work environment in which I am immersed today. Because of my ability to draw from my past team experiences, in addition to, the relationships in which I developed through team sports I have a firm belief that people are positively affected and gain the most from those interdependent situations. A large part of my teaching philosophy relies on the belief that “teamwork is better than me-work.” Not all of our students are a part of this type of team environment; however, the classroom is a perfect place to train students to work with and for each other to benefit all.

Learning to cooperate with others, be reflective, and take criticism is an important part of a successful classroom. As I began to use the teamwork style in my classroom, I realized that students did not automatically know how to work together cooperatively. By observing student behavior and through trial and error, I have generated ideas and strategies for both the teacher and students to use to cultivate the teamwork instead of me-work environment.

The teacher is the driving force behind the team environment. Just as a coach does for a sports team, the teacher initiates, models, and guides appropriate behavior. She builds and maintains a trustful relationship first between she and her students followed by trusting relationships among the students. The first couple of weeks are crucial to setting the stage for a team to successfully build. The following are things I do to ensure my team develops, grows, and wins their current school year. I begin the first day stating my appreciation, care, and expectation for each



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**“The school year is just a journey to the state championship game. I want to win but I cannot do it alone.”**

student. In my room I have a letter posted to my class stating:

Dear Student,

I appreciate your being a part of my class.

I expect great things from you.

You will succeed.

Love, Mrs. Hardin

Throughout the year, I try to acknowledge my appreciation for students by thanking them for their hard work, acknowledging a job well done, etc.

Secondly, I constantly refer to the class as a team. On the first day, I discuss my love for sports, especially basketball and “warn” the children of my sports analogies. “The school year is just a journey to the state championship game. I want to win but I cannot do it alone.” This statement helps students to begin realizing that I want and need their help to reach my goal. Some students will jump on this band wagon quickly, especially if they are sports oriented already; however, some will have to be won over to the cause through consistent coaching from me, as well as, encouragement from teammates. Eventually, my goal of winning the state championship game (successful year and successful TCAP scores) will become the entire class’ goal, our goal instead of just my goal. I refer to unit tests and benchmark exams as scheduled conference games, our daily work as practices, and error analysis of assessments as film watching.

In the first week, I introduce the term “winning mentality” and have a group discussion about what this means (giving 100%, practicing to get better, helping teammates, reflecting on failures, etc.) This term becomes the encouragement or redirection I use when I see students giving up or becoming frustrated. Even when students do not show mastery of a skill by scoring well enough on an exam, we go back to the winning mentality of not feeling defeated, but determined to reflect on and learn from the behaviors that may have resulted in not mastering the skill





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**When they know other people believe in them (peers and me), as well as, know that other people depend on them, students set their aims higher and usually exceed even that.**

(game loss). Having a winning mentality means picking your head up and doing better the next time. I cover my room with posters reminding students of my expectation of a winning mentality. Students start using the term to boost others when needed.

Also in the first week, my class participates in a team builder activity each day ending with a discussion relating back to our term “winning mentality.” Through these activities, students discover appropriate ways to communicate with one another. They learn the difference in critique and criticism and first use it with the game like activity and then will later relate those discussions and experiences to math related activities. During these first weeks, I usually have to give much guidance, redirection, and suggestion for positive interactions instead of negative ones. Students begin reiterating my statements and encouragements to others (even repeating them back to me when I seem to be having a down/frustrated day).

Although the teacher is the initial driving force for the teamwork not me-work way of approaching classroom activities, the students become the constant force that keeps the momentum going. As students get used to communicating appropriately, they blossom into great encouragers. Students start riding on the teamwork train and start lifting up one another. They start realizing others’ strengths and weaknesses; therefore, learning how to effectively work as a team. Often times if someone gets too harsh while critiquing, other students will step in to alleviate the tension in the moment. The students become the guide while I can step back.

Creating the team environment is a year long process. It takes consistent language and expectations. Each member of the team/class must feel important and relevant. Because I have consistently guided students through role play, modeling, verbal guidance, etc. students become team players that desire to help one another reach the end goal. In my experience, students gain ownership of all they do through working as a team to get there. When they know other people believe in them (peers and me), as well as, know that other people depend on them, students set their aims higher and usually exceed even that. Teamwork instead of me-work ensures a year-end victory.



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“...math can be approached from so many different ways, ways that make sense, and helps students, see concretely why we do the things we do and understand them much more deeply. It doesn’t have to be about memorizing formulas and calculations taught with “well this is just how we do it” without really know why.”

## Get Out! Who Knew Math Could Be Fun?

By Teri Doshier  
Johnson City School System

I have been struggling to come up with an idea for this article. I knew it had to be math related but that was the problem, because I wanted to write about something I do in math that others might be inspired by, but the more I thought about it, I realized there nothing.

I am a second grade teacher, I taught first grade for seven years, and second grade for one. I love teaching, I have liked math OK, but my passion has been teaching reading and writing, I could come up with all kinds of things I do with reading and writing to share, but math was pretty much from the book. Math was the subject I got through, so that I could teach reading and writing. I have never considered myself a “math person”, I understand it, or I thought I did, but I didn’t have the confidence to get out of the math book. I taught by the book, used a few manipulatives and just drilled it in.

Maybe that’s why my principal asked if I would go to Mathletes this summer. I said yes, despite the fact that I hated to give up two weeks of my precious summer, because I wanted to be a more confident math teacher and a better math teacher (also, I never say no to a principal, because I don’t want to end up teaching kindergarten the next year).

So for the past two weeks, I have been in Mathletes and it has done everything for me I had hoped and so much more. These past two weeks I have learned so many different strategies to help students do math in “faster more efficient ways”. It completely opened my mind by showing me that math can be approached from so many different ways, ways that make sense, and helps students, see concretely why we do the things we do and understand them much more deeply. It doesn’t have to be about memorizing formulas and calculations taught with “well this is just how we do it” without really know why. For the first time math was really making sense to me and it was fun. As I said to the people at my table, “who knew you could be a free thinker when it came to solving math problems.”



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**“I am going to incorporate my love of literature and integrate that into my math lessons, along with lots of hands on exploration activities and hopefully I can change students minds, make them excited about math, help them break through the confusion and the “I’m not good in math” mentality, and give them a whole new appreciation and understanding of math ...”**

In the past two weeks I have become so excited about using my new math skills, my new attitude, and my new perspective, that I actually heard myself say out loud,” I want to teach third grade math next year” (we compartmentalize at our school after second) . I couldn’t believe I said it, but I did. So this morning, imagine my surprise when I opened an e-mail sent out by my principal, letting our faculty and staff know we were losing our third grade math teacher. Before I knew it, I sent her a message back saying I would really like to be considered for that position. We met at the end of the day and I am now our new third grade math teacher. Three weeks ago, I would have never believed that I would have the desire to teach math all day. I am now so excited about teaching math, using the new skills I have learned, and the knowledge that “kids all learn different and at different rates and that is OK”, even in math, I am going to incorporate my love of literature and integrate that into my math lessons, along with lots of hands on exploration activities and hopefully I can change students minds, make them excited about math, help them break through the confusion and the “I’m not good in math” mentality, and give them a whole new appreciation and understanding of math, just as Mathletes has done for me the past two weeks.



## UPCOMING NTCM CONFERENCES AND MEETINGS

### NCTM Future Annual Meetings

- 2013  
Denver, CO. April 17-20  
<<http://iem.nctm.org/link.php?M=3004392&N=1763&L=4993&F=H>>
- 2014  
New Orleans, LA. April 9 - 12
- 2015  
Boston, MA. April 15 – 18

### NCTM Future Regional Conferences

- 2013  
Baltimore, MD • Oct 16-18  
Las Vegas, NV • Oct 23-25  
Louisville, KY • Nov 6-8
- 2014  
Indianapolis, IN • Oct 29-31  
Richmond, VA • Nov 12-14  
Houston, TX • Nov 19-21
- 2015  
Atlantic City, NJ • Oct 21-23  
Minneapolis, MN • Nov 11-13  
Nashville, TN • Nov 18-20  
<<http://iem.nctm.org/link.php?M=3004392&N=1763&L=893&F=H>>

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### **Tennessee Mathematics Teachers Association (TMTA)**

<http://www.tmta.info/>

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## Membership Application



***Mail completed form to:***

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Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

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**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



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## Halloween math...

**Q:** Wadaya get when you take the circumference of your jack-o-lantern and divide it by its diameter?

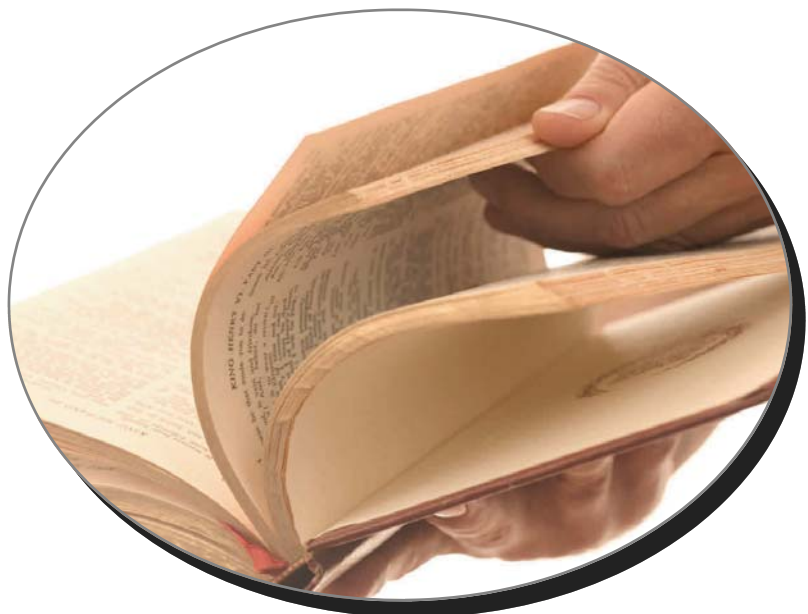
**A:** Pumpkin  $\pi$ .

<http://www.montgomerycollege.edu/~szimmerman/files/jokes.htm>

## Facts about reading

98% of reading is an auditory/listening task. Only 2% of reading is visual. Listening to a story and reading that same story will activate the exact same pathways in the brain. It's not where the sensory information comes from but, where it ends up in the brain. Our eyes act more like ears when we read.

<http://www.soundreading.com/facts-about-reading.html>



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## UPCOMING EVENTS

### NCTM REGIONAL CONFERENCES

- Baltimore, MD • Oct 16-18



- Las Vegas, October 23-25
- Louisville, KY • November 6-8

### NCTM ANNUAL MEETINGS AND EXPOSITIONS

- 2014
    - Indianapolis, IN • Oct 29-31
    - Richmond, VA • Nov 12-14
    - Houston, TX • Nov 19-21
  - 2015
    - Atlantic City, NJ • Oct 21-23
    - Minneapolis, MN • Nov 11-13
    - Nashville, TN • Nov 18-20
- <http://iem.nctm.org/link.php?M=3004392&N=1763&L=893&F=H>





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## IT ONLY TAKES ONE

By Rebecca Reasor

Close your eyes and imagine you are at your own high school graduation ceremony. You probably are remembering the excitement of finally finishing high school. You think of all the activities you participated in and all the good memories associated with your high school years. All your family has come to celebrate your accomplishment. You know college is coming in the fall but right now you just want to enjoy the moment. Odds are most of us reading this article are already teachers. We cared about our education. We had supportive friends and family. We excelled in our classes. High school was fun for us.

Now I want you to picture what your life may have been like without your friends, without a supportive family. Now picture high school as extremely difficult. You just can't seem to catch a break in your classes. You have to work all day after school to help pay the bills for your family. Adults in your circle don't really care what you do with your life as long as it doesn't bother them.

The latter story is the life of "that" student. As math teachers, we've all had them - The student that just doesn't seem to care. They are frequently getting in trouble at school, they sleep in class, they never submit a single completed assignment. In fact, they just cause problems for you in class each day. You try and work with them, you give them extra help, and you even let them "redo" assignments. You have tried everything you know to try and you still can't seem to get through to them. Maybe you should just give up on them.



As a first year teacher, this is how I once felt about a former student of mine. I was at my wits end. I had sent him to the office for everything: cursing, throwing objects, failure to do anything math related, even inappropriate "artwork" on his papers. I had no choice but to fail him in Algebra 1.

Now fast-forward from freshman year to my student's senior year and his graduation. After the ceremony, instead of running off to meet his friends and family, he directly sought me out. I congratulated him and wished him the best. I asked if his family was here and he replied, yes, they were, but



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it's what he said after that that caught my attention. He told me that his family could wait. He said they weren't the ones who were responsible for him graduating. He went on to thank me for believing in him; that if it hadn't been for me (and a few other teachers), he would not have finished high school and graduated. He said that if it wasn't for teachers who truly cared about him and pushed him to do his best and really believed in him, he would have dropped out a long time ago. He said we (his teachers) were the ones who were responsible for him finishing and graduating high school. He said we had changed his life.

Later, after I had dried my eyes and people were clearing out, I thought back to what I did that made such a difference in his life. How a student who I failed not once, but twice could come and say such a complementary thing to me was beyond my imagination.

Now, after several years of teaching, I still think of that moment. I have learned that it was never anything huge or ground-breaking that made the difference. It was simple things like not giving up on him and always pushing him to do better. Small words of encouragement and just a listening ear when he needed some perspective. I never judged him or held his previous behavior in class against him. Every day was a fresh start for him to try again. I found out what some of his interests were and incorporated them into my lessons. I called on him when I knew he had the correct answer. I encouraged him on anything he did that was a positive behavior. Slowly, he started building confidence in his skills as a math student and as a person. It only took one person believing he could pass and be successful to make the difference.

***Having one person who cares CAN make all the difference in the world to that one student. Are you going to be the one person for your students this year?***

What lessons can be learned from my experience? Students often come to us with a pre-disposition of fear and hate towards math. As teachers, we have a responsibility to be "that" teacher who makes a difference in "that" student's life. We can't give up on them like we expect them to not give up on themselves. Be sure to let them know you care about what and how they do and you believe they CAN do math. Keep encouraging students and find ways to build their math confidence. Train them and teach them the study skills necessary to be successful not only in math class, but in life as well. Having one person who cares CAN make all the difference in the world to that one student. Are you going to be the one person for your students this year?



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## Collaboration Among School Systems

By Jackie Everhardt

**B**eing at the Mathletes program has opened my eyes to the importance of group collaboration among fellow teachers. Teachers may be a part of different school systems but we all strive to become better teachers not only for our schools but for our communities as well. This program has showed me how to look to others for help, but not in a bad way. We do not all know



everything that works for all students in the classroom, but we all have learned from our own experiences. Sharing these experiences with others can only be helpful to those who just begin rather than a person thinking “If I ask for help or suggestions then I



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am a failure.”

This is something I once thought as a beginning teacher because I should know what to do when I graduate from college. I now know that is not the truth because we have to learn what works and does not work for ourselves. I feel this has been an experience that all teachers not just only in mathematics, but other subjects as well, should go through.

Most of the time we sit through meetings at our own school system, or have Professional Learning Communities, which is great but sometimes we need to talk more with other schools and see what is or is not working. With this knowledge, we could find better ways to teach different methods that a teacher may have never thought of themselves. I know schools try to better their own schools and do not share as much materials with others because they have something that works. They could be afraid of being surpassed as far as test scores go. We have to remember as teachers that we want the best for our students. What would be a better way than to have teachers get together and share, to see what could happen in the classroom?

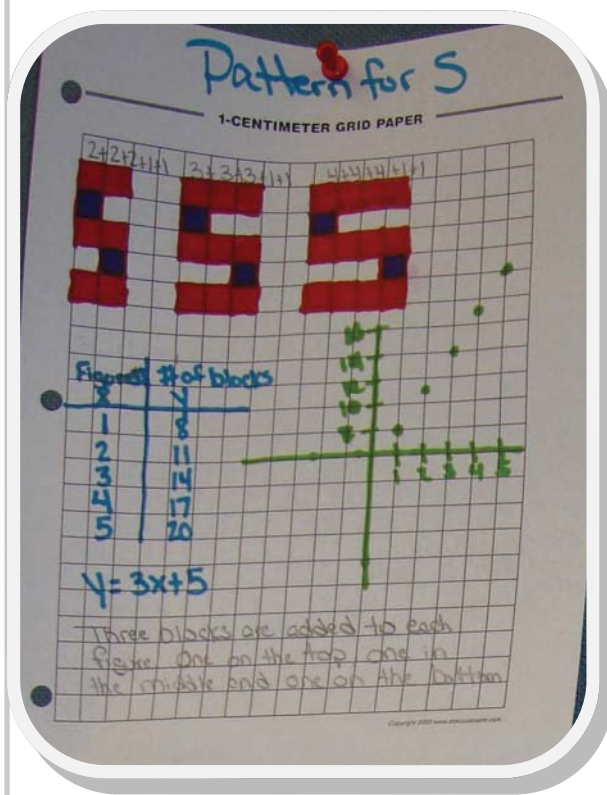
Smaller schools would benefit greatly because most of them only have one teacher per subject while larger schools have more than one teacher to teach the same subjects. This is a benefit to the larger schools but why not have us teachers gather for in-service and have collaborative meetings to give them more ideas in the classroom. Collaboration of teachers from differing school systems in our area would be beneficial for our schools, communities, but most of all our students. These students are why we want to teach and to put the best education out there possible for them.

## “GRAND” Mathematics Teaching

By Evandro R. Valente

I have had the privilege to teach mathematics at Tennessee High School in Bristol, Tennessee since the fall of 1995. In these 18 years I taught almost all courses offered to our students; from algebra I to advanced placement calculus. I employed a variety of pedagogical approaches to present mathematics in meaningful ways to my students. When I started teaching calculus in 1999, I attended College Board sponsored workshops in order to learn the most effective ways to present the rigorous AP calculus curriculum. There were two main views about calculus teaching; traditional and reformed. Traditional methods rely heavily on pencil and paper to work problems that may or may not have any real world applications. Reformed calculus methods emphasize applications and topics are presented algebraically (similar to traditional methods), but there is also an emphasis on graphical,

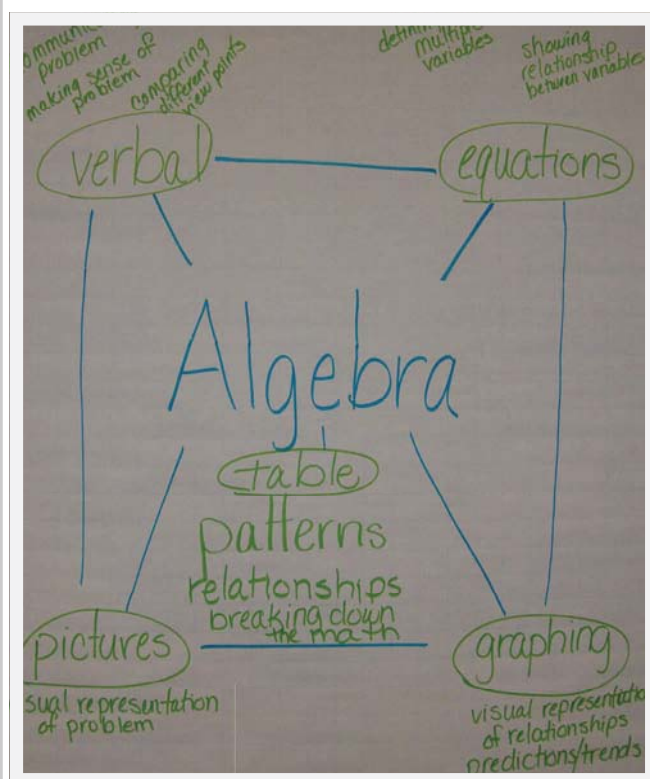
numerical, and verbal presentations of topics (students write about what they are doing). I adopted the same approach to other mathematics class that I teach. I do enjoy mnemonic devices to help me remember formulas, concepts, procedures, etc. Who has not use PEMDAS in arithmetic classes? Probably all geometry and precalculus teachers employ SOHCAHTOA to teach trigonometric ratios. In fact, my students teach me new ones every year. Influenced by reform methods, a few years ago I started teaching mathematics in a “GRAND” way.



[G]raphical approaches to teaching mathematics help students who struggle with the algebraic manipulations of traditional teaching methods. A graph is a good way of telling a story and they are common place in newspapers, television, etc. Technology has made graphing functions a relatively easy task. Students can find zeros, maxima, y-intercepts, and solve many other mathematical problems with the use of a graph. Graphs do not substitute thinking because students still need to understand how to generate and see

the graph using the technology.

[R]eal-world. Whenever possible, teachers need to present problems in mathematics need to describe real-life situations. Mathematics is a tool to describe phenomena that occur every day. There is value in mathematics for the sake of mathematics or, as I say to my students “for intellectual pleasure”, but students need to see that mathematics serves a real purpose in our lives.



[A]lgebraically. Mathematics is a language in its own right. We cannot understand mathematics apart from its unique vocabulary and algebraic manipulation of equations must be present in our presentation of mathematics to students. Without literacy in algebraic manipulation, mathematics loses its beauty and its power of generalization.

[N]umerically. We must help students understand data that are presented in table or numeric form. Many real-life situations cannot be easily described by a well-defined function. Real-life data is not always continuous. Students need to learn how to manipulate discrete data that are presented in table forms. Most of my calculus students can, for instance, find composition of functions algebraically with relative ease. These same students have difficulty performing the same task when functions are presented in tabular form.

[D]escriptively. The ability to write and express ideas makes human beings unique. When our students write about mathematics, they reflect on their learning and misconceptions. We can help our students clarify their thoughts, correct their misconceptions, and improve their learning when we require that they describe what they have learned and explain their thinking.

The order of the letters does not mean that Graphical ways are more important than Descriptive ones, or vice-versa. The mnemonic device simply reminds me look for ways to present my lessons in as many ways as possible so that I can serve my students in the best possible ways.



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## Stronger Than It Appears

By Kevin Mooney

**B**elow is an example of a project that I have been using over the past years. I usually use it about the time that we take up textbooks because it assures that we have enough textbooks for even the most ambitious builders.

I like to use this project because it has a real world approach. Both group members have to be involved in the creation of the designs and also the test itself. Since it requires both members to come up with a design, members are forced to attempt a design individually before they form their group. It is surprising to see how many students struggle at first to draw their design by scale. Most figure it out by the end of the project. When the groups are formed, they must evaluate the two designs and pick one or create a new design base on the ideas they have come up with.

This project also focuses on trial and error. As groups start to test their set up, other groups see how what the results were. This leads them to using this and their design ideas and results to create new design ideas. Most of the ideas tend to look similar by the end of testing.

Lastly, I really like the strategy that many students use. They may test once and get a decent result and choose to test again to try to do better. However, some may choose to keep their original number to earn more points for that category.

Many of the students, which do not get involved in class on most topics, find this project interesting and have a blast. I believe that my class record is 46 math textbooks. Good luck and happy stacking.

### INDEX CARD PROJECT

**Materials:** 4 3 x 5 Index Cards  
3 feet of masking tape

**Goal:** To hold up the weight of as many textbooks as possible for 10 seconds one inch off the ground. Design must be free standing. No tape may be use to attach design to books or floor.

**Group Members:** 2 per group



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## Grading Rubric:

Points Earned

|  | Points Earned      |  |
|--|--------------------|--|
| 1 original design for each group member<br>Sketches of design need two views- side and top<br>(drawn to scale) | 20 possible points |  |
| Design adjustments<br>Turn in sketch for each design tested  | 20 possible points |  |
| Number of attempts needed (max 3)<br>1 attempt 20 points<br>2 attempts 17 points<br>3 attempts 14 points       | 20 possible points |  |
| Maximum number of books held<br>Percentage of class best score   | 20 possible points |  |
| Average number of books held per attempt<br>Percentage of class best score                                     | 20 possible points |  |

## Process:

1. Each group member needs to come up with a design.
2. Once groups are formed, a collective design needs to be created or chosen.
3. Teams test their design.
4. Teams throw away old materials and get new material if they desire
5. Alterations and made to the design. The new designs sketches are created.
6. New designs are tested.
7. Repeat #4-6 until group members are content with their progress or have tested 3 designs.
8. Turn in designs labeled with group name, group members, design number and number of books held.

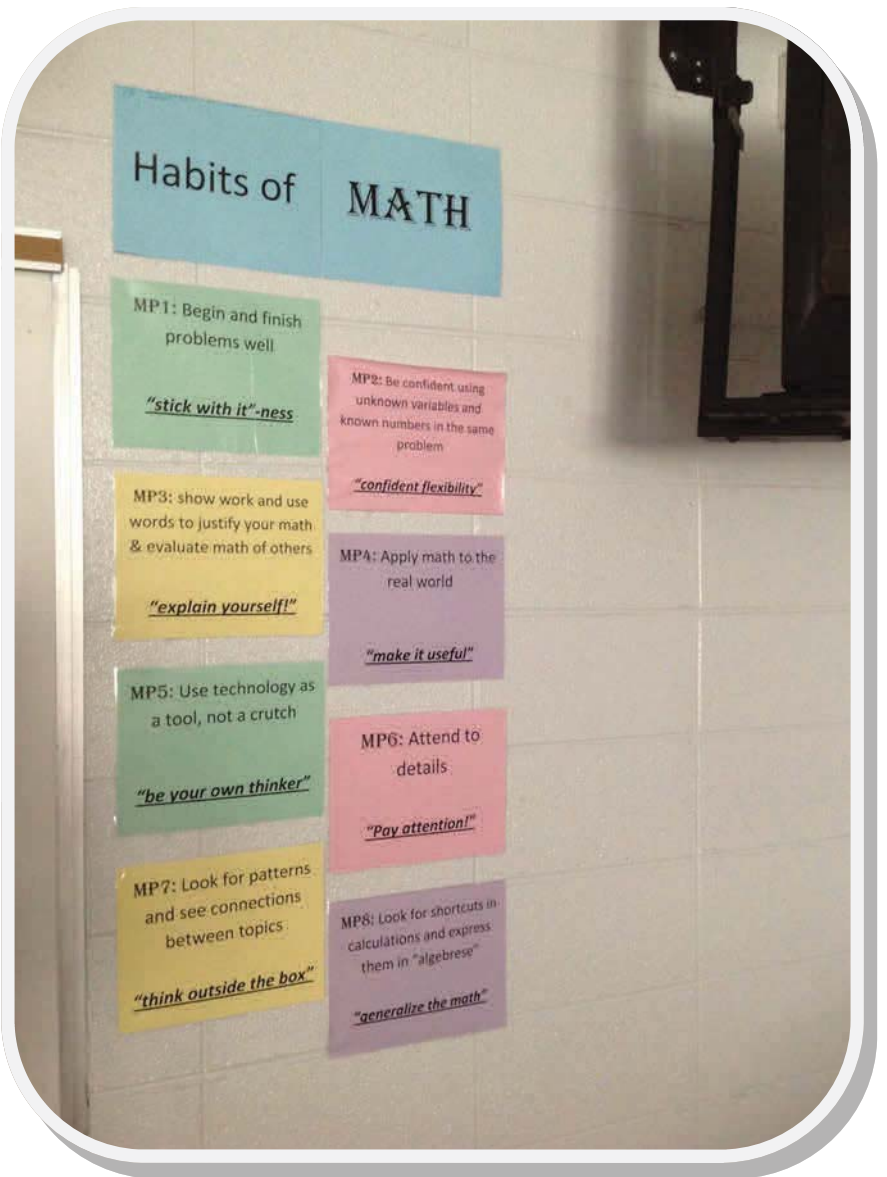
**Group members are responsible for all materials once the teacher has given them to them. No replacement materials will be given without an attempt being recorded.**



# 8 Math Practice Standards in Kid-Friendly Language

By Kristen Fabick

Towards the end of last school year, I started brainstorming ways to incorporate the new Common Core State Standards for Mathematical Practice. These 8 overarching practices truly define what doing mathematics (rather than solving a problem) looks and feels like. As I continue to further my own mathematical thinking and mindset, I have come to know definitively that doing mathematics requires both persistence and failure. It requires seeing both what is written on the page and what patterns and equivalencies are hidden behind what is written on the page. It requires both collaboration with others and justification of one's own perspective. I have been an avid supporter of the Common Core State Standards (as a relatively new teacher I do not know much else), and I wholly believe in the goals and values behind the new curriculum. However, I feel daunted by how to make these 8 mathematical practices tangible and understandable to my students—most of which are special education students. The first thing I knew I absolutely needed to do was rewrite the standards in language my students (even the ones with communication disabilities) could understand and remember. I knew I needed to use short 3 to 4 word phrases to capture each standard. This was a surprisingly difficult and time-consuming task. Yet it was quite possibly one of the best exercises I've put myself through to really get a handle on what the 8 mathematical practices truly are. I had to find the golden nugget among all the academic language. Once I could define each practice myself, I had to summarize the whole standard in 3 to 4 words—words a 13 year old with a 2nd grade reading level might possibly be able to hold onto. I'm not sure how successful I have been in achieving this goal, but I am hopeful





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that my students this year will be able to help me modify the language as needed for the future. The second thing I determined to do was to make each mathematical practice an integral part of the daily learning experience and atmosphere of my classroom. The easy part was to create a wall collage of the kid-friendly practices I created. The hard part will be making myself reference the standards and holding my kids accountable on a daily basis to the level of rigor intended by the authors of the Common Core State Standards. It will take a while for the kids to get comfortable with the 8 standards, so I plan on emphasizing each standard for a week and building up so all the standards are covered. For example, the first week of school we will emphasize practice standard 1. The next week, we will emphasize both practice standards 1 and 2 (giving more attention to the 2nd standard that will be formally introduced that week). By the end of the first grading period (9 weeks in my district), the students should at least understand what each standard means and what kinds of thoughts, habits, solution paths, and communication techniques demonstrates proficiency in each standard.

Since the 8 mathematical practice standards are intended to be interwoven throughout each curricular topic, it will be essential for me to provide learning experiences and tasks that allow students to see what each practice looks like and does not look like. I have undoubtedly created high expectations for myself regarding this coming year, but I expect no less dedication to learning and no less effort from my students. I may not always succeed in the goals I have set forth, but I will work as hard as I can to create and maintain progress toward each goal. At the end of the year, it will have been in the processes and in the struggles and in the failures where learning took place. If I can communicate that process-valuing mindset to my students, I will have achieved one of my most important goals.

MP1: Begin and finish problems well

“stick with it”-ness

MP2: Be confident using unknown variables and known numbers in the same problem

“confident flexibility”

MP3: Show work and use words to justify your math and evaluate math of others

“explain yourself!”

MP4: Apply math to the real world

“make it useful!”

MP5: Use technology as a tool, not a crutch

“be your own thinker”

MP6: Attend to details

“pay attention!”

MP7: Look for patterns and see connections between topics

“think outside the box”

MP8: Look for shortcuts in calculations and express them in “algebrese”

“generalize the math”



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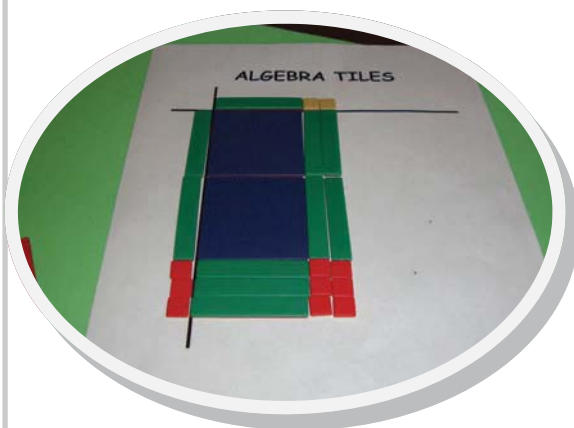
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## Special Needs Algebra

By Nicholas Lingerfelt

Some are the 50 problems a night, gone are the teacher lectures for 90 minutes and gone are the days of those that were so very common 50 years ago. Therefore, we as teachers have to find another way to make the classroom an enjoyable experience. I have taught for 7 years now. I have taught at each grade level except 12<sup>th</sup> and 8<sup>th</sup> grade. I have taught in subject areas of Math, Language Arts, Science, and Social Studies, and I am now realizing that as a teacher I must “make it fun.”

In my classes I have had a wide variety of students. I have had students from all economic backgrounds, students with all types of disabilities, and students that have not been very successful in their prior classroom experiences. They come to my classroom and are about to give up. I have to change that mindset



I am currently finishing a course that has asked me to step away from the norm. It has challenged me to take a look at the way my classroom is structured. The course has prepared me for the changes that are about to take place with the implementation of Common Core. This course I am speaking of is the 2013 Mathletes program that has been offered by Eastman Chemical Company through East Tennessee State University.

During this course I have learned that one problem can lead to many different solutions. It is all subjective to each individual and their unique circumstances. I can no

longer say that the answer is wrong because it is not on my key when grading. If a student can prove the reasoning (correct or incorrect) behind the solution, I must allow it to be correct. I have learned that a grade is simply not in the check mark or an x. It is in how the student got to the solution and how they explain where to go from there. This course has challenged us to step away from the pre-conceived ideas of a normal classroom and allow the students freedom to interact with their peers for learning opportunities. It has also shown me a way to allow the students to take the lead in the learn-



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ing environment and the teacher to act more as a facilitator. I came into this course with a background in Special Education. However, I have been challenged and motivated to not only teach but to learn as well. It has been a rewarding and enjoyable ten days and I look forward to the start of the upcoming school year.



## Organizations we are affiliated to:

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<http://www.nctm.org/>

### **Tennessee Mathematics Teachers Association (TMTA)**

<http://www.tmta.info/>

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# UETCTM

## Membership Application



***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_  
\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_  
\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



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## What do airplanes have to do with this?

Mathematician U. was a great friend of his five-year old grandson. They discussed everything including math and U. was very proud of the boy's math talents. The child went to kindergarten and in two weeks he asked U. to help with the difficult math problem: "There are four airplanes flying, then two more airplanes join them. How many airplanes are flying now?" U. was very disappointed by the simplicity of the problem. "What confuses you?" he asked. The child says: "I know, of course, that  $4 + 2 = 6$ , but I cannot figure out what the airplanes have to do with this!"

<http://www.math.utah.edu/~cherk/mathjokes.html>





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## UPCOMING EVENTS

### 2014 NCTM RESEARCH CONFERENCE

- APRIL 7 - 9 • New Orleans  
<http://www.nctm.org/researchconf/>

### 2014 NCTM ANNUAL MEETING & EXPOSITION

- APRIL 9 –12 • New Orleans  
<http://www.nctm.org/neworleans/>

### NCTM REGIONAL CONFERENCES & EXPOSITIONS

- 2014  
Indianapolis, IN • Oct 29-31  
Richmond, VA • Nov 12-14  
Houston, TX • Nov 19-21
- 2015  
Atlantic City, NJ • Oct 21-23  
Minneapolis, MN • Nov 11-13  
Nashville, TN • Nov 18-20  
<<http://iem.nctm.org/link.php?M=3004392&N=1763&L=893&F=H>>

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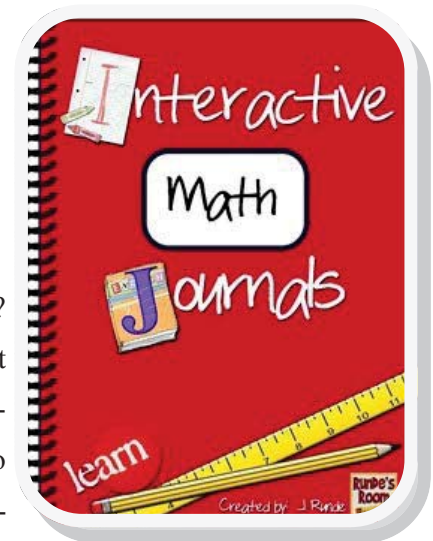
## A Tech-Savvy Way to Journal in Your Math Classroom

By C. Ronea Murray: *A teacher in the Kingsport City School District*

All teachers regardless of their concentration understand how important it is for our students to be effective communicators. Mathematicians often see things from a different point of view than the “average Joe.” Therefore we need to make sure that our students have good communication skills so that no matter what their career path is they are effective communicators.

Teachers all across the state of Tennessee are currently brainstorming ways to make their students better communicators. Journaling is a great way to help our students improve their verbal skills; however, let’s be honest: How many math teachers truly use journaling on a daily or even weekly basis? It can be very time consuming, and with all the concepts we need to teach, frankly, journaling is not a high priority to most mathematics teachers.

What if there were an easier way to journal in your mathematics classroom? Would the students really give their mathematics journaling assignment 100%? Could journaling be an effective way to work on our students’ communication skills? We all know that our students are very tech savvy. So what if there was a way to use technology to journal? Well, most of us teachers then ask, “Is it expensive? Is it difficult to use? Would the students use and enjoy journaling if it were presented in a tech savvy manner?”



<http://www.teacherspayteachers.com/Product/Interactive-Math-Journal->

Technology is here to stay, so teachers need to jump on board and find easy, fun, and fast ways to implement it into our classrooms. Since journaling is a great opportunity for our students to work on their verbal

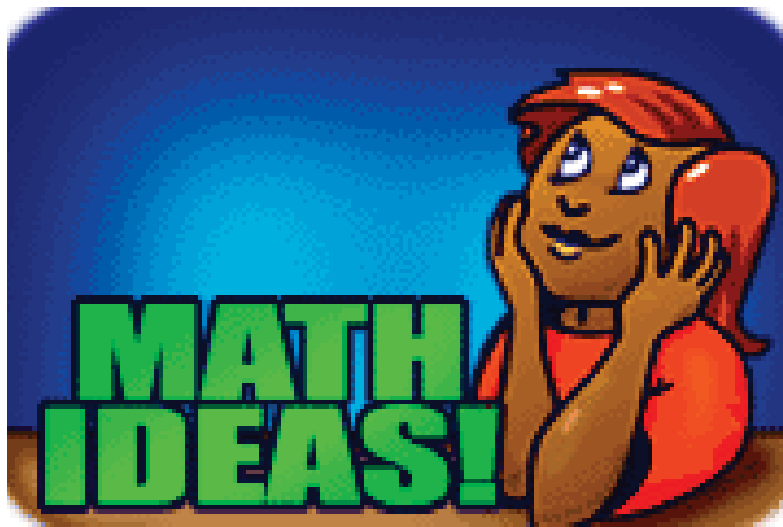


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interpretations of mathematical concepts and they love technology what if we merge the two ideas (journaling and technology) together? Make journaling an electronic journal.

The possibilities are endless with today's technology. Teachers can develop a blog that students are required to blog on each day or week. They can tell what they did well on, what they struggled on, and even give feedback to the teacher as to what concepts they need additional time on. If the teacher is not up to writing a blog, how about using Twitter, Facebook, Pinterest, or even text messages? The teacher can simply print off all the students' responses and use the feedback for planning out his/her classroom activities. The students will love journaling if it is presented in a tech savvy manner. What do you have to lose? Students are very vocal and will help you through the process. So this year, why not try something new and approach journaling from a tech savvy approach?



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## Communication

By Annette True: *A teacher in the Kingsport City School District*

संचार "जानकारी प्रतीकों, संकेत, या व्यवहार का एक आम प्रणाली के माध्यम से व्यक्तियों के बीच बातचीत की है जिसके द्वारा एक प्रक्रिया है."

Mawasiliano ni "utaratibu ambao habari ni kubadilishana kati ya watu binafsi kwa kupitia mfumo wa kawaida wa ishara, ishara, au tabia."

La comunicación es un proceso por el cual se intercambia información entre individuos a través de un sistema común de símbolos, signos o comportamiento.

If you were not able to understand any of those, here is the definition in English. Communication is "a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior." (Miriam-Webster online dictionary)

Communication or lack thereof is the basis for many of our issues (in any area - not just math education). Communication affects everything we do every day. Although we have become more interconnected with the aid of technology, it seems that it has become more difficult to communicate effectively. However, there are a few simple things you can do that can improve communication with parents and students.

### Parent Communications

As a young child heads off to kindergarten, the need for communication between parent and teacher is great. However as students age, the communication begins to break down. It seems the older the student, the less communication occurs. One easy way to rectify this situation is a daily email newsletter. A simple table in a word processing program, a distribution list, and a few minutes a day is all you need. You can even do it ahead of time and schedule it to send later in the evening in a lot of email programs. In the newsletter, include a few sentences



about what you are doing in class, any homework assigned, and any important announcements. This allows parents to know what is going on with their child. Many parents commented that this was helpful in many ways. One parent said that even though she might not know how to do what we were working on in class, it gave her the vocabulary to talk to her child about it intelligently. Another parent commented that he found it extremely useful in knowing what was going on in class. Finally, another parent stated that she liked it because it was so brief and to the point. She even said that if it was longer, she might not read it. A parent survey at the end of the year found that all parents (that responded to the survey) loved it and wished more teachers took the time to do something like it.

### **Student - Teacher Communication**

Teenagers are difficult to communicate with in any setting. To make the situation worse, school, math, and being a teacher compound the problem. One thing that is easy to do and students generally like is a survey where they get to tell you, the teacher, what they like and what needs attention. It may seem risky to put yourself out on a limb like that, but I have learned so much about myself, my students, and my teaching by doing this. Even though students are usually brutally honest, they are usually very insightful. Including surveys periodically can give valuable feedback in a variety of areas. While you can find questions online to use (and that is a good place to start), the most effective surveys ask questions that you personally want to know, things that apply to your classroom and your teaching. Not to advertise, but Quia.com is a website that allows you survey students and it compiles your results in many forms (not to mention there are several other helpful things it does like allows you to make quizzes and it grades them for you). This data is so useful that if you are willing to take a little risk to learn more about yourself, your teaching, and your students, it could revolutionize your world.

Although these two strategies take very little time, they can make a major impact on your teaching and the relationships you develop with your students and their parents. Take the time, and take the risk. You will be rewarded.

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## Life In a Professional Learning Community

By Cyndi Drozdowski: *A teacher in the Kingsport City School District*

**W**hy bother with a Professional learning community, you might ask. What will I gain from it? How will my students benefit? I can tell you from firsthand experience that a learning community or team, will give both you and your students an advantage over any one that has an isolated teacher providing their instruction.

A little  history first, just in case anyone doesn't understand the concept of

***This community is an ongoing collaboration between individuals to provide the most successful learning opportunities for all students.***

Professional learning communities. This term has come to us from the business world. The term started as a group of individuals that work together toward the common goal of student learning. This community is an ongoing collaboration between individuals to provide the most successful learning opportunities for all students. This term has grown to include many other scenarios. Even a group of individuals that simply share a common interest in education.

A true PLC is focused on the learning of each student in a group. That is their sole purpose of existence and the responsibility of all members of the group. Members collaborate to determine exactly what the students should learn, monitor the learning of each student, provide appropriate intervention when students struggle and provide extensions when a student masters the content.

I had the good fortune to walk into a school that utilized this approach, but I have also had the chance to see it evolve and to be an integral part of this process. As I came to a much larger school, I soon saw a need for such collaborative work. If you have 12 teachers teaching the same subject, it only makes sense to use all of the strengths of the group to work for all of the students.

We have subject based PLC for our school and I have worked on the geometry team for both years that I



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have taught there. There was an effort made to keep the number of teachers small, and we have only 5 members. Everyone on the team has a say in all decisions made, but there must be some give and take in decisions made by the team. We must agree on everything from timing of material taught to timing of a test and how material will be assessed. Although the instruction method is up to the individual teacher, we do share ideas of how something might be taught. I can see this being much more beneficial as we move forward with Common Core. We work together to make decisions, but split up task to save on some of the work. Although one person makes the notes or task for the lesson, you are free to edit and use these notes how you wish. This group works well together, and we all provide suggestions and ideas for teaching material.

It is possible that the teams get too large, and that would slow down the process. Yes, a larger group would give you more input and more hands to share the work, but it also brings in more options and more chance for members of the PLC to slow down the decision making process. Everyone should be heard and agree with decisions. I feel that the ideal size of a PLC should be between 5 and 8 members. Too few and the benefits are not as strong. Too many and there is a good chance more time spent on debates than on creating learning opportunities for the students.



of  
“The most powerful strategy for improving both teaching and learning, however, is not by micromanaging instruction but by creating the collaborative culture and collective responsibility of a professional learning community (PLC).” (DuFour and Mattos, p35).

DuFour R, & Mattos, M. (2013). How do principals really improve schools? *The Principalship*, 70 (7): 34-40.

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## The Changing Role of Calculators in the Classroom

By Dean Hogan: *A teacher in the Washington County School District*

Calculators have long had a place in mathematics classrooms across the country. However, the role calculators play in the classroom is definitely changing and this change is the source of much debate among today's educators. When to introduce calculators and how often students are allowed to use them are two of the topics that are most often discussed.

As a math teacher I have always wanted my students to learn the math by hand and to use calculators as a tool and not as a crutch. My goal was to teach them by hand and after they were comfortable solving this way I would introduce the calculator. I wanted the students to see calculators as a time saver, not a necessary tool that was required for solving.

Early in my career this was easier to accomplish. I would ask my students if they carried a calculator with them everywhere they went. Of course I knew their answer would be no. At this point I would stress to the students the importance of learning to do their math by hand instead of relying on the calculator for everything.

Then we entered the cell phone age. Students began to all have cell phones. These cell phones were basic, but all had four function calculators on them. Now when I asked the students if they planned to carry a calculator with them at all times, they all said yes. This forced me to adjust my argument and accept that people would have calculators with them everywhere they went. This was okay because algebra went beyond what four function calculators could do. I was now okay with students using the calculators for the simple computation involved in algebra. They still had to know the math to solve problems.

At this point I started letting the students use basic calculators more often. We also started using graphing calculators but I purposely did not show them a lot of the functions available on the calculator until they had lots of practice working by hand. This seemed to be a good balance. The students used calculators to save time on computations that they were capable of doing by hand. However technology kept improving and kids went from basic cell phones with basic calculators to smart phones with internet capability. Now they had access to more advanced calculators, apps, and Google.

At the same time that smart phones started to show up in every student's hand, the standards in our math classrooms became more rigorous. Students were expected to cover certain topics in algebra that work very well with graphing calculators. I still wanted to teach my students to work by hand first and learn the technology second. However, the topics I teach this way are slowly changing. I can remember exactly when I was forced to accept this technological change and try to work with it. A student that





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generally did not do much work came in with a full assignment completed on matrices. I questioned the student about how he accomplished the work and he proudly showed me on his cell phone an app that did all sorts of operations with matrices. I was surprised at first, but then two other students showed me two different apps that they used to complete their work. I wasn't upset that they used the apps instead of working by hand because they took the initiative to figure out how to solve a problem. I was glad that they had taken the time to get online and figure out how to solve a problem.

Problem solving skills are really what I hope my students take away from any of my classes so I was pleased with their initiative. I still show students how to do things by hand on most topics but we also spend a fair amount of time working with the calculators. I don't often tell students to use their phones and find apps to use but when they do, I take the time to talk about using tools and the resources available to them to assist in problem solving.



## MATHLETES 2013



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## Mathletes: Pre and Post Common Core

By Denise Strong: *A teacher for the Bristol Tennessee City School District*

As a repeat participant in Mathletes, I wasn't sure how much more I could take from the program. However, with the impending Common Core implementation I figured it wouldn't hurt to go again. On the standards side of things, we as teachers are shifting from teaching a large number of standards in a short amount of time to teaching concepts through student-led discovery, in hopes of deeper knowledge and lifelong understanding. I know it sounds very grand and glorified, but it really makes so much sense. When our parents told us not to touch the hot dish, we continued to try. It wasn't until we touched that dish and "discovered" the hurt, that we actually learned our lesson.

In the summer of 2011, I took part in my first exposure (since college) of discovery based learning. The first time through Mathletes was a great experience, which I took a lot from but didn't do enough with. My anxiety toward discovery based learning stemmed from a concern of what my students would do during the activity. I was concerned that the topic of conversation would be completely off task, and the manipulative would be used as a toy not a learning tool. In my past experience, parts of the manipulative would go missing, or be broken. Now I don't want to paint this picture of terrible students, and a chaotic classroom that I have no control over. But for the most part my room is completely in my control, and I have very few issues. But my classes tend to be filled with students who don't particularly see the relevance of Algebra in their lives. I often worried that I would be teaching the manipulative and not the concept. I feared the math would be lost. As much as Mathletes inspired and invigorated me, I took it as "Just not my style". My kids still seemed to grasp the material, and achieved rather well considering their predictions. So I felt I did my job.

Now with the second opportunity at Mathletes and Common Core on its way, I told myself to keep an open mind and really open up to the idea of hands on discovery. The difference for me came when I acted as a student, not a math teacher. When participating in the activities I was determined to think like a student, and not to "skip" to the skills they are supposed to be finding. While doing this it was rewarding to have little victories as a "student" and even more so to talk to other people and see how they came to their conclusions. I guess because I was always strong at math, I never realized how many different ways you can come to the same correct conclusions. Then we started addressing my other concern of manipulative. And to my pleasant surprise teachers traded stories of similar hesitations and experiences, and this really made a huge difference for me to realize how to overcome these issues. Then there was the greatest part, two days filled with sharing our tasks in order to give and receive feedback. For my own task the feedback was rather positive, this was reassuring with the pressure of creating tasks in two short weeks. But it was more beneficial to see different interpretations of what it meant to be a task. I was worried it was always going to be long and drawn out, but it didn't have to be.

Overall, my experience with Mathletes was positive during both experiences. As it pertains to Common Core, I would definitely say it was much more of a learning experience because it HAS to be relevant in my classroom. And to be honest I am actually eager to begin integrating hands on learning into my curriculum.

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## Ginni Story

By Ginni Story: *A teacher for the Washington County School District*

*My Name is Ginni and I'll take all you'll give me!!*

To keep a classroom fresh with new ideas from year to year, you have to either have an extraordinary imagination with a wealth of time on your hands *or* you have a vast array of resources to draw from. When I first started teaching eight years ago there was a wonderful teacher that took me under her wing. She had many years of experience behind her and was the *queen* of printed resources. She had years and years of old textbooks, workbooks and even old copies of her own tests.

Throughout my first year of teaching I would watch her print a page from ten different books and meticulously cut and arrange every handpicked question and glue them to a piece of paper for each of her worksheets and tests. Week after week I would watch her gather just the right question for her assessments, cutting, arranging and gluing. I finally convinced her that there was a wonderful advancement in technology called a *computer* and it is full of wonderful tools. She wasn't naïve, she knew what a computer was... she just didn't know how to use the programs that would benefit her and save her time. Honestly, she thought she was too old to learn. (Can you imagine a teacher saying that?) Well I convinced her otherwise and introduced her to a wonderful test generating program and showed her how to load additional test banks from various books. She now had multiple books to draw from at the touch of a button.

We taught each other a lot that year. She is now a whiz on the computer and I am a pack rat for resources. My eyes



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and ears are always open, listening and looking for books, videos, activities, websites, just anything that would help me be a better teacher. Something that would turn on the light bulb in my student's brains, something that would bring them out of the darkness into the world of understanding. That is the sole reason I became a teacher, to watch *that* process unfold before my eyes, knowing I had a small part in that illuminating process. Therefore, striving for new and improved resources is very important to me.

*That is the sole reason I became a teacher, to watch that process unfold before my eyes, knowing I had a small part in that illuminating process.*

I surveyed the twenty-five teachers in my Eastman Mathletes program at ETSU and asked them what their favorite teaching resource was. Ninety percent of those teachers said "other teachers." We are each other's best resource. However, there are tens of thousands of us across the country and most are eager to share the things that work for them. I'm not an expert on resources but I know they are out there.

Since we are each other's best resource, my suggestion is to write down the ISBN of those fantastic books other teachers have shared with you. For example, last week someone shared with me the book "When Are We Ever Gonna Have to Use This?" by Hal Saunders (ISBN 1-57232-364-7). It is a wonderful Algebra I resource with connections to so many real-world jobs and the problems, and/or formulas, associated with those jobs. You are probably wondering "Why write the ISBN number down if you have the title of the book?" Which leads me to a website I found out about from one of my colleagues called [www.halfcom](http://www.halfcom). On this website you can find new and used books for a fraction of their original cost. There are so many books on this site it will be easier for you to search by their ISBN instead of the title, although that works too. I will attach the title and ISBN of some of my most current resource books. However, books aren't the only written resource; there is the



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## World Wide Web.

There are countless websites out there that are great resources for teachers. On the internet there is everything from videos, lesson plans, tutorials, even webinars. A majority of them are free but some of them are worth paying for, like the website [teacherspayteachers.com](http://teacherspayteachers.com). I could write for days explaining in detail all the websites that I find useful. Instead, I will put this essay to a close and leave you with a few of my most frequented sites along with resource books I own. Have a wonderful year and remember, "We are all in this together, so SHARE!!"

[www.teacherspayteachers.com](http://www.teacherspayteachers.com)

[www.mathmistakes.org](http://www.mathmistakes.org)

[www.algebra1teachers.com](http://www.algebra1teachers.com)

[www.illuminations.nctm.org](http://www.illuminations.nctm.org)

[www.kuta.com](http://www.kuta.com)

[www.khanacademy.org](http://www.khanacademy.org)

[www.todaysmeet.com](http://www.todaysmeet.com)

[www.classzone.com](http://www.classzone.com)

When Are We Ever Gonna Have to Use This?  
ISBN 0960481206

Discovering Algebra- the investigative approach  
ISBN 1559537639

Navigating through Algebra in Grades 9-12  
ISBN 0873535022

On Core Mathematics Teachers Edition (gr. 8-12)  
ISBN 0547617232

The Magic of Numbers (by Gross, Harris)  
ISBN 0131777211

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<http://www.nctm.org/>

### Tennessee Mathematics Teachers Association (TMTA)

<http://www.tmta.info/>

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# UETCTM

## Membership Application



***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617

***Membership Fee: \$10***  
***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



# UETCTM News

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## “Age is nothing but a number”

Do you realize that the only time in our lives when we like to get old is when we're kids? If you're less than 10 years old, you're so excited about aging that you think in fractions.

“How old are you?” “I'm four and a half!” You're never 36 and a half.

You get into your teens, now, they can't hold you back. You jump to the next number, or even a few ahead. I'm gonna be 16! You could be 13, but hey, you're gonna be 16! And then the greatest day of your life ...YOU BECOME 21. YESSSS!!!

But then you turn 30. Oooohh, what happened there? He TURNED: What's wrong? What's changed? You BECOME 21, you TURN 30, then you're PUSHING 40. Whoa! Put on the brakes, it's all slipping away. Before you know it, you REACH 50.

But wait!!! You MAKE it to 60. You didn't think you would!

So you BECOME 21, TURN 30, PUSH 40, REACH 50 and MAKE it to 60.

You've built up so much speed that you HIT 70!

You get into your 80's and every day is a complete cycle; you HIT lunch; you TURN 4:30; you REACH bedtime. And it doesn't end there. Into the 90s, you start going backwards; “I Was JUST 92.”

Then a strange thing happens. If you make it over 100, you become a little kid again. “I'm 100 and a half!”

May you all make it to a healthy 100 and a half!!

*Modified from <http://www.snopes.com/glurge/aging.asp#0XLvfkjGI7WGH5rO.99>*



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## UPCOMING EVENTS

### 2014 NCTM RESEARCH CONFERENCE

- APRIL 7 - 9 • New Orleans  
<http://www.nctm.org/researchconf/>

### 2014 NCTM ANNUAL MEETING & EXPOSITION

- APRIL 9 –12 • New Orleans  
<http://www.nctm.org/neworleans/>

### NCTM REGIONAL CONFERENCES & EXPOSITIONS

- 2014  
Indianapolis, IN • Oct 29-31  
Richmond, VA • Nov 12-14  
Houston, TX • Nov 19-21
- 2015  
Atlantic City, NJ • Oct 21-23  
Minneapolis, MN • Nov 11-13  
Nashville, TN • Nov 18-20  
<<http://iem.nctm.org/link.php?M=3004392&N=1763&L=893&F=H>>





## To Use or Not to Use the TI Nspire

By Kristina K. Hill

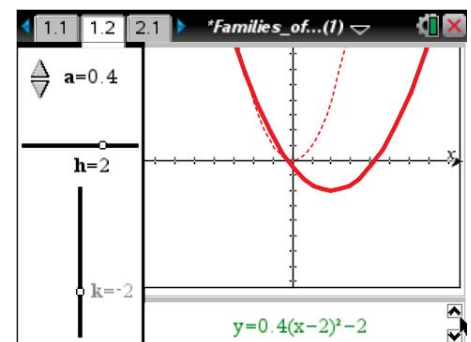
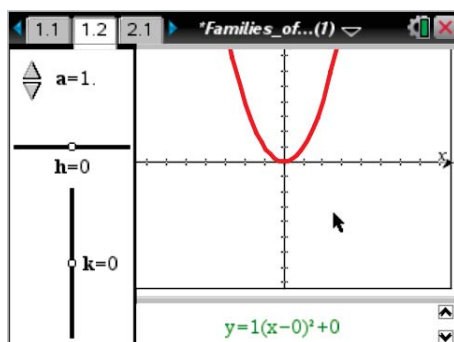
*Washington County School District*

According to PARCC’s Approved Calculator Policy, the assessments for high school students “will allow for an online calculator with functionalities similar to that of a TI-84 graphing calculator.” So why should we teach our students to use the TI Nspire?

I asked Jennifer Wilson, NBCT and mathematics instructor at Northwest Rankin High School in Flowood, MS, that same question. Ms. Wilson pointed out that the key word is functionalities. She stated, “By suggesting that the online calculator has functionalities similar to that of a TI-84 graphing calculator, they are giving us insight into what the calculator will be able to DO.”

Discovery and investigation is an important aspect of the Common Core. This discovery and investigation can occur in numerous ways—manipulatives, questioning, etc. It can also occur with the use of the calculator.

The TI Nspire was developed to be a dynamic tool for our students. It is not “just” a calculator. It was created for discovery and investigation. With the activities that have been produced for the TI Nspire, students have the opportunity to “see” the math. The TI Nspire allows for multiple representations. Many of the activities are considered to be “action-consequence” activities. An example is the TI Nspire activity “Family of Functions”. Students change the variables of the equation by using sliders. The change in the variables is represented by a change in the graph and the equation.





## Transforming graphs of quadratic functions (high school)

◀ About the task CCSSM Alignment Part a Part b Scoring ▶

The graph of the quadratic function  $f(x) = 2(x - 5)^2 + 6$  is shown.

A new function,  $p(x)$ , is created from the existing function, such that  $p(x) = -f(x)$ . You may use the coordinate plane and the sliders to show the graph of the new function if you would like. The graph will not be scored.

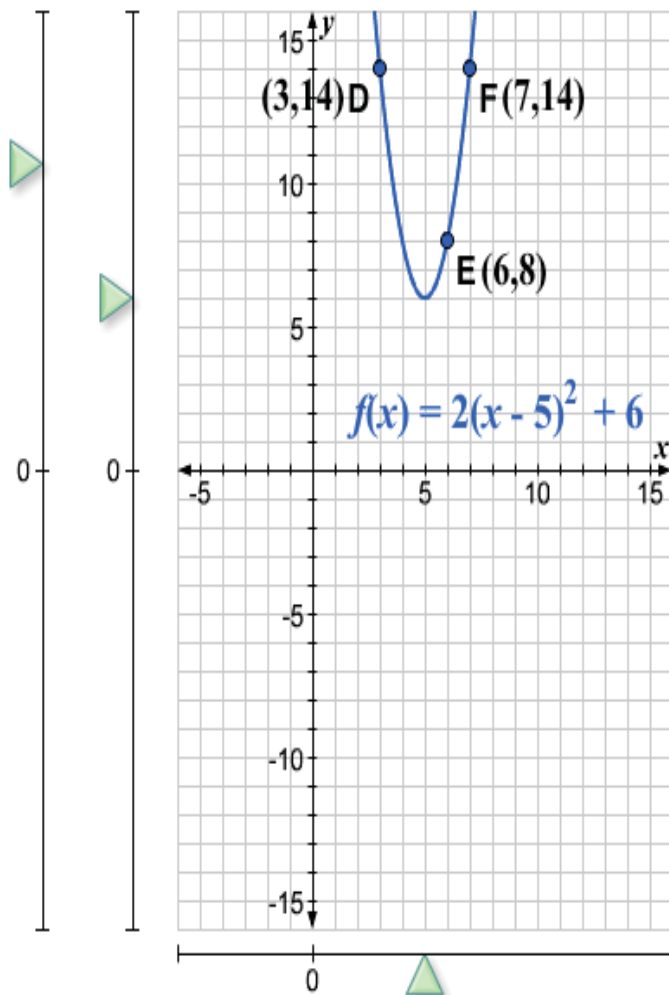
Fill in the blanks to give the coordinates of points  $D'$ ,  $E'$ , and  $F'$  that lie on the graph of the new function  $p(x)$  and that are the images of points  $D$ ,  $E$ , and  $F$  that lie on the graph of  $f(x)$ .

$D'$ (  ,  )

$E'$ (  ,  )

$F'$ (  ,  )

Submit Answer





Looks familiar?

TI Nspire activities are accompanied by Student Activity Sheets that allow the students to reflect on the “consequence” of the action they performed:

1. Given any function, describe the effects parameter  $a$  has on its graph when
  - a.  $|a| > 1$
  - b.  $0 < |a| < 1$
  - c.  $a < 0$
  - d.  $a = 0$
2. Given any function, describe the effects parameter  $h$  has on its graph when
  - a.  $h > 0$
  - b.  $h < 0$
  - c.  $h = 0$

As Mrs. Wilson says, “I use technology in my classroom to connect students to each other and to give them a chance to understand mathematics like they are unable to do without multiple representations, even if part of their test will ultimately be without a calculator.”

Perhaps this will help better explain:

| <u>Statement</u>                          | <u>Justification</u>  |
|---|-----------------------|
| Common Core = Discovery and Investigation | Given                 |
| TI Nspire = Discovery and Investigation   | Given                 |
| <b>Common Core = TI Nspire</b>            | Substitution Property |

References:

<sup>1</sup><http://www.parcconline.org/sites/parcc/files/PARCCApprovedCalculatorPolicyJuly%202012.pdf>

<sup>2</sup>[http://www.ccsstoolbox.com/parcc/PARCCPrototype\\_main.html](http://www.ccsstoolbox.com/parcc/PARCCPrototype_main.html)

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# UETCTM News

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## “I’m Terrible at Math”

By Lori Hill

*Sullivan County School District*

How often do we hear students saying that certain students are “good at Math” while others are “bad at Math”? Everyone seems to accept the premise that some people are math - or numbers-oriented and some people are not. Our classroom experiences sometimes bear this out. The “smart” students most of the time call out the answers; we praise them and move on, while the others watch. So the idea that there are those who “get” Math and those who do not gets reinforced over and over. But what if that is not true? What if there are truly no students who are “bad at Math”, only classrooms that do not deliver enough opportunity for everybody to learn, each perhaps at a different pace? What if the most important gift I can give my students is the ability to tolerate frustration long enough to solve a complex, difficult problem?

Few people enjoy giving up short-term comforts and pleasures for long-term gain, but at this point in human history, it seems that Western society is producing more and more of us who are simply not willing to make that trade. Many people, especially younger people, want immediate gratification and do not often stop to count the costs. And they will do almost anything to avoid frustrating tasks and situations.

Malcolm Gladwell has addressed this subject in his book *Outliers* (2008). Mr. Gladwell observed that Asian students are often better at Math than their Western counterparts. He began to wonder why, and took a step back to view the larger picture of Asian and Western cultures. He found that, for literally thousands of years, Asian culture has been founded upon perseverance, patience, and hard work.

The cultivation of rice is a painstaking, back-breaking procedure that really never ends. There are no rest periods, and, in fact, the more you terrace, plant, weed, irrigate, harvest, and re-plant, the more successful you will be. The work is labor-intensive and tedious. No machines can replace human commitment in a rice paddy. In this culture, perseverance and hard work are rewarded.

Western culture, by contrast, was built upon the growing of wheat, barley, and rye. These crops require lots of work, too, but machinery adds to the efficiency of production. Every time a new piece of equipment is invented and put into place, the harvest goes up, and labor decreases. And, perhaps the most telling difference of all: these crops do better if the land is given a rest.

Gladwell is convinced that Asian students outperforming Westerners has nothing to do with genetics

or social situations. He believes firmly that hard work, perseverance, and frustration tolerance are learned values and that Asian families tend to instill them in their children more than most Western families do, perhaps because of the different ways their cultures have evolved agriculturally.

Dr. William J. Knauss wrote about frustration tolerance in his paper, "How to Conquer Your Frustrations" ([www.rebtnetwork.org](http://www.rebtnetwork.org)). Knauss paper presents a survey with several questions; one of which was "If I can't solve a problem right away, I tend to give up."

The possible responses are "rarely", "sometimes", and "often". An "often" response suggests that you need to develop goal persistence. People who give up easily follow a recognizable pattern: They tend to get easily distracted, often have a poor sense of timing and pacing, and commonly exhibit a strong desire to dodge discomforts. In other words, low frustration tolerance (Knauss).

Low frustration tolerance can be the cause for lots of dysfunction in our everyday lives, as well as in Math class. The ability to tolerate frustration, stated differently, looks like this in our Mathematical Practices standards: Make sense of a problem and persevere in solving it ([www.corestandards.org](http://www.corestandards.org)). The new standards seem to be calling for more of an ability to pay a short-term price of frustration and discomfort in exchange for a payoff in the form of a completed task. To be successful under the new common core standards, our students need to work to build up their tolerance of frustration and increase their ability to stay with a complex problem long enough to develop a meaningful and justifiable solution.

As Knauss states, our students need to be taught that "some things in life will feel uncomfortable" and that people who can learn to bear more and more discomfort will learn to be better problem-solvers. And the good news, according to Gladwell, is that perseverance and hard work are values that can be learned.

In Mathletes, Denise Strong led an activity for the class which required all students to go through a maze made by tape on the floor. There was one correct pattern through the maze, which only Denise knew. We were instructed to attempt to make it through the maze, one at a time and to learn the pattern by Denise's responses to our moves. It was frustrating and took a while. This task gave us all a bit of practice raising our frustration tolerance, and, more importantly, it required no math at all! So a student with only basic math skills would have no excuse not to persevere through this maze. It was not about "good at Math" and "bad at Math"; it was just about Perseverance with a capital P.

Other tasks we tried in Mathletes involved working together with one hand behind your back to build a paper airplane, and building a shape from blocks with piece meal instructions. We can use tasks like this to build frustration tolerance and perseverance into our students, no matter what their ability levels are. Additionally, beginning the year with complex tasks that require relatively low-level math skills will aid in building perseverance and will also allow students to feel successful early on in a math class. Also, teachers can model to students how to persevere through a problem by demonstrating steps and thinking out loud through the activity.

Our goal as educators should be to never again hear the words, "I'm terrible at Math!" Our new common core standards are setting us up to reach that goal. Our common core tasks can become the rice paddies of this generation, producing students who will believe that they can succeed at Math, and subsequently, at the complex problems life throws at them.

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## Professional Learning Community

By Luci Creech

*Sullivan County School District*

Recently I had the opportunity to work in a Professional Learning Community (PLC). A PLC is teamwork between coworkers, fellow Algebra 1 teachers in my case. This was new to all of us. We were both excited and nervous about the teamwork ahead. In the following paragraphs, I will describe my experience in our PLC from this past school year.

When we first met, all 7 of us, had to not only listen to each other's ideas, but also share ideas. This was teamwork after all. We discussed where to start in the book, which sections needed to be included in Unit 1, and the amount of time to spend on each section. We also approximated the dates for quizzes and tests. After charting that on the calendar, we set out to create our daily lessons and assessments. After this first PLC meeting, we had accomplished the planning for the first few weeks of school including when to assess and how to assess. Several teachers stepped up and provided the first round of quizzes and tests. We scheduled our next meeting before breaking our huddle.

At our second PLC meeting, which took place before the final assessment in Unit 1, we shared what worked (and didn't work). We discussed the pace of our classes and examined the speed (or lack thereof) at which we were able to cover the material. Unit 2 was planned. The pacing was put on the calendar. Another set of teachers volunteered to provide the assessments. We closed our gathering after scheduling the next meeting.

One difficulty arose...getting all seven Algebra 1 teachers together at the same time. We didn't have common planning or common lunch. Our meetings took place before or after school which interfered with coaches (after school) and those with children (dropping off at daycare/school). We did communicate via email. We also discussed our progress with those Algebra 1 teachers we interacted with daily.

Another way we overcame the difficulty of contact was to place "mailboxes" in the copy room for sharing of assessments and worksheets. (I'd like to explain the location of our math teachers. Six teachers are on one hall, and the others are on the other side of the building.) With the mailboxes in the copy room, we were able to share materials as well as make copies for another teacher if requested.

The benefits to our PLC were more than I imagined. Better communication developed within our department. Ideas were shared. The task of preparing assessments was shared which increased the amount of time we were able to spend on other tasks. The Algebra 1 students were all "on the same page". They were able to work together even if they had different teachers. And we were able to help out fellow teachers' substitutes in case of last minute absence. There are many more benefits which would be unique to individual teachers.

I look forward to improving the PLC at my school. Consider starting one at yours.

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# UETCTM News

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## Social Media is NOT Evil

By Tim Smith

*Bristol Tennessee City Schools*

I have started using social media in my math classes. Some of the outlets I use are Today's Meet, Screen-casting, Twitter, and U-stream. I can honestly say my classes have not been the same since I began using them. I want to explain how I use each outlet and how it has changed my class for the better!!

### **Today's Meet (todaysmeet.com)**

Kids love to text (need I say more)! I have a back channel running in my class along with my Promethean board. This allows the students to discuss problems from one side of the room to the other. It also allows them to discuss problems at home if they have a question. If a student is not in class they can text in questions from home or wherever they may be. I will talk more about that when I explain how I use U-Stream. They will sometimes joke with each other but my rule is POSITIVE AND PROFESSIONAL. I have only had one incident where a student was not and it was dealt with quickly. I have had no problems since. I can show parents what their son/daughter is texting.

### **Screen -casting (screencast-o-matic.com)**

This has been a great tool to show the process of how to work problems. Students can watch this at home as a reteach. I usually throw a bone in by giving a phrase that if they repeat to me in class they will get a bonus. The truth is I am not crazy about hearing my own voice but I am slowly getting over it and realize IT'S NOT ABOUT MY VANITY. It is about the students learning.

### **Twitter**

This has been an adventure. I do use Twitter in class for the students to discuss math with each other and other people who may include math teachers, professionals (talk about real life application). I am about to embark upon setting up a weekly discussion with my students and others to talk about how math is used and any other question my students may have. One way I use twitter outside of school is to tweet questions like tell me how to solve system of equations or tell me something specifically you learned in class today and you will get 5 bonus points on your next assignment. During class I will usually show Twitter by using Tweetdeck or Twitterfall. I can be followed @coachtmsmith.

The one rule I have is to always be positive and professional with your comments. If a student is not posi-



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tive and professional I will first talk with them. The second offense I will call home and write them up. There are offenses where I will call home and write them up on the first offense depending on the offense.

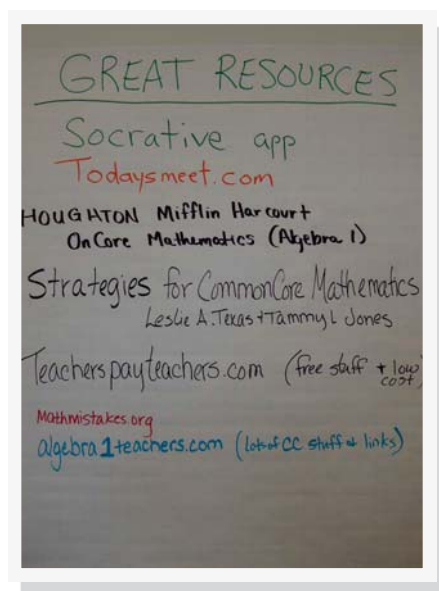
## U-stream (ustream.com)

This has been fun. I live-stream my class through this site. The first thing I tell my students is that when your parents ask "What did my son/daughter do?" I can show them. The first couple of times I used this I did not go live so the kids and I could get used to how it works. I would record class and upload it. This tool became very real to me when a student was out of class because she was sick. She was able to log on and watch class live. She used Today's Meet to text in her answers and questions as the lesson unfolded. She was able to learn quadratic equations from home!! When she came to class the next day she didn't have to worry about asking me what she had missed because she hadn't missed anything.

By using these tools my class has definitely changed for the better. Kids love technology and respond well to it. I believe social media can be used for the good and safely.

Before I end I must give credit to Adam Taylor (@2footgiraffe) who teaches Biology and Chinese in Nashville TN. I attended a tech. conference where he shared many of these tools. I don't think he knows about the impact it had but Thank you Adam!!

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## Interview

By Dillon Faver

*Sullivan County Schools*

INTERVIEWER

Hello, my name is Dillon Faver. We are going to talk about your perspective on inclusion, special education, and general education. How are you this evening?

TRENT

I'm doing fine, and excited to give my perspective.

INTERVIEWER

Great! Let's get started. How long have you been a part of an education program, and where did you study?

TRENT

Well, I graduated from King College in 2010 with Bachelors in Mathematics and currently getting my teaching license at Tusculum College. Before I actually became a teacher I substituted at Sullivan East High School for a year so I was familiar with the school. The very next year I was the teacher's aide at Sullivan East giving me even more practice with students and teaching strategies. At the half way mark one of the Algebra teachers had to back out so I became the interim teacher for the rest of the 11 year.

INTERVIEWER

What are your thoughts about inclusion in the general classroom and the negative and positive effect on the teacher, Special Ed. students and general students?

TRENT

Inclusion definitely has a positive and negative outcome for everyone. The Special Ed. students benefit socially because they are a part of the regular everyday classroom with general students and learn social skills while not missing the high school experience. However, some students may not benefit. In my algebra class it is difficult for those students to keep up. Many of the students are not ready and not prepared for the mate-



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rial we cover in algebra. This may cause problems in the classroom because the students lose focus because they are not prepared and cannot keep up with the rest of the class. Another negative effect is when those students are in groups. The average or above average students get frustrated and do the assignment individually without the help of the special ed. students. However, if the teacher groups the students correctly, the above average student can work with the lower student and both of the students benefit. If a student is not prepared with the basic math skills and knowledge they should not move forward and continue to work on their basic skills.

INTERVIEWER

Are students with IEP's a distraction in the classroom?

TRENT

Not all students with IEP's are distractions in the classroom. Just like the average students you have 28 students that will work hard and students that don't care and are a distraction. Students with IEPs just struggle in particular areas. A student in my algebra II class has an IEP and the student has trouble focusing. Sometimes that student acts as a disturbance, other times they work really well. It really just depends on the student.

INTERVIEWER

Does inclusion have an effect on the teacher? If so how?

TRENT

Yes, inclusion does affect the teacher. The teacher has to take into consideration this student with an IEP and has to accommodate their needs. Sometimes teachers have to make a lesson that will mold around the individual student.

INTERVIEWER

How will the new Common Core affect the students, and how can you, as the teacher instruct and use the new Common Core objectives to benefit the students and their education?

TRENT

Students have to learn how to think on their own and process information. Using manipulatives and



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having students collaborate with one another will help them learn and become better educated. We as teachers can expand students' minds by looking into the mathematics and the processes to problem solve. For example, the teacher must have students investigate further by using the 5 strand method (graphing, creating a table, verbalizing their methods, creating a picture, and create an equation) to solve problems.

## INTERVIEWER

Thank you Trent for your time and honesty. Have a good rest of the day.

## TRENT

Thank you.

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## What Motivates Students To Learn?

By Deborah Redman  
*Sullivan County Schools*

One of my biggest hills to climb in education was to try to motivate students. Many of my students fall in the category of future drop outs or students who do not see the need for an education. It can be very difficult to find what motivates these students to want to learn. There are three areas that I have found which usually work with most of my students. I don't think that one person can motivate all kids by themselves, but if we all change the thought patterns of a few it will help our education system.

One semester I had a group of students who all had been through algebra I at least three times. They were feeling no success in school and were understanding that they would not be able to graduate. They did not have the best of home lives, nor did they have a support system at home to encourage them. By the end of the semester, we were one happy family that would go to bat for each other on our trials. At the beginning of the class, I would allow time for the students to share or ask questions about their personal lives. These were life lessons that were more important to them than learning to solve equations or graphing a line. By taking time to listen, they saw that I cared about them as a person and they began to take interest in what I was trying to teach them. By the end of the semester, my group of potential drop outs were solving equations and learning Algebra. Since then most of them have graduated or received their GED, and gone on to become working members in society.

*If we continue to teach in the traditional manner of everyone sitting quietly in rows doing practice worksheets every day, we will continue to lose our students.*

If we continue to teach in the traditional manner of everyone sitting quietly in rows doing practice worksheets every day, we will continue to lose our students. Times have drastically changed and so must our teaching styles. I am looking forward to teaching with Common Core this year. I think that this will grab the attention of a lot of students who we have been letting slip by. When a student can build or discover ideas, it will help them to learn. In Geometry, I love to implement an activity with line curves. I take card stock and copy a basic coordinate graph on one side. Each child gets a needle, cross-stitch thread, and directions. We continue with the activity by poking holes on key points on the grid. They learn to thread a needle, tie knots and sew by graphing points on the coordinate grids. If they don't remember any math, they will at least be able to darn socks or sew a button on a shirt. The boys and girls beg to do this project each year. Even the students who I can't get to do work will participate in this activity and succeed. With Common Core ideas, I think we will see more and more students engaging in learning.

My last suggestion for motivating student is to attend as many ball games, parades, competitions, or



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performances as you can. When students see your face in the crowd it makes them realize that you care about what they are doing. I have observed that many students do not have family members that are able to follow their activities. In this day and time it takes both parents working to live an average life. Many parents want to but cannot afford time off to follow the interest of their child. When they see your interest in their success, they will work for you so they can make you proud.

I realize that these suggestions will not work for all students, but in my experience it has helped reach many students who do not have success in the traditional classroom. All children can learn, but they are driven by different sources. If we all work together, we might be able to reach more children and make lasting changes in their lives.

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# UETCTM

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***Mail completed form to:***

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***Membership Fee: \$10***

***Payable to: UETCTM***

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**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



# UETCTM NEWS

VOLUME XV, ISSUE I

FEBRUARY 2014

## Guess How Many?

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Common Core: How Can Educators Get Family Members On Board? 11

A recent study, published in January of 2014, suggests that by playing guessing games, children can improve their skills with traditional math problems. The researchers asked first-graders to practice tasks that required them to estimate the number of objects in a set. Other children did tasks such as comparing or adding the lengths of lines. Children who practiced approximating the number of objects performed better on arithmetic tests immediately afterward than did the other children.

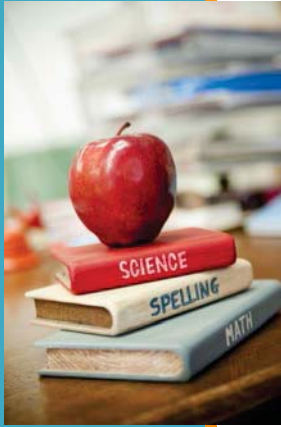
Thus, the study linked practice with intuitive number tasks with better math performance in students. What does this mean for you as a teacher? It means that you should engage your students into thinking about numbers. Have your students estimate different things, such as how many papers are in a stack or how many pencils are in a pouch and help them improve their mathematic skills!

<http://blogs.kqed.org/mindshift/2014/02/how-guessing-games-help-kids-solve-math-problems/>

<http://www.ncbi.nlm.nih.gov/pubmed/24462713>







“The important thing is not to stop questioning. Curiosity has its own reason for existing.”-

*Albert Einstein*

# Searching for the Next Einstein

By Jason B. Dobbs

I have read that as a small child, Albert Einstein, the greatest scientist of the twentieth century, was considered by some of his teachers to be intellectually inferior, someone that would never amount to much. The reason for this faulty inference by his early teachers was that he was silent. He hardly ever spoke.

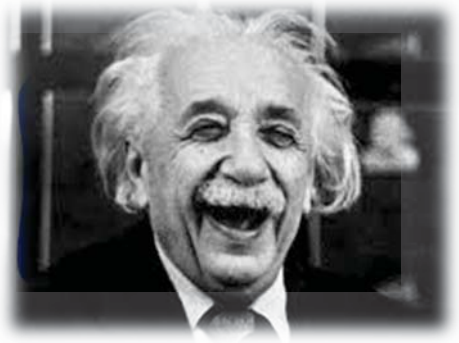
The truth was that Einstein’s brain was superior in its ability to visualize forms, and this supreme power of visualization led him to formulate the theory of relativity. He could visualize what the universe would look like if one was to ride on front of a beam of light.

Now please do not conclude that the implementation of the Common Core standards and its insistence that students visualizing mathematical concepts will lead to the production of a plethora of Einstein’s. No, brains like Einstein’s, in my humble opinion are hard to find as a lone needle in a haystack. But I will conclude that without an emphasis on visualization, mathematics is devoid of any significant meaning. It is rote. It is a chore. It leaves learners with a feeling of hopeless inadequacy.

Let’s think about how visualization is inherently required for the understanding of measurement. Any fourth grade math teacher could easily express their frustration in teaching young children not one but two measurement systems. Since students see them applied in the “real world”, they can typically grasp feet, pounds, and gallons. What about meters, grams, and liters? Without visualization, students’ understanding is severely limited.

Visualization is essential in the understanding of all mathematics. This visualization must be aided by the use of manipulatives. Consistent use of various manipulatives allows learners to touch and see concepts concretely. After much practice, learners will increase their understanding so that they can then draw diagrams, a requirement of common core math tasks.

Believe it or not, there are some critics of common core math tasks, in that, the requirement of drawing diagrams or creating mind maps of the strategies used to solve rigorous math problems is not necessary. But if we as a society are striving to create critical thinkers such as Einstein, mathematics must stress the process of visualization. It is the strongest argument of implementing the common core standards.



# Making Two Digit Multiplication Easier to Understand

By LeAnne DeLeon



*“I was amazed at how much they enjoyed doing the multiplication ...”.*

When I was in elementary school we were taught the traditional algorithm for multiplying two digit numbers. I never gave thought to how or why that method worked. All I knew was if I followed the rules I would get the correct answer. I always struggled with doing the two digit algorithm in my head. Then finally when I was taking a course in college on teaching math, I was taught to do two digit multiplication by using partial products. The partial product method is just a way of breaking the number apart into easier numbers to work with. I found this method so simple and did not understand why I was not taught this method before. By doing this method I could easily see why and how the method worked.

This year I had the privilege of teaching two digit multiplication in my classroom. I was curious if the students would truly understand the method that I was taught in college as well as I understood it. The students picked up on the partial product method very quickly. I was amazed at how much they enjoyed doing the multiplication and how easily they could explain what they had done.

My students actually enjoyed doing the multiplication.

When teaching the partial product method I explained that they first needed to break their numbers apart into numbers that are easier to multiply. As noted in Figure 1 below, if you have the number  $12 \times 19$  the student can break the 12 apart to 10 and 2 and 19 apart to 10 and 9. Then they would multiply  $10 \times 2$ ,  $10 \times 10$ ,  $10 \times 9$ , and  $9 \times 2$ . These numbers are much easier to multiply so; most students could do this in their head ( $10 \times 2 = 20$ ,  $10 \times 10 = 100$ ,  $10 \times 9 = 90$  and  $9 \times 2 = 18$ ). Next all they have to do is add the sums together ( $20 + 100 + 90 + 18 = 228$ ). Figure 1 also illustrates how the students can organize their work.

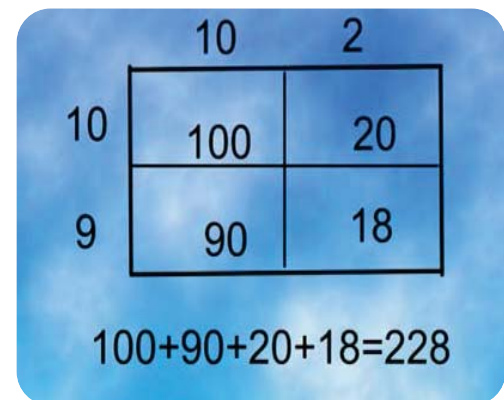


Figure 1

The students can easily use base ten blocks to model their work as noted in Figure 2. They can see that 10 tens strips equal a hundred, 2 tens strips equal 20, 9 tens strips equal 90 and 2 groups of nine equal 18 ones. They can also see the regrouping with the number 18 when they trade 10 ones in for a tens strip.

This method of teaching multiplication fits with Common Core. It helps students not only get the correct answer, but it allows them to see how and why the answer is correct.

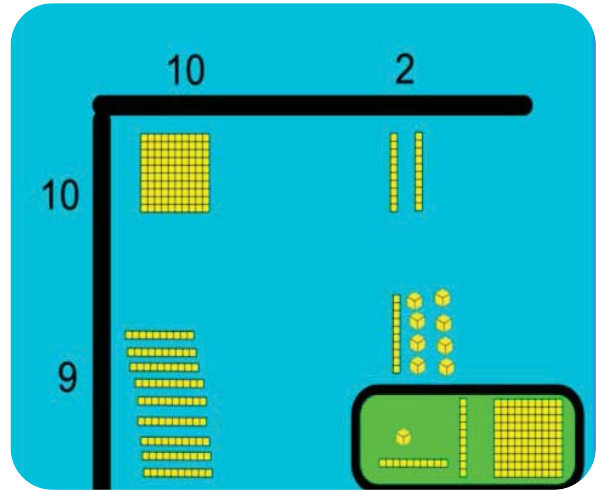


Figure 2

## February Puzzle

*This month's math challenge comes from [www.wuzzlesandpuzzles.com](http://www.wuzzlesandpuzzles.com), a great website where you can find many fun puzzles for all ages.*

### Try to fill in the missing numbers.

- ❖ The missing numbers are integers between 0 and 10.
- ❖ The numbers in each row add up to totals to the right.
- ❖ The numbers in each column add up to the totals along the bottom.
- ❖ The diagonal lines also add up the totals to the right.

|    |    |    |    |    |    |
|----|----|----|----|----|----|
|    |    |    |    |    | 30 |
| 3  | 4  |    |    | 9  | 24 |
|    | 6  | 10 |    |    | 30 |
|    | 8  | 10 |    | 3  | 33 |
|    |    |    | 0  | 4  | 19 |
|    |    | 5  | 4  | 0  | 26 |
| 32 | 32 | 28 | 18 | 22 | 19 |



*“Collaborative teaching is another key factor in student success.”*

## Common Core Standards and Special Education

By Ben Armstrong

The adoption of the Common Core State Standards has created the opportunity for students with special needs to be included in the general education curriculum as never before. The Common Core State Standards challenge all students to become prepared for college or workforce environments. While the goal of these standards is to ensure a consistent framework for all students, including students with special needs in the general education classroom can present challenges to regular education teachers, special education teachers, and building administrators.

In order to expose students with special needs to Common Core standards in the regular education classroom with their peers without disabilities, several things must occur. First, students with special needs must have individualized supports designed to meet their needs. This usually occurs during the development of the Individualized Education Program (IEP). The IEP process will require close collaboration among all personnel working with the student. The regular education teacher, parent, special education teacher, and even the student will need to be involved in order to determine the supports needed as well as the level of support the student will require to be successful in the regular education classroom.

In order for all students, including those with special needs, to reach the level of success demanded by the Common Core Standards, instruction must be delivered by teachers who know the standards and are trained to provide quality instruction as well as specialized support. According to the developers of the Common Core State Standards, instructional strategies based on the Universal Design for Learning (UDL) which presents information in multiple ways and allows students to show what they know in a variety of ways is beneficial to supporting students with special needs.

Accommodations may be required for a student to be successful in the general education classroom. Accommodations may include changes in the way material is presented or how the student completes assignments. While accommodations may be needed, it is important to ensure that tasks remain rigorous and accommodations do not deter from the standard being taught or the expectations for the student. While accommodations may be necessary in the classroom, students with special needs will be assessed using the same test as students without special needs. For this reason, it is important that expectations for students with special needs remain as high as those without special needs.



Collaborative teaching is another key factor in student success. Students with special needs should have access to a teacher who is well versed in the Common Core Standards as well as access to a teacher who has special education experience and expertise. These two teachers must work closely to monitor student progress, as well as make adjustments and adaptations as necessary.

Professional development opportunities which allow teachers to become trained in the Common Core Standards, collaborative teaching, and methods for teaching students with diverse needs are also important factors in successful inclusion of students with special needs in the general education classroom.

Other key factors to the success of students with special needs in the general education classroom include a school wide ownership of all students. All staff must take responsibility for all students, regardless of the needs of the student. All staff must also set and expect high achievement from all students. Intervention systems must be put in place to ensure that all students receive the supports needed to be successful.

While the implementation of the Common Core Standards presents exciting opportunities for students with special needs to be taught in a classroom with their peers without special needs, it also presents challenges for those working with these students. By developing a school wide system of ownership of all students, training all staff through professional development, and having a strong collaborative process, students with special needs can reach the same goals as their peers.



#### References:

McNulty, Raymond J., & Gloeckler, Lawrence C. (February, 2011). Fewer, Clearer, Higher Common Core State Standards: Implications for Students Receiving Special Education Services. International Center for Leadership in Education.

## Fun Math Facts! <http://www.makemegenius.com/>

- The word 'mathematics' comes from the Greek *máthēma*, which means learning, study, science.
- Different names for the number 0 include zero, nought, naught, nil, zilch and zip
- 12,345,678,987,654,321 is the product of 111,111,111 x 111,111,111. Notice the sequence of the numbers 1 to 9 and back to 1.
- 'FOUR' is the only number in the English language that is spelt with the same number of letters as the number itself



*"We, as teachers, have to roll with the punches and go old school it when needed."*

# Technology in the Classroom

By Cyndi Turnmire

I teach at a small, rural K-4 school. <http://henryanker.com/> Great assessments on different areas of learning from K-5. Great opportunity to generate a grade. In the past we have not been a Title 1 school. That changed approximately 3 years ago. Suddenly we went from very limited resources to an abundance of <http://www.superteachertools.com/> This is "technological" goodies at our disposal. My thoughts after that were "how did I ever survive without these!"

The first main purchase for all of the classrooms was Promethean boards. I fell in love instantly. I couldn't wait to create and see how far I could go with my lessons. We were also given ActiveExpressions for our classrooms. These are great for student responses that instantly show on the board. I looked for every bit of training I could find on these to help me use this to the fullest of its capabilities. <http://www.coolmath-games.com/> Math games <http://www.mathplayground.com/games.html> More Math <http://www.tnhistoryforkids.org/> Great for teaching Tennessee history and facts.

It was so exciting to be able to go to the internet and immediately find answers to those questions that came up in our lessons. For example, we read a story on Antarctica and a question came up about where exactly the penguins live. I found, however, to turn off the projection as I googled this. Sometimes some risqué things came up in the search results that I didn't feel I needed to discuss. <http://www.multiplication.com/> Practice those facts <http://www.iknowthat.com/com> Does require a subscription, but we have found several schools willing to share passwords. <http://www.brainpop.com/> Great movies and quizzes for a variety of topics. I use my ActiveExpressions to do the quiz at the end of the videos.

Some of the best websites I have found for technology are: <http://studyjams.scholastic.com/studyjams/index.htm> Songs and interactive lessons

[http://www.cellsalive.com/cells/cell\\_mode1.htm](http://www.cellsalive.com/cells/cell_mode1.htm) - This is great for comparing plant and animal cells.

<http://www.sheppardsoftware.com/> - An abundance of learning games for a wide age of learners.

These are just a few of the ones that I use religiously. If I find a great site I usually bookmark it. I have found that when I do this it is easier to rename the link to give me a hint as to what the link is.

We have also purchased a traveling Ipad cart that can be checked out. There are 20 I pads that can be used in the classroom. We are limited on apps at this point because of having the free versions which only take you so far. We also have 10 I pads to share between 4<sup>th</sup> grade. A teacher I pad was also given to us for class use. Several wireless routers have been placed throughout the school.

This upcoming year is another year to add to my technology collection. The plan is to purchase ELMOs and laser printers for every teacher. We also will be provided money for Math and Language to purchase items needed for our room in those areas.

In looking back and reflecting I have found that technology is great when it works. It never fails that I have something planned and the network goes out. Once my Promethean bulb blew, and I about died, or I sign up to use the computer lab and 10 of the computers are down. This leads to plan B. We, as teachers, have to roll with the punches and go old school it when needed. How did early teachers ever survive?





## Make it Memorable! by Mitzi Hammond

During the first year that I taught 5<sup>th</sup> grade math, I saw a common problem with my students. They could not remember the meaning of many important math terms. When asked to find perimeter, they found area or volume. Which number is the numerator? Factor or multiple? I began looking for catchy songs or sayings related to math concepts. I have added motions and movement to many of them so that they serve a dual purpose; remembering the math concept and providing a break! Here are some that I have gathered so far:

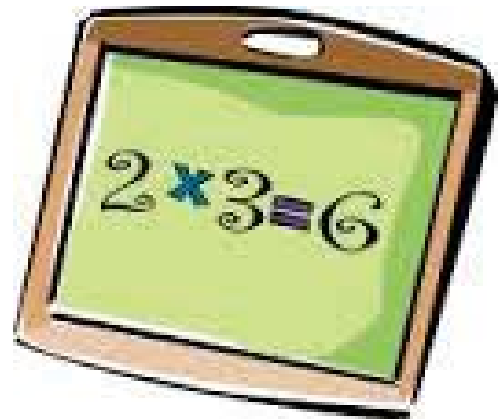
### Multiplication facts:

TouchMath Skip Counting CD: The songs have a theme for each number. For example, the 8 song has a cowboy theme, so we ride and rope as we sing. The songs don't have up to date "rockin" music and the person "singing" has a very robotic sounding voice, but the kids love them!

"Rockin the Standards" has skip counting songs, too, and is available on CD or iTunes

([www.rockinthestandards.com](http://www.rockinthestandards.com))

These songs are sung to familiar tunes such as "Twinkle, Twinkle, Little Star". This CD also has songs related to other curriculum standards such as place value, quadrilaterals, measurement, parallel/perpendicular lines, and angles.



### Factors and Multiples:

Chant: Millions of multiples, factors are few! (kick) We move around the room in a "conga line" as we chant this one. As an introductory activity for factors and multiples, students explain why the word "millions" is matched with multiple and the word "few" is matched with factors. "Millions" reminds students that every number has millions (infinite) of multiples and the multiples are always greater than (M is for more) or equal to the number. Multiples of eight are greater than or equal to eight! "Few" reminds students that a given number has a definite number of factors and factors are always less than (F is for fewer) or equal to the number.



**Geometry:**

Perimeter: We sing a song that was created by a fellow teacher in Kingsport City Schools, Cheryl Lee. I am not sure what song the tune is based upon, but here are the words:

Mr. Perry Meter adds all sides.

Mr. Perry Meter adds all sides.

Mr. Perry Meter adds all sides.

Mr. Perry Meter adds all sides!

**Volume:**

This one is on Youtube. Search for “Volume Song – Length X Width X Height”. It is also available at [www.havefunteaching.com/songs/math-songs/volume-song](http://www.havefunteaching.com/songs/math-songs/volume-song). A catchy tune and fun video make this one very enjoyable for the students—and of course we get up and dance while we sing!

**Area:**

I haven’t found a wonderful song or chant for this one, but last year I just started saying “area, squarea” every time we mentioned finding area. That reminded students that area is measured using square units. Several students even drew pictures of Mr. Perimeter and Mrs. Squarea. They were very creative and incorporated the meaning of area and perimeter into the pictures.

**Fractions:**

I just have a couple of “sayings” for this topic. I write them on chart paper and we read them every time the concept is mentioned.

- ✚ The denominator is DOWN on the bottom.
- ✚ Never add denominators!
- ✚ A fraction is just another way to write a division problem.
- ✚ Division word problems with remainders:
- ✚ Another saying written on chart paper:
- ✚ The answer to the division problem is NOT always the answer to the story problem.

I write these songs, sayings and chants on chart paper and keep them up all year. Students also have copies in a math folder that they keep in their binders. When we solve problems, or when taking a test, students write reminders on their paper related to these songs and sayings. For example, if asked to find perimeter, students circle the work perimeter and write “adds all sides” above it.

At the end of this past school year, I received a letter from a former student. In it he thanked me for teaching him “tricks” to remember math concepts. He said that he got all the perimeter, area and volume questions right on his tests because he thought of the songs we sang. It was fantastic to hear the he was continuing to use these songs in middle school math. So, as you head back to your classrooms this year, be sure to make it memorable!



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**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater Tri-Cities region. This year we will have a single-day conference in the spring at a day and location yet to be announced. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



# UETCTM NEWS

VOLUME XIV, ISSUE 5

MARCH 2014

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## Pi Day $\pi$

March 14 (3/14) is celebrated around the world as Pi Day. Pi ( $\pi$ ) is the symbol used in mathematics which represents a constant, ratio of a circle's circumference to its diameter, approximately equal to 3.14159.

The number Pi is an irrational and transcendental number which continues infinitely without pattern or repetition. It had been calculated to over one trillion digits past the decimal point.

**Fun fact:** If you hold a mirror to a circle, it looks like a circle. If you hold a mirror up to Pi, it spells PIE!

### Geometry formulas using pi:

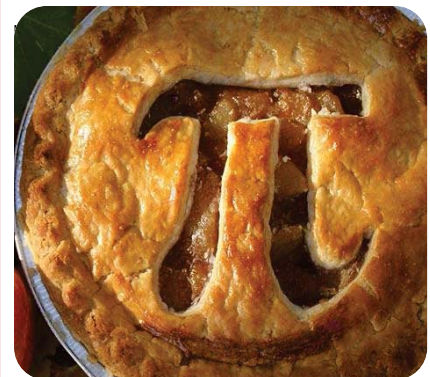
The area of a circle:

$$A = \pi r^2$$

The volume of a cylinder:

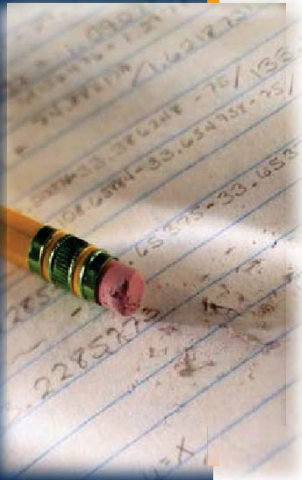
$$V = \pi r^2 h$$

<http://www.piday.org/learn-about-pi/>



# Math Anxiety: A Self-Fulfilling Prophecy

By Amy Duncan



*"I get it; there is only one correct answer, but sometimes the effort and dedication and reasoning that goes into a child's work to solve a math problem is just as much a victory as coming up with the right answer"*

Amy Duncan  
teaches for  
Johnson City  
Schools

When one considers the importance of Reading/Language Arts and Mathematics in our educational system, it should seem disturbing that so many students still find it acceptable to declare, "I'm not good at math" or "I can't do math." They will tell anyone who will listen including the math teacher. I never hear students say, "I can't read," although I know that there are plenty of students who struggle with reading on grade level. What is it about math that has students feeling like they are going to fail before they start?

I'm not sure there is one answer to this question but a few ideas have crossed my mind. Of these ideas, all could and will hopefully be alleviated through our new "task" approach to teaching. First, I believe a huge part of math education is built around memorizing algorithms. I'm certainly not suggesting that students shouldn't have the knowledge of standard algorithms, but they should be able to use an algorithm that makes sense to them not the *one* approach the teacher is modeling in class that day. Teaching by way of tasks allows students the opportunity to understand the problem in their own brain and then communicate their understanding by way of a diagram or an algorithm that makes the best sense to them. Mastering a problem through their

own hard work and effort will pay dividends in way of the student's math confidence.

Secondly, the pressure applied by the teacher and/or students to always have the right answer can put a lot of stress on a student who isn't as confident in their math abilities. I get it; there is only one correct answer, but sometimes the effort and dedication and reasoning that goes into a child's work to solve a math problem is just as much a victory as coming up with the right answer. Celebrating a student who has worked extremely hard on a problem and just come up short on the correct answer will encourage him/her to work hard on the next problem. Also, not ignoring a student who doesn't have the correct answer but asking very specific questions about their reasoning and work and speaking directly with them about ways they can improve their performance will validate them. The student will begin to believe "the effort is worth it and my teacher wants to help me succeed."

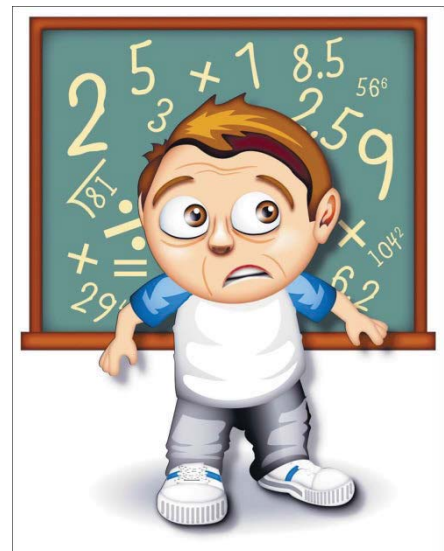


The task lesson plan model empowers teachers to slow down and have good discussions with his/her students about “their thinking.” A math class with these types of activities and with a student empowering environment will help reduce math anxieties in students.

Lastly, and this one doesn’t have as much to do with the student as much as with the teacher who teaches math, teachers can impose their own fears of math on to their students. Teachers certainly don’t do this on purpose, but they can and I believe do communicate with their students as subtly as through their sagging shoulders and sighs that, “math is not my favorite subject and I can’t wait for it to be over.” Okay, so maybe it isn’t that loud, but teachers can say and do things that tell students reading a story is much more entertaining, working on a science experiment is way cooler, and history is just plain old fun. Where does that leave math? Studying for a math lesson might take more work and effort for teachers than other subjects they teach. However, I think they should put the effort into the lesson *and then* require their students to work just as hard during the lesson.

Problem solving isn’t easy work. If teachers shy away from it, their students will too. How can a teacher ask his/her students to persevere when working through the problems when they themselves can’t persevere to adequately prepare for the lesson? I believe the old adage, “what a child sees he does” and this includes in the math class. When we model perseverance and dedication in our math classes, students will have an example to look up to and possibly try to replicate.

Allowing students autonomy in solving math problems, praising them when they give great effort, even if the outcome isn’t the correct answer, and speaking directly and honestly about their performance in math class, and lastly having a teacher who works hard on the lesson preparation and comes to class with an, “I love math,” attitude, will go a long way in reducing math anxieties or just low math confidence among students.



## Even Miracles Take a Little Time

By Kristen Galloway



*“I always begin by asking myself, “what do I want students to learn?” and “how can I weave one concept into the tapestry of the day?”*

Kristen Galloway teaches for Kingsport City Schools

What is the one thing that teachers cannot get enough of other than RESPECT? The answer is ***time!*** Teachers have so much subject content area to cover, including curricula that is federal, state, or locally mandated. A teachers’ normal day is a linear progression of disconnected subjects with specific time allotments per discipline, connected only by short transition periods. What this translates into is frustration on the part of teachers as they often struggle to fit everything into these allotted time periods. It is my experience that there are ways to meet these challenges by integrating content across disciplines and thereby maximizing student learning. In my ideal world, I would have three hours for math instruction. However, I live in a real world where ninety minute periods to teach math are the rule. My solution would be to link math instruction to science instruction. I could also visualize incorporating literacy, music, physical education, and other subjects into math instruction.

There are a number of ways that I have been able to integrate math into other disciplines. I always begin by asking myself, “what do I want students to learn?” and “how can I weave one concept into the tapestry of the day?” In literacy, I can read books that involve math and math concepts, such as One Grain of Rice. My students can also read a readers theater about subjects such as division. In science my students can compile and interpret data, compare numbers, and measure different units such as temperature and time. In music my students can learn about fractions using music notes and learn their “math facts” through singing. My students can add and subtract on a chalk number line in physical education class where I can also use that same number line to teach about positive and negative numbers.

How else does literacy relate to math? With Common Core and Constructed Response Assessment, students are expected to be able to read through math word problems and explain their thinking in a coherent fashion. I believe this translates into the need to practice comprehension skills and the ability to write math sentences that can be understood.



I believe that student learning and engagement will improve when students are able to see the big picture and apply knowledge they can transfer from one subject area into another. I know that I am not the first to suggest this approach; I know others who have tried integration successfully. Integration will allow teachers to stop focusing on how to frantically fit everything in the day, but free teachers to design a rich approach to student learning that integrates content areas and facilitates authentic and sensible learning.



## March Puzzle

This month's math challenge comes from [www.mathisfun.com](http://www.mathisfun.com), a great website where you can find many fun puzzles and brain teasers.

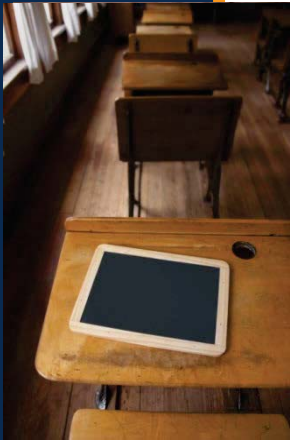
### 5 digit puzzle number:

**What 5-digit number has the following features:**

**If you put the numeral 1 at the beginning, you get a number three times smaller than if you put the numeral 1 at the end of the number.**



(Answer: 42857 (142857 is three times smaller than 428571))



*“I felt that the use of games in teaching math was the most effective strategy...”*

Brett Herron  
teaches for  
Kingsport  
City Schools

# Games, Games, Games

By Brett Herron

This past year was my first year teaching 4th grade. The move was a big transition from kindergarten which I had taught for the past three years. The most overwhelming transition that I had moving from the two grades was the idea of teaching math. By teaching three consecutive years in kindergarten, I was feeling comfortable with the curriculum and the most effective strategies to use with students. The summer before I moved to 4<sup>th</sup> grade, I read and studied the 4th grade curriculum as much as I could. I asked colleagues, read journals, and even experimented on family members to see if certain math strategies would work or fail. I wanted my students to experience a love of math, like I did when I was in school. When reflecting on the past year, one math strategy stood out above others. I felt that the use of games in teaching math was the most effective strategy that I used in teaching my students concepts or new mathematical ideas. Below are a few of the games I used in my classroom as I taught multiplication, division, decimals and fractions.

## Multiplication Games

**Double, Halve or Stay:** This game is intended for two to four players, with the use of two dice. One dice will represent the tens and the other dice will represent the ones. Players will agree on a target number between 5 and 122. The players take turns to roll the dice. Once the dice are rolled a number is formed. The player then makes a decision to produce a number that is as close as possible to the target number. The player can choose to: double, halve, or keep the number as is. The player closest to the target number is the winner.

**Multiplication War:** This game is intended for two players, with the use of a deck of playing cards (with or without face cards – assign number value for face cards). One player shuffles and divides the cards between both players (placing the cards face down between them). Each player turns over a card at the same time. The first player to say the product of both of the cards wins and takes the cards. Play continues until one player has most (or all) of the cards.



**Double Dice:** The materials used for this game include (per person): 1 pair of double dice (dice inside dice), paper & pencil. The object of the game is to have the highest total score after five turns. On their team's turn, both players on Team A roll his/her pair of double dice. Each die will produce a total number between 1-12. Players will use their digits to create a two digit number. Both members of the team record the problem on their paper and solve the multiplication problem. Team B now takes their turn. After 5 turns, all players total their points. The team with the largest sum wins.

## Division Games

**Division with Dice:** In this activity/game, the teacher will give the students centimeter grid paper and a regular die. The students will roll the die. The number on the die tells the student how many rows there will be in their array. The students will use X's to make the number of rows. The students will then roll the die again. This is the number of X's they will draw in each row. For example: If a student rolled a 6 and a 5, there will be six rows of five X's on the grid paper. After they draw the array, the students will write one division fact that is related to the array.

## Decimal Games:

**Adding Decimals with Playing Cards:** This game is intended for students in groups of two or more. The teacher will give out a deck of cards to each group of students (face cards and tens are removed and the Ace is worth 1). The players split a deck of cards and deal out three cards each, placing them face down. Each player turns over the first and third cards and leaves the second card face down to represent the decimal point. Together, players line up the decimals and add both numbers together to get the sum. This is not a competitive game, but a chance for students to work at adding and working with decimals.



## Fraction Games:

**Fraction War:** Much like Multiplication War, the object of Fraction War is to win all of the playing cards from your partner. In the deck of cards, the Ace is worth 11, the Jack is worth 12, the Queen is worth 13, and the King is worth 14. The players split a deck of cards and simultaneously flip over their top two cards, using the smaller card as the numerator. The greatest fraction wins the cards. If the cards are equivalent fractions, the cards are placed in a center pile. The next hand is played normally and the winner of the next fraction.

**Fraction Addition:** This game is intended for students in groups of two. The teacher will distribute a deck of cards (faces are worth ten, Ace is worth 1 or 11). The two players work as a team as they add fractions. Deal four cards and place them face up. Use the four cards to create two fractions. Once they add the fractions on scratch paper, they can check their answer using a calculator.

## Fun Math Facts! <http://www.makemegenius.com/>

- *The number 5 is pronounced as 'Ha' in Thai language. 555 is also used by some as slang for 'HaHaHa'*
- *Have you ever noticed that the opposite sides of a die always add up to seven (7).*
- *An icosagon is a shape with 20 sides.*
- *From 0 to 1,000, the letter "A" only appears in 1,000 ("one thousand").*



*“Differentiated instruction is teaching using various methods and activities to meet each individual’s needs.”*

Tonya Warner  
teaches for  
Hawkins  
County Schools

# The Benefits of Differentiated Instruction

By Tonya Warner

Being an educator is not a simple task. Before a teacher ever enters a classroom full of eager students, he or she must think about how to get the students to learn and accomplish their learning goals. Educators have studied various methods and strategies written by well-known psychologists. What ideas actually work for the students in the classroom? If every student learns differently and each student reaches his or her personal goal at different times, then how do teachers teach every student in the class? The technique that works is using differentiated instruction.

What exactly is differentiated instruction and how do teachers know it really works? Differentiated instruction is teaching using various methods and activities to meet each individual’s needs. All students are provided materials that relate to the same content. Students vary when approaching learning. Some students are visual learners while others can listen to lecture or read to understand the material. So how does a teacher implement this kind of instruction into the classroom?

First the teacher must know the levels of all of the students. A teacher will do this by giving pre assessments on various subjects before the beginning of the lesson. Then students will be taught using manipulatives, direct instruction, and through common core tasks. The teacher can also group the students in centers when content is taught. Each group will be assigned to a different area of the room. The areas may be with iPads, class computers, graphic organizers, or learning games.

Each group will work on the same content; however, one student may understand it better on the iPad versus a graphic organizer. The multiple stations will have different activities for the students to complete. This shows the teacher that each student had the opportunity to learn the content and had a chance to learn in the way that works for them.

Another way to differentiate the instruction is to work with students who may get behind. When most students understand the content but a few seem confused, the teacher can work with the students who need help. For example, a teacher will teach a lesson and give some type of assessment to the students whether it is formal or informal. The teacher can leave the students who understand alone and allow them to have time to work on enrichment activities while working individually with the students who do not grasp the content immediately. This allows extra time to implement the content to reach students comprehension.

Differentiated Instruction is a method that works in the classroom. It allows all students to have a chance to learn what is being taught. Every student feels comfortable in the classroom knowing they have various opportunities to reach their academic goals. Differentiated Instruction allows the teacher to keep the students motivated at school. It also supports the teacher’s knowledge of his or her students and what type of learning works best for which student. This type of instruction is an exceptional approach to education.



*“How close was your prediction to your actual solution?”*

Ellan Kitzmiller teaches for Bristol TN City Schools

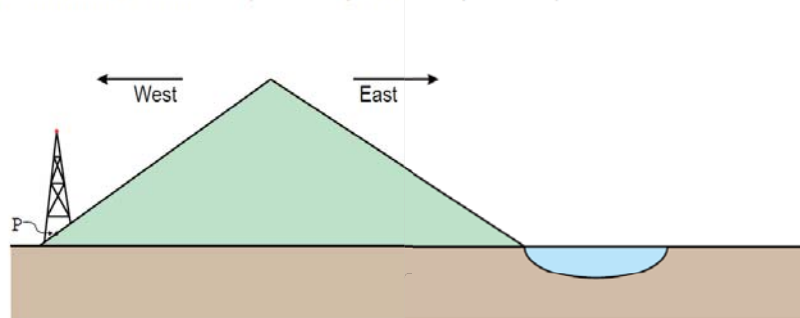
## Over the Hill by Ellan Kitzmiller

“Over the Hill” is one of the many challenging tasks that Dr. Nivens gave our Mathletes class. Like most tasks that he provided us to work on over that last two weeks, this activity had multiple ways to be approached. We had five groups working on this task at the same time. Over an hour later, when everyone finished, each group made a poster showing the steps they took to get to their answer. It is always amusing to see how others get the same result using a totally different method. The first part of the lesson started off with a picture and a few broad questions to get our though process going.

### Part 1: Preliminary Probing

1. What information is needed to solve the problem? What information is not important to know?

A cell phone tower will be built somewhere on the west side of the hill pictured in figure 1. How far up the hill must the tower be placed to provide a signal to anyone on the east side of the lake?



(Not drawn to scale)

2. Thinking algebraically or geometrically, how can you mathematize the problem?

This is a real-world problem that deals with trying to find the best placement for a cell tower on the west side of the hill that would allow the signal to reach people living on the east side of the lake. All we had at the time was a picture of the situation, not drawn to scale, and these very broad questions. There was quite a bit of discussion about how cell phone signals are dispersed, such as, at an angle, horizontally, into space and back to earth, etc. After much discussion, we were told that the signal could reach the east side of the lake at an angle from the top of the tower. Some began drawing a line on the picture using a ruler from the point where the top of the tower could be located down to the edge of the lake in order to visualize the problem better.

At this point, we were given part 2 of the activity.

### Part 2: Down to Details

3. Use the following information to draw an accurate model:

- The cell tower is 200 feet tall.
- The hill is 800 feet tall and 2800 feet wide from west to east at the base.
- The hill has vertical symmetry.
- The lake starts at the base of the hill and is 600 feet wide.



4. First, predict how far up the hillside the tower must be built so that the tower can provide a signal to all points on the other side of the lake. Then determine the exact location on the hillside for the base of the tower. Explain your thinking completely.

5. How close was your prediction to your actual solution? Is your solution reasonable? Explain.

When we got to the second part of the activity, we were given a grid and some very important information. We found out that the hill had vertical symmetry. We also found out the height and width of the hill and height of the cell tower. Our group plotted the picture on the grid and labeled our vertical and horizontal axis. The horizontal distance of the hill was 2800 feet and the lake extended 600 feet beyond that point, so the east side of the lake was positioned at (3400, 0) on the x-axis. We then used a ruler to connect this point to the top of the hill which was positioned at (1400, 800). We extended the line to allow for the top of the cell tower to touch this line. We then found the slope of this line and developed an equation for the line using the coordinates that we came up with on the grid. The equation is  $y = -2/5x + 1360$ .

This equation represents the top of the tower to the east edge of the lake. Next, we decided to draw a line parallel to west side of the hill that would intersect the top of the cell tower. The slope of the west side of the hill was found by using the coordinates (0,200) which was the base of the hill and (1200,900) which represented the top of the hill. Using the slope  $4/7$  that we found and the fact that we would have to raise the parallel line up 200 feet, we got the equation  $y = 4/7x + 200$ . Members in our group used either substitution or elimination to find the exact point of intersection of these two lines to the top of the cell tower. This point was (1195,882). I then subtracted 200 from the y-coordinate to find the coordinates that would represent the base of the tower (1195,682). At this point, the distance formula was used to find how far up from the base of the west side of the hill to where the base of the cell tower would be which 1376 feet. Dr. Nivens provided us with many thought-provoking, interesting, and fun problems. This problem may have been my favorite.

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# What Would You Like to Eat?

By Rachel Norris

The entire basis of Common Core is to allow students to look at and solve math problems in multiple ways. Even though I have always encouraged students to see problems from their own perspective and work them out with a method of their choice, I never realized I was still so much in control of their thinking and problem solving skills. My students could pick from different methods used to solve the given problem, but I was still orchestrating the choices and their thought process. It is like asking a child, "Would you like an apple or a banana?" As adults we think we are allowing the child an opportunity to make an independent choice. In reality the child wanted a candy bar, but we have the power and control to ensure the child's choice is acceptable to us. In essence, we are still making the decision.

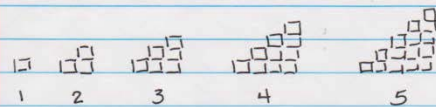
Experiencing Common Core tasks in a classroom setting has forced me to think about math problems in a different way. As an experienced math teacher, it is natural for me to go into a problem looking for a pattern, an equation, or possibly a formula. I look at the problem in its entirety to find order and meaning. For most problems, I can write an equation from a table in less than 30 seconds because it is second nature to find a solution and I pride myself in the ability to do it quickly. How quickly I forget that I have been working these problems longer than any of my students have been alive.

The original toothpick problem assigned in class focused on the relationship between the total number of toothpicks and how that related to the perimeter of the figure. Because this was a perimeter problem, it was solved easily with repeated addition. Even though the fact that the perimeter could be found by simply multiplying the figure number by 4, it took a bit of thought to break the problem down in a way that could explain it with simple arithmetic.



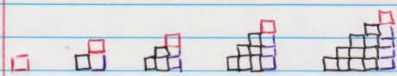
Rachel Norris teaches  
for Sullivan County  
Schools

The challenge came when we were asked to find a formula that could be used to determine the total number of toothpicks in the figure. I forced myself to use only simple arithmetic and my solution path follows:



| Fig # | # of toothpicks added | total # of toothpicks |
|-------|-----------------------|-----------------------|
| 1     | 4                     | 4                     |
| 2     | 6                     | 10                    |
| 3     | 8                     | 18                    |
| 4     | 10                    | 28                    |
| 5     | 12                    | 40                    |

| Fig # | # of toothpicks added | # of toothpicks added |
|-------|-----------------------|-----------------------|
| 1     | $4+0 = 4+2(1-1)$      | 4                     |
| 2     | $4+2 = 4+2(2-1)$      | 6                     |
| 3     | $4+4 = 4+2(3-1)$      | 8                     |
| 4     | $4+6 = 4+2(4-1)$      | 10                    |
| 5     | $4+8 = 4+2(5-1)$      | 12                    |
| n     | $4+2(n-1) = 4+2n-2$   | $2n+2$                |



$2n+2$  (where  $n$  is the figure #) is the amount of toothpicks being added in each figure

This created a lot more work than what was really required to develop the formula. I knew that I wanted to break this problem down into basic mathematical operations; however, most of my students have not had much experience with higher degree equations and expressions. It was important for me to mimic their possible thought patterns and solving strategies. I always tell students to use what they know, but I forget that they do not know what I know. I realize that in order for me to change the way my students think, I have to change the way I think first.

As teachers, we have to loosen the reins when it comes to thinking. I want my students to think, but I have to understand and accept the fact that they will probably not think the way I expect them to think. As they say, sometimes less really is more. The less we impose our own thought processes on our students, the more likely they are to find their own and with that will come ownership, meaning and learning. Instead of asking, "Would you like an apple or a banana?" we could actually get the independent thoughts we desire by simply asking, "What would you like to eat?"

| Fig # | # of toothpicks already present | $(2n+2)$ | = | Total # of Toothpicks |
|-------|---------------------------------|----------|---|-----------------------|
| 1     | 0                               | + 4      |   | 4                     |
| 2     | 4                               | + 6      |   | 10                    |
| 3     | 10                              | + 8      |   | 18                    |
| 4     | 18                              | + 10     |   | 28                    |
| 5     | 28                              | + 12     |   | 40                    |

| Fig # | # of toothpicks already present |
|-------|---------------------------------|
| 1     | $2-2 = 1 \cdot 2 - 2 = 0$       |
| 2     | $6-2 = 2 \cdot 3 - 2 = 4$       |
| 3     | $12-2 = 3 \cdot 4 - 2 = 10$     |
| 4     | $20-2 = 4 \cdot 5 - 2 = 18$     |
| 5     | $30-2 = 5 \cdot 6 - 2 = 28$     |
| n     | $n(n+1) - 2 = n^2 + n - 2$      |

| # of toothpicks already present | + | # of toothpicks added to the figure | = | Total # of toothpicks |
|---------------------------------|---|-------------------------------------|---|-----------------------|
| $(n^2 + n - 2)$                 | + | $(2n+2)$                            | = | $n^2 + 3n$            |



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Washington County Schools  
3089 Highway  
11W  
Blountville, TN  
37617



***Membership Fee: \$10***  
***Payable to: UETCTM***

Name:

Home Address:

Home Phone: (        )        -

School: \_\_\_\_\_

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School Phone: (        )        -

Email Address:

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater Tri-Cities region. This year we will have a single-day conference in the spring at a day and location yet to be announced. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



# UETCTM NEWS

VOLUME XIV, ISSUE 6

MAY 2014

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## Meeting

Next UETCTM meeting:

May 15, 2014

At EAST TENNESSEE STATE

UNIVERSITY

CULP CENTER, Forum Room (located  
on top floor, west end)

3:00 pm to 5:00 pm

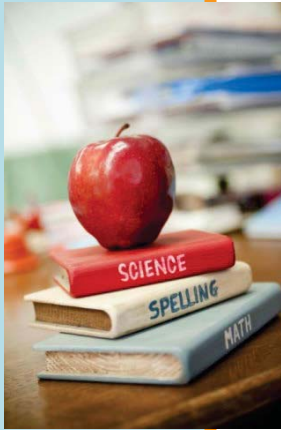
Guest speaker: Dr. Jeff Knisley

Breakout sessions TBD

Snacks and drinks to be provided  
courtesy of the ETSU Curriculum and

Instruction department.





*"I found myself spending countless hours researching lesson plans, creating materials, searching for engaging activities and power points to teach my lessons."*

Cindy Childress  
teaches for  
Hawkins County  
Schools

## My Top 10

By Cindy Childress

My first year of teaching was perhaps the most exciting and the most stressful of my career. I found myself spending countless hours researching lesson plans, creating materials, searching for engaging activities and power points to teach my lessons. Therefore, I have created a list of websites that I have found to be most helpful in planning what and how I teach to alleviate some of the stress for novice teachers, and perhaps give veteran teachers some new resources as well.

[www.ixl.com](http://www.ixl.com)

*"IXL is the Web's most comprehensive math practice site. Popular among educators and families, IXL provides unlimited questions in more than 2000 topics."* IXL is one of my favorites!!! It's not a free website, but it's well worth the price. The classroom subscription allows you to track your students' progress. However, I use my classroom money to buy the parent subscription to use in my classroom because it costs less. It's great for early finishers to practice skills. Language Arts is also coming soon to IXL.

[www.henryanker.com](http://www.henryanker.com)

Henry Anker has developed several on-line tests to practice skills from Kindergarten through 7<sup>th</sup> grade. I also use this website for early finishers or during intervention classes to practice skills.

[www.thinkfinity.org](http://www.thinkfinity.org)

*"There are so many lesson plan databases online, but Thinkfinity stands above the rest because its content comes from the best names in learning-language arts from ReadWriteThink, math from NCTM, science from the American Association for the Advancement of Science, and more."*

<http://www.pppst.com>

Pete's Power Point Station has tons of free power points covering a wide range of topics. Some of these I've used just as they are, and some I've altered a little to meet my objective.

<http://illuminations.nctm.org/ActivitySearch.aspx>

There are over 100 math lessons, activities, and resources on this site that provide a high quality of learning for all students.



[www.visualfractions.com](http://www.visualfractions.com)

Fractions always present a challenge for my students. This website models fractions in student friendly terms that students are able to understand. It is a great resource that models fractions with number lines or circles. Fraction games and worksheets are also included.

<http://tweentribune.com>

*"Tweentribune is a free, not-for-profit online newspaper for kids, aged 8-15. It is updated daily with stories from the Associated Press that are chosen based on relevancy to pre-adolescents. Tweens can post comments to the stories which are moderated by their teachers, and teachers can use the site as a resource for meeting No Child Left Behind requirements for reading, writing and computer skills."*

[www.readworks.org](http://www.readworks.org)

This site contains research-based high quality, engaging K-6 reading comprehension lesson plans and non-fiction reading passages & question sets that are aligned with Common Core Standards. And, best of all it's FREE!

[www.teacherspayteachers.com](http://www.teacherspayteachers.com)

Teachers Pay Teachers is an online marketplace of free and priced teacher created resources available for download, including their original lesson plans, task cards, unit plans, and other course materials.

<http://commoncoresheets.com>

Again, this one is FREE, a word I've come to love since becoming a teacher! This site has lots of more in-depth common core aligned worksheets covering math, science, language arts, and social studies.



## Dwain Brewer



*“That evening I wondered if there was something else other than a worksheet that I could do to reinforce and assess the lesson that I had taught.”*

Dwain Brewer  
teaches for  
Hawkins  
County  
Schools

Most of us can remember the days before Nintendo, iPods, and any form of electronic devices. Most of the games that we had to play were some type of a board game. One of those was checkers.

After graduating from college, my first job was an interim position in second grade. A month before school was out for the summer, a Promethean Board was installed in the classroom. While exploring all of the resources that were on the Promethean Board, I found an interactive checkers game.

One day while handing out a math worksheet to go along with the lesson I had taught, I overheard a student say, “Not another worksheet.” That evening I wondered if there was something else other than a worksheet that I could do to reinforce and assess the lesson that I had taught. I remembered the checkers game. The next day instead of a worksheet, I decided to play checkers.

After the lesson the next day, I told the class that we were going to play checkers. I was surprised when only four students even knew how to play the game. After explaining the rules and how to play, I split the class into two teams. I then gave a student a math question and they had to come up with the answer.

I also had the rest of that team to solve the question to see if that person came up with the correct answer. After getting the correct answer, I would then let that student go to the Promethean Board and make a move on the checkerboard. The kids just went “crazy” but in a good way. That was the best math lesson since starting my interim position.

From that day forward, the students wanted to play checkers and we played checkers a lot. I also started using it as a way to assess in my other subjects as well. It also was a good classroom management tool. If they started to misbehave, I told them we would not play checkers and it would work to get them back on task. It also was a great tool for students to think. They started thinking, “If I move here, they will move here or if I move here, then they move here.” They could see that there were several options for them. What do we want our students to do with Common Core? Find different options or strategies to solve a problem.

As teachers, we are all ways searching for things to use instead of worksheets with our students. I found a great one that day. Who would have thought that playing checkers could be beneficial in learning? Needless to say, it took us three weeks just to finish the checker game to get a winning team.



# May Puzzle

This month's math challenge comes from [www.wuzzlesandpuzzles.com](http://www.wuzzlesandpuzzles.com), a great website where you can find many fun math puzzles!

Try to fill in the missing numbers.

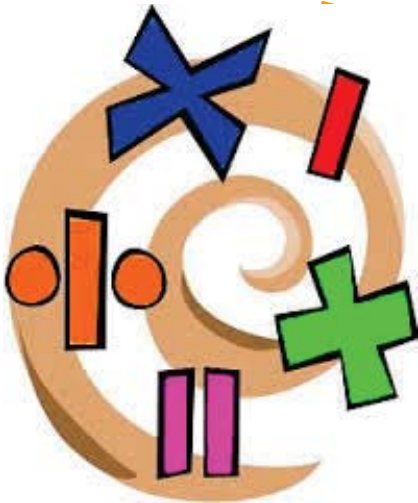
Use the numbers 1 through 25 to complete the equations.

Each number is only used once.

Each row is a math equation. Work from left to right.  
Each column is a math equation. Work from top to bottom.



|    |   |    |   |    |   |    |   |     |     |
|----|---|----|---|----|---|----|---|-----|-----|
|    | - |    | × |    | / |    | + |     | 9   |
| +  |   | -  |   | -  |   | ×  |   | ×   |     |
|    | - |    | + |    | + |    | + |     | 32  |
| +  |   | +  |   | -  |   | +  |   | -   |     |
|    | + |    | / |    | + |    | - |     | 11  |
| -  |   | -  |   | +  |   | -  |   | -   |     |
|    | + |    | - |    | - |    | - |     | -34 |
| +  |   | -  |   | +  |   | +  |   | -   |     |
|    | - |    | + |    | + |    | + |     | 70  |
| 47 |   | -9 |   | 17 |   | 80 |   | -32 |     |



# Teaching Math in the 21<sup>st</sup> Century

By Melinda Miller

"What? I have to explain how I got that answer using diagrams, equations, and words?" These are the types of comments I hear from many students in today's math class. One comment I hear most often is, "I'm not good at math." I ask myself, "What can I do or say to convince students that math is not their enemy?" How can we, as educators, change our students' way of thinking about mathematics?

Teaching mathematics, or any of the various subjects, in the 21st century classroom is definitely not like it used to be. When I was in school, math class consisted of completing a worksheet with either a right or wrong answer. The student was never asked to explain or model his or her thinking and writing an equation was very seldom required. In today's classroom, math is so much more than getting a right or wrong answer to a problem. Math involves explaining and modeling how and why the student came to the conclusion he or she did. What steps can we take, as educators, to encourage our students to express and explain themselves while learning math and not just the computation of an answer?

Questioning plays an extremely important role in today's math class. Encouraging questions in an open and accepting atmosphere is a very important aspect to learning. When students feel free to ask questions, they will inquire without hesitation and fear. Many students are reluctant to ask questions for fear of looking "stupid" or "dumb" before their peers. Every question has significance; no question is irrelevant. Encouraging questions with an attitude of acceptance and understanding can play a key role in opening a student's mind to a different world of solving math problems.

One thing is for sure, no two students learn exactly in the same manner. Incorporating different styles and methods of teaching will fundamentally reach each student in his or her own way. The 21st century teacher's role is to lead students to the solution of a problem. Manipulatives, a variety of teaching strategies, student discussion, and technology can be used in the classroom not only to enhance student learning, but also to enhance teaching. When students actually see how they get an answer deeper understanding begins to develop. I will admit that at times I have had my doubts about using manipulatives and/or technology (e.g. iPads, etc.) frequently, but have come to the conclusion that students need the opportunity to discover things for themselves. My epiphany about using manipulatives came when a student commented to me while working with adding and subtracting mixed numbers. I told the student, "You don't have to use the manipulatives if you don't need to." The student's reply was, "Mrs. Miller, I understand it better if I can see it." This conversation was profound for me and my way of thinking about teaching mathematics. If using manipulatives or technology helps to guide students to a deeper understanding of mathematics, then by all means I intend to continue encouraging their use.

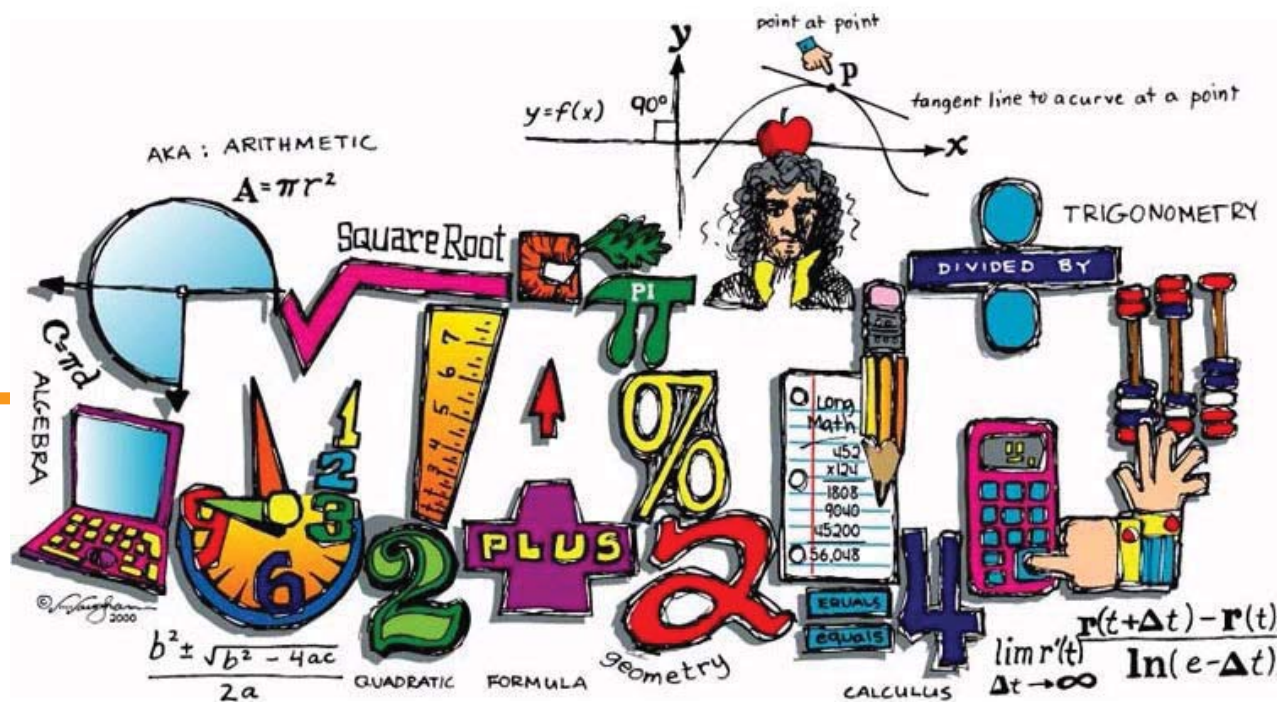


*"What steps can we take, as educators, to encourage our students to express and explain themselves while learning math and not just the computation of an answer?"*

Melinda Miller teaches for Hawkins County Schools

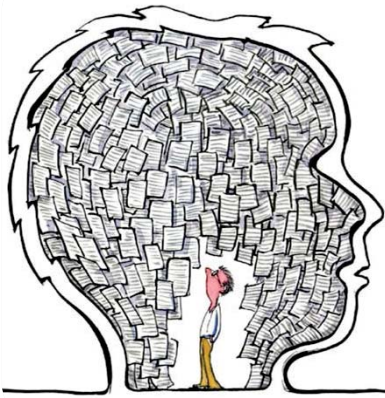


The face of education has certainly changed. No longer is a teacher's role to check a student's answer to make sure it is correct. The 21st century math classroom is filled with exploring, creating, discussing, and discovering a whole new world of mathematics. Who knows what obstacles students of the 21st century can overcome when encouraged to explore and discover math in a whole different light. One day soon I hope to have many more conversations with students expressing their love of mathematics.



## Fun Math Facts! <http://www.makemegenius.com/>

- In America, mathematics is known as 'math', they say that 'mathematics' functions as a singular noun so as per them 'math' should be singular too.
- A 'jiffy' is an actual unit of time for 1/100th of a second.
- The word "FRACTION" derives from the Latin "fractio - to break".
- Have you heard about a Palindrome Number? It is a number that reads the same backwards and forward, e.g. 12421.



*"...I realized that a picture really is worth a thousand numbers."*

Sarah Vaughan  
teaches for  
Bristol TN City  
Schools

# A Picture is Worth a Thousand Numbers

By Sarah Vaughan


We've all heard the saying "a picture is worth a thousand words", but I had no idea that this saying also applied to numbers until I took a Mathletes course at ETSU this summer. You see, I have been a 6<sup>th</sup> grade Reading, Language Arts, and Social Studies teacher for the past three years in a local elementary school. I tend to be one of those people who like a change, and so I was thrilled to be moving to teach 4<sup>th</sup> grade math and science next school year. However, it had been a long time since I had done any math besides balancing my bank account, and furthermore, I had no real experience teaching it.

So, here I was preparing to teach 4<sup>th</sup> grade math and science in a state of fearful excitement. What if I wasn't good enough? What if I couldn't help my students to understand the magical language of numbers? I love math, and it always came somewhat easily to me in school, so if I couldn't relate to my students' struggles, how could I reach them? I went to my district's math training and then the state common core training which was held locally. This only added to my fears. This math was not the math I remembered. This math was different, and I did not know how to teach children to solve algebra problems without them understanding the concept of "x" – the dreaded unknown variable. I was solving 4<sup>th</sup> grade problems as though I was in a middle school or even high school algebra class! What was I going to do?

By some strange altering of events, I got into a Mathletes class that had been closed. Despite the loss of the last two weeks of my precious summer, I was ecstatic. I was also desperate. If I didn't figure out how to teach this new form of

math that everyone was talking about, I didn't know what I was going to do. Thankfully, heaven (or something close) sent me Dr. Price and 15 amazing teachers from various schools in our area. It was in Mathletes that I realized that a picture really is worth a thousand numbers.

We began our class by exploring a different system called "Orpda". It sounds strange, and I was a little skeptical myself at first; however, Orpda served a greater purpose. It helped me to develop a better understanding of our base ten number system and to develop greater empathy for our students who are working to understand what is essentially another language with numbers as its alphabet. Math to me is the language of the universe or at least the language that humans have developed to better understand our universe. Orpda helped me to realize how difficult it is for some of our students to comprehend and speak that language. They not only have to know the numerical symbols and number words, but they have to know how to manipulate the symbols and numbers to solve problems. In addition, unlike our alphabet, our number system is infinite.



Often the most difficult part of solving a math problem for students is simply getting started. They do not know how to begin, what operation to use, or where to put the numbers. With pictures, this problem is solved; they always know to begin by drawing a picture or representation of the problem. So, the teacher will not have the problem of half the class looking down at their papers with either dazed or panic expressions as their pencils refuse to move. The students' pictures can take on any form, and they don't have to be artists to draw a visual representation of the problem. (Trust me, speaking as an artistically challenged person, if I can do it they can too. So can you!)

After the students have drawn a picture of the problem, they have a new perspective and can more easily see the information and relationships in the problem. After all, our students are constantly confronted with visual images through TV, video games, movies, and Apps, and all of these make them more familiar with problems in the visual form. So, once students have a visual representation of the problem, they have a better understanding of the problem and what it is asking, which in turn helps them to determine which operation(s) to use to solve the problem. Often times, students don't even realize the latter, as they take away objects and divide them up, because performing mathematical operations in picture form comes more naturally than performing them using the foreign symbols of mathematics. Instead, they simply use their visual to solve the problem, which makes it much easier to translate into a mathematical equation later.

Once the students have drawn their picture and used it to solve the problem, it is much easier for them to form an equation and explain their thinking and reasoning. This is a result of the deeper conceptual understanding and ability to internalize the

problem, which are both brought about by the picture that was created by the student. The picture is personal because they made it, and it is more likely to help them relate to and connect with the problem. In this way, they are not just memorizing some step-by-step procedure they have learned only to be confused later when the wording of the problem changes. When the wording of the problem changes, their picture changes, and their thinking adapts.

Common Core has placed such emphasis on conceptual understanding, real world problems in the form of words rather than isolated numerical computation problems, and the ability to reason and explain. It is changing math from something that is memorized and regurgitated in the form of meaningless procedures to something that requires students to think for themselves. So, how do we as teachers teach our students to think? We allow them to explore various problems on their own and with others. We guide them through questioning, and we encourage them and help them to build their confidence through exploration and problem-solving. We teach them not to let math intimidate them but that math belongs to them and that they should use it as a tool. Most students are fearful of math because they do not realize that they have the power and that the numbers and symbols are only tools which can be manipulated as needed for their problem-solving purposes. Pictures can ease their fears and help the students to realize that the power is theirs to use as they will.



# There's Math in My Reading!

By Nikki O'Brien

Using literature to teach science and social studies has become synonymous. Stories or informational text both enrich and deepen understanding of these content areas and give students a completely different spin on the topics. However, using literature to teach math is not as easy to plan or connect, but it is just as powerful.

There are many texts created **for** math. The Hershey's Milk Chocolate Fraction Book by Jerry Pallotta, the Sir Cumference series by Cindy Neuschwander, The Grapes of Math by Gregory Tang...the list goes on. These books are great. In fact I have a book bin box in my classroom library labeled "Math," for just such books. The issue I have had with literature and math connecting has been finding math in books that are **not** meant to be used with mathematic topics (You know, any book from the other gazillion book bins). While reading a fictional chapter book to my class, ideas for teaching reading and language arts bounce off the page. Figurative language, inferring, comma usage...here's another list that goes on. It is rare though, to find me reading a book like "Because of Winn Dixie" and ideas for symmetry, variables, and the distributive property to fly up at me. Actually, forget about rare, it's never!

At least, it never occurred to me until now. Something happened this summer to change how I look at all literature in preparation for a lesson, especially a math lesson. But before I get to the point, let me veer off in another direction. I promise, the detour won't be long!

My elementary school years were in the late 80s/early 90s. It was a different kind of childhood than the generations before me. There was a lot of "kidnap" talk in the news, Soul Asylum's "Runaway Train" playing on the radio, and in school, we had teachers and speakers reading to us about strangers, how to say "no," and not to wear clothes with our



Nikki O'Brien teaches for  
Washington County Schools

names printed on them. Then I would go home to hear stories from both my parents and grandparents about their childhoods. How their mothers would insist they go outside to play and not return until supper. How they would ride bikes with neighborhood kids in the street, go on adventure hikes through the woods, or go swimming or fishing at a nearby creek. They would do all these things without adult supervision!

I have never stopped being amazed by that difference in experience, nor have I stopped being envious of it. So naturally, when I come across literature about characters who are living "free and fearless" childhoods, I'm hooked. Enter Love, Ruby Lavender by Deborah Wiles and Flutter by Erin E. Moulton.

## The Books

Both of these books are chapter books suitable for independent readers in fourth - sixth grade. Love, Ruby, Lavender is about a young girl who lives her life in my "free and fearless" (envious) way. She lives in a small farm town and her adventures aren't the same adventures you will find in Hatchet or The Cay, but they pull you in just the same in a subtle, heart-wrenching and warming way. Flutter also features a young girl of similar age to Ruby who takes it upon herself to follow a local legend in hopes of saving her baby sister's life. This story is adventurous too, with a more prominent bang. The rising action starts in chapter one and doesn't stop until the last chapter.

## The Math

Each book is centered around a small town. Love, Ruby Lavender even has a map of "Halleluia, Mississippi" (the story's setting). The setting in Flutter is circular. It starts at home, navigates through a river, forests, hills, and winds its way around. This is where math flew off the page and hit my "teacher-who-thinks-everything-is-a-lesson" mind with a very loud thunk.

Since "Ruby" has a map provided, I figured that it would be the more ideal of the two to start with. The book could be used as a class read-aloud, student-led book club, or small guided reading group. While students are reading and doing their best inferring, comparing and contrasting, and context clueing, THE MAP is there by their side.

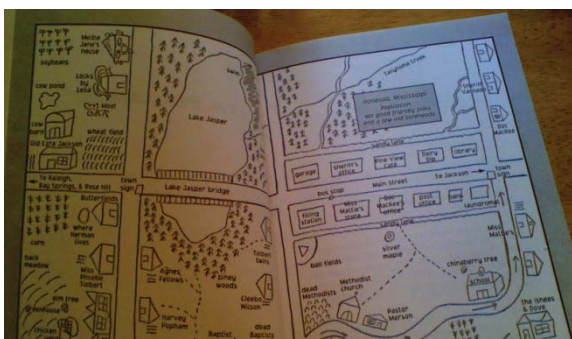


Image of the map from Love, Ruby Lavender taken by Nikki O'Brien.

After reading a chapter, the teacher can have the students connect not only to math, but geography as well, and create a map scale for the image. Then use it to determine whole number distances between various "Halleluia" locations. After the next chapter, guess what comes next? Fractions! A question could be, "What location is half way between the Dairy Dip and the Fire Dept. pond?" or, "If Melba Jane's house is  $\frac{7}{8}$  of a mile from Ruby's house, what fraction of a mile is The Pink Palace?" When another chapter ends, the map's focus could be converting feet to yards or miles. The map can be printed onto grid paper and students can find the area and perimeter of buildings or blocks in the town. A bigger map project would be for students to keep up with all the places Ruby goes throughout the book, chapter by chapter, by circling them on the map and drawing her routes. Then they can calculate how many trips she makes to various places, use their scales to determine how many miles she traveled in the book, and determine easier routes she could have taken. They could make up their own mathematical adventure stories (plug for math connecting to writing!). For example, tell the students they have two miles that they can spend in "Halleluia" and they must break their miles up into fractional parts over the course of a day. For each stop they make they must elaborate about what happens at that location ("I left Ruby's house and traveled  $\frac{3}{8}$  of a mile to Cleebo Wilson's house. My bike came to a screeching halt when all of a sudden...").

Within the book itself, there is a lot of time spent at "Miss Mattie's store." Math connections here could be adding sums, making change, and working with decimals. The exact same concepts could be applied to "Flutter," except now the challenge is not being given a map, but having to invent one along the way. Students will have to approximate both time and distance, because the adventure happens over a long range, but all in one day. For this reason, the students will have to wait until the end of the book to work with their maps mathematically.

So, with all this in mind, now every time I pick up a book to enjoy before reading to my students, I know I am going to be analyzing the text for every subject I teach, not just Reading. The next book on my "Summer Reading List" does not travel through a town, or include a map of one. By skimming, I can tell that all the adventure pretty much stays in one setting. Hmmm? What non-map math can I find in The One and Only Ivan?

### Other fictional chapter books with maps:

*The Inheritance Cycle* by Christopher Paolini (Eragon, Eldest, Brisingr, and Inheritance) - independent reading age range - Middle School to High School

*The Cay* by Theodore Taylor - independent reading age range - 4th to 8th

*Balto and the Great Race* by Elizabeth Cody Kimmel - independent reading age range 4th - 6<sup>th</sup>

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# UETCTM

## Membership Application

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***Membership Fee: \$10***  
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**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater Tri-Cities region. This year we will have a single-day conference in the spring at a day and location yet to be announced. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**



# UETCTM

## Newsletter

October 2014

VOLUME XV ISSUE 1



NATIONAL COUNCIL OF  
TEACHERS OF MATHEMATICS

### REGIONAL CONFERENCES 2014

**INDIANAPOLIS OCT. 29-31**

**RICHMOND NOV. 12-14**

**KEY NOTE: DAN MEYER, STANFORD**

**HOUSTON NOV. 19-21**

<http://www.nctm.org/regionals/>

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## IT'S A NEW YEAR

by **MAGGIE HALL**

The beginning of the year... New faces, new expectations, and a new classroom. But with that also comes the wonder, fear, and anxiousness. The beginning of



school can be nerve-racking for both teachers and students. Students may wonder, What will my teacher be like?, Who will be in my class?, and What will I be

learning this year?. On the other hand, the teacher is wondering, what will these students be like? What are their learner levels and what kind of learners are they, and how can I make this year better than last year?

There are a few activities that can help students get over their anxiousness. At the beginning of the year, I begin each morning with a "Morning Meeting." During this time, students get a few minutes to share information with the class. This allows them to feel more comfortable and have a voice in the classroom. This includes myself. I

take this time to allow my students to get to know me a little bit. I don't, by any means, spill my life to them. However, I do feel that it is important that they know a few personal things about me so they can make a connection with their new teacher. Hopefully this will help me gain a little of their trust and make them feel more at ease being in my class.

Another activity I complete in my morning meeting is one that allows everyone, including myself, to learn everyone's name. I begin by picking out a topic. For example, I may pick the topic food. Next, I tell the students to think of a food that begins with the first letter in their name. After giving students time to think of a food, or research one on the computer, and modeling the activity, we can begin the game. Students take turns saying, "Good Morning. I am Twix Tina." and the rest of the class says "Good Morning Twix Tina!" We continue around the room until every student has gone. This activity can also be done with many other topics including, but not limited to, animals, toys, specific subject areas, etc. I have found that this activity, get students more comfortable with the students in the classroom, and allows the teacher and students time to learn the students' names in a fun way.

Furthermore, I think it is important to set expectations at the beginning of the year. I typically take the first few days of school going over expectations in the classroom. I explain to my students several of the topics that we will be learning throughout the year and explain that they will be learning these topics in a fun, creative way! I let them know what by the end of the year, they will be filled with extreme knowledge and be able to share their knowledge with others.

Going over my expectations also includes going through the room and allowing everyone to "explore"

where everything is in the class. Furthermore, I give students a few minutes to practice and use the items in my classroom. I show students how to use the classroom library and computer station the correct way and then have them practice. This makes the students feel more comfortable with the classroom.

At the beginning of the year I have a few specific rules that I implement; however, I do not just say, "Here are the rules. Follow them!" The students sit down with me and come up with rules they feel are the most important and we add those to our rules chart. We

also make consequences for breaking the rules together. This gives them ownership of the rules; therefore; I feel they are more likely to follow them.

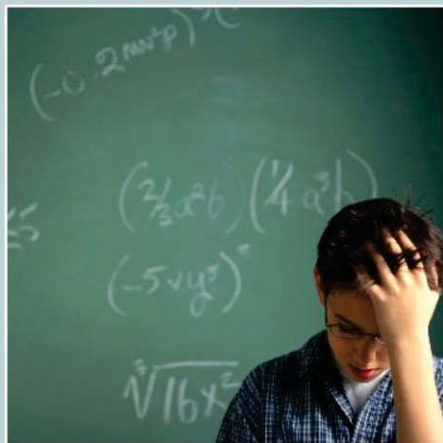
Doing these things in my classroom has helped eliminate some of the wonder, fear, and anxiousness at the beginning of the new school year. Hopefully, through some of these activities, the students gain a better understanding of the year and feel more a part of the classroom. This also gives the teacher a chance to get to know the students a little better and get a good start to a new year.



*"Doing these things in my classroom has helped eliminate some of the wonder, fear, and anxiousness at the beginning of the new school year."*

## Music, Math, and Memory

by Linda Compton



*"One . . . similarity between music and math is the necessity to solve multi-step problems."*



Research has, for years, shown that music education improves math and science skills for students. Why is that? Having been a band director for years before switching to math education, I believe it is due to the many common skills learned in music education that transfer to the math classroom. As math teachers, we can encourage the development of these skills in our own classrooms, as they seem to match well with the current Common Core standards.

The first, and perhaps most important, common goal between music and math is the development of a series of skills that build upon each other. In both disciplines, it is absolutely crucial that the student understands the basics intimately if he or she is to have hope of understanding the later, more advanced concepts. This is where the memory part comes into play. Practicing these basics early and often ensures that children actually understand the concepts instead of just memorizing them. True



understanding of key concepts is necessary for students to remember them past a test or exam. Some of the basic ideas in a musician's training include posture, how to hold the instrument, and how to make a sound. These fundamentals are essential; if learned improperly in the beginning, they are almost impossible to fix because the use of these skills is inherent in everyday application. This idea can be used in math classes as well. Elementary mathematical ideas are practiced in most every aspect of the subject, so early understanding of these concepts is necessary.

Another goal of both music education and the Common Core curriculum is the desire to allow students to discover their own solutions to problems presented. In music, problems often present themselves in the form of a new piece to learn. Students are encouraged to try reading the piece on their own at first, so they can see what they think will pose difficulties and what will be learned quickly. Once they've found the hardest parts, many teachers suggest that the student try to find his or her own way to play it. This is especially true for string players. My daughter, as a violinist,

was instructed to find at least two or three different ways to play a difficult phrase and explain to her teacher why each method would or wouldn't work. This is exactly what the Common Core curriculum is trying to stress. In our classrooms, we have to allow our students to use all of their previous knowledge and discover solutions to problems for themselves. Naturally, we are there to help alleviate some of the difficulty, and when a student is completely lost, we as teachers are there to provide guidance. The end result, though, is that each student is allowed to discover, and therefore come to fully understand, the methodology behind the simplest and eventually the most complicated problems they might face.

One final similarity between music and math is the necessity to solve multi-step problems. A musician facing a new piece must see not only the notes to be played, but also the rhythm, dynamics, and articulation required. Every one of these aspects can prove difficult, and each requires the student's attention. First, the student tackles the notes and rhythms, learning how to make each note sound at exactly the right time. Then he or she looks at the articulation, how

each note in the phrase should be attacked, and has to build that component into the notes and rhythms that have already been learned. Finally, the dynamics are added in, how soft or loud the phrase should be, and this element is added to what has already been established. Naturally, this multi-step process is applicable to math as well. Students must understand how to work out one piece at a time, how to go through the logical sequence of steps to reach the conclusion. Not every musician learns a piece the same way, and the same goes for our math students. As long as the students are faithful to the problem presented, their own logic should be encouraged to shine.

All students should be encouraged to try music. As stated earlier, research proves that music education is a tremendous asset to all students, especially those in math and science. We, as math teachers, can also use these ideas from music education to improve our own classrooms and make them both Common Core and student friendly.

# Divide Across and Save the Embarrassment

by Jaime Hise

When my son came home from 4<sup>th</sup> grade with a worksheet on reducing fractions, I was anxious to make sure he absolutely and completely understood the concept. As you know, fractions are something many students struggle with, and I was determined my son would “get” them.

As I looked over his Common Core worksheet, a problem like this was demonstrated:

**Example:**

**Divide Across:**

$$\frac{4}{10} \div \frac{2}{2} = \frac{2}{5}$$

I take one look at this and say to myself, the math teacher, “You can’t divide across! There’s a mistake on this paper!” So, I ask my son for his notes, and what’s there? Notes and examples that show that they are dividing across. So I reteach my son the “correct”

way to divide fractions, i.e., the Keep, Change, Flip method, or in the language of mathematics, leave the first fraction the way it is and multiply it by the reciprocal of the second. The way I wanted the explanation on the paper to be written was essentially this:

$\frac{4}{10} \div \frac{2}{2} = \frac{2}{5}$ , which is dividing the numerator and denominator by common factor

**Now, the really embarrassing part:**

I wrote my son’s teacher a really sweet letter that explained the apparent error on the worksheet. I didn’t attack her teaching but rather questioned the method on the worksheet and explained that I was afraid that older students would confuse the “Divide Across” method as the “right” way to divide fractions when they got to Algebra. I never received a reply and here’s why I think she was the one who was truly sweet:

During my Algebra I Mathletes course in July 2014, I discovered, with direction from my professor, Dr. Nivens, that this method is an accurate way to model dividing fractions, and not only this, but

also that in many cases, it’s much easier!

Try it with several easy divisions of fractions; you’ll see ... it works every time!

$$\begin{aligned} \frac{6}{18} \div \frac{6}{6} &= \frac{1}{3} \\ \frac{4}{15} \div \frac{2}{5} &= \frac{2}{3} \\ \frac{5}{8} \div \frac{1}{8} &= \frac{5}{1} = 5 \end{aligned}$$

The last case is the easiest because if you already have the common denominator, the answer is just the ratio of the first numerator to the second numerator. Kids are already familiar with getting common denominators because they learn to add and subtract fractions before they learn to multiply and divide them. So, you want make it easier, get the common denominator first:

$$\begin{aligned} \frac{5}{8} \div \frac{2}{3} &= \frac{15}{24} \div \frac{16}{24} \\ &= \frac{15}{16} = \frac{15}{16} \end{aligned}$$

Get a common denominator

24 ÷ 24 = 1, then simplify

You can even show it to be true in pictures or with fraction tiles, by asking how many of the divisor go into the dividend or "how many parts go into the whole; in this case, how many "one-eighths" are in "three-fourths"? See the picture below:

**Example 3**  $\frac{3}{4} \div \frac{1}{8}$   
**Problem:**  $\frac{3}{4} \div \frac{1}{8}$   
**Think/Ask:** How many  $\frac{1}{8}$ 's are in  $\frac{3}{4}$ ?

**Model:**

There are 6  $\frac{1}{8}$ 's in  $\frac{3}{4}$ .

We've seen it in examples and in pictures, but we must ask,

"Can we divide fractions across every time?" Consider the following:

**Assumptions** Let a, b, c, and d be real numbers, such that b, c and d are not equal to zero.

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{\frac{b}{c}} * \frac{d}{d} = \frac{a}{\frac{b}{c} * \frac{d}{d}} =$$

$$\frac{\frac{ad}{bc}}{\frac{cd}{cd}} = \frac{ad}{bc} = \frac{ad * \frac{1}{c}}{bc * \frac{1}{c}} =$$

$$\frac{\frac{ad}{c}}{b * \frac{1}{d}} = \frac{\frac{a}{b}}{\frac{c}{d}} =$$

$$\frac{a \div c}{b \div d}$$

Anyone else surprised at that one? I was completely surprised to be able to use this property for all numbers with no exceptions except no zeros in the denominator. (By the way, you can also show it's true when you start to have things like "x + 3" in the numerator and denominator in Algebra 1 and 2. I reserve that from here)

When I realized this, it hit me just how sweet my 4<sup>th</sup> grade son's teacher is. You see, when I wrote this very detailed – but incorrect! – letter on dividing fractions by

multiplying the reciprocal, she didn't correct me. She kindly didn't reply and embarrass me at all. However, I know when I worked through Mathletes with Dr Nivens and studied more on this topic, I realized I'd embarrassed myself!

In conclusion, two morals to this story: 1. you can divide fractions by dividing straight across and sometimes, it's a lot easier! 2. Before you write a letter to the 4<sup>th</sup> grade math teacher about something you fear might be confusing to the kids before high school algebra, make sure you know your 4<sup>th</sup> grade algebra.

P.S. Yes, I'm going to write a letter of apology and admit my mistake. \*Sigh ... \*





# One to One in Your Classroom

by Michael Christian

This past school year I had the opportunity to take part in a one to one digital conversion at my school. For anyone who is not up to date on this cutting edge lingo, like myself last year, one to one means that every student in the building has their own piece of technology that is used in the classroom to support their learning. My school chose to issue laptop computers as the students' technology support. I would like to share my experience in terms of classroom management, clerical organization (paper pushing), and curriculum and instruction.

The digital conversion made me rethink many of my daily classroom management strategies. I was no longer spending time in front of the class doing instruction. This made for a very quiet classroom. It also left the teacher in more of a facilitator role in the classroom. As a result, most of my interactions with students were individual and small group.

One of the obvious first questions that pops up with digital conversion is, "What do you do if they are not

using the computer for learning?" This was something that I had to deal with on a daily basis at the beginning of the conversion. Our school's response to this was to confiscate the computer immediately. This rule was consistently enforced throughout the school which I believe was the most important part of dealing with the issue. Students would lose their computer privilege for a period of time based on the number of offenses until it was permanently taken.

This method was effective due to the fact that students did not want to lose the privilege. If lost, it meant they were either working on a desktop at school or going back to doing all their work on paper. Having a backup plan for this and any situation is advisable. Whether the wireless network is down at school, or the student shows up to class without the computer, or you need to confiscate a computer, have a backup plan at all times.

As mentioned earlier, I was no longer using large portions of my class doing traditional instruction. I tried to find students several resources per topic that included instruction or video tutors as I called them. Sometimes it was a video I found and sometimes I would record my own. This served two purposes in the classroom. It

gave students a choice on who they felt most comfortable with, and it also let them take ownership of their learning as not every "tutor" is going to use the same method.

The biggest adjustment for me was letting go of the reins in the classroom. It was tough to sit back and let the students drive their learning. This feeling was short lived as I remembered something I had heard at an in-service training the past summer. "It should not be the teacher walking out of school exhausted at the end of the day. It should be the student that leaves school exhausted."

This was a new approach for me. It made me reevaluate the way I ran my classroom. I needed to ask the question, who is doing the thinking in the classroom? I would ask myself this question every time I planned a lesson. And there I found a place to use up that energy that was no longer being used on class lectures. I planned! I found that this was now the most important time in my day. I needed digital resources. I needed structured, challenging lessons that students could work through at their own pace. I needed extension pieces for students that would finish early. I needed support elements for students that would have trouble. Essentially, I used my planning time to teach all of my lessons for the

following day. If I had done my job well, I could see the result the following day while a merely facilitated the tasks and provided support when needed. I noticed that I was able to spend time with students who needed the help that normally would have been overlooked due to me being spread too thin between classroom management and giving instruction.

The clerical advantages would present themselves gradually while our school made the transition. Immediately, I noticed that I no longer made copies of things. I focused on making most of what I do into a digital copy. This took some trial and error but I found the technology staff in our system to be more than willing to assist. I no longer had the ever maddening question, "what is my grade in here right now?" This was now too online for them to access.

Our school system has decided to use schoology.com as our learning management system. I particularly like the features with this system, but do not have experience with other LMS systems. With this system I am now able to manage

everything in my class with the exception of attendance. Once students have joined my classroom through schoology, I can now interact with them in ways that used to take several different applications to accomplish. It provides discussion boards, assignment due dates and drop boxes, messaging, quiz and test options with grading, and the ability to provide feedback on assignments without ever using paper. It is not an overstatement to say that this has revolutionized my classroom.

I hope to hit the ground running this coming school year. I feel like I have a better grasp on using the technology that the students have to focus on their learning. There were times in the beginning that I felt lost and overwhelmed. Our entire school had switched horses in mid-stream and converted in January right on the tail of Christmas break. I quickly realized that it was not just me or the teachers that were adjusting. The students had to adjust as well. I honestly learned many things from my tech savvy students this past school year.

When the year came to an end, I felt like I had hit my stride using the laptops with students. It had simplified many of the headaches

that got in the way of my teaching and planning from a paperwork standpoint. I learned to concentrate on what do I want the students to tell me about their learning, not what will I tell the students they need to learn? All in all, I believe that the students' in Bristol City Schools are the winners here. Their teachers have never been more focused on their learning than now. Students have been able to take ownership of their learning like never before. I believe that these two things will result in better quality education for our graduates.



# Commander in Chief of the Classroom

by Cody Dison

Over the past several years our education system has seen an overhaul of our standards and expectations, and during this time teachers have been left scratching their heads as they try to understand what this Common Core version of education looks like. At the moment teachers are caught up in a race to find as many activities and strategies as they can, to help them reach their students. What if we went the other direction, and really worked hard to limit ourselves to just a few really strong activities and strategies? We also find teachers pushing themselves to the breaking point as they try to appease students' desires for fun and please the administration's view of rigor. What if focus more on a student's locus of control and intrinsic motivation, and trust that our game plan for the year will get us to the desired results? Finally, does really matter if you have met your goals for the year if the one thing you once loved and were passionate about, teaching, becomes the one thing you hate?

We have to focus our attention on becoming the commanders and chiefs of our classrooms.

I absolutely love the idea of being more of a facilitator in the classroom and allowing my students to learn through exploration and creativity, but too often teachers fail to have positive influences in areas of a student's life that has nothing to do with education. We want our classrooms to be so free flowing and fun that we allow the students to always allow the students to dictate our decisions. As a teacher I need show my authority in the classroom and allow my students to see that I make decisions based on their needs, not their wants. This helps students build respect for their teacher, and I promise you that students today are looking for someone to respect and guide them through their year. As students build a strong, respectful relationship with their teacher, the students can transition from extrinsic motivation to intrinsic motivation. They no longer need to be bribed. They have a desire to meet their goals for themselves and also for their teacher.

Activities and strategies are a wonderful thing, but I think that too many teachers feel that the key to becoming the best teacher that they can be is accumulating activities. I believe that activities are a very small portion of what it takes to have a successful classroom and here is how I perceive it to break down: Activities 15%; Strategy 25%; Relationship/Management 60%. Educators should key in on classroom management techniques and focus on building strong relationships with their students because this will increase the quality of the activities that teachers implement. The number one of desire of each teacher at the beginning of the year should be to form a strong relationship with his or her students and have a lasting impact on their lives that isn't confined to education. Students should want to be just like you!

Finally, let's discuss what weighs on us all, the outcome. Today's education system has teachers stressed to their breaking point as they spend the majority of their year worried about their "AMQ" and "Growth." Teachers don't trust

their game plan heading into the year or they don't have a game plan, and when I say game plan I don't mean lesson plans or a standards calendar. Teachers need to have a specific plan for where they want their students to be at each quarter and teachers need to have a plan for how will develop a report with their students so that students gain confidence throughout the year. Educators need to set goals and have personal interviews with students about setting goals. Offering rewards for those goals is perfectly acceptable, but do not give that reward unless every student meets the goal, no exceptions! In the end if teachers stick to their game plan their students will have a strong relationship with them and the confidence needed to be successful.



*"Educators should key in on classroom management techniques and focus on building strong relationships with their students"*



*"The number one of desire of each teacher at the beginning of the year should be to form a strong relationship with his or her students and have a lasting impact on their lives that isn't confined to education."*



# The Age Problem

by Brad Hill

In an effort to engage students in mathematical thinking I use this puzzle to explore numbers and their relationships. If age is really just a number, as they say, then let's explore it mathematically. As you will see we can scaffold this problem from the most basic of graphs  $y = x$  to more complex functions with asymptotes. Also with this exploration we discuss asymptotes, rational numbers, the notion of undefined, parallel lines, slope, rates of change, and graphs with differing rates of change. For ease in calculations I have chosen a situation where the parents are 25 years older than the student. Within this one problem we can review T-tables, plotting points,

| Your Age | Years After Birth |
|----------|-------------------|
| 0        | 0                 |
| 1        | 1                 |
| 2        | 2                 |
| 3        | 3                 |

graphing lines, ratios, and proportions. While we are reviewing these we can introduce the ideas of parallel lines, line shifts, asymptotes, differing rates of change within one

graph, and we can start "making sense" of and "seeing structure" in mathematics.

Hopefully, the students will graph the line  $y = x$ , which will be a line representing their age as years pass.

What will this graph look like?

|   |   |
|---|---|
| 4 | 4 |
| 5 | 5 |
| X | X |

Here the students should graph the line  $y = x + 25$ , which represents your parent's age in relationship to their age.

What will this graph look like?

| Your Age | Parent's Age |
|----------|--------------|
| 0        | 25           |
| 1        | 26           |
| 2        | 27           |
| 3        | 28           |
| 4        | 29           |
| 5        | 30           |
| X        | X+25         |

Here we are introducing the idea of ratios and rational functions. By making the ratio of the student's

| Your age | Your age/Your Parent's Age |
|----------|----------------------------|
| 0        | 0                          |
| 1        | 1/26                       |
| 2        | 2/27                       |
| 3        | 3/28                       |
| 4        | 4/29                       |
| 5        | 5/30                       |
| X        | X/[X+25]                   |

age over the parent's age we can represent their age as a percentage of their parents age. Now we are talking about ratios, percentages, and graphing a rational function. By now the hope is that the students are noticing that as they age they are closing the gap (percentage) between their age and their parent's age, but noticing they will never reach 1 or 100% of their parent's age. Now we have our first asymptote.

What will this graph look like? What is special about this graph?

Are there a value(s) for X that will not work? Why?

| Parent's Age | Parent's Age<br>Your Age |
|--------------|--------------------------|
| 25           | Undefined                |
| 26           | 26/1                     |
| 27           | 27/2                     |
| 28           | 28/3                     |
| 29           | 29/4                     |
| 30           | 30/5                     |
| X            | $X/(25-X)$               |

In this graph we are looking again at a rational function, but here we are looking at a graph that is descending with a vertical asymptote at  $x = 25$  and a horizontal asymptote at  $y = 1$ .

What will this graph look like? How does this graph differ from the one above?

Are there a value(s) for X that will not work?

Is y a function of x in both of these? Is x a function of y in both of these? Explain.

### Homework

(Graph and describe using full sentences)

What conjectures can you make about the age relationship between you and an older (younger) sibling?

Describe the graphs if we compared your age to your grandparent's age?

Describe the graphs (your age, your age/parent's age) as an ordered pair and (your age, your age/g-parent's age) as a separate ordered pair?





## Organizations we are affiliated with:

### National Council of Teachers of Mathematics (NCTM)

<http://www.nctm.org>

### Tennessee Mathematics Teachers Association (TMTA)

<http://www.tmta.info/>

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**Membership Fee: \$10**

**Payable to: UETCTM**

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School:

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School Phone: (     )

Email Address:



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# UETCTM News

## Meeting on Monday, October 6

The second meeting for the Upper East Tennessee Council of Teachers of Mathematics will occur from 4:00 to 6:00 on October 6, 2008 on the Campus of Northeast State. We will be hosted in room A110, the faculty/staff dining room next to Subway.

The meeting will follow the standard agenda beginning with a social time from 4:00 to 4:30. From 4:30 to 5:00 we will address logistical concerns regarding future meetings and guest speakers.

We have three presentations during the meeting. Malissa Trent from Northeast State will provide a lecture for elementary school teachers. Daryl Stephens, a professor from ETSU, will speak on the topic of “Proportionality” to middle school teachers. Robert Beeler, also a professor from ETSU, will present on “Regression” for high school teachers and college professors.

### Future Meeting Dates

Tuesday, Nov. 11

Monday, Feb. 9

Tuesday, March 3

Monday, May 4

### Franklin Math Bowl

The annual Franklin Math Bowl will take place on Saturday, November 8 on ETSU’s main campus. This is a competition for students in grades 6-8. For more information please visit <http://www.etsu.edu/math/fmb>. Registration forms are on this site, and they are due by Oct. 15th.

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# Math Perspectives

UETCTM Newsletter  
Editor

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## How We Teach Our Students Mathematics Matters

By Tara Carver Peters

One of the greatest questions often posed to me is “what can we do better?” when it comes to mathematics instruction. Four thoughts immediately surface:

- \* Excellent classroom management must occur at all levels
- \* Increased Math Knowledge must occur for teachers at all levels
- \* Differentiated instruction must occur for students at all levels
- \* Inspirational Teaching must occur at all levels

Classroom management is at the core of effective classroom instruction at all grade and ability levels. It does not matter if you are an “Einstein” and you know “everything” about your subject if you cannot control your students. Students truly crave structure **Continued on page 3**

## On School and Student Teaching

By Casey Anderson

Although I am currently pursuing a masters in the arts of teaching, my undergraduate degree was in English and math, so my first experiences in the professional educational world began only a year ago. Since then, my classes have focused on teaching me and my peers the importance of student centered approaches to teaching and diversifying our **Continued on page 4**

## MISSION: Discovery in Learning

By Julie Tester

As a preservice teacher, one of my missions is to find excellent learning activities to incorporate into my classroom when I begin teaching. Over the last year, I have redefined my goal by examining the learning activities and asking myself one simple question: does this activity promote a higher level of learning, or is it simply fun?

**Continued on page 5**

## **How We Teach Our Students Mathematics Matters (cont.)**

and a teacher who is in control of the classroom. Students respect teachers who maintain excellent classroom control while providing excellent mathematics instruction.

Every teacher of mathematics can and should be a perpetual learner. Knowledge is infinite, and teachers of all subject areas, especially mathematics teachers, must commit themselves to on-going and continuous learning. Teachers who are perpetual learners attend and learn from workshops/in-services designed to improve both their mathematical knowledge-base and teaching strategies. Such teachers also pursue additional university-level mathematics courses that will ultimately serve to make one a stronger and more confident teacher in the classroom. Teachers who are perpetual learners look for opportunities to go outside and beyond the scope of the textbook, especially when looking for ways to make the mathematical concepts relative and interesting.

Differentiated instruction is the key for teaching students at all levels of learning. The “it’s my way (which is usually one way) or it’s wrong” approach must end. We must understand that students come to us with different life experiences, therefore, their brains are

wired differently for learning. Teachers of mathematics must expose students to many different methods for solving problems. Mathematics teachers must be willing to learn new ways of solving problems so they can understand the different approaches students will use when solving problems. Also, as much as possible, mathematics teachers should teach the subject from many different perspectives: verbally, conceptually, algebraically, geometrically, analytically, numerically, and technologically.

Inspirational teaching is a goal all teachers should strive for when teaching today’s students. How do you grab and maintain student interest in the subject area? Everyone is so concerned about test scores. That’s understandable, but there’s a bigger concern at hand. Ask yourself, what good are test scores if we fail to inspire our students to seek mathematical knowledge and pursue careers involving mathematics? And, if we fail to produce students who want to continue studying and learning about mathematics, what will this ultimately mean for our country’s future? What an awesome responsibility and opportunity for today’s mathematics teacher! Be inspirational and motivational when teaching mathematics!

## **How We Teach Our Students Mathematics Matters (cont. 2)**

Can we solve all of our problems and conquer all of the challenges set before us? Absolutely not--there is no magic formula that can fix every problem we face! But, can we improve upon how we currently teach mathematics? Absolutely yes! We just have to be willing to learn, grow, and evolve as dynamic mathematics teachers!

-Tara Carver Peters is the 6th-12th Mathematics Specialist for the Sullivan County School System.

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### **On School and Student Teaching (cont.)**

teaching styles to meet the needs of students with different learning needs.

While I have eagerly taken my classes and passed my Praxis tests, I know that sitting in a desk on this side of the classroom is much different than standing at a podium on the other side. This thought evokes my biggest fear: that when I finally stand before my first class I'll feel completely unprepared for the task, or, worse yet, that I'll forget everything I've studied about creating a student-centered classroom, placing an emphasis on higher-order thinking tasks, and ensuring my lessons appeal to different learning styles. After all, the one word I hear people use most often in describing their first year of teaching is "survival."

In college, I have weeks or, at the very least, days to make the "perfect" assignment for a grade level and subject I *might* be teaching when I am hired by

a school. This certainly doesn't seem like a realistic scenario in the world of teaching, especially during my very first year; between grading papers, planning lessons and units for the entire year from scratch, and getting a "feel" for how my new school operates, how do I find time to plan and teach that perfect lesson they had us working on every semester? Can I do it every day? No. Once or twice a week? Sure.

I begin my student teaching next fall, and, despite my concerns, I am confident that with the help of my peers, my professors, and my mentor teachers, I can find the balance between grading papers, discovering creative activities I can implement on a daily basis, and finding time to carefully plan and craft the lessons that will speak to my students by engaging them through activity they will enjoy and find interesting. While I have learned a lot

## **On School and Student Teaching (cont. 2)**

about the theory of teaching in my classes, I believe my most valuable lessons will come from my student teaching experience which will help me understand what being a teacher is truly like.

-Casey Anderson is ETSU Graduate Student working towards a Masters in Teaching with a certification in both math and English. He begins student teaching next fall.

---

## **MISSION: Discovery in Learning (cont.)**

During the last month, I have been fortunate to have the opportunities to attend two professional development meetings. The first was the TMTA Conference in Clarksville. The other was the “Integrating Storytelling and Science Instruction” Workshop, a collaborative program between Jet Propulsion Laboratory and the International Storytelling Center. During both of the seminars, I found activities that promoted a higher level of learning; the one that struck me as the most valuable, however, was a common thread between the two programs: journaling.

During the TMTA conference, I attended a session strictly devoted to math journaling. Led by elementary teachers Lynda Gunter (Kindergarten) and Carolyn Bingham (Second Grade), this session demonstrated the importance of math writing and the incorporation of math journals. The leaders stressed the value of having the students not only solve the daily math

problems, but also explain their solutions. These explanations assessed their understanding of the math principles. Additionally, the students were able to see that most problems have multiple solutions.

The “Integrating Storytelling and Science Instruction” Workshop also stressed the importance of journaling. In fact, one of the lead speakers, Laurie Thompson, explained that recent research has shown that keeping science notebooks can increase student comprehension by 44%. She explained that these results came from classrooms where science journal met the following criteria: student approached issues from various routes of discovery, students demonstrated understanding using pictures or charts and written language, and finally, students justified their solution in a written statement. These written statements provide the teacher with a means of assessment, while allowing the students to expand their

## MISSION: Discovery in Learning (cont.)

thinking by utilizing their language arts skills.

Both of these experiences have met the criteria of my mission. Journaling in various content areas is a valuable daily activity that will be incorporated into my future classroom. It is a wonderful means of assessment, while promoting creativity and problem solving in the classroom. Simply put, journaling is a mission into the discovery of learning.

-Julie Tester is pursuing a Bachelor of Science degree in Elementary Education with an emphasis in Interdisciplinary Studies and will be student teaching in the spring.

## Request for Article Submissions

Beginning this issue, our newsletter will contain a new editorial series entitled "Math Perspectives." Every month, four people will contribute to the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series yet, so the topic of each contribution is up to its author.

If you or someone you know would like to contribute to our new column, please contact the newsletter editor, Ryan Nivens.

### UETCTM Membership Application

Complete & return to Floyd Brown with a check for \$10 made payable to UETCTM. Completed Application and check may be mailed to Floyd Brown, Science Hill High School, Mathematics Dept., 1509 John Exum Parkway, Johnson City, TN 37604

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If you are reading this newsletter on paper, you're missing out on all the color! Visit our web site ([www.uetctm.org](http://www.uetctm.org)) to see the newsletter as a full-color PDF file with clickable links.

## Mark Your Calendar NCTM Conferences

### 2009 Annual Meeting & Exposition

Washington D.C.  
April 22-25

“Equity: All Means ALL”

### Regional Conferences & Expositions

Oklahoma City - Oct. 2-3  
Preregistration deadline:  
September 5

Cleveland - Oct. 16-17  
Preregistration deadline:  
September 16

Reno - Nov. 6-7  
Preregistration deadline:  
October 6

Events Taken from  
NCTM Newsletter (45.1)



# UETCTM News

## Meeting on Tuesday, November 11

The Next meeting for the Upper East Tennessee Council of Teachers of Mathematics will occur from 4:00 to 6:00 on November 11, 2008 at Science Hill High School. We will be meeting on the 8/9 campus (see map on [page 7](#)).

The meeting will follow the standard agenda beginning with a social time from 4:00 to 4:30. From 4:30 to 5:00 we will discuss business matters. Presentations will be held from 5:00 to 6:00.

Val Love will be presenting on what can be considered “problem solving” at the elementary school level. Amy Howard will be discussing origami math for middle school teachers. Also, Floyd Brown will have a presentation for the secondary and college level. He will be speaking on using composition of functions to teach graphing basic classes of functions.

See you there!

### Future Meeting Dates

Monday, Feb. 9

Tuesday, March 3

Monday, May 4

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# Math Perspectives

**UETCTM Newsletter  
Editor**

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## Do You Believe in Me?

**By Valerie Love**

During a recent internet search for a video to use for a workshop, I came across a video on teacher tube called Do You Believe In Me? The video is a young boy from the Dallas area speaking to teachers during their back-to-school system wide meeting. He asked the teachers to believe in him, his classmates, their colleagues, themselves and their job.

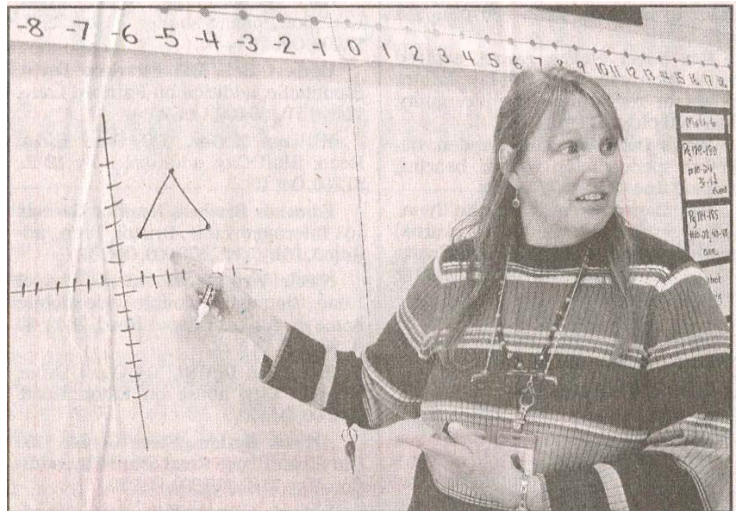
Do you believe in a student? Do you believe he or she is capable of performing in the work place with or without a college degree? Do you believe in his or her self worth? If you do not believe, ask yourself why not. Never write off a child. For some students, we are all they have got. Isaac Newton was taken out of school by his mother to become a farmer. If

not for the intervention of his school master, would the proverbial apple have fallen on Newton's head? Question why you are teaching if you do not **(cont. on page 3)**

## Local Teacher Receives Math Grant

**By Ryan Nivens**

I had only been working at ETSU for two weeks when Susan Saam knocked on my door. She was looking for scholarship information for graduate school, and any other sources of funds, and hoped that I could help her. Coincidentally, I had just emailed my Eastman Scholar Mathlete teachers about the Tennessee Mathematics Teachers Association **(cont. on page 3)**



Picture taken by Marianne Steffey

Susan Saam explains a math problem to her class at Grandview Elementary School.

## **Do You Believe in Me? (cont.)**

believe every child has the capacity to learn and shine in his or her own greatness. Just because someone is not learning, does not mean a person can not. Become someone else's inspiration.

Do you believe in all of your students? Do you show them to believe in each other? Whether or not you do, they are all showing up in your classroom. They show up wanting you to believe. Will you be the teacher that inspires a classroom full of students to learn, create, and dream of a world where they reach their highest potential? Become the teacher they deserve.

Do you believe in your colleagues? All of them? They have shown up to your school to make a difference in

children's lives. I hope you believe in them. Become the colleague that your peers are worthy of.

Do you believe in yourself? Do you believe that you are making a difference in the lives of generations to come? You are! It is up to you what kind of difference that will be. You may not ever see the difference you make. You may not ever be thanked for the difference you make. Despite this, become the teacher you have the potential to be.

You better not give up on them. Their lives depend on it.

-Valerie Love is currently the Math Coach for Johnson City Schools

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## **Local Teacher Receives Math Grant (cont.)**

mini-grant application for \$1000 worth of classroom supplies. I told her I was too new to help her find scholarships to graduate school, but that the TMTA needed applications to be turned in by tomorrow. She thanked me and left, and I added her to my email list.

Months later, I ran into her in Clarksville, TN at the TMTA annual meeting. Having only seen her once, I did not initially recognize her. She re-introduced herself and told me that she

had applied for the grant and had received news that she was a finalist. I admit I was excited to know that she had followed up on this opportunity, and even more excited to find out that she had won!

Congratulations to Susan Saam for winning this grant. Not only did she gain funds for classroom supplies, but Susan will be attending next fall's annual conference to give a presentation on how she has used some (cont. on page 4)

## Local Teacher Receives Math Grant (cont.)

of her supplies to teach mathematics. Hopefully another northeast Tennessee teacher will win next year's mini-grant from TMTA.

-Ryan Nivens currently teaches at ETSU in the Center of Excellence in Mathematics and Science Education

Please see the Sunday, November 2 issue of the Kingsport Times-News for a full story on Susan and the grant!

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## Kathy Moffitt Awarded Teacher of the Year

By Ryan Nivens

Kathy Moffitt, a UETCTM member, was a participant in the Eastman Scholar Mathlete program this past summer. As a "Mathlete," she was challenged to take a more active role in the professional development of her fellow teachers. Although she enjoys teaching students, Kathy admits that teaching her peers is not something she finds easy.

Despite this hesitation, she embraced the role of curriculum leader within her district and helped lead sessions on teaching circumference during the month of July. Kathy has now won the honor of "Teacher of the Year" for Kingsport schools in a contest sponsored by Wal-Mart.

The Kingsport Times-News has written an article on Moffitt's award which can be accessed online [here](#).



Picture taken by Ned Jilton II

Kathy Moffitt helps students in a math study group at Ross N. Robinson Middle School.

# Grant Opportunities

from NCTM November 2008 Bulletin

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## Mathematics Education Trust Scholarship

NCTM's Mathematics Education Trust (MET) has begun taking applications for a new scholarship intended for future middle school mathematics teachers. To qualify, applicants must be a college junior working towards teaching certification in middle (6-8 grades) school mathematics. The scholarship offers a maximum of \$3,000 which can be used toward tuition, fees, course materials, and other expenses. The deadline to apply is May 9, 2009.

MET offers other grants, scholarships, and awards. This year's deadline for many of their awards is November 14, so check their site quickly to see if you are eligible or interested in any of their offerings! More information can be found at [www.nctm.org/met.aspx](http://www.nctm.org/met.aspx).

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## Student Achievement Grants

The National Education Association (NEA) Foundation currently provides \$5,000 grants which are given throughout the school year to teachers from all content areas. The grants are offered to help improve the academic achievement of students in U.S. public schools and public higher education institutions. Your proposal for student work should focus on critical thinking and problem solving that increases student understanding of standards-based subject matter.

The application deadline for the next grant is February 1, 2009. More information is available at [www.neafoundation.org/programs/StudentAchievement\\_Guidelines.htm](http://www.neafoundation.org/programs/StudentAchievement_Guidelines.htm).



# NCTM Committee Opportunities

from NCTM November 2008 Bulletin

NCTM is currently calling on members to serve on one of their many committees. Committees usually meet several times a year at different locations across the country. Volunteers start their term on May 1 and usually serve for three years.

The active committees are as follows: Affiliate Services Committee, Educational Materials Committee, Emerging Issues Committee, *Journal for Research in Mathematics Education* Editorial Panel, Mathematics Education Trust Board of Trustees, *Mathematics Teacher* Editorial Panel, *Mathematics Teaching in the Middle School* Editorial Panel, Nominations and Elections Committee, *ON-Math: Online Journal of School Mathematics* Editorial Panel, Professional Development Services Committee, Research Committee, *Student Math Notes* Editorial Panel, and the *Teaching Children Mathematics* Editorial Panel. If you are interested in serving on one of these committees, please visit [www.nctm.org/about/volunteer](http://www.nctm.org/about/volunteer) for more information.

---

## Mark Your Calendar NCTM Conferences

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### 2009 Annual Meeting & Exposition

Washington D.C. - April 22-25  
"Equity: All Means ALL"

### Annual Research Pre-session

Washington D.C. - April 20-22

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### Regional Conferences & Expositions

#### 2009

Boston - Oct. 21-23

Minneapolis - November 4-6

Nashville - November 18-20

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### Professional Development

#### E-Workshops

Find online workshops on a variety of topics at [www.nctm.org/eworkshops.aspx](http://www.nctm.org/eworkshops.aspx)

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#### 2009 Joint Mathematics Meetings

American Mathematical Society and  
Mathematical Association of America  
conference:

Washington D.C. - January 5-9

-December 15 Registration Deadline

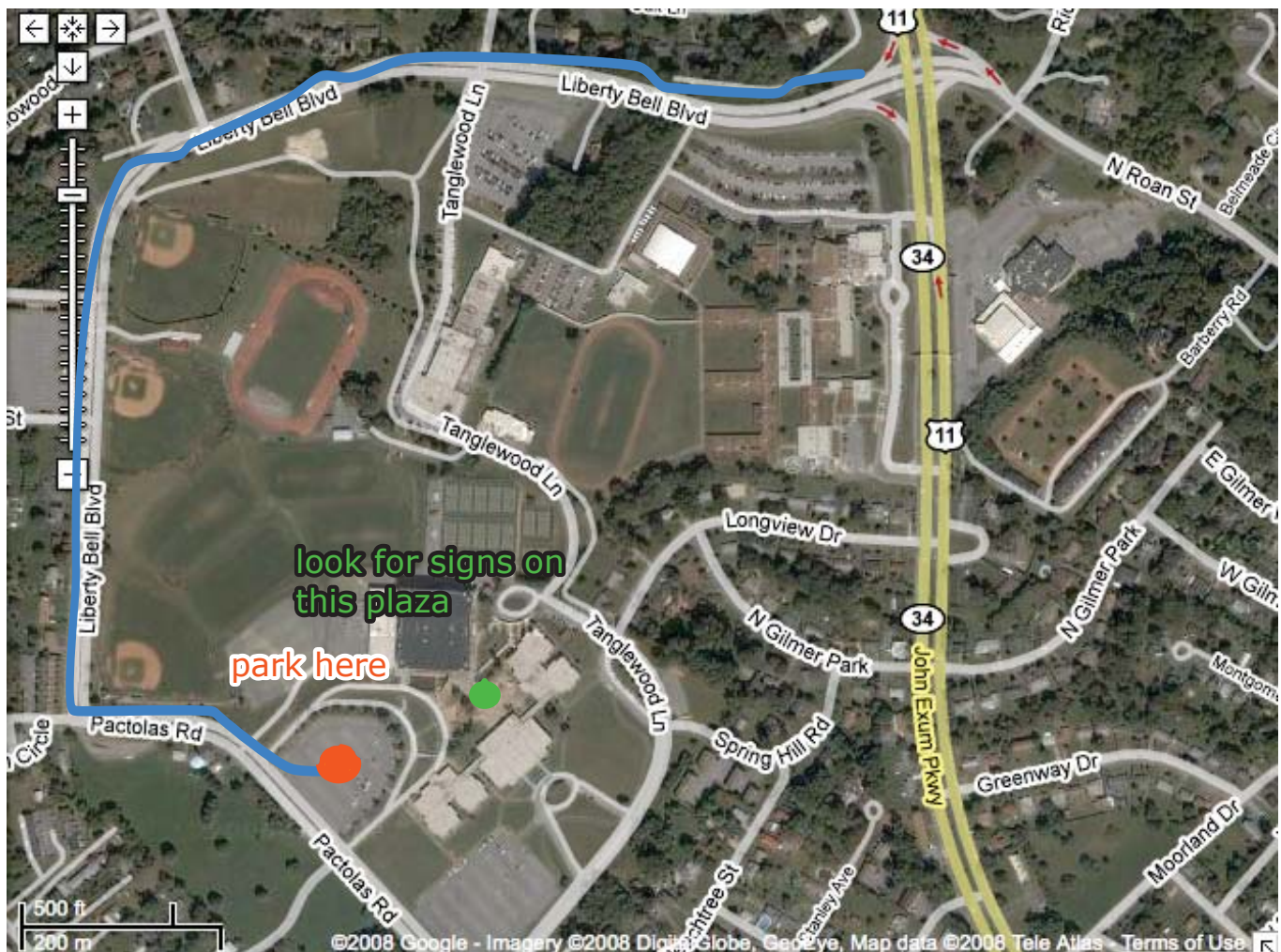
-[www.ams.org/amsmtg/2110\\_intro.html](http://www.ams.org/amsmtg/2110_intro.html)

## Request for Article Submissions

We are always looking for people to contribute articles to our ongoing “Math Perspectives” series. Every month, we would like four people to write for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series yet, so the topic of each contribution is up to its author.

If you or someone you know would like to contribute to this column, please contact the newsletter editor, Ryan Nivens.

## Directions to Science Hill 8/9 Campus



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If you are reading this newsletter on paper, you're missing out on all the color! Visit our web site ([www.uetctm.org](http://www.uetctm.org)) to see the newsletter as a full-color PDF file with clickable links.

**UETCTM Membership Application**

Complete & return to Floyd Brown with a check for \$10 made payable to UETCTM. Completed Application and check may be mailed to Floyd Brown, Science Hill High School, Mathematics Dept., 1509 John Exum Parkway, Johnson City, TN 37604

Name: \_\_\_\_\_ Home Phone: (\_\_\_\_) \_\_\_\_\_

Home Address: \_\_\_\_\_

School: \_\_\_\_\_ School Phone: (\_\_\_\_) \_\_\_\_\_

School Address: \_\_\_\_\_

Email Address: \_\_\_\_\_



# UETCTM News

## First Meeting of the New Year

The next meeting for the Upper East Tennessee Council of Teachers of Mathematics will be held at Sullivan Central High School from 4:00 to 6:00 on February 9, 2009. Directions and a map are available on page 8.

The evening will open with a social time from 4:00 to 4:15. Refreshments will be available. The regular business meeting will also occur during this time slot. From 4:15 to 5:00, Dr. Craig Green, the Director of Tennessee Governor’s Academy for Mathematics and Science, will give a presentation on a new opportunity for high school juniors and seniors in Tennessee. For more information on the Governor’s School, please visit <http://tga.tennessee.edu/>.

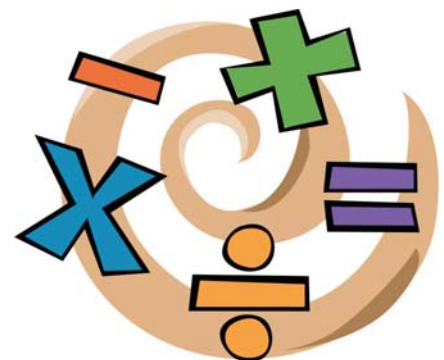
From 4:50 to 6:00, the regular concurrent presentation will begin. Four presentations are scheduled for the evening and are given by Cathy Nester, Tara Carver Peters, Rachel Norris, and Dr Jeff Knisley. Abstracts for their presentations can be found on page 2.

### Future Meetings

Tuesday, March 3

Monday, May 4

(Locations TBA)



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## Programs for February 9th

**K-4th Presentation:** Problem Solving in the Elementary Classroom  
Cathy Nester, *Sullivan County K-5th Mathematics Specialist*

Problem solving...young children enjoy it, yet as we get older we tend to develop a fear of it. What exactly does developmentally appropriate problem solving look like in the elementary classroom and how can we, as teachers, set up our classroom in a manner that students will develop and maintain a love for mathematical thinking and problem solving? Come hear and share ideas related to this topic that is so critical to the success of our students.

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**5th-6th Presentation:** Teaching the Properties of the Platonic Solids  
Tara Carver Peters, *Sullivan County 6th-12th Mathematics Specialist*

Hands-on activities using polydrons designed to teach students how to construct the five platonic solids and their nets. Activities include strategies for allowing students to develop Euler's famous formula that relates the number of faces, edges, and vertices for convex solids. All activities are aligned with the new state math standards for geometry.

---

**7th-9th Presentation:** Teaching Algebraic Concepts Using Algebra Tiles  
Rachel Norris, *Mathematics Teacher at Sullivan North High School*

Ever wonder how to use algebra tiles to teach algebraic concepts in a new and exciting way for students? Come and learn how to use these manipulatives in your classroom to enhance student understanding.

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**10th-12th Presentation:** New Math Opportunity Designed to Benefit High School Math Teachers and Their Students  
Dr. Jeff Knisley, *Interim Chairman of the Department of Mathematics, ETSU*

Learn about a new development in math and a possible funding opportunity related to this development that will be beneficial to many students and teachers in upper East Tennessee.

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# Math Perspectives

## I'm Not a Manipulator, Just a Manipulative Lover

By Susan J. Saam

On September 20, 2008, I was blessed with the most exciting news of my short teaching career. At the business meeting at the end of the TMTA conference at Austin Peay University in Clarksville, it was announced that I had won their first ever \$1000.00 mini grant. The money was used to buy a plethora of math “toys” to help teach my 6th, 7th and 8th graders about fractions, decimal and percent conversions, geometric shapes, property identification, the Pythagorean theorem, solving linear and nonlinear equations, irregular shape area, and perimeter computations, among other things.

I had applied for the grant after looking for funds to help pay the tuition for the classes I needed for my Alternative Type II license. While on the ETSU campus, I stumbled into the Math Department and met Ryan Nivens. I told him my predicament about needing funds, and he told me about the mini grant. There was a catch, however: the proposal had to be postmarked by tomorrow! I raced home and began typing. I came up with a one page proposal which explained my background (I am only a second year teacher) and my dream to teach math with manipulatives,

which I could not possibly buy on my own. I told them what concepts I would be able to cover with these math toys and how many Tennessee State standards could be met if I had them. After sending the proposal in, I honestly forgot about it. School started, and I was concentrating on learning the names of my 125 new students!

Then, on the Thursday evening before the conference (which was on a Saturday), I received a phone call from Jackie Vogel of TMTA. She asked me if I was planning on attending the conference in Clarksville. I told her that I wasn't sure. When she told me that I really needed to be there, I realized what she may have been saying, and I then committed to being there even if it meant taking the long drive there and back. So at 2:30 Saturday morning, I drove the four and a half hours to Clarksville, attended several wonderful workshops, and then attended the business meeting where I heard my name announced as the winner of the grant. I drove the four and a half hours home on what seemed like a cloud, thinking of the ways I was going to use the deluxe color tiles, pattern blocks, tangrams, base ten blocks, geoboards, rods, cubes, (cont. on p. 5)

## Professional Development? What's the Purpose?

By Jerry Whitaker

Have you ever been told by your principal to attend a professional development workshop that you didn't want to attend? Have you ever signed up for a professional development workshop just to have a day away from your students? Do you take sick days when you are required to attend professional development workshops? At workshops, do you send text messages to your friends? Do you talk to the person next to you in a voice that disturbs others? Do you write notes or draw during the presentation?

Professional development involves ongoing learning opportunities for educators provided by the district or schools. If you keep doing the same thing year after year, you will get the same results year after year. The problem with that philosophy is things constantly change. Most of us enjoy the benefits of an up-to-date cell phone which we can use to receive and send texts, make notes, or update our calendar. The first cell phones could not do those tasks. We had to make a change to something that was effective and efficient for our needs. E-mail is one such valuable tool. It is so easy to e-mail someone with documents and they receive them in seconds. In the past, those documents would have to be mailed, and it would take days to

receive them. Technology has helped us move into the future with confidence and competence. A lot of us want the newest technology on the market. The following statement was made at a recent meeting I attended. "If you're using the same instructional strategies, year to year....who's the unmotivated learner?" Why do so many of us not want the newest strategies for helping our students?

Professional development builds the specific knowledge and competencies for best practice and is vital to school success and teacher satisfaction. We face many challenges as teachers. We have the new more rigorous state standards, we teach a more diverse population, and there are so many other challenges coming our way. We need the extra "edge." Stephen Covey describes it as "sharpening the saw." He refers to a person sawing a tree for hours using a dull saw. That person refuses to stop and sharpen the saw because he is too busy sawing. Some of the tools we use in our daily life may grow "dull." We need to take time to renew our skills and make them "cutting-edge." Professional development provides opportunities for networking and collaboration among teachers. The networking aspect is a tremendous asset to your (cont. on p. 6)

## I'm Not a Manipulator... (cont.)

fraction circles, attribute blocks, geosolids, coordinate grid double-sided write "n" wipe board classroom basics kit and accompanying 30 9" x 12" Dry Erase Grid Boards, 32 dry erase markers, 30 student erasers, and more!

Since that day, I have been busy designing lessons around these math tangibles. My classes have used the dry erase coordinate grid boards to calculate and graph functions, to plot points, and to translate, reflect and rotate figures. We have used the geosolids to name triangular pyramids, to name rectangular prisms, and to figure out how many faces, edges, and vertices each one has. It has really been a lot of

fun using these toys, and I look forward to our upcoming unit on probability because the kids will have dice and spinners to work with.

I look forward to presenting at an upcoming TMTA conference where I will explain how I used the manipulatives in my classroom and what a difference it made for me and my students. I thank TMTA for their generosity. Their gift has enriched all of us and will enrich the math experience of my classes for many years to come!

*Susan Saam is a teacher at Grandview Elementary School in Washington County, TN.*

---

## Mark Your Calendar NCTM Conferences

### Annual Meetings & Exposition

---

Washington D.C. - April 22-25, 2009  
"Equity: All Means ALL"

### Annual Research Pre-session

Washington D.C. - April 20-22

San Diego - April 21-24, 2010

"Connections: Linking Concepts and Context"  
Speaker proposal deadline is May 1

### Regional Conferences & Expositions

---

#### 2009

Boston - Oct. 21-23

Minneapolis - November 4-6

Nashville - November 18-20

(In Conjunction with TMTA's  
annual meeting)

Events Taken from  
NCTM Newsletter (45.6)

## Professional Development? What's the Purpose? (cont.)

school, your district, your students, and yourself. Teachers from other schools may be having the same problem as you have now, or at one time they had the same problem. Some smaller middle schools only have one math teacher. It is such a help to contact another teacher and see what they are doing.

When you walk into the professional development workshop ask yourself three questions. Are you ready? Are you able to learn? Are you willing to learn? You are ready because you are there. You are able to learn because you are a professional. You have a college degree. You can do it. Are you willing? That depends on you.

What are you willing to take back? What do you need to take back and implement? Are you honest with your skills? You cannot implement everything. Professional development is like a cafeteria. You can pick and choose what works. In picking and choosing, we need to be honest with ourselves. In every workshop, there is at least something that can be of help to us.

Are you ready to “sharpen your saw?” We must! Our students depend on it.

*Jerry Whitaker is currently the Math Coordinator for Washington County Schools*

### UETCTM Membership Application

Complete & return to Floyd Brown with a check for \$10 made payable to UETCTM. Completed Application and check may be mailed to Floyd Brown, Science Hill High School, Mathematics Dept., 1509 John Exum Parkway, Johnson City, TN 37604

Name: \_\_\_\_\_ Home Phone: (\_\_\_\_) \_\_\_\_\_

Home Address: \_\_\_\_\_

School: \_\_\_\_\_ School Phone: (\_\_\_\_) \_\_\_\_\_

School Address: \_\_\_\_\_

Email Address: \_\_\_\_\_

## Franklin Math Bowl Needs Test Writers

The Franklin Math Bowl is a middle school math contest held on a Saturday in the early part of November on the ETSU campus. It is co-sponsored by the ETSU math department and UETCTM. Each year we have a test for 6th, 7th, and 8th grade math plus Algebra I. The test consists of 25 multiple-choice questions. Sample tests can be found on the Franklin Math Bowl web page at <http://www.etsu.edu/math/fmb/>. We need some volunteers to write tests. (Or if you don't think you could write a test, at least contribute some questions.) Obviously we can't use middle school teachers who prepare their students for the test, but anyone else is eligible. Typically we ask writers to have their tests written by early September.

If you would be willing to help, have further questions, or want to see test writer guidelines, please contact Daryl Stephens, director, at 423-439-6973 or by email at [stephen@etsu.edu](mailto:stephen@etsu.edu). Thanks in advance for your help!



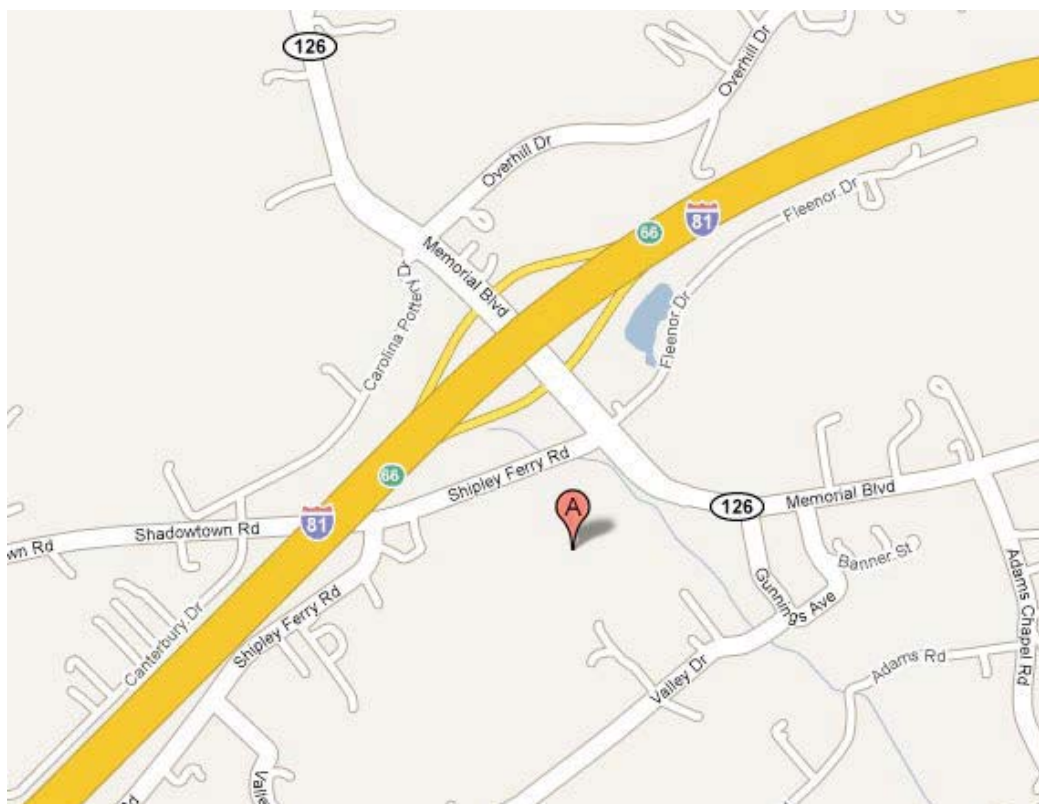
## Request for Article Submissions

We are always looking for people to contribute articles to our ongoing “Math Perspectives” series. Every month, we would like four people to write for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series yet, so the topic of each contribution is up to its author.

If you or someone you know would like to contribute to this column, please contact the newsletter editor, Ryan Nivens.

---

## Directions to Sullivan Central Campus



Sullivan Central High School is located on Shipley Ferry Road, just off exit 66 on I-81 between Bristol and the intersection of I-81 and I-26.

## Officers of UETCTM for 2008/2009

### President

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[stephen@etsu.edu](mailto:stephen@etsu.edu)

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[brownf@jcschools.org](mailto:brownf@jcschools.org)

If you are reading this newsletter on paper, you're missing out on all the color! Visit our web site ([www.uetctm.org](http://www.uetctm.org)) to see the newsletter as a full-color PDF file with clickable links.

**ETSU**

**Department of Curriculum and Instruction**

**Att. Ryan Nivens**

**Box 70684**

**Johnson City, TN 37614-1709**





# UETCTM News

## Last Meeting for the Spring

The final meeting before Summer of the Upper East Tennessee Council of Teachers of Mathematics will be held at East Tennessee State University from 4:00 to 6:00 on Monday May 4, 2009 in room 3 on the third floor of the Culp Center. Directions can be found at <http://www.etsu.edu/maps/>. Visitor parking passes are not needed since our event begins after 3:30.

The evening will open with refreshments and a social time from 4:00 to 4:20. Refreshments include tea, cookies, chips, and goldfish. The regular business meeting will also occur during this time slot. From 4:50 to 6:00, the regular concurrent presentation will begin. Ryan Nivens and Tara Carver-Peters will be presenting “Fun with 3D geometry for Elementary Students.” Dr. Robert Beeler will be presenting “Invisible Purple Unicorns and Other Imaginary Beasts,” an investigation of imaginary numbers at the high school level. The middle school workshop has yet to be announced.

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## **“State of the Union”**

# **A Reflection from UETCTM’s President**

Wow, how quickly time flies. We started out the school year at Science Hill and then made our way to Northeast State, Science Hill 8/9 campus, Sullivan Central, Volunteer, and will end the year at ETSU. We heard some wonderful presentations through out the year and I want to take this moment to personally say “Thank You” to each presenter for your time and effort. I heard from a number of members that they learned so many new things from our meetings and really appreciated having the opportunity to be apart of an organization like UETCTM.

I think the expansion of the newsletter to include articles has been a wonderful addition and I would like to say “Thank You” to Ryan Nivens for his work on the new and improved UETCTM newsletter. It has been really interesting reading the different math perspectives that we have seen throughout this past year. We really appreciate each individual who took out the time to write an article for the newsletter and hope that many more of you will submit an article in the future.

This past year has been extremely busy for me, coming back to work as a new mom and taking on the role of being president of UETCTM, and I could not have done it without help.

Daryl Stephens, “Thank You” so much for everything and to our math specialists in Hawkins County, Johnson City, Kingsport City, Washington County, and Sullivan County. I really appreciate all of the assistance in trying to find locations and speakers throughout the year.

Lastly, I want to thank each UETCTM member for coming to our meetings and supporting our organization. Thank you so much for helping me make UETCTM’s 2008-2009 academic year a great one! I look forward to seeing everyone in the fall.

*-Dayna Smithers*

*Current President of the Upper East,  
Tennessee Council of Teachers of  
Mathematics*

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# Math Perspectives

## Assessment: It Isn't Just an "Endpiece" Anymore

By Cathy Nester

What is assessment? For many years, assessment has been viewed as a means to an end. Often, it was something teachers did at the end of a lesson before moving on to the next lesson. Very little emphasis was placed on the information gained from the assessment if there was any analysis made of that information at all. In fact, it was seldom that anything was done with the assessment beyond recording the grade in the gradebook. That was then...

...This is now. Today we realize that in order to help students understand the concepts we are teaching them, we as teachers must understand what they already know. How are we to gain that information except through assessment? Pre-assessment! In fact, not only should we assess before we begin a unit of study, we should assess students throughout the study and at the end as well. This article will provide a brief discussion regarding each of these and hopes to inspire teachers to take a new look at assessment and its role in the classroom.

Pre-assessment should, ideally, be a reflection of the summative evaluation planned for the unit. Once the essential understandings for a unit of study have been identified, the summative evaluation can be created. Using this evaluation as a

guide, a pre-assessment can be created that asks students to tell what they already know and understand about the underlying concepts of the upcoming unit. The results of this pre-assessment will aid teachers in making adequate plans to address the needs of each individual student. Pre-assessment need not be just a shortened form of the test planned for the end of a unit, however. In fact, it may be something as simple as a survey asking students to write a brief paragraph stating what they already know and understand about a concept. For example, if the unit of study is focused on the concept of area and perimeter, and students will be asked on the summative evaluation to determine these measures for a simple floor plan, the pre-assessment might be to write a brief description of perimeter and area and describe how each would be used and why. From this simple task, teachers can identify students who are at the very beginning levels of understanding and those who are ready for a more challenging assignment. While these students should all be working to understand the concepts behind the same content standard, their tasks will be at very different levels. This is the key to differentiating instruction for students. (cont. on p 4)

## Assessment: It Isn't Just an "Endpiece" Anymore (cont.)

It is also critical that we assess students daily. This practice provides direction for our unit and helps to pace the instruction for subsequent lessons. Daily assessments need not be lengthy, paper-pencil tasks, but instead may be very informal. For example, observations made as the teacher watches independent practice of tasks or listens as a small group works through a problem solving process are both forms of assessing students. Asking students to write two or three sentences on an index card at the end of class stating what they understood well from the day's lesson and what they wished to have further clarification of is another form of ongoing assessment. By simply asking students to give a

thumbs up sign if they understand, a thumb down if they are lost, or a thumb in the middle if they need a few more times to practice a skill, teachers can gain instant assessment regarding the current understanding of a concept. Such daily, formative types of assessment allow teachers to adjust their unit of study as they prepare for each day's instruction in a manner that will benefit all students. It also provides students with feedback, which has been a proven method of raising student achievement. This practice allows students the opportunity to resolve content issues as they arise, rather than waiting until the end of the unit only to fail an (cont. on p 5)

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## Mark Your Calendar NCTM Conferences

### Annual Meetings & Exposition

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San Diego - April 21-24, 2010  
"Connections: Linking Concepts and Context"  
Speaker proposal deadline is May 1

### Regional Conferences & Expositions

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#### 2009

Boston - Oct. 21-23  
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Nashville - November 18-20  
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Events Taken from  
NCTM Newsletter (45.6)

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## Assessment: It Isn't Just an "Endpiece" Anymore (cont.)

examination and be forced to move on to new content.

Of course, there must also be some form of summative evaluation following a unit of instruction. This task should require students to provide evidence of their personal understanding concerning the content presented and how it applies to their current level of mathematic development. This assignment should be more than a set of multiple choice questions if true evaluation is to be gained. Students should be required to process, problem solve, or write about the tasks performed in a manner that the teacher acquires insight into the thought processes and mathematical perceptions of each student. Ideally, this should be a demonstration of the content learned...not a quest to determine which students learned it and which ones did not. Students still requiring assistance with the content should receive further practice and instruction through a small group or individualized setting. Otherwise, the foundation for future mathematics content will be insufficient, creating obstacles to the learning process.

Finally, no discussion regarding assessment would be complete without looking at the importance of benchmark testing and the use of those

results. Periodic benchmark testing allows teachers to view student progress from year to year and can help in the identification of those students who may not be gaining in knowledge at the same rate as their peers. By looking at the progress of each student, teachers are able to create small, flexible groups for instruction based upon needs in skill and content areas specific to each. Once a teacher is able to diagnose a gap in understanding, an intense focus can be placed on remediation, allowing the student to move on to new and deeper levels of learning.

So you see, while teachers must start each unit of study with "the end in mind", a "one size fits all" approach to assessment is as ineffective as a "one size fits all" approach to teaching the content. The new focus is on content and the manner in which each student is able to navigate through the material in a quest for new understanding and the ability to put theory into practice by applying the concepts to real life.

*-Cathy Nester is a elementary math specialist for Sullivan County Schools*

## Math and Music by Lynn Whitaker

Most all children and teens love music, and many students learn through music. Now there are mathematical CDs with math-specific songs to help students learn mathematics concepts and skills. Math CDs can be used to introduce a new math concept or to reinforce a skill. This multi-sensory approach can also be added to an existing calendar wall time in the early grades. Students remember the skill better when it is put to a musical beat. Older students learn and retain formulas better when put to music. Mathematical concept songs can be found on the Internet, or you can find math CDs in a math catalog or a school supply store. An example of a song is listed below:

### **Odd & Even Song** (tune: BINGO)

There was a farmer who had a pig,  
And Even was his name-o.

0, 2, 4, 6, 8; 0, 2, 4, 6, 8; 0, 2, 4, 6, 8;  
And Even was his name-o.

There was a farmer who had a cow,  
And Odd was her name-o.

1, 3, 5, 7, 9; 1, 3, 5, 7, 9; 1, 3, 5, 7, 9;  
And Odd was her name-o.

*-Lynn Whitaker is a 1st grade  
teacher at Gray Elementary  
School in Washington County, TN*

---

## Request for Article Submissions

We are always looking for people to contribute articles to our ongoing “Math Perspectives” series. Every month, we would like four people to write for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included next volume dedicated to mathematics problems. We are looking for people to submit favorite problems focused on various grade bands.

If you or someone you know would like to contribute to this column, please contact the newsletter editor, Ryan Nivens at [nivens@etsu.edu](mailto:nivens@etsu.edu).

## NCTM Membership and Journal Subscriptions

Are you a member of NCTM (National Council of Teachers of Mathematics)? As an NCTM member you can receive one or more of four outstanding journals depending on your interests: Teaching Children Mathematics (geared towards elementary school), Mathematics Teaching in the Middle School, Mathematics Teacher (for high school teachers), or Journal for Research in Mathematics Education.

In addition, the NCTM web site has a number of members-only features including an online journal devoted to more high-tech tools for all levels, and NCTM publishes many books, monographs, and yearbooks of interest. Now when you join or renew an existing individual membership online, you can choose to have a rebate sent back locally to UETCTM. New NCTM members or members renewing after a lapse of at least a year earn UETCTM a \$5 rebate; renewing NCTM members earn us a \$3 rebate. Go to [www.nctm.org](http://www.nctm.org) for more information, and when you fill out the online membership form, select Upper East Tennessee Council of Teachers of Mathematics from the drop-down menu for the state.

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Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_\_

Email Address: \_\_\_\_\_



**Officers of  
UETCTM for  
2008/2009**

**President**

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Division of Mathematics  
Northeast State Technical  
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**Past President**

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[stephen@etsu.edu](mailto:stephen@etsu.edu)

**Secretary**

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**Treasurer**

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**ETSU**

**Department of Curriculum and Instruction**

**Att. Ryan Nivens**

**Box 70684**

**Johnson City, TN 37614-1709**



# UETCTM News

## UETCTM Meeting

\* \* \*

**Tuesday, May 4, 2010**  
**4:00 p.m. - 6:00 p.m.**

\* \* \*

### UETCTM Meeting Location:



**Northeast State Community College**  
 Faculty/Staff Dining Room –  
 next to Subway in Student Center  
 2425 Highway 75  
 Blountville, TN 37617  
 (423) 323-0243 / (800) 836-7822

\* \* \*

### UETCTM Meeting Agenda:

#### Breakout Sessions

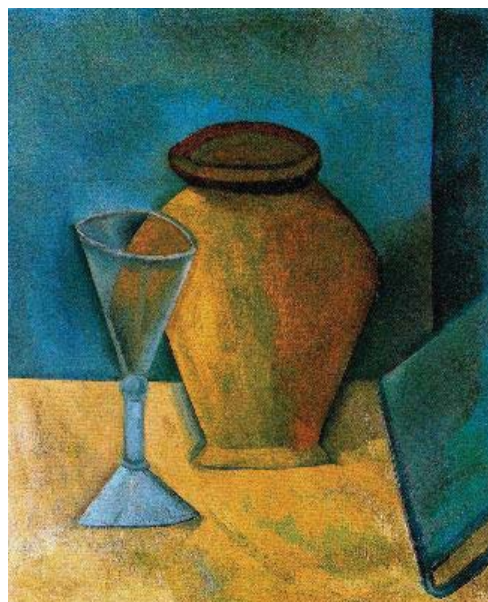
**Elementary/Middle – Solving Problems with Singapore Math**

**Presented by:**  
 Nelle Gobble and Malissa Trent - NESTCC

**Middle/High School – Synergistic Learning and Teaching with Slide Rules**

**Presented by:**  
 Mark Pollock - NESTCC

## MATH FUN



**How can Pablo Picasso's**  
*Pot, Wine-Glass and Book, 1908*  
 inspire math in the classroom? See Pg 8.

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# Essay on the Storm Shelter Problem

*By Larry Swindell*

Clinch School, Hawkins County Schools

On the first day of class Dr. Nivens assigned the attached “Storm Shelter Table” and the associated problem to solve. I have entered the results (perimeters and costs) for all applicable integral factors. Our group was instructed to graph the data using a scatterplot with length as the independent variable and perimeter as the dependent variable. I calculated the perimeters using plastic squares and counting rather than trying to derive a formula for the perimeter with the given constraints. Since the inputs from 1 to 24 meters resulted in outputs that began at 50 meters, decreased to 20, repeated at 20, then cycled back up to 50 through the same output values (see Attachment 1), I suspected the graph might be a parabola. However, when we graphed the data (see second attachment), the resulting curve was clearly not parabolic.

Also, since the answer to the problem involved minimizing the perimeter, I was sure that for integral factors, 20 meters was the minimum perimeter and \$2500 was the minimum cost. We had used all possible integral factors of 24. However, it seemed probable that if the curve could be more carefully drawn, that there should be a minimum perimeter less than 20 meters resulting from a fractional length between 4 and 6 meters.

Therefore, at Mr. Nivens' suggestion, I have investigated the nature of the curve and the

minimum point on the curve as follows:

First, I realized that given a fixed area of 24 square meters, the formula for the perimeter was

$$P = 2L + 2W, \text{ or, letting } x = \text{length, } y = \text{perimeter,}$$

$$y = 2x + 2(24/x), \text{ or}$$

$$y = 48/x + 2x$$

This function is the sum of a hyperbola ( $y = 48/x$ ) and a line ( $y = 2x$ ). When I graphed this function on the TI-84 calculator in the first quadrant - the only place it has relevance - (also see second attachment), it fit the original data but gave a clearer picture of the nature of the curve.

- First, as  $x \rightarrow 0$ ,  $y \rightarrow \infty$ , so the curve is asymptotic to  $x = 0$ .
- Second, as  $x \rightarrow \infty$ ,  $y \rightarrow 2x$ , so the curve is asymptotic to  $y = 2x$  and becomes essentially straight.
- Finally, the first derivative of  $48/x + 2x$  is  $-48/x^2 + 2$ . Thus, when  $-48/x^2 + 2 = 0$ , the slope of the curve is zero, indicating a minimum point. The *trace* and *calc* functions of the TI-84 calculator yielded a minimum at  $x = 4.9$  and  $y = 19.6$ . Since  $(4.9)^2$  is very close to 24, and  $-48/24 = -2$ , this value of  $x$  (the length of the rectangle) yields the minimum value of  $y$  (the perimeter).

Contrary to what I initially suspected, the curve was in fact not parabolic: identical y values did not result from equally spaced x values. And, although the problem was posited for *integral* values of length, a smaller perimeter (~19.6 meters) could be derived from using a *fractional* value for the length, namely ~4.9 meters. ■

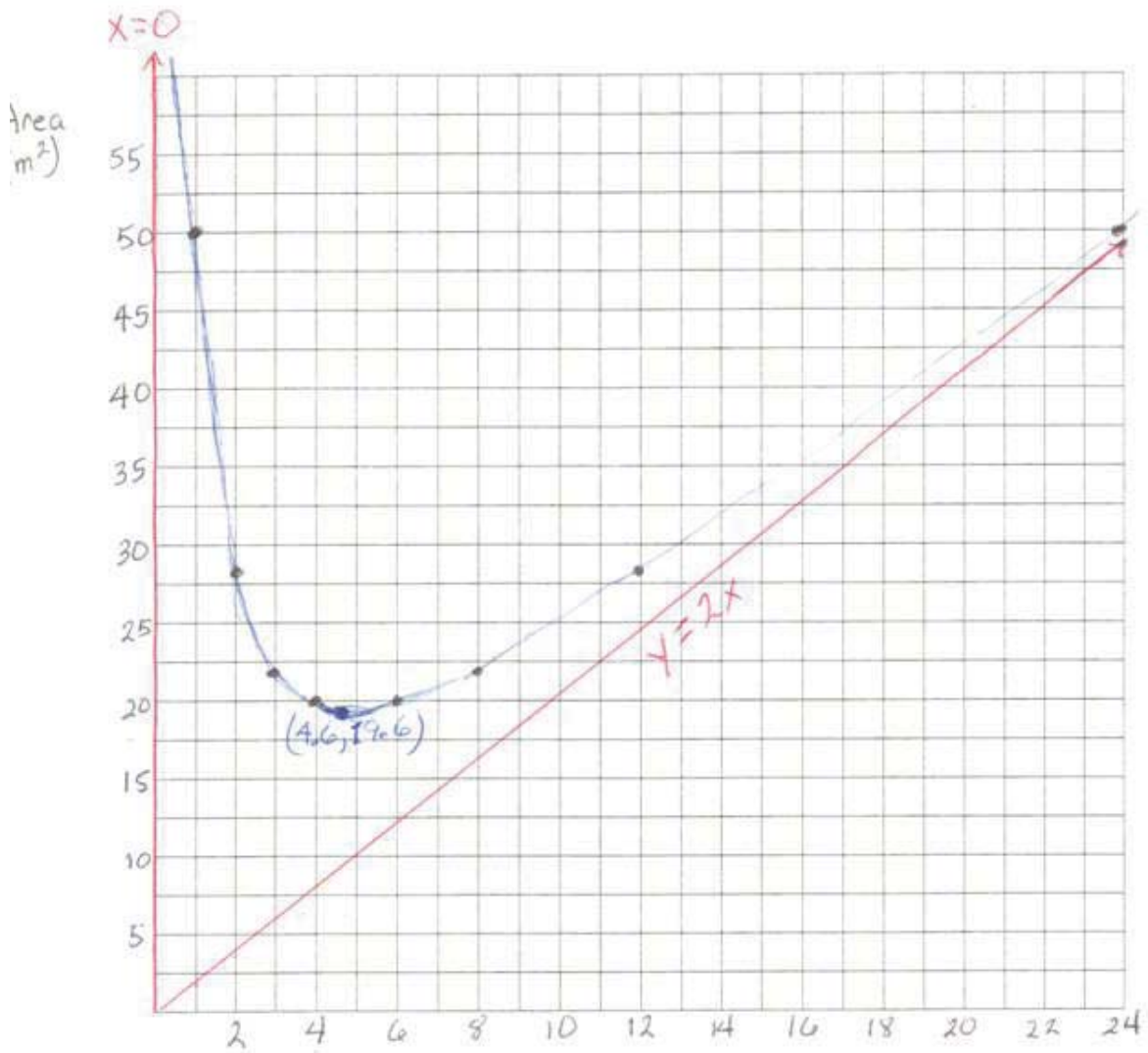
### Attachment 1

#### Storm Shelter Table

The rangers in the Great Smoky Mountains National Park want to build several inexpensive storm shelters. The shelters must have 24 square meters of floor space. Suppose the walls are made of sections that are 1 meter wide and standard wall height. Use your tiles to experiment with the different rectangular shapes of the floors. Sketch each possible floor plan on your grid paper. Record all information in the table below. Determine the cost of each of your arrangements if each wall section costs \$125.

| Length (meters) | Width (meters) | Area (m <sup>2</sup> ) | Perimeter (meters)           | Cost of Walls |
|-----------------|----------------|------------------------|------------------------------|---------------|
| 1               | 24             | 24                     | 50                           | \$6250        |
| 2               | 12             | 24                     | 28                           | 3500          |
| 3               | 8              | 24                     | 22                           | 2750          |
| 4               | 6              | 24                     | 20                           | 2500          |
| 6               | 4              | 24                     | 20                           | 2500          |
| 8               | 3              | 24                     | 22                           | 2750          |
| 12              | 2              | 24                     | 28                           | 3500          |
| 24              | 1              | 24                     | 50                           | 6250          |
|                 |                |                        | (seemed to suggest parabola) |               |

Attachment 2  
Grid Paper (24x24)



- Dots are original data
- Blue curve is  $y = 48/x + 2x$
- Red lines are asymptotes
- Labeled point is actual minimum point

# Why They Fail and Why They Rebel

*By Michael Robinson*

Sullivan County Schools, North High School

The special education student entering the high school math classroom has not been adequately prepared for the transition. I believe that the concept of fractions is not being introduced. Students who are removed from the regular classroom to the resource classroom during the regular math class lose the introduction of new material because they are still struggling with concepts that should have been mastered such as basic addition and subtraction skills.

Students should not be removed during regular math but at other times so they will receive both lessons. Mercer and

Mercer (2005) state that there are several disadvantages associated with pulling students out of the general education classes, one of which is that “the student may miss valuable lessons in the general education class while attending the resource room” (p. 16). Brown and Quinn (2006) tell us that there are five concepts of fractional numbers that must be connected: whole to part relationship, ratio, quotients, measures, and operators. All are needed to form fractional number thinking patterns (“Australian Mathematics Teacher,” Winter). These students are unable to cognate fractions because the metacognitive process may have not been fully developed. The special education student struggling in the resource

classroom enters high school with the hope of acquiring the education needed to obtain a job in today’s competitive job market. Their hopes are often shattered because of their inability to fulfill the minimum math requirements.

Students who are referred to special education at the second, third and fourth level are missing the basic introduction of fractions. According to the Tennessee state standards, the part to

whole relationship is introduced at the first and second grade level. This is the first important concept necessary for understanding and being able to

think in the fractional process. Missing this concept will greatly diminish the cognition necessary to form visual understanding in the algebraic process. Sousa (2007) tells us that students with number concept difficulties appear to have the understanding of small numbers and quantity at birth. The understanding of large numbers and place value, however, seems to develop during the preschool and early elementary years. Subsequently, ratio and measures are covered in the third and fourth grade, which is during the early elementary years, and the special education student is out of the regular classroom while this critical concept is being taught.

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***Their hopes are often  
shattered because of their  
inability to fulfill the  
minimum math requirements.***

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### Tennessee Curriculum Standards Second Grade

|   |
|---|
| Use concrete models or pictures to show whether a fraction is less than $\frac{1}{2}$ , more than $\frac{1}{2}$ , or equal to $\frac{1}{2}$ .                   |
| Match the spoken or written word names and concrete or pictorial representations (parts of regions or parts of sets of objects) of halves, thirds, and fourths. |
| Compare the unit fractions $\frac{1}{2}$ , $\frac{1}{3}$ , and $\frac{1}{4}$ .  |

### Tennessee Curriculum Standards Third Grade

|   |
|---|
| Connect written and pictorial representations of fractions with denominators up to ten. |
| Compare fractions with numerators of 1 and denominators up to 10.                       |

### Tennessee Curriculum Standards Fourth Grade

|  |
|--|
| Use concrete or pictorial representations to compare and order commonly used fractions.  |
| Use concrete and pictorial representations to compare decimals.  |
| Use various models and equivalent forms to represent order and compare whole numbers and commonly used fractions and mixed numbers (e.g., number lines, base ten blocks, expanded notation, Venn diagrams, and hundreds boards). |

With the struggling student in the resource class during the regular math class, this material can very well be overlooked. Unlike the student struggling with language who has three opportunities during the school day—English, History, and Science—to improve on their reading ability, the struggling math student gets only one chance. By the time the resource student reaches the conclusion of the fourth grade, he/she has missed three of the five concepts for introduction and understanding of the algebraic process. Intervention at this time can be successful with hands on activities and repetition of the needed material.

The introduction of quotients occurs in the fifth grade. If this crucial step is not covered, the now at-risk student will lose the critical

thinking skills necessary to perform algebraic reasoning. Mathematics Developmental Continuum P-10 tells us: "Fractions are a way in which division is written in algebra, where the division sign  $\div$  is not used. Facility with fractions is needed for many aspects of algebra including algebraic fractions (i.e. any division), rationalizing irrational and solving equations" (<http://www.education.vic.gov.au/studentlearning/teachingresources/maths/mathscontinuum/number/N45001P.htm>). In algebra, fraction notation is used for division. Consequently, 'fractions' arise that appear unusual and perturbing to students. Can students see the main structure (and hence which number is divided by which) in unusual fraction-like expressions like these?

### Tennessee Curriculum Standards Fifth Grade

|  |
|--|
| Order and compare (<, >, or =) whole numbers, fractions, mixed numbers, and decimals using models (e.g., number lines, base ten blocks, Venn diagrams, and hundreds boards). |
| Compare and order fractions using the appropriate symbol (<, >, and =).  |
| Demonstrate knowledge and understanding of grade level mathematical terms.   |
| Represent proper fractions, improper fractions, and mixed numbers using concrete objects, pictures, and the number line.   |
| Connect symbolic representations of proper and improper fractions to models of proper and improper fractions.  |
| Represent numbers as both improper fractions and mixed numbers.  |
| Develop understanding of equivalent number representations (i.e., fractions, decimals, and percents).  |
| Represent numbers using a variety of models and equivalent forms (i.e., whole numbers, mixed numbers, fractions, decimals, and percents).                                    |
| Compare and order whole numbers, fractions, decimals, and percents using the appropriate symbol (<, >, and =).   |
| Connect whole numbers, mixed numbers, fractions, and decimals to locations on the number line.   |
| Demonstrate understanding of percents greater than 100 and less than one.  |
| Connect ratios to a variety of models, real-world situations, and symbolic representations.  |
| Identify a ratio using three forms: 3 to 5; $\frac{3}{5}$ ; 3:5.   |
| Determine if two ratios form a proportion and find the missing number in a proportion.   |
| i.e., mixed numbers, fractions, decimals, percents, and integers.  |
| Compare rational numbers using the appropriate symbol (<, >, and =).   |
| Connect rational numbers to locations on a number line.  |
| Connect percents greater than 100 and percents less than one to real-world situations.   |
| Use ratios to represent quantitative relationships.  |

Students who have not had the benefit of the regular education curriculum by the time they reach the seventh or eighth grade are lost. The regular education student is starting to compute with the math skills they have acquired. Resource students have no idea what the fractional process is. They will often become behavior problems at this time or seek shelter in the resource classroom where they are not set up for failure. Knowing that the multiplication

and division steps are critical in the formation of algebraic computation and reasoning, students are in need of intervention to try to build understanding of the lost concepts. Several special education techniques can be used to help rebuild the students' deficit, but at this age may only reinforce the stigma they may have developed by leaving the regular classroom for special help.



### Tennessee Curriculum Standards Seventh Grade

|   |
|---|
| Compute with whole numbers, fractions, decimals, and percents in problem-solving situations (e.g., mental computation, estimation, calculators, computers, and paper and pencil). |
|---|

|              |
|--------------|
| Eighth Grade |
|--------------|

|   |
|---|
| Compute efficiently and accurately with whole numbers, fractions, decimals, and percents. |
|---|

|  |
|--|
| Develop and analyze procedures for computing with fractions, decimals, and integers. |
|--|

The special education student entering the ninth grade is given a screening measure for achievement (either a WRAT III or a Woodcock Johnson). During the last three years, attention has been focused on the math section of these tests. None of the students entering the behavior modification environment has attempted to complete the fractions on the test. This demonstrates the failure of the current system for teaching mathematics concepts to special education students and the need to implement the measures I have described.

#### References:

Brown, G. and Quinn, R. J. (2006) *Algebra students' difficulty with fractions: an error analysis*. Australian Mathematics Teacher (December 2006).

Sousa, D. A. (2005) *How the special needs brain learns*. Thousand Oaks: Corwin.

Mercer, C. D., and Mercer, A. R. (2004) *Teaching Students with Learning Problems (7th Ed)*. Columbus: Prentice Hall.

## MATH FUN

### Shaping Up With Picasso

Look at the world like Pablo Picasso did, analyzing geometric patterns. Visit the link from Crayola below for directions on how to create a Cubist still life, focusing on the shapes you see with your Picasso viewpoint.



<http://www.crayola.com/lesson-plans/detail/shaping-up-with-picasso-lesson-plan/>

#### Cubism

A nonobjective school of painting and sculpture developed in Paris in the early 20th century, characterized by the reduction and fragmentation of natural forms into abstract, often geometric structures usually rendered as a set of discrete planes.

## Request for Article Submissions

We are always looking for people to contribute articles to our ongoing “Math Perspectives” series. Every month, we would like four people to write for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next volume dedicated to mathematics problems. We are looking for people to submit favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact the Newsletter Editor, Ryan Nivens.*

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# UETCTM

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Washington County Schools  
405 W. College Street  
Jonesborough, TN 37659

***Membership Fee: \$10.00***

***Make check payable to: UETCTM***

**Name:** \_\_\_\_\_

**Home Address:** \_\_\_\_\_

\_\_\_\_\_

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**School Address:** \_\_\_\_\_

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**School Phone:** (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

**Email Address:** \_\_\_\_\_

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# UETCTM News

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Volume 4 Issue 4

February 3, 2003

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**We are striving to cut down on mailing costs. If you would like to receive this newsletter electronically, please send an email to [godbolea@mail.etsu.edu](mailto:godbolea@mail.etsu.edu). Thanks for your cooperation.**

**“The essence of mathematics lies in its freedom. “**

**-George Cantor**



The Upper East Tennessee Council of Teachers of Mathematics will host its fourth meeting of the 2003-2004 school year on Tuesday,

February 10<sup>th</sup>, at Sullivan South High School.

Refreshments will be served from 4:00 – 4:30, providing a chance to mix and mingle with local math teachers. A short business meeting begins at 4:30. Following the meeting, Deborah Williams, secondary consultant, and Rosemary Mosier, elementary consultant will share current information from the State Department of Education.

## **Forthcoming Meetings**

March 8, 2004  
Northeast State Technical Community College

April 16, 2004  
Eastman/ETSU/Dobyns-Bennett High School

**“The moving power of mathematical invention is not reasoning but imagination.”**

**-De Morgan, A.**

**Directions: From Johnson City: Take I-181N/US-23 N toward Kingsport and travel 16 miles. Take the TN-347/Rock Springs Road – exit 49. Turn slight right and travel 1 mile on Rock Springs Road. Turn Left onto Moreland Drive. From Bristol: Take I-81 S toward Knoxville and travel 15 miles. Merge onto TN-36 N/Fort Henry Dr – exit 59 – toward Kingsport. Turn Left onto Rock Springs Road and travel 1 mile. Turn Right onto Moreland Drive.**

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## **Officers of UETCTM for 2002-2003**

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## February 10 Meeting Agenda

?? Upcoming Elections

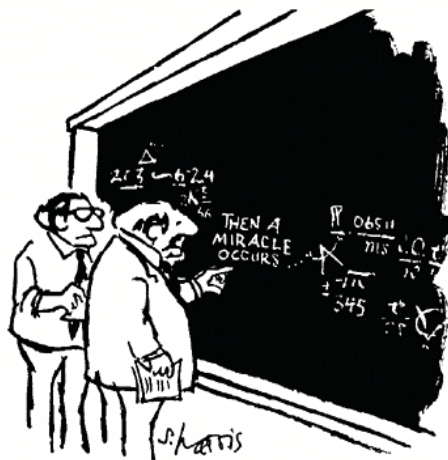
?? Arthur Benjamin visit – Mathemagics!



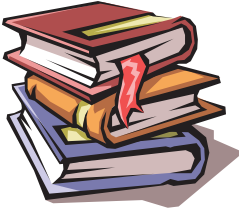
Information regarding Mathcounts coming soon!

## Middle School Math Day

Middle School Math Day is a joint effort of area Mu Alpha Theta's in conjunction with UETCTM and area businesses, such as Eastman Chemical, scheduled on Saturday, April 17, 2004 at Dobyns-Bennett High School.



"I THINK YOU SHOULD BE MORE EXPLICIT  
HERE IN STEP TWO."



## High-Stakes Tests

**Competency** (for those students who entered High School prior to 2001-02):

February 23-27, 2004

June 8-9, 2004

July 13-14, 2004

### **Gateway**

Algebra I, Biology, and English 10 – May 4-6, 2004

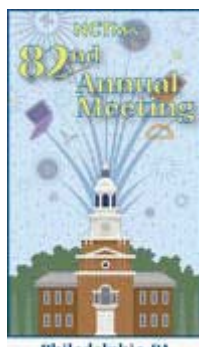
July 20-22, 2004

### **Terra Nova** (Grades 3-8)

Window: March 22-April 9, 2004

## NCTM – National Meeting

The National Council of Teachers of Mathematics (NCTM) will hold its National meeting in Philadelphia, PA on April 21-24, 2004. The theme for this year's meeting will be, "Defining Mathematics for All." Philadelphia Preview will be available early in November. The conferences will be held at the Pennsylvania Convention Center, Loews of Philadelphia, and Philadelphia Marriott. NCTM members will receive full registration for \$160. Since we adopt math textbooks next year, this would be a great conference to attend to check out new series.



## **NCTM Academies**

Listed below are the NCTM Academies being held in our region.

**Geometry** – all grade bands – Richmond, VA  
March 25-27, 2004

**Assessment** – all grade bands – Cleveland, OH  
June 24-25, 2004

**Data & Probability** – Boston, MA  
July 11-13, 2004

**Assessment** – all grade bands – Indianapolis, IN  
September 29 – October 1, 2004

Registration information is available at [www.nctm.org](http://www.nctm.org).

## **UETCTM Scheduled Meetings**

The following is a schedule of the upcoming UETCTM scheduled meeting dates along with the speakers for each meeting.

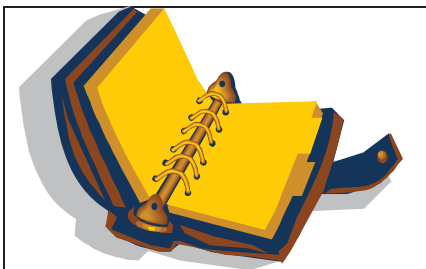
**March 8, 2004** Northeast State Technical Community College

Speaker: Allen Bellman – Prentice Hall

**April 16, 2004** Eastman/ETSU/Dobyns-Bennett

Speaker: Mathemagician Art Benjamin (Harvey Mudd College)





# **MARK YOUR CALENDAR!**

**March 25-27, 2004**

**NCTM Geometry Academy**

**April 17, 2004**

**Middle School Math Day**  
Dobyns-Bennett High School

**April 21-24, 2004**

**NCTM National Meeting**  
Philadelphia, PA  
Theme: “Defining Mathematics for  
All”

**June 24-25, 2004**

**NCTM Assessment Academy**

**July 11-13, 2004**

**NCTM Data & Probability  
Academy**

**Sept. 29 –Oct. 1, 2004**

**NCTM Assessment Academy**

# **Mathemagics!**

## **IS COMING To the Tri-Cities TN/VA Area!!!!**

**WHAT:** **Dr. Arthur Benjamin, mathematics professor** at Harvey Mudd College in Claremont, California and inventor of the Mathemagics Course which teaches children and adults the secrets of rapid mental calculation, will visit the Tri-Cities, TN/VA, area and perform his Mathemagics

**WHEN:** April 16<sup>th</sup> & April 17<sup>th</sup>

**WHERE:** Nancy Pridemore Theatre  
Dobyns-Bennett H. S.  
1800 Legion Drive  
Kingsport, TN

### **Two FUN-Filled Days**

April 16<sup>th</sup>: Workshops will be conducted for area students in grades 5-12, teachers, parents, and the public

April 17<sup>th</sup>: Workshops will be conducted as part of the Tenth Annual Middle School Math Day

## April 16, 2004

The workshops on April 16<sup>th</sup> are presented **free of charge** by Eastman Chemical Company, ETSU Mathematics Department, Upper East Tennessee Council of Teachers of Mathematics, and area chapters of Mu Alpha Theta [the honorary high school mathematics organization] and are open to any student in grades 5-12 in the region.

Registration will be limited by the seating capacity of the Little Theatre to 400 participants, therefore it is imperative that schools submit their registrations as soon as possible. Register ASAP by submitting the enclosed registration form(s) by mail, fax, or email.

Schools and/or parents are responsible for transportation and instructions will be included for loading, unloading and parking.

On April 16<sup>th</sup>, Dr. Benjamin will conduct multiple hour-long sessions on *Mathemagics*, combining his expertise in Mathematics with his love of Magic. The following schedule is tentative, based entirely on the number of registrations received; revision may be necessary to accommodate the numbers of participants.

|               |   |
|---------------|---|
| 9:00 - 10:00  | First Presentation: for Students in Grades 5-8, Teachers & Parents    |
| 10:30 - 11:30 | Second Presentation: for Students in Grades 5-8, Teachers & Parents   |
| 12:00 - 1:00  | Third Presentation: for Students in Grades 9-12, Teachers & Parents   |
| 2:00 - 3:00   | Fourth Presentation: for the Community and Area Colleges of Education |
| 5:00 - 8:00   | Dinner Meeting at ETSU for area Teachers                              |

Please share this information with all schools in your system at once. We hope that you will promote this throughout your system, as an opportunity like this rarely comes along at no charge to students. You are encouraged to release this information to the media and to include it on district and school websites. **DEADLINE FOR REGISTRATION: MARCH 26<sup>TH</sup>**

**April 17, 2004**

## **10<sup>th</sup> Annual Middle School Math Day**

**Grades 5-8 Only**

**Theme: MATH is FUNctional**

9:00 - 12:30      Dobyms-Bennett Gym Lobby & Math Pod  
Fee: \$3.00

Students in the region are invited to attend the 10<sup>th</sup> Annual Middle School Math Day, one of the most popular mathematics events in the region. From a list of 20 or more choices, students will select two 50-minute hands-on sessions in which to participate. Each session is limited to 15 participants, so registration forms need to be returned at once.

Some of the workshops to be offered include Origami, African Rainsticks, Ravenous Raptors, Tangrams, and Mathemagics by Dr. Benjamin. All participants will attend the keynote session with Dr. Benjamin and will receive a continental breakfast, a commemorative t-shirt, chances to win cool door prizes, and other freebies.

To keep the sessions small, registration will be limited to the first 200 received. If more than 200 registrations are received, a waiting list will be established. It is for this reason that students are encouraged not to be a last-minute "No-Show." There will be no refunds after March 1<sup>st</sup> ; if a student who has registered cannot attend, someone on the waiting list will replace them. Similarly, the t-shirt(s) and other freebies will be given to those who attend.

Schools are responsible for transportation and students are encouraged to arrive at 9:00 or shortly thereafter so that the first session can begin promptly at 9:30. There will not be enough space for teachers and/or parents accompanying students to attend the mini-sessions; however, they are invited to attend the closing session. Refreshments will be provided.

**DEADLINE FOR REGISTRATION: MARCH 26<sup>TH</sup>**

**An excerpt from Art Benjamin's webpage:**



I offer three assembly-length shows. For older audiences (grades 4 and above), I get students excited about math by demonstrating my calculating talent (I literally race calculators!), along with a variety of mathematical tricks, and then I teach the students how they can learn these math tricks themselves. My presentation is aimed at building confidence in math skills and showing kids how math can be fun! For younger audiences (grades K-3), I present a magic show with a strong mathematical theme. Using a combination of magic and storytelling, I introduce students to the magic of mathematics. By the end of the show, they will learn to do some of these tricks on their own. Lastly, I offer an evening show that combines elements of both presentations. This show is suitable for all ages and is perfect for Family Math Nights. I have presented my shows all over the world, but I especially love doing shows for schools.

Find out more about Art at his homepage:

<http://www.math.hmc.edu/~benjamin/index.html>

Kingsport City Schools does not discriminate on the basis of race, color, national origin, sex, disability, or age in its programs and activities, in any employment practice, educational program, or any other program, activity or service. The following person has been designated to handle inquires regarding the non-discrimination policies: Coordinator for Section 504 and Title IX, Kingsport City Schools, 1701 East Center Street, Kingsport, TN 37664, (423)378-2100

Please contact Sherry Cox at 423-378-2415 for additional information. If you need specific accommodations for either event, we will make every effort within reason to meet your needs.

### Membership Application

Complete & return to Jennifer Light with a check for \$10 made payable to UETCTM.

**Name:** \_\_\_\_\_

**Home Address:** \_\_\_\_\_

\_\_\_\_\_

**Home Phone:** (\_\_\_\_) \_\_\_\_\_

**School:** \_\_\_\_\_

**School Address:** \_\_\_\_\_

\_\_\_\_\_

**School Phone:** (\_\_\_\_) \_\_\_\_\_

**Email Address:** \_\_\_\_\_

**UETCTM News**

Jennifer Light, Treasurer- UETCTM  
389 Ridgeway Road  
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**Inside This Issue:**

Meeting Agenda  
Middle School Math Day  
Test Dates  
NCTM Information  
Scheduled Meetings  
Mathemagics!



# UETCTM News

Volume 5 Issue 1

September 6, 2004

“Imagination is more important than knowledge.”

-Albert Einstein



“Mathematical reasoning may be regarded rather schematically as the exercise of a combination of two facilities, which we may call intuition and ingenuity.”

-Alan Turing



The Upper East Tennessee Council of Teachers of Mathematics will host its first meeting of the 2004-2005 school year on Monday, September 13<sup>th</sup> at

Sullivan South High School. Refreshments will be served from 4:00 – 4:30, providing a chance to mix and mingle with local math teachers. A short business meeting begins at 4:30, followed by a session on Graph Theory Applications in High School, given by Debbie Knisley (ETSU), and the MS Program in the Teaching of K-8 Mathematics, given by Anant Godbole (ETSU).

**Directions: Coming from Johnson City on I-181N (=I-26W), take exit 49,**

**Rock Springs Road. Turn slight right onto Rock Springs Road and travel for 1.1 miles. Turn left onto Moreland Drive. The school is located at 1236 Moreland Drive.**

## 2004-2005 Meetings

October 12, 2004  
Northeast State Comm. Coll.

November 15, 2004  
Science Hill High School

February 8, 2005  
Dobyns-Bennett High School

March 8, 2005  
Elizabethton High School

May 3, 2005  
Cookout at Eastman Lodge

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## TMTA Meeting



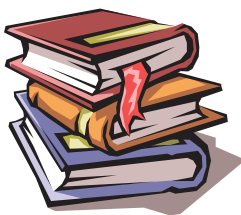
The annual meeting of the Tennessee Mathematics Teachers' Association will be held September 24-25, 2004. This year's conference is hosted by our affiliate, Chattanooga Area Mathematics Teachers' Association at Chattanooga State Technical Community College in Chattanooga, Tennessee. We have over 100 breakout sessions and two keynote addresses along with the theme of *Reaching All Learners*. You may access the program booklet and registration form online at [www.tmta.info](http://www.tmta.info). Please forward this information to other teachers at your school or direct them to the TMTA website for more information.

## Franklin Math Bowl

The Franklin Math Bowl will be held on November 13 at ETSU. More details soon!!



Information regarding Mathcounts coming soon!

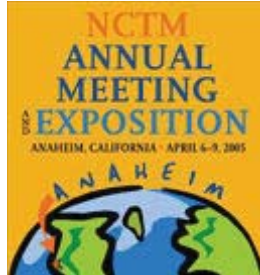


## High-Stakes Tests

Information regarding test dates for high-stakes test coming soon!

## **Middle School Math Day**

Information regarding Middle School Math Day coming soon!



## **NCTM – National Meeting**

The National Council of Teachers of Mathematics (NCTM) will hold its National meeting in Anaheim, CA on April 6-9, 2005. The theme for this year's meeting will be, "Embracing Mathematical Diversity." The conferences will be held at the Anaheim Convention Center, Anaheim Marriott Hotel, and the Hilton Anaheim Hotel. NCTM members will receive full registration for \$180. Highlights on presentations will be available online in November. For additional information, please visit their website at <http://www.nctm.org/meetings/anaheim/index.htm>. This is a great opportunity for everyone!



## NCTM Academies

The NCTM Academy on Assessment for all grade bands will be held in Indianapolis, IN, September 29 – October 1, 2004. This is the final workshop for Fall 2004. Information regarding academies for 2005 will be available soon! For additional information, visit the website at [www.nctm.org/academy](http://www.nctm.org/academy).

## UETCTM Scheduled Meetings

The following is a schedule of the upcoming UETCTM scheduled meeting dates along with the speakers for each meeting.

- September 13, 2004** Sullivan South High School  
Speakers: Debbie Knisley, ETSU, on “Graph Theory Applications (High School), and Anant Godbole, ETSU, on “MS Program in the Teaching of K-8 Mathematics (Elementary and Middle). Tara Peters will be in charge of the meeting.
- October 12, 2004** Northeast State Technical Community College  
Speakers: To be announced. Malissa Trent will be in charge of the meeting.
- November 15, 2004** Science Hill High School  
Speaker: “Textbook Fair” for all teachers. Floyd Brown will be in charge of the meeting.
- February 8, 2005** Dobyns-Bennett High School  
Speakers: Floyd Brown on “Cabri Jr. Applications” (7 – 12 group) and Micheal Carter on “TI-83 calculator” (K – 8 band) Michael Carter will be in charge of the meeting.
- March 8, 2005** Elizabethton High School  
Speaker: Three sessions on Reading in Math, Biology and Math, and

State Department Issues. Kathe Rainwater will be in charge of the meeting.

**May 3, 2005** Cookout at Eastman Lodge  
Speaker: "Reminiscing-Type" presentations by several long-time UETCTM members



**MARK  
YOUR  
CALENDAR!**

**September 24-25, 2004**

**TMTA/Chattanooga Area Council  
of Teachers of Mathematics**  
Chattanooga State Technical  
Community College

**September 29 – October 1, 2004**

**NCTM Academy on Assessment**  
Indianapolis, IN

**November 13 2004**

**Franklin Math Bowl**

**April 6 – 9, 2005**

**NCTM National Meeting**  
Anaheim, CA  
Theme: "Embracing Mathematical  
Diversity"

Theme: "Defining Mathematics for  
All"



## Membership Application

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### UETCTM News

Floyd Brown, Treasurer- UETCTM  
1509 John Exum Parkway  
Johnson City, TN 37604

### Inside This Issue:

Meeting Dates  
TMTA Meeting  
Middle School Math Day  
NCTM National Meeting/Academies







# UETCTM News



Volume 5 Issue 2

October 6, 2004

“If I have seen it further, it is by standing on the shoulders of giants.”

-Sir Isaac Newton



“It is a mathematical fact that the casting of this pebble from my hand alters the centre of gravity of the universe.”

- Thomas Carlyle



The Upper East Tennessee Council of Teachers of Mathematics will host its second meeting of the 2004-2005 school year on Tuesday, October 12<sup>th</sup> at

Northeast State Community College. We will be having a **STATSTRAVAGANZA!** We will have two sessions that demonstrate statistics activities: K-8 and 9-college. Shannon Brewer and Malissa Trent will conduct the K-8 session and Mary Ella Poteat (and possibly Maggie Flint as well) will be in charge of the 9-college session. We are looking forward to this event and hope to have a great turnout.

We will meet in the Faculty/Staff dining room, located next to

Subway in the auditorium building.

UETCTM members will need to drive around behind the math/science building and park near the shop building. Malissa Trent will reserve some parking spaces there and students will be handing out parking permits.

**Directions: From Johnson City: Take I-181N/I-26W toward exit 42. Travel through Gray and go 7-8 miles to the airport. NSTCC is on your right just past the airport. From Kingsport: Take I-81N to the airport exit (#63) and turn right. Proceed towards the airport and follow the signs to NSTCC.**

## 2004-2005 Meetings

October 12, 2004  
Northeast State Comm. Coll.

November 15, 2004  
Science Hill High School

February 8, 2005  
Dobyns-Bennett High School

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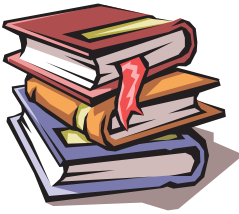
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## **Franklin Math Bowl**

The Franklin Math Bowl will be held on November 13 at ETSU. More details soon!!



Information regarding Mathcounts coming soon!



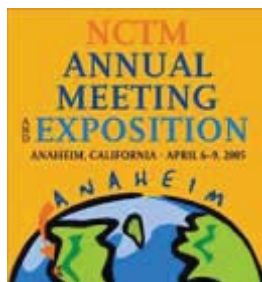
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**December 7, 2004: Gateway Math Test**

Information regarding additional test dates coming soon!

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## **NCTM – National Meeting**

The National Council of Teachers of Mathematics (NCTM) will hold its National meeting in Anaheim, CA on April 6-9, 2005. The theme for this year's meeting will be, "Embracing Mathematical Diversity." The conferences will be held at the Anaheim Convention Center, Anaheim Marriott Hotel, and the Hilton Anaheim Hotel. NCTM members will receive full registration for \$180. Highlights on presentations will be available online in November. For additional information, please visit their website at <http://www.nctm.org/meetings/anaheim/index.htm>. This is a great opportunity for everyone!

## **MAA – New Online Magazine!**

The Mathematical Association of America announces the launching of a new online magazine and resource in the history of mathematics and its use in teaching, entitled *Convergence: Where Mathematics, History and Teaching Interact*, with the cooperation of the National Council of Teachers of Mathematics and the financial support of the National Science Foundation. The target audience is teachers of grades 9-14 mathematics, be they secondary teachers, two- or four-year college teachers, or college teachers preparing secondary teachers. The magazine will include articles dealing with the history of various topics in the curriculum, classroom suggestions designed for immediate use, historical problems, a "what happened today in history" feature giving mathematical events that happened on that date in history, interesting mathematical quotations changing daily, reviews of books and teaching materials, and a calendar of upcoming meetings and other events in the history of mathematics and its use in teaching. To visit the magazine, point your browser to <http://convergence.mathdl.org>. For more information, or to contribute, write to the editors: Victor J. Katz: [vkatz@udc.edu](mailto:vkatz@udc.edu); Frank J. Swetz: [fjs2@psu.edu](mailto:fjs2@psu.edu).

## **UETCTM Scheduled Meetings**

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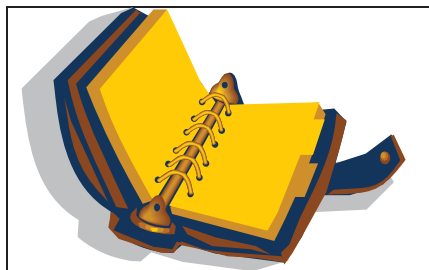
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**December 7, 2004**

**Gateway Math Test**

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Anaheim, CA

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#### Inside This Issue:

Meeting Dates  
NCTM National Meeting  
MAA Online Magazine



“The mathematician’s patterns, like the painter’s or the poet’s must be beautiful; the ideas like the colors or the words must fit together in a harmonious way. Beauty is the first test: there is no place in this world for ugly mathematics.”

- Godfrey Hardy



“The greatest unsolved theorem in mathematics is why some people are better at it than others.”

- Adrian  
Mathesis



The Upper East Tennessee Council of Teachers of Mathematics will host its third meeting of the 2004-2005 school year on Monday, November 15<sup>th</sup> at

Science Hill High School.

We will be having a Mathematics Book Fair!

This will be a great opportunity to compare textbooks. From 4:00 – 5:00, display booths will be set up in the library and from 5:00 – 7:00 presentations will be held in the classrooms.

Several book companies are planning to attend, and this will be an enjoyable time to learn about all that is offered regarding upcoming textbooks. Refreshments and door prizes will be provided!!

We will meet at Science Hill High School. If you have any questions, please contact Tara Peters at Sullivan South High School (423-354-1400) or Floyd Brown at Science Hill High School (423-232-2190). Hope to see you there!

**Directions: From Kingsport: Take I-26 towards Johnson City and take exit 35 (Roan Street). Turn right onto Roan Street and travel for approximately 1.5 miles. Science Hill High School will be on your right.**

### **2004-2005 Meetings**

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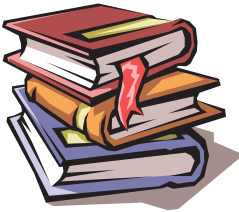
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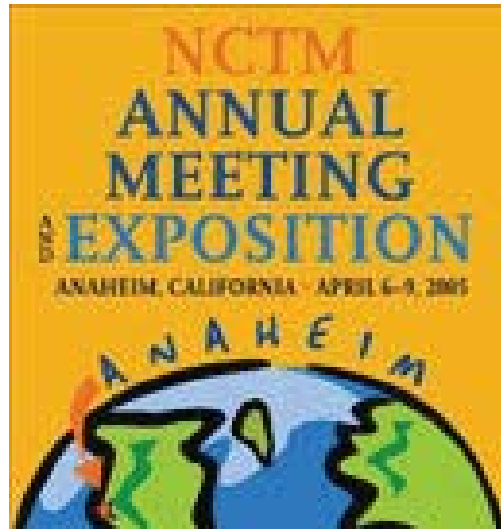
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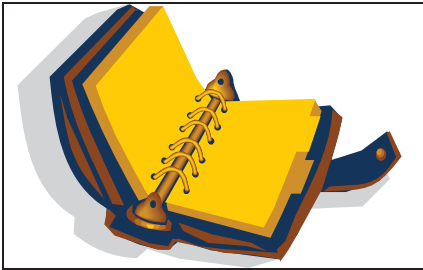
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### Inside This Issue:

Mathematics Book Fair!  
Meeting Dates  
NCTM National Meeting





“An expert problem solver must be endowed with two incompatible qualities, a restless imagination and a patient pertinacity.”

- Howard W. Eves



“Every new body of discovery is mathematical in form, because there is no other guidance we can have.”

- Charles Darwin



The Upper East Tennessee Council of Teachers of Mathematics will host its fourth meeting of the 2004-2005 school year on Tuesday, February 8<sup>th</sup> at

Dobyns-Bennett High School. Refreshments will be served from 4:00 – 4:30, providing a chance to mix and mingle with local math teachers. A short business meeting begins at 4:30, followed by a session on “Cabri Jr. Applications” (7 – 12 group) given by Floyd Brown and “TI-83 calculator” (K – 8 band) given by Micheal Carter. Micheal Carter will be in charge of the meeting.

### **2004-2005 Meetings**

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March 8, 2005  
Elizabethton High School

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Cookout at Eastman Lodge

**Directions: From Johnson City:** From Interstate I-181, going towards Kingsport, take the Wilcox Drive exit. Go straight through the light at the end of the exit ramp. Continue past Meadowview on left, Tennessee Eastman(both sides of road), go through railroad underpass, continue until you reach Center Street. Turn right onto Center Street and veer right at the fork onto Fort Henry Drive. Turn left onto Legion Drive into Dobyns-Bennett parking lot.

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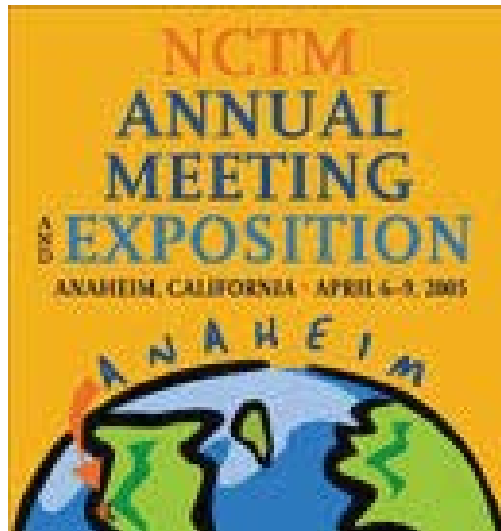
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## **Special Message from NCTM's President**

January 2005



Photo reprinted with permission of the publisher, Early Years, Inc. From the January 2004 issue of *Teaching K-8 Magazine*, Norwalk, CT 06854.

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### **Who's Doing the Talking?**

By Cathy L. Seeley  
President, National Council of Teachers of Mathematics

In the November 2004 President's Message for the *NCTM News Bulletin* (available at [www.nctm.org/news/president](http://www.nctm.org/news/president)), I suggested that the most important factor in a student's mathematics learning (after teacher expectations) is the student's active engagement in the learning process. One clue to whether students are engaged in learning can be found by looking into classrooms and noticing who is doing the most talking—the teacher or the students.

Most of us learned to teach the same way we ourselves were taught. Often, the classrooms we experienced as learners were teacher-centered, with students expected to listen, take notes, do homework, and answer test questions based on what was presented to us by the teacher. Along the way, there may have been a few absolutely wonderful teachers who drew us into their teaching through entertaining and nonroutine variations

on the traditional lecture model. Other times we suffered through boring mathematics presentations where we were not engaged in our own learning. Fortunately, many of us were successful as students in this type of lecture-based classroom, and we may even have become somewhat proficient using a similar model of teaching ourselves. While we were learning, however, many other students were never engaged in mathematics through lectures, even with the most energetic teacher.

Today we are called to teach challenging mathematics to a much wider range of students than ever before. Teachers tell me that fewer and fewer of even their more successful students respond positively to teacher-centered, lecture-based teaching. In recent curriculum projects based on NCTM's *Principles and Standards for School Mathematics*, a different teaching model is emerging. Often, students are expected to work in small groups around engaging tasks, either in real settings or in interesting mathematical contexts. Although it is possible to use these excellent materials in a teacher-centered classroom, far greater gains are found when the teacher gives students a greater role in the learning process.

The teachers who are most effective with these materials offer guidance and probing questions instead of telling students all the things they are supposed to learn. In this kind of student-centered classroom, the teacher's role is to set the stage, organize the task, ask good questions, and help students connect their experience to the mathematics being addressed. Much of this work happens with the class as a whole, but there is usually a period of intense student activity where students interact around the mathematics in pairs or small groups. This new teacher role calls for sophisticated knowledge of both mathematics and learning, and it takes at least as much preparation as a good lecture or content presentation. But the payoff is immense. When students have the opportunity to figure out an approach to a problem; discuss, argue, and justify their ideas; and wrestle with challenging mathematics, they are truly engaged in their learning. They are hooked into the mathematics. They are much more likely to be able to remember what they learn and apply it to other situations than they would if they were simply told how to solve a particular type of problem.

To determine how engaged your own students are, take an objective look at your classroom and ask yourself who's doing the talking. If the teacher's voice is the voice usually heard, how engaged are students? If the classroom is largely quiet, how engaged are students? If only short fill-in-the-blank kinds of responses are expected from students, how engaged are students? Even if students are heard, if only a few students have the opportunity to make comments or offer possible answers to the teacher's questions, how engaged are the rest of the students?

Shifting the focus of the classroom to include more student engagement does create a noisier classroom. In fact, it may appear to be less structured or orderly than a teacher-directed classroom. After all, this type of learning environment involves lots of students talking, often at the same time, as they work in small groups. Learning to see the benefits of this apparent disorder is an important step for a teacher shifting toward more student engagement. Noise and student involvement do not have to turn into chaos or lack of structure. On the contrary, effective teachers learn to manage such classrooms with clearly spelled-out expectations for student behavior and student participation. Students have well-defined roles in their groups, and the teacher serves as an organized facilitator. The result is that students learn with real understanding.

If you are accustomed to teaching in a teacher-directed classroom, it may be challenging to shift to a more student-centered style. You will likely need to go through appropriate professional development that will ideally include some kind of long-term support. But the payoff for you and your students will be tremendous as you hear a higher level of mathematics conversation and as you see for yourself a higher level of student learning.

*Cathy Seeley is president of the National Council of Teachers of Mathematics (NCTM).  
This article is provided as a service to Affiliates of NCTM.*

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Special Message from NCTM's President  
Meeting Dates  
NCTM National Meeting

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# UETCTM News

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Volume 5 Issue 5

February 25, 2005

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“Pure mathematics is, in its way, the poetry of logical ideas.”

- Albert Einstein



“Each problem that I solved became a rule which served afterwards to solve other problems.”

- René Descartes



The Upper East Tennessee Council of Teachers of Mathematics will host its fifth meeting of the 2004-2005 school year on Tuesday, March 8<sup>th</sup> at

Elizabethton High School.

Refreshments will be served from 4:00 – 4:30, providing a chance to mix and mingle with local math teachers. A short business meeting begins at 4:30, followed by a session on “Reading in the Math Content Area” given by Joy Runyan of the Eisenhower Math/Science Consortium at the Appalachian Educational Laboratories. Kathe Rainwater will be in charge of the meeting. Nominations/Elections of 2005-06 officers will take place.

## **2004-2005 Meetings**

March 8, 2005  
Elizabethton High School

May 3, 2005  
Cookout at Eastman Lodge

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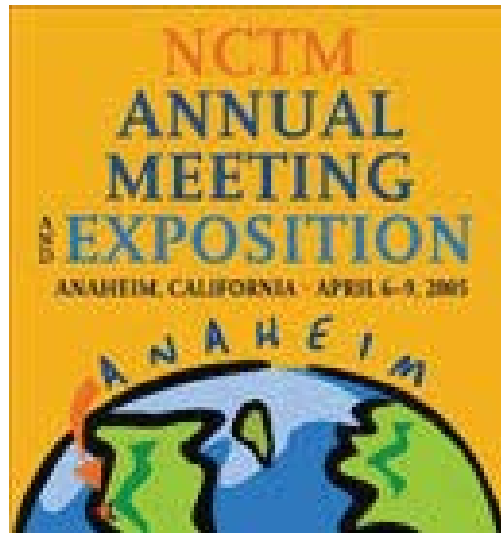
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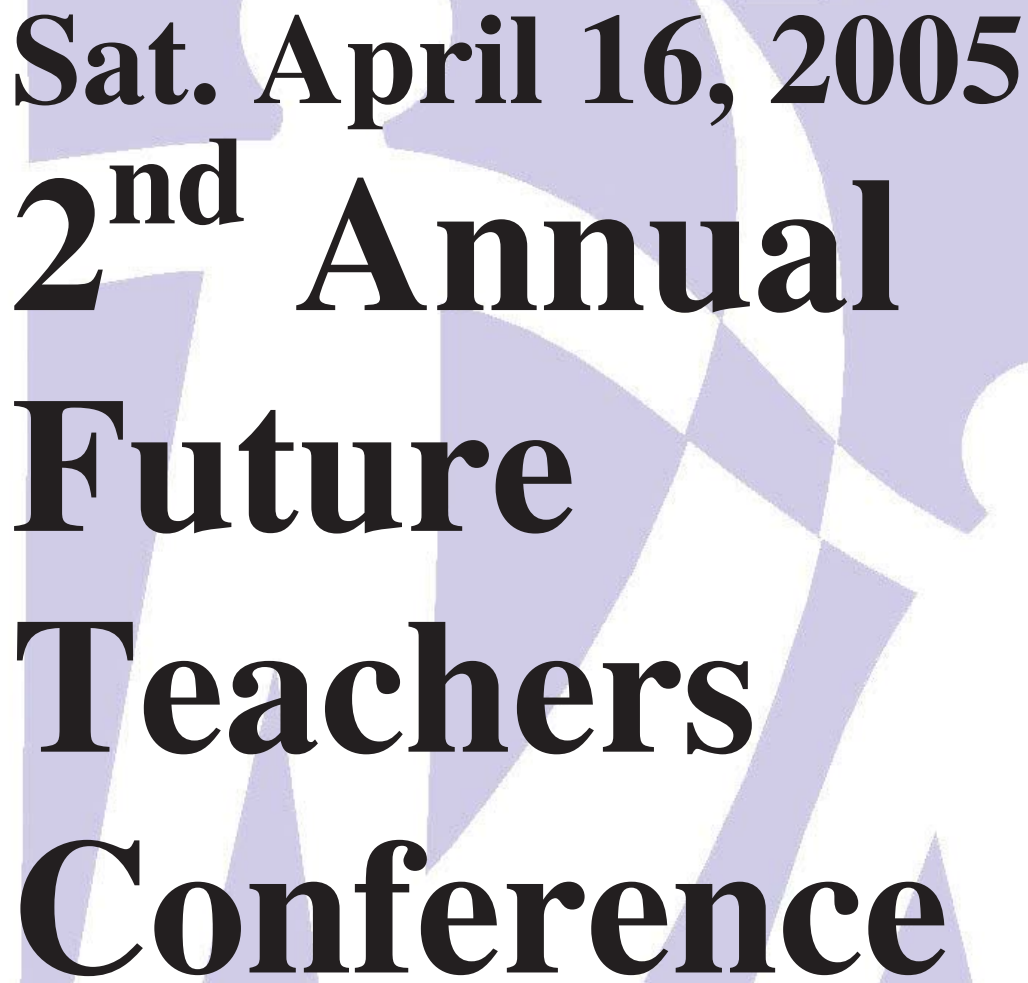
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## **NCTM – National Meeting**

The National Council of Teachers of Mathematics (NCTM) will hold its National meeting in Anaheim, CA on April 6-9, 2005. The theme for this year's meeting will be, "Embracing Mathematical Diversity." The conferences will be held at the Anaheim Convention Center, Anaheim Marriott Hotel, and the Hilton Anaheim Hotel. NCTM members will receive full registration for \$180. Highlights on presentations will be available online in November. For additional information, please visit their website at <http://www.nctm.org/meetings/anaheim/index.htm>. This is a great opportunity for everyone!



**Sat. April 16, 2005**  
**2<sup>nd</sup> Annual**  
**Future**  
**Teachers**  
**Conference**

**Sessions include:**

|   |                            |                            |
|---|----------------------------|----------------------------|
| Principals Panel                              | Experienced Teachers Panel | First Year Teachers Panel, |
| Science                                       | NCLB/Licensure Process     | Guided Reading             |
| Social Studies                                | The Multicultural Class    | Classroom Management       |
| Units/Themes                                  | First Year Experience      | Math                       |
| How Politics Affects You and Your Profession  |                            |                            |
| Calculators in the Classroom AND MANY MORE!!! |                            |                            |

We have a great program planned this year...  
Hope you can join us!

Registration info: Yolanda Sankey [yksankey@pstcc.edu](mailto:yksankey@pstcc.edu)  
Office: AL 252D Phone: 539-7180

# 2<sup>ND</sup> ANNUAL FUTURE TEACHERS CONFERENCE



**Saturday, April 16, 2005**

Pellissippi State Technical Community College  
Hardin Valley Campus



## **REGISTRATION INFORMATION**

Please follow directions on the bottom of the registration form to pay registration fee.

## **REGISTRATION FEES**

Early Registration Discount (*on or before* February 28): \$30.00

Registration Fee (*after* February 28): \$40.00

## **REGISTRATION PROCESS**

Registration will not be processed until completed registration form and payment are received. Registration will be processed on a first-come, first-serve basis; conference maximum is 200 participants. We are unable to make any refunds once registration form and payment are received.

## **CONFERENCE CONFIRMATION**

Early registered attendees will receive a confirmation email, directions to the conference, parking information, and a campus map by March 15, 2005. If you do not receive this email, contact Yolanda Sankey at [yksankey@pstcc.edu](mailto:yksankey@pstcc.edu), AL252D, or (865) 539-7180. All other registered attendees will receive their confirmation info by April 13, 2005.

## **MENU**

*Breakfast*- Danishes, Bagels, Whole Fruit, OJ, Water, Coffee

*Lunch*- Deli Style Sandwiches - Meat Choices, Cheese Choices, Bread Choices, Lettuce, Tomato, Pickle, Onion, Condiments, Macaroni Salad, House Salad

*Snacks*- Cookies, Brownies, Cokes, Water

## **SESSIONS INCLUDE:**

Principal, New, and Experienced Teachers Panels; Science; NCLB; Guided Reading; Social Studies; Classroom Management; The Multicultural Classroom; Math; Technology; How Politics Affects You and Your Profession; Calculators in the Classroom; First Year Experience; Units/Themes, Literature for Adolescents; And Many More!!!!

If you attended last year's conference, remember to bring your tote bag to the conference!

# FUTURE TEACHERS CONFERENCE



**Saturday, April 16, 2005**  
Pellissippi State Technical Community College  
Hardin Valley Campus



**Conference Activities: 7:30am-4:30pm**

**\$40 Registration Fee**  
**(Includes Breakfast & Lunch)**

**Early Registration Discount**  
**Register Before February 28, 2005 for \$30.00**

**!!! Space is limited !!!**

For further information please contact:  
Yolanda Sankey at [yksankey@pstcc.edu](mailto:yksankey@pstcc.edu) or (865) 539-7180  
Meg Moss at [mvmoss@pstcc.edu](mailto:mvmoss@pstcc.edu) or (865) 694-6673  
Kasey Greenway at [fiddlefool272@yahoo.com](mailto:fiddlefool272@yahoo.com) or (865) 789-1792

**Conference Schedule will be posted at [www.pstcc.edu/departments/edu](http://www.pstcc.edu/departments/edu) soon.**

Registration will not be processed until completed registration form and payment are received.  
Registration will be processed on a first-come, first-serve basis; conference maximum is 200 participants.  
We are unable to make any refunds once registration form and payment are received.

---

## REGISTRATION FORM

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Fax ( ) \_\_\_\_\_ Alt. Phone ( ) \_\_\_\_\_

E-mail(s): \_\_\_\_\_

What school are you currently at? \_\_\_\_\_

Did you attend last year's conference? \_\_\_\_\_

Please return this form along with your registration fee (checks payable to PSTCC)  
Before April 9, 2005 to Alexander Building Office #252D or mail to:

PSTCC  
Natural and Behavioral Sciences Dept  
Attn: Yolanda Sankey  
Box 22990  
Knoxville, TN 37933

## **UETCTM Scheduled Meetings**

The following is a schedule of the upcoming UETCTM scheduled meeting dates along with the speakers for each meeting.

**March 8, 2005**

Elizabethton High School

Speaker: Joy Runyan of the Eisenhower Math/Science Consortium at the Appalachian Educational Laboratories will speak on “Reading in the Math Content Area.” Kathe Rainwater will be in charge of the meeting.

**May 3, 2005**

Cookout at Eastman Lodge

Speaker: “Reminiscing-Type” presentations by several long-time UETCTM members





**MARK  
YOUR  
CALENDAR!**

**April 6 – 9, 2005**

**NCTM National Meeting**

Anaheim, CA

Theme: “Embracing Mathematical  
Diversity”

**April 16, 2005**

**Future Teachers Conference**

Pellissippi State Technical

Community College

Hardin Valley Campus

Session: Principal, New, and

Experienced Teachers Panels;

Classroom Management; The

Multicultural Classroom; Math;

Technology; Calculators in the

Classroom; First Year Experience;

Units/Themes, And Many More!!!!

## Membership Application

Complete & return to Floyd Brown with a check for \$10 made payable to UETCTM. Completed Application and check may be mailed to Floyd Brown, Science Hill High School, Mathematics Dept., 1509 John Exum Parkway, Johnson City, TN 37604

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**Email Address:** \_\_\_\_\_

### UETCTM News

Floyd Brown, Treasurer- UETCTM  
1509 John Exum Parkway  
Johnson City, TN 37604

### Inside This Issue:

2<sup>nd</sup> Annual Future Teachers Conference  
Meeting Dates  
NCTM National Meeting

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# UETCTM News

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Volume 6 Issue 3

November 8, 2005

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The Upper East Tennessee Council of Teachers of Mathematics will host its third meeting of the 2005-2006 school year on Monday, November 14<sup>th</sup> at Elizabethton High School (look for signs for room numbers). Contact person: Kathe Rainwater

4—430: Refreshments;  
430—5: Business Meeting  
5—530, Guy Mauldin, High School Talk on  
“Slope Fields and other Interesting Topics”  
530-6, Daryl Stephens, ETSU,  
Elementary/Middle School Talk on  
“Construction of Magic Squares.”  
(The talks will be back-to-back, not held  
simultaneously)

**Directions: From Johnson City:** From Interstate I-26 E, going towards Johnson City, take Exit 31 toward Elizabethton/Milligan College. Turn right onto Bernberg Rd. Turn left onto West E Street. Elizabethton High School is located at 907 West E Street.

| <b><u>2005-2006 Meetings</u></b> |
|----------------------------------|
| LOCATIONS TO BE ANNOUNCED        |
| February 14, 2006                |
| April 10, 2006                   |
| May 9, 2006                      |

**Officers of UETCTM for 2005-2006**

- President: Tara Peters  
Sullivan South High School  
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## **UETCTM Scheduled Meetings**

The following is a schedule of the upcoming UETCTM scheduled meeting dates. Location and speakers will be announced later.

Tuesday February 14;  
Monday April 10;  
Tuesday May 9

## **Possible MS Mathematics Education Cohorts**

ETSU has launched two MS Programs in Pre-Collegiate Mathematics. See <http://www.etsu.edu/math/precollegiate/precollegiate-math.htm> for details.

1. IT IS LIKELY (subject to funding, we will know about the status of the grant application by Thanksgiving) that a new K-8 cohort will begin in January 2006 with FULL TUITION support. Teachers from partner districts (Elizabethton City, Hancock County, Johnson County, Unicoi County, Kingsport City) are particularly invited, but applications are welcome from ALL K-8 teachers. Classes will be at ETSU once a week. Please tell your colleagues and contact Anant Godbole, [godbolea@etsu.edu](mailto:godbolea@etsu.edu) for more information.
2. IT IS ALSO LIKELY that a new 7-12 cohort will start in January 2006 at the ETSU Bristol Campus, unfortunately with no initial support. Please tell all your colleagues. Contact Anant Godbole, [godbolea@etsu.edu](mailto:godbolea@etsu.edu) for information.

### CAVEATS:

These programs will not provide licensure or an add-on. They are intended to provide a deep understanding of the math teachers will use in the classroom.

## **MATH and BIOLOGY SYMBIOSIS**

UETCTM members Tara Peters, Floyd Brown and Pat Jungkeit will soon be coming to your school to recruit HS seniors for a new program at ETSU – Quantitative Biology. Students will earn \$500, \$1500, \$2500, \$3500 in undergrad research stipends their HS senior year, and freshman, sophomore and junior years in college respectively. KEEP your eyes wide open to IDENTIFY students who are

- Motivated;
- Would like to go to ETSU, more or less on a free ride;
- Do NOT, I REPEAT NOT have a burning desire to do math or biology – we are looking for persons who are more or less “undecided”.

## Membership Application

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**Email Address:** \_\_\_\_\_

### UETCTM News

Floyd Brown, Treasurer- UETCTM  
1509 John Exum Parkway  
Johnson City, TN 37604

### Inside This Issue:

MS Cohorts  
Math Biology major

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# UETCTM News

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Volume 6 Issue 4

February 2, 2006

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The Upper East Tennessee Council of Teachers of Mathematics will host its fourth meeting of the 2005-2006 school year on Tuesday, February 14<sup>th</sup> at Dobyns Bennett High School). The meeting will be held in the library (look for signs)

4—430: Refreshments;  
430—5: Business Meeting  
5—6, Nancy Duggin from the State Department has agreed to be our guest speaker. She is going to talk with K-12 teachers about National Board Certification. Teachers should come prepared to hear some interesting information! Feel free to ask Ms. Duggin any relevant questions pertaining to National Board Certification. Again, all math teachers, K-12, are invited to attend!

| <b>2005-2006 Meetings</b>                                   |
|---|
| February 14, 2006, Dobyns Bennett High School               |
| April 10, 2006, Northeast State Technical Community College |
| May 9, 2006, Warrior's Path State Park                      |

**Directions: Coming from Johnson City on I-181N (=I-26W), take exit 51 and make a right onto John B. Dennis Highway.**

**Proceed on John B. Dennis until you pass Eastman Chemical Co. on your left. Take the next exit, which is Fort Henry. Make a right onto Fort Henry and proceed on Fort Henry until you reach Dobyns-Bennett on your right. Park anywhere and enter on either the left or the right of the main entry. Proceed up the ramp to the library. Signs will be posted. If you take exit 59 from I-81, you will exit onto Fort Henry Drive. Proceed toward Kingsport until you reach Dobyns-Bennett.**



**Officers of UETCTM for 2005-2006**

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Email: [fbrown@xtn.net](mailto:fbrown@xtn.net)

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**UETCTM Grant Applications to be accepted at  
February 14 meeting**

We have some about \$2500 in our account that, quite frankly, we should be putting to better use. We have decided to allow our member teachers the opportunity of making a "request" to buy "item(s)" for their classrooms that are truly worthy and needed. In order to be considered for the request, such teacher(s) need to submit their request at our next meeting, which will be held at Dobyys-Bennett High School on February 14, 2006. The teachers must apply in person, and must show/stay for the meeting(s) in order to be considered. Also, such teachers must belong to the UETCTM. Cost of the request should be reasonable in order to be considered. The executive board will decide if the request(s) are accepted or rejected.

**MATH and BIOLOGY SYMBIOSIS**

UETCTM members Tara Peters, Floyd Brown and Pat Jungkeit will soon be coming to your school to recruit HS seniors for a new program at ETSU – Quantitative Biology. Students will earn \$500, \$1500, \$2500, \$3500 in undergrad research stipends their HS senior year, and freshman, sophomore and junior years in college respectively. KEEP your eyes wide open to IDENTIFY students who are

- Motivated;
- Would like to go to ETSU, more or less on a free ride;
- Do NOT, I REPEAT NOT have a burning desire to do math or biology – we are looking for persons who are more or less “undecided”.

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### UETCTM News

Floyd Brown, Treasurer- UETCTM  
1509 John Exum Parkway  
Johnson City, TN 37604

### Inside This Issue:

UETCTM Grants  
Math Biology major

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# UETCTM News



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Volume 6 Issue 5

March 30, 2006

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The Upper East Tennessee Council of Teachers of Mathematics will host its fifth meeting of the 2005-2006 school year on Monday, April 10<sup>th</sup> at Northeast State Technical Community College. The meeting will be held in the Math Science building (look for signs). UETCTM members will need to drive around behind the math/science building and park near the shop building. Malissa Trent will reserve some parking spaces there and students will be handing out parking permits.

4:00—4:30: Refreshments;

4:30—4:45: Business Meeting

4:45—5:20: Elementary/Middle talk: Ms. Nelle Gobble, Associate Professor, NSTCC Mathematics Division will do a presentation on the use of attribute blocks.

5:25—6:00: High School/College level talk,

Dr. Mark Pollock, Ph.D., Ch.E., P.E., Professor, NSTCC Mathematics Division.

Spark Mathematics with Mnemonics, Demonstrations, and Super Notebooks

The use of mnemonics, demonstrations, and super notebooks creates an environment for synergistic learning of TEAMS, an acronym for Technology, Engineering, Art, Mathematics, and Science.

|   |
|---|
| <b><u>2005-2006 Meetings</u></b>                            |
| April 10, 2006, Northeast State Technical Community College |
| May 9, 2006, Warrior's Path State Park                      |

**Directions: From Johnson City: Take I-181N/I-26W toward exit 42. Travel through Gray and go 7-8 miles to the airport. NSTCC is on your right just past the airport. From Kingsport: Take I-81N to the airport exit (#63) and turn right. Proceed towards the airport and follow the signs to NSTCC.**

**Officers of UETCTM for 2005-2006**

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## **MATH and BIOLOGY SYMBIOSIS**

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- Motivated;
- Would like to go to ETSU, more or less on a free ride;
- Do not have a burning desire to do math or biology – we are looking for persons who are more or less “undecided”.

The website with complete application form is at [www.etsu.edu/teqb/](http://www.etsu.edu/teqb/).  
Questions can be addressed to Anant Godbole; [godbolea@etsu.edu](mailto:godbolea@etsu.edu)



# T<sup>3</sup> Teacher Leader Cadre (TLC) Open Enrollment Course

## Geometry Using the TI-83 Plus/TI-84 Plus Madison, TN

**Dates:** June 5-9, 2006

August 4-5, and  
September 29-30, 2006

**Location:** Goodpasture Christian School  
619 W Due West Avenue  
Madison, TN 37115



Learn to integrate TI Technology into your classroom as well as become a teacher leader for your school district by attending a T<sup>3</sup> TLC Open Enrollment Course. Return to your district to apply what you have learned and serve as a leader, mentor and/or trainer for your district to foster a collaborative learning culture. The TLC program is based on principles of effective professional development for research and best practice. Courses are taught by experienced, certified T<sup>3</sup> National Instructors.

Course materials focus on;

- Technology training
- Content
- Developing Teacher Leaders
- Pedagogy
- Teaching Adults



Registration fee is \$650 per person. Price includes 9 days of instruction, course materials, and graduation kit which includes a TI-84 Plus, Silver Edition Viewscreen Calculator and TI-Smartview. Participants must attend all 9 days of training in order to receive a graduation kit. Registration is online and handled by the T<sup>3</sup> Office.

Any questions about the site should be directed to the local organizer:

Pamela Heintzman  
615-868-3700  
[pheintzman@goodpasture.org](mailto:pheintzman@goodpasture.org)

**Course description can be viewed online at:**

[http://education.ti.com/educationportal/sites/US/nonProductMulti/pd\\_geometry83and84.html](http://education.ti.com/educationportal/sites/US/nonProductMulti/pd_geometry83and84.html)

**Registration is \$650**

**Register online only at:**

<http://www.baskow.com/ti/tlc/>

ti-educators@ti.com  
1-800-TI-CARES  
education.ti.com

T<sup>3</sup> • Teachers Teaching with Technology™



Professional Development Services from Texas Instruments



## Membership Application

Complete & return to Floyd Brown with a check for \$10 made payable to UETCTM. Completed Application and check may be mailed to Floyd Brown, Science Hill High School, Mathematics Dept., 1509 John Exum Parkway, Johnson City, TN 37604

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### UETCTM News

Floyd Brown, Treasurer- UETCTM  
1509 John Exum Parkway  
Johnson City, TN 37604

### Inside This Issue:

Geometry Using the TI-83 and TI-84  
Math Biology major

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# UETCTM News

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Volume 6 Issue 6

May 2, 2006

The Upper East Tennessee Council of Teachers of Mathematics will host its LAST meeting of the 2005-2006 school year on Tuesday May 9th at The Warriors Path State Park. The cookout will be from 4:00 till 6:30. We will provide drinks, burgers, veggie burgers, hot dogs, chips, condiments, paper products, garbage bags, charcoal,.....

Please bring a dish to pass around. Suggestions: salads, desserts, cookies, vegetables. Do bring family members (no pets please). Bring Frisbees, soccer balls, whatever. RSVP please (see below)

|  |
|--|
| <b><u>2005-2006 Meetings</u></b>       |
| May 9, 2006, Warrior's Path State Park |

The "loveliest" and most "scenic" shelter is #4 and the picnic will MOST LIKELY be held there. Shelter 4 is located on Duck Island on the side that is opposite the parking lot area, and it is private. According to the park lady Tara spoke with, even though it says not to drive one's car on Duck Island, the gate is always unlocked and we can drive a car out there to take out stuff as long as we take it immediately back to the parking area after unloading. We would have to walk down some steps to get to it once we were there.

RSVP PLEASE!!!! Please tell us whether you will be attending and how many people you will bring. Send e-mail RSVP's to Tara, [gregtara@comcast.net](mailto:gregtara@comcast.net) Last year's picnic was sparsely attended, let us change that this year!!

The weather is supposed to be decent, but if that changes and it is POURING, the alternate date will be Wednesday May 10

---

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619 W Due West Avenue  
Madison, TN 37115



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Any questions about the site should be directed to the local organizer:

Pamela Heintzman  
615-868-3700  
[pheintzman@goodpasture.org](mailto:pheintzman@goodpasture.org)

**Course description can be viewed online at:**

[http://education.ti.com/educationportal/sites/US/nonProductMulti/pd\\_geometry83and84.html](http://education.ti.com/educationportal/sites/US/nonProductMulti/pd_geometry83and84.html)

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ti-educators@ti.com  
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## Membership Application

Complete & return to Floyd Brown with a check for \$10 made payable to UETCTM. Completed Application and check may be mailed to Floyd Brown, Science Hill High School, Mathematics Dept., 1509 John Exum Parkway, Johnson City, TN 37604

**Name:** \_\_\_\_\_

**Home Address:** \_\_\_\_\_

\_\_\_\_\_

**Home Phone:** (\_\_\_\_) \_\_\_\_\_

**School:** \_\_\_\_\_

**School Address:** \_\_\_\_\_

\_\_\_\_\_

**School Phone:** (\_\_\_\_) \_\_\_\_\_

**Email Address:** \_\_\_\_\_

### UETCTM News

Floyd Brown, Treasurer- UETCTM  
1509 John Exum Parkway  
Johnson City, TN 37604

### Inside This Issue:

Geometry Using the TI-83 and TI-84

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# UETCTM News

Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

Volume 7, Issue 1

September 05, 2006

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## First UETCTM Meeting Tuesday, September 12

The first meeting of the Upper East Tennessee Council of Teachers of Mathematics will take place on Tuesday, September 12, 2006, at Science Hill High School in Johnson City. We will start with refreshments and a social time at 4:00. At 4:30 we will have business meeting in which we will select a new president-elect for 2006-07 and choose the meeting locations for the rest of the year. Following the business meeting, Jackie Hughes from Science Hill High School will present a program on math activities and games. Teal McInturff from Science Hill will have a presentation on using technologies such as smart boards in the classroom. Both of these programs should appeal to teachers at all grade levels.

Science Hill is located at 1509 John Exum Parkway. From Interstate 26, take the Roan Street exit (US 11E) headed south. Pass the mall, go over the hill, and the school is on your right at the next stoplight at the corner of Roan, Liberty Bell Blvd, and John Exum Parkway.

## President's welcome

*Daryl Stephens, 2006-07 President*

Welcome to the new year of the Upper East Tennessee Council of Teachers of Mathematics. We will be starting our year with two very interesting programs. One of our goals this year is to increase membership and participation by elementary teachers. We'll plan on having at least one meeting at an elementary school. Our October meeting will most likely be at North Side Elementary School.

We now have a web page! Go to <http://www.uetctm.org> to see copies of newsletters and anything else we think of. Suggestions are welcome.

## Upcoming events

### Tennessee Mathematics Teachers Association (TMTA) Fall Conference

September 22-23, 2006, The University of Tennessee at Martin

Information on the meeting is at <http://www.utm.edu/departments/cens/math/meeting/>.

More information about TMTA is at <http://www.tmta.info/>.

## 2006-2007 UETCTM Meetings

September 12, 2006

Science Hill High School

October 10, 2006

North Side Elementary, JC (?)

November 14, 2006

February 13, 2007

April 10, 2007

May 8, 2007

**Franklin Math Bowl**

Saturday, November 11, at ETSU (contact Michel Helfgott, [Helfgott@etsu.edu](mailto:Helfgott@etsu.edu) for more information)

**National Council of Teachers of Mathematics Annual Meeting**

March 21-24, 2007, Atlanta, GA: <http://www.nctm.org/meetings/atlanta/>  
NCTM information is online at <http://www.nctm.org>.

**Officers of UETCTM for 2006-2007****President**

Daryl Stephens  
ETSU Math Department  
Box 70663  
Johnson City, TN 37614  
Phone: (423)439-4676  
Email: [stephen@etsu.edu](mailto:stephen@etsu.edu)

**Past President**

Tara Peters  
Sullivan South High School  
1236 Moreland Drive  
Kingsport, TN 37664  
Phone: (423)239-1348  
Email: [gregtara@comcast.net](mailto:gregtara@comcast.net)

**President-Elect**

To be elected at the first meeting

**Secretary**

Guy Mauldin  
Science Hill High School  
1509 John Exum Parkway  
Johnson City, TN 37604  
Phone: (423)232-2190  
Email: [maulding@jcs.k12.tn.us](mailto:maulding@jcs.k12.tn.us)

**Treasurer**

Floyd Brown  
Science Hill High School  
1509 John Exum Parkway  
Johnson City, TN 37604  
Phone: (423)232-2190  
Email: [fbrown@xtn.net](mailto:fbrown@xtn.net)



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**School Address:** \_\_\_\_\_

\_\_\_\_\_

**School Phone:** (\_\_\_\_) \_\_\_\_\_

**Email Address:** \_\_\_\_\_

**UETCTM News**  
ETSU Math Department  
Box 70663  
Johnson City, TN 37614

---

# UETCTM News

Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

Volume 7, Issue 2

<http://www.uetctm.org>

October 10, 2006

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## Next UETCTM Meeting Tuesday, October 17

The second meeting of the Upper East Tennessee Council of Teachers of Mathematics will take place on Tuesday, October 17, 2006, at North Side Elementary School in Johnson City. (This is a change from the original plan because October 10 conflicted with several school systems' fall breaks.) We will start with refreshments and a social time at 4:00. At 4:30 we will have business meeting in which we will select a new president-elect for 2006-07 and choose the meeting locations for the rest of the year. Following the business meeting, Kelly Burluson from Harold McCormick Elementary School in Elizabethton will give a talk about using manipulatives. Dr. Anant Godbole from ETSU will give a presentation titled "Innovative Integration of Elementary Mathematics and Science."

**Directions:** North Side Elementary School is at 1000 N. Roan Street, which is at the corner of N. Roan and E. Chilhowie near downtown Johnson City. From I-26, take the Watauga/Unaka (TN Hwy 400) exit (currently exit 33, though that may change soon with the mile marker renumbering) and turn onto Unaka (the one-way street heading west). At Roan Street (the next light past the interstate), turn right. The school is about two blocks up Roan on the right side.

## Needed: President-Elect

At our first meeting in September, we had no nominations for president-elect for this year. The president-elect will be the president for the 2007-08 school year. We will try again at the business portion of the October meeting. If you have any suggestions for a new president-elect, contact that person and one of the officers. Or if you would like to volunteer, that also would be great!

## UETCTM Members Attend TMTA Conference

At least four people from upper east Tennessee attended the Tennessee Math Teachers Association annual meeting September 22-23 at UT-Martin. In attendance were Pam Stidham, mathematics coordinator for Kingsport City Schools; Sherry Cox, ETSU adjunct and retired Dobyns-Bennett High School teacher; Johnny Painter, Greeneville High School; and Daryl Stephens, ETSU.

## 2006-2007 UETCTM Meetings

October 17, 2006

North Side Elementary, Johnson City

November 14, 2006

Elizabethton High School

February 13, 2007

Northeast State Community College

April 10, 2007

Vance Middle School, Bristol, TN

May 8, 2007

Picnic at Warrior's Path State Park

## Correction

The description of last month's meeting said that Jackie Hughes would give the program. In reality it was Gayle Hughes who gave part of the program. Many apologies! (Jackie is Gayle's daughter and is still in college.)

**Visit our website at [www.uetctm.org](http://www.uetctm.org)!** Look for pictures of previous meetings, old newsletters, and more.

## Upcoming events

### Franklin Math Bowl (Middle school math contest)

Saturday, November 11, at ETSU (contact Dr. Michel Helfgott, [Helfgott@etsu.edu](mailto:Helfgott@etsu.edu) for more information)

### National Council of Teachers of Mathematics Annual Meeting

March 21-24, 2007, Atlanta, GA: <http://www.nctm.org/meetings/atlanta/>  
NCTM information is online at <http://www.nctm.org>.

### TMTA Math Contest

Tuesday, April 17, 2007

### Middle School Math Day is back!

It is scheduled for April 28, 2007 and will be held at Volunteer High School. We are still planning the specifics for the day, but be sure to mark your calendars and watch for more details coming soon. If anyone is interested in teaching a workshop for the event, please contact Julia Grecol at [grecolj@hck12.net](mailto:grecolj@hck12.net).

### Tennessee Mathematics Teachers Association Annual Meeting

September 20-22, 2007, Bearden High School, Knoxville

## Officers of UETCTM for 2006-2007

### Past President

Tara Peters  
Mathematics Coordinator  
Sullivan County Schools  
4154 Sullivan Gardens Dr.  
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Johnson City, TN 37604  
Phone: (423)232-2190  
[mauldin@jeschools.org](mailto:mauldin@jeschools.org)

### President-Elect

To be elected at the October meeting

### Treasurer

Floyd Brown  
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## Membership Application

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**UETCTM News**

ETSU Math Department

Box 70663

Johnson City, TN 37614

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# UETCTM News

Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

Volume 7, Issue 3

<http://www.uetctm.org>

November 7, 2006

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## Next UETCTM Meeting Tuesday, November 14

Our third meeting of the Upper East Tennessee Council of Teachers of Mathematics will take place on Tuesday, November 14, 2006, at Elizabethton High School. As usual, we will start with refreshments and a social time at 4:00. At 4:30 we will have business meeting in which we will again try to select a new president-elect for 2006-07. Following the business meeting, we will have two presentations. Denise Kind of Harold McCormick Elementary in Elizabethton will show some of her favorite teaching tricks. Eric Wondergem, a master's student at ETSU, will give a talk on the Doomsday Algorithm (a way of telling what day of the week a given date will fall on).

**Directions:** Elizabethton High School is just a couple of blocks off of West Elk Avenue (US 321). From I-26, take the US 321 exit towards Elizabethton and turn right at the brown sign pointing to Elizabethton High School. From Hampton and other points east, take US 321 around the main part of town and turn left at the sign pointing to EHS. The meeting will probably begin in the library. Watch for directional signs when you get to campus.

Looking ahead, the February meeting will have talks by Northeast State faculty ( topics and personnel TBA), and at the April meeting we'll hear from Robin Herndon, a pre-K teacher in Lebanon, Virginia about math activities at the primary level, and from Tonya Hancock, a representative from TI.

## Needed: President-Elect

We are still minus a president-elect for this year to become president in 2007-08. We hope to elect one at the November meeting. Please consider volunteering or nominating someone. It's an enjoyable job.

**Visit our website at [www.uetctm.org](http://www.uetctm.org)!** Look for pictures of previous meetings, old newsletters, and more. A membership form is available on the website.

## Upcoming events

**Franklin Math Bowl** (Middle school math contest)

Saturday, November 11, at ETSU (contact Dr. Michel Helfgott, [Helfgott@etsu.edu](mailto:Helfgott@etsu.edu) for more information)

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## 2006-2007 UETCTM Meetings

November 14, 2006

Elizabethton High School

February 13, 2007

Northeast State Community College

April 10, 2007

Vance Middle School, Bristol, TN

May 8, 2007

Picnic at Warrior's Path State Park

**TMTA Math Contest**

Tuesday, April 17, 2007

**Middle School Math Day is back!**

It is scheduled for April 28, 2007 and will be held at Volunteer High School. We are still planning the specifics for the day, but be sure to mark your calendars and watch for more details coming soon. If anyone is interested in teaching a workshop for the event, please contact Julia Grecol at [grecolj@hck12.net](mailto:grecolj@hck12.net).

**Tennessee Mathematics Teachers Association Annual Meeting**

September 20-22, 2007, Bearden High School, Knoxville

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Phone: (423)232-2190  
[maulding@jcschools.org](mailto:maulding@jcschools.org)

**President-Elect**

To be elected at the November meeting (we hope!)

**Treasurer**

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**UETCTM News**

ETSU Math Department  
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# UETCTM News

Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

Volume 7, Issue 4

<http://www.uetctm.org>

February 8, 2007

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## Next UETCTM Meeting Tuesday, February 13

Our fourth meeting of the Upper East Tennessee Council of Teachers of Mathematics will take place on Tuesday, February 13, 2007, at Northeast State Technical Community College. As usual, we will start with refreshments and a social time at 4:00. At 4:30 we will have business meeting in which we will again try to select a new president-elect for 2006-07. Following the business meeting, we will have presentations made by several Northeast State faculty members.

**Directions:** Northeast State is next to the Tri-Cities Regional Airport on State Highway 75. (Take the Gray/SR 75 exit off I-26 or the airport/SR 357 exit off I-81.)

The meeting will be held in the Faculty-Staff Dining Room next to Subway in the Student Services Building (where the auditorium is), not in the library as in years past. Turn right after the entrance road dead-ends. A parking permit is not needed. You can find a campus map online at <http://www.northeaststate.edu/default.asp?DocumentID=355> or a small one on the back page.

## Needed: President-Elect

Please, please, please, this is a begging issue now! The office of president-elect for the 2006-07 school year is still vacant and needs to be filled so we can have a president in 2007-08. We will ask for nominations at the business meeting.

**Visit our website at [www.uetctm.org](http://www.uetctm.org)!** Look for pictures of previous meetings, old newsletters, and more. A membership form is available on the website.

## Upcoming events

### National Council of Teachers of Mathematics Annual Meeting

March 21-24, 2007, Atlanta, GA: <http://www.nctm.org/meetings/atlanta/>

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Tuesday, April 17, 2007

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### 2006-2007 UETCTM Meetings

February 13, 2007

Northeast State Community College

April 10, 2007

Vance Middle School, Bristol, TN

May 8, 2007

Picnic at Warrior's Path State Park

coming soon. If anyone is interested in teaching a workshop for the event, please contact Julia Grecol at [grecolj@hck12.net](mailto:grecolj@hck12.net).

### **Tennessee Mathematics Teachers Association Annual Meeting**

September 20-22, 2007, Bearden High School, Knoxville

### **National Association for Developmental Education Annual Conference**

March 21-24, 2007, Gaylord Opryland Resort & Conference Center, Nashville

<http://www.nade2007.net>

*(NADE is an organization of people who work with underprepared college students, including math, reading, composition, and learning strategies courses. There will be quite a few math sessions. UETCTM president Daryl Stephens is also the outgoing chair of the Mathematics Special Professional Interest Network – see [www.nademathspin.org](http://www.nademathspin.org) for more information about this group.)*

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## **AMATYC Outer Banks Summer Institute “Developmental/Remedial Algebra Using a Function Approach”**

The Outer Banks of North Carolina

June 17 – June 22, 2007

### **Conceptual Foundation "A Function Approach":**

Teaching algebra from a function approach requires the use of **function and function behaviors** to teach algebraic concepts and skills such as factoring, equation solving, arithmetic operations on polynomials, systems of equations, inequalities, properties of inequalities, definitions, concept of asymptotic behavior, absolute value, slope, laws of exponents, etc. Using unique materials, we will reorder the algebra content and use function concepts to develop understanding of, interest in, and long-term memory of traditional algebraic ideas. We will capitalize on cognitive processes of associations, pattern building, attention, visualizations, meaning, the enriched teaching environment, distributed learning, and priming. We will model how to teach developmental/remedial algebra through a function approach with graphing calculators, and demonstrate why they are crucial to teaching and learning.

### **Guiding Questions:**

During the Outer Banks Summer Institute we will briefly review the literature on neuro/cognitive science research of the brain with the expectation that it may answer questions like: How can we foster long-term memory? How can we develop understanding? Is pattern-building better than reasoning when trying foster understanding of algebra? Will memorizing produce long-term memory? Will practice? How is an emotional connection (meaning) related to memory, attention, and understanding? Do we need to “connect” a mathematical concept/skill to other algebraic concepts? To the real world? Can’t we make learning faster? How can we more likely create correct recall of algebra taught? This may sound like rather high expectations, but research in the cognitive and neurosciences have advanced considerably in the last 15 years, and now is the time to interpret the results and implement what we can to teaching and learning of developmental algebra.

### **Teaching Tools:**

At the 9th annual AMATYC Outer Banks Summer Institute we will use the TI-84 Plus SE, TI-CBL2, and Vernier EasyLink, as tools of choice when teaching remedial/developmental algebra.

### **Instructors:**

Debbie Crocker, Appalachian State University; Ed Laughbaum, The Ohio State University

### **Location:**

The Institute will be held on the Outer Banks of North Carolina near the village of Duck at the Army Field Research Facility (FRF) < <http://www.frf.usace.army.mil/>>. The classroom is adjacent to the beach.

### **Registration and Information:**

See <http://www.amatyc.org/Events/summer-institutes.htm> for the registration form. For reports and pictures from earlier years, see [www.math.ohio-state.edu/~elaughba/](http://www.math.ohio-state.edu/~elaughba/) **The deadline is May 1st.**



## Meeting Within a Meeting

### ASA Program for Math/Science Teachers

Based on *Guidelines of Assessment and Instruction of Statistics Education (GAISE)*,

which complements NCTM *Principles and Standards for School Mathematics* and

NCTM *Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics*

Sponsored by the American Statistical Association

2007 ASA Joint Statistical Meetings

- Date: Monday, July 30, 2007
- Place: Salt Palace Convention Center, Salt Lake City
- Audience: Middle School and Junior High Math and Science Teachers
- Teachers: Submit applications, letter of intent, and letter from principal, all due [March 1, 2007\\*\\*\\*](#).
- Objectives: Enhance understanding and teaching of statistics within the math curriculum based on conceptual understanding, active learning, real world data, and appropriate technology
- Content: Based on standards, assessments, and textbooks  
Consistent with **GAISE** recommendations ([www.amstat.org/education/gaise](http://www.amstat.org/education/gaise)), *NCTM Principles and Standards for School Mathematics*, and *Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics* ([www.nctm.org/focalpoints](http://www.nctm.org/focalpoints))
- Format: One-day meeting  
Activity-based sessions, including lesson plan development  
Lunch and dinner followed by panel discussion  
Overnight stay with optional activities on Tuesday
- Provided: Registration cost  
Meals and refreshments  
One night of lodging (Monday night)  
Handouts  
Professional development half-credit for 7–13 contact hours (if possible)  
Certificate of Participation from the ASA
- Follow-up: Program evaluation for future follow-up workshops  
Development of listserv with questionnaires  
ASA chapters network with local teachers to organize learning communities
- Contact: Rebecca Nichols, [rebecca@amstat.org](mailto:rebecca@amstat.org); (703) 684-1221, Ext. 1877

**\*\*\*Space is limited. If interested in attending, please contact Rebecca as soon as possible.**

**Officers of  
UETCTM for  
2006-2007**

**President**

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**President-Elect**

To be supplied

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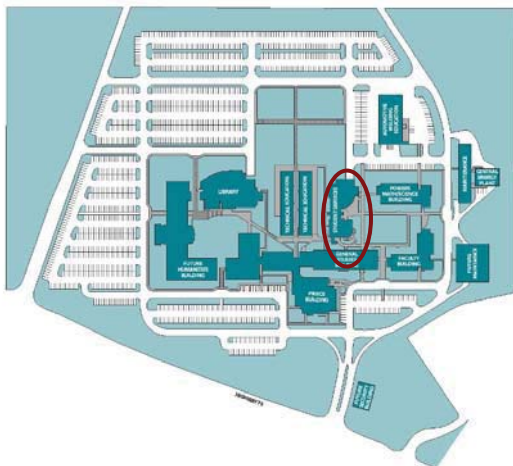
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Have you renewed your membership? If not, this may be your last newsletter. Go to [www.uetctm.org](http://www.uetctm.org) and print out a membership renewal form and bring it with your dues to the next meeting (or mail it in to the address on the form).



Map of Northeast State; Student Services Building is circled.

**UETCTM News**  
ETSU Math Department  
Box 70663  
Johnson City, TN 37614

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# UETCTM News

Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

Volume 7, Issue 5

<http://www.uetctm.org>

March 30, 2007

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## Next UETCTM Meeting Tuesday, April 10

The fifth meeting of the Upper East Tennessee Council of Teachers of Mathematics will take place on Tuesday, February 13, 2007, at Northeast State Technical Community College. As usual, we will start with refreshments and a social time at 4:00. At 4:30 we will

have a business meeting. Following the business meeting, we will have two presentations. Tonya Hancock from Texas Instruments will give a program on graphing calculators. Robin Herndon, a teacher at Lebanon Primary School in Lebanon, Virginia, will tell about the math curriculum she developed for pre-kindergarten as part of her master's thesis in math at ETSU last year. This will be our last program meeting of the school year. Our final meeting will be our annual picnic.

**Directions:** *From Johnson City*, follow 11E to Bristol and take the left fork across the bridge where the road splits into Volunteer Parkway and Bluff City highway. Then turn right onto Weaver Pike at the red light, Advance Auto is on the right. From there take a left at the second red light (you will see Tennessee High on the right at the light) onto Edgemont Avenue. Vance will be on your right.

*From Kingsport*, take 11W and it will turn into State Street. Take a right at the light onto Volunteer Parkway( the Chamber of Commerce will be on the right). Then take a left onto Weaver Pike at the red light(Advance Auto will be on the left). Go to the second red light and turn left again onto Edgemont Avenue. Vance will be on the right.

*From I-81*, take exit 3 onto I-381. It will turn into Commonwealth Avenue and then Volunteer Parkway. Take the same left onto Weaver Pike as mentioned above. Then left at the second red light and Vance is on the right.

Watch for signs for our meeting room.

## 2006-2007 UETCTM Meetings

April 10, 2007

Vance Middle School, Bristol, TN

May 8, 2007

Picnic at Warrior's Path State Park

## Meet Your New President-Elect

At the February meeting of UETCTM, Dayna Smithers, a mathematics instructor at Northeast State Technical Community College, was elected to be our president-elect. Dayna is a graduate of ETSU and before coming to Northeast had previously worked in the admissions office at ETSU. Because of the lateness in the year before we had a president-elect, the members present voted to retain Daryl Stephens as president for the 2007-08 school year. Dayna will become president of UETCTM in 2008.

**Helpers will be needed for running the May 8 picnic.** Your president will be at a three-day workshop in Knoxville and will unfortunately be unable to attend. We will ask for volunteers at the April meeting.

**Visit our website at [www.uetctm.org](http://www.uetctm.org)!** Look for pictures of previous meetings, old newsletters, and more. A membership form is available on the website.

## **Upcoming events**

### **Tennessee Mathematics Teachers Association Annual Meeting**

September 20-22, 2007, Bearden High School, Knoxville

A speaker proposal form which can be filled out on your computer has been posted to our UETCTM website at <http://www.etsu.edu/math/uetctm/TMTASpeakerForm2007.doc>. A copy for writing on is on page 3 of this newsletter.

### **TMTA Math Contest**

Tuesday, April 17, 2007

### **Middle School Math Day is back!**

The Mu Alpha Theta chapter at Volunteer High School in Church Hill, TN is organizing a Middle School Math Day. It will be on Saturday, April 28 from 8:30 am – 2:30 pm. Area 6th, 7th, and 8th graders are invited to pick four workshops to attend during the day and discover just how much fun math can be. The workshops will consist of games and hand-on activities that demonstrate how exciting math is in the real world. Topics include origami, code-breaking, tessellations, tangrams, logic problems, and more. Lunch will be provided and each participant will receive a t-shirt and participation certificate along with a few other goodies. The fee per student is only \$5. If you know of any students who might be interested in attending, please send me an email so I can make sure you receive some applications. Space is limited, so students will need to get their applications in early. Email Julia Grecol, Mu Alpha Theta Co-Sponsor at [grecolj@hck12.net](mailto:grecolj@hck12.net) or call (423) 357-3641.

There are still a few openings for workshops as well, so if you have an idea for a workshop for middle school students, please contact Julia also.

### **AMATYC Outer Banks Summer Institute “Developmental/Remedial Algebra Using a Function Approach”**

The Outer Banks of North Carolina

June 17 – June 22, 2007

*(See February newsletter for details; go online to [www.uetctm.org](http://www.uetctm.org) if you lost your newsletter)*

### **Franklin Math Bowl**

Coming in November. Watch your mail or e-mail for details as they become available.

**Tennessee Mathematics Teachers' Association Conference  
 Smoky Mountain Mathematics Educators' Association  
 Bearden High School, Knoxville, Tennessee  
 September 21-22, 2007  
 Speaker Proposal Form**

**Speaker Contact Information:** Name, e-mail\* and affiliation as it will appear in the program.

|                        |  |                  |  |
|------------------------|--|------------------|--|
| Speaker Name:          |  | Affiliate Group  |  |
| Home address           |  | City, State, Zip |  |
| Email address*         |  | Home Phone       |  |
| School                 |  | School Phone     |  |
| School Mailing Address |  |                  |  |
| City, State, Zip       |  |                  |  |

\*Do not publish my e-mail address in the program. \_\_\_\_\_

**Second Speaker Contact Information:** Name, e-mail and affiliation as it will appear in the program.

|                        |  |                  |  |
|------------------------|--|------------------|--|
| Speaker Name:          |  | Affiliate Group  |  |
| Home address           |  | City, State, Zip |  |
| Email address*         |  | Home Phone       |  |
| School                 |  | School Phone     |  |
| School Mailing Address |  |                  |  |
| City, State, Zip       |  |                  |  |

\* Do not publish my e-mail address in the program. \_\_\_\_\_

**Speaking Preference/needs:**  Friday  Saturday  Both  No Preference

Computer Lab  50 min  Extended Session two 50 min. w/break  SmartBoard  Internet

Classroom set of calculators      If calculators are needed, what type?

**Title of Presentation:** Please print or type, not to exceed 8 words. The title should give an adequate description of the mathematical or educational content of your presentation.

Description of Presentation (Please print or type, not to exceed 25 words)

**Presentation Level:**  K-2    3-5    Middle    High School    College    General    Pre-Service Teachers

**Note:** Presenters are responsible for their own lap tops and projection devices unless they are using a computer lab.

Other special needs: \_\_\_\_\_

**Professional Recognition:**

TMTA would like to recognize your contribution to the success of our conference. Please include the name and address of your principal/supervisor below.

**By May 1, please return to:**  
 Libby Burney  
 1601 Cella Homma Lane  
 Knoxville TN 37909  
[burney@k12tn.net](mailto:burney@k12tn.net)  
 fax (865) 594-3627  
 work (865) 594-3646

**Officers of  
UETCTM for  
2006-2007**

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Phone: (423)232-2190  
[brownf@jcschools.org](mailto:brownf@jcschools.org)

Have you renewed your membership? If not, this may be your last newsletter. Go to [www.uetctm.org](http://www.uetctm.org) and print out a membership renewal form and bring it with your dues to the next meeting (or mail it in to the address on the form).

**UETCTM News**

ETSU Math Department  
Box 70663  
Johnson City, TN 37614

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# UETCTM News

Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

Volume 7, Issue 6

<http://www.uetctm.org>

May 2, 2007

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## UETCTM Picnic Canceled

The picnic scheduled for Tuesday, May 8, has been canceled. Only five people expressed an interest by the May 1 deadline. Perhaps next year will be better.

The executive board will meet some time in the next few months and determine a meeting schedule for the 2007-08 school year.

## Tennessee Mathematics Teachers Association Annual Meeting September 21-22, 2007, Bearden High School, Knoxville

Since the meeting is so close to home, why not plan to attend? If you can't go both days, it would still be worthwhile for the two-hour drive to Knoxville to attend Friday evening or Saturday morning/early afternoon. Check the TMTA website (<http://www.tmta.info>) for membership information, and, a little later, for conference information.

Speaker proposals were due May 1, but it's possible there might be a few slots still open. Look in the previous edition of *UETCTM News* or look on our website at <http://www.etsu.edu/math/uetctm/TMTASpeakerForm2007.doc> for a copy of the proposal form. Check with Libby Burney, [burney@k12tn.net](mailto:burney@k12tn.net), to see if there is still a need for more proposals.

*If you have information you would like placed in the next newsletter, please e-mail it to Daryl Stephens at [stephen@etsu.edu](mailto:stephen@etsu.edu).*

### Officers of UETCTM for 2006-2007

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# UETCTM News

Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

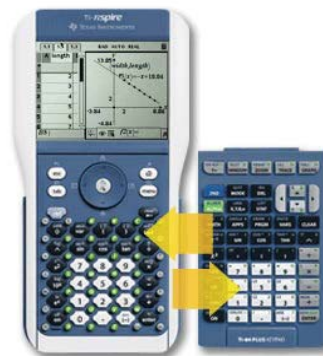
Volume 8, Issue 1

<http://www.uetctm.org>

September, 2007

## First Meeting: Tuesday, September 11, SHHS

The first meeting of the Upper East Tennessee Council of Teachers of Mathematics will take place on Tuesday, September 11, 2007, at Science Hill High School in Johnson City. We will start with refreshments and a social time at 4:00. At 4:30 we will have business meeting in which we will choose the meeting locations and dates for the rest of the year and take input for speakers. From 5:00 – 6:00 we will have a speaker. Our speaker will be Sylvia Brown of Mountain Empire Community College. She attended a workshop this summer and will tell us about the new TI-Nspire calculator which is coming out this fall. It has a view screen twice the size of the other TI graphing calculators with five times the resolution, but is priced about the same as the TI-84 Plus Silver. If there is a sufficient demand for an elementary and middle school talk, Daryl Stephens will talk about mental arithmetic tricks.



Picture from [www.ti-nspire.com](http://www.ti-nspire.com)

The exact meeting dates for the rest of the year have not been officially set, but at the request of several members, we will return to having some meetings on Mondays and some on Tuesdays to better accommodate a wider variety of teacher schedules. We will set those meeting dates (and locations if someone volunteers their school) at the September 11 meeting. If you have some ideas for future meetings, or would like to speak yourself, please let one of the officers know, either at the September meeting or by phone or e-mail.

Please invite, cajole, wheedle, or beg a colleague to join you at the meeting. We have had rather sparse attendance in the last year, and it would be really great if we could generate more interest and attendance. We especially want to increase attendance by elementary and middle school teachers.

### In this issue:

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### Franklin Math Bowl

(Middle school math contest)

Saturday, November 10, ETSU

Contact Daryl Stephens

([stephen@etsu.edu](mailto:stephen@etsu.edu)) for more

general information or Judy

Chisholm

([chisholm@etsu.edu](mailto:chisholm@etsu.edu)) for

registration information.



## Tennessee Mathematics Teachers Association Annual Meeting September 21-22, 2007, Bearden High School, Knoxville

Since the meeting is so close to home, why not plan to attend? If you can't go both days, it would still be worthwhile for the two-hour drive to Knoxville to attend Friday or Saturday. Check the TMTA website ([www.tmta.info](http://www.tmta.info)) for details, online registration, and hotel information. If registering by September 14, one-day registration online using a credit card is \$45 and two-day is \$75. Paying by check or after September 14 is slightly higher. Lunch is included in the price each day. Registration for pre-service teachers ranges from \$25 to \$38. There are three session times on Friday morning, three Friday afternoon, and three on Saturday morning. Each time slot has sessions of interest to lower elementary, upper elementary, middle, high school, and college teachers, as well as some general interest sessions. There should be certificates available for inservice credit. (Friday is an inservice day for Knox County teachers.)



Here is a rundown on scheduling:

### Friday, Sept. 21

8:00-5:00 Registration  
 9:00-11:45 Sessions and Workshops (3)  
 11:45-1:00 Lunch and affiliate meetings  
 (UETCTM is in Rm. 406)  
 1:00-2:00 Keynote speaker, Dr. Tim  
 Kanold, superintendent, Adlai  
 Stevenson High School,  
 Lincolnshire, IL  
 2:15-5:00 Sessions and Workshops (3)

### Saturday, Sept. 22

8:00-Noon Registration  
 9:00-11:45 Sessions and Workshops (3)  
 11:45-1:00 Award Luncheon with speaker  
 Dr. Thomas Zacharia, Oak  
 Ridge National Laboratories  
 1:00-2:00 TMTA Business Meeting for all  
 members (with door prizes)

## SVCTM Conference in Abingdon, VA, September 15

*(excerpted from an e-mail by Susan Fleming, SVCTM President-Elect)*

The Southwest Virginia Council of Teachers of Mathematics will hold its annual meeting on Saturday, September 15, 2007 at the Southwest Virginia Higher Education Center, located on the campus of Virginia Highlands Community College in Abingdon, Virginia. Registration begins at 8:00 a.m. in the Main Lobby with the General Session following at 9:00 a.m. and the breakout sessions from 11:00 a.m. - 12:30 p.m.

The presenters for this meeting will be teachers and faculty from within the schools served by SVCTM. Teachers will participate in several hands-on activities that align with NCTM Standards and the Virginia SOL's. Workshops will be offered for each grade band.

Keynote Address: Dr. Jim Rubillo, Executive Director, National Council of Teachers of Mathematics: "Don't Be So Mean! Seeing That Variation Is Natural and Normal"

Registration is \$10. Session descriptions and a registration form are available at <http://www.vhcc.edu/sfleming/SVCTM/home.htm>.

## UETCTM Membership Application

Complete & return to Floyd Brown with a check for \$10 made payable to UETCTM. Completed Application and check may be mailed to Floyd Brown, Science Hill High School, Mathematics Dept., 1509 John Exum Parkway, Johnson City, TN 37604

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_  
\_\_\_\_\_

Home Phone: (\_\_\_\_\_) \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_  
\_\_\_\_\_

School Phone: (\_\_\_\_\_) \_\_\_\_\_

Email Address: \_\_\_\_\_

|   |  |  |
|---|--|--|
| <b>Officers of<br/>UETCTM for<br/>2006-2007</b>   | <b>President</b><br>Daryl Stephens<br>ETSU Math Department<br>Box 70663<br>Johnson City, TN 37614<br>Phone: (423)439-4676<br><a href="mailto:stephen@etsu.edu">stephen@etsu.edu</a>                              | <b>President-Elect</b><br>Dayna Smithers (becomes president in 2008)<br>Division of Mathematics<br>Northeast State Technical Community<br>College<br>PO Box 246<br>Blountville, TN 37617<br>(423) 354-2502<br><a href="mailto:dbsmithers@NortheastState.edu">dbsmithers@NortheastState.edu</a> |
| <b>Past President</b><br>Tara Peters<br>Mathematics Coordinator<br>Sullivan County Schools<br>4154 Sullivan Gardens<br>Dr.<br>Kingsport TN 37660<br>Phone: (423) 354-1793<br><a href="mailto:tara.carverpeters@hotmail.com">tara.carverpeters@hotmail.com</a> | <b>Secretary</b><br>Guy Mauldin<br>Science Hill High School<br>1509 John Exum<br>Parkway<br>Johnson City, TN 37604<br>Phone: (423)232-2190<br><a href="mailto:maulding@jcschools.org">maulding@jcschools.org</a> | <b>Treasurer</b><br>Floyd Brown<br>Science Hill High School<br>1509 John Exum Parkway<br>Johnson City, TN 37604<br>Phone: (423)232-2190<br><a href="mailto:brownf@jcschools.org">brownf@jcschools.org</a>  |

If you are reading this newsletter on paper, you're missing out on all the color! Visit our web site ([www.uetctm.org](http://www.uetctm.org)) to see the newsletter as a full-color PDF file with clickable links.

**UETCTM News**  
**ETSU Math Department**  
**Box 70663**  
**Johnson City, TN 37614-1701**



# UETCTM News

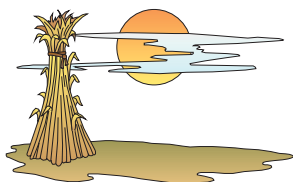


Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

Volume 8, Issue 2

<http://www.uetctm.org>

October, 2007



## Northeast State Hosts October 22 Meeting

The second UETCTM meeting this year will be held on Monday, October 22, from 4:00 - 6:00 on the campus of Northeast State Technical Community College. As usual, several of the Northeast State faculty will make some presentations of interest to math faculty at all levels.

**Directions:** Northeast State is next to the Tri-Cities Regional Airport on State Highway 75. (Take the Gray/SR 75 exit off I-26 or the airport/SR 357 exit off I-81.) The meeting will be held in the Faculty-Staff Dining Room next to Subway in the Student Services Building (where the auditorium is). Turn right after the entrance road dead-ends. A parking permit is not needed. You can find a campus map online at <http://www.northeaststate.edu/default.asp?DocumentID=355>.

## Meetings Set for 2007-08

|                         |   |
|-------------------------|---|
| Monday, October 22      | Northeast State Technical Community College |
| Tuesday, December 4     | Kingsport - school site TBA                 |
| Monday, February 11     | Sullivan County - school site TBA           |
| Tuesday, April 15       | ETSU  |
| One more spring meeting | TBA   |

## Upcoming Events

### November 10 (Saturday)

Franklin Math Bowl (middle school math contest), ETSU  
(Contact Daryl Stephens, [stephen@etsu.edu](mailto:stephen@etsu.edu), if you would like to help with grading)



### April 18-19 (Friday-Saturday)

Tennessee Mathematical Association of Two Year Colleges (TMATYC),  
Northeast State Technical Community College

## 2007 NAEP Reports Sustained Improvement In Math Scores Nationwide in Grades 4 and 8

Reston, Va., September 25, 2007 – The National Council of Teachers of Mathematics (NCTM) welcomed the incremental and sustained improvement in mathematics performance shown by the results of the 2007 National Assessment of Educational Progress (NAEP) released today. NCTM asserted that public attention to math instruction and increased emphasis on professional development for teachers are having a positive effect on the quality of math that students are learning. Since 1990, NAEP math scores have risen steadily, and the 2007 average scores for grades 4 and 8 are higher than in any previous assessment year. NCTM developed its first standards in 1989 and updated them in *Principles and Standards for School Mathematics* in 2000.

Between 2005 and 2007, the average fourth-grade score increased from 238 to 240, and the average eighth-grade score increased from 279 to 281. In 1990, these average scores were 213 and 263, respectively. Nationally, a higher percentage of students in both grades 4 and 8 performed at or above basic, proficient, and advanced levels in 2007 than in all previous assessments. Results for this year's NAEP, known as the Nation's Report Card, show that 82 percent of fourth graders and 71 percent of eighth graders performed at or above the basic level in math, compared to 50 percent and 52 percent, respectively, in 1990. The percentage of those achieving at the proficient level also increased dramatically since 1990, from 13 to 39 percent among fourth graders and from 15 to 32 percent among eighth graders.

"NAEP's 2007 results continue a trend of encouraging national progress in mathematics education," said NCTM President Francis (Skip) Fennell. "This year's record high scores are an affirmation that much of what we are doing is working. The improved test scores for African-American and Hispanic students show progress in closing the achievement gap nationally, although results still lag for too many minority students and children in poverty. One of our highest

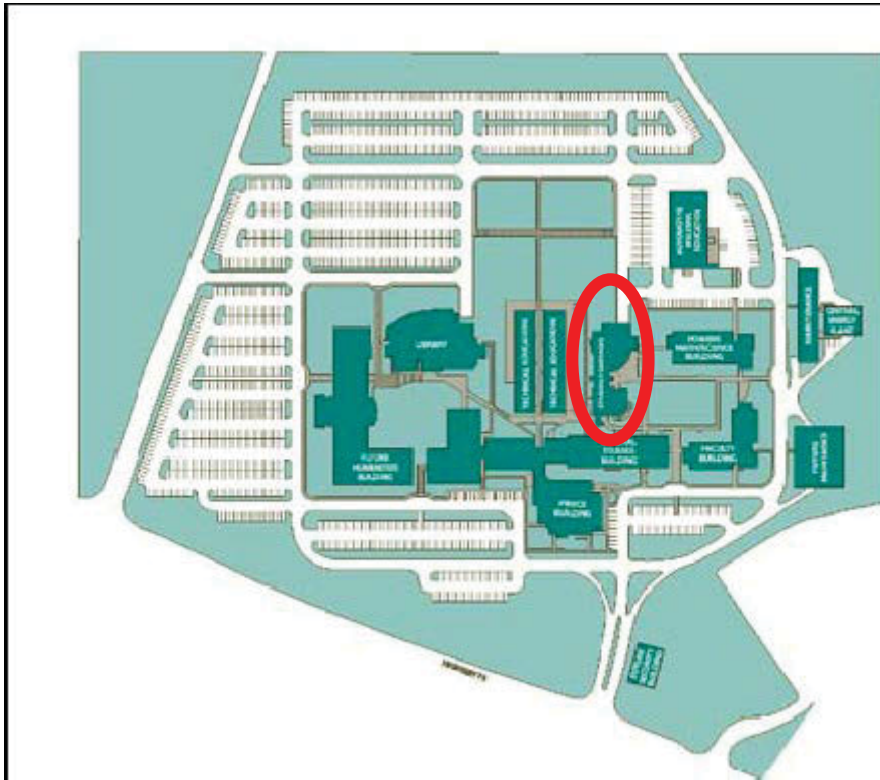
priorities as educators should be to eliminate the achievement gap and help every child reach his or her potential."

Though average scores for white, black, Hispanic, and Asian/Pacific Islander students in both grades 4 and 8 were higher in 2007 than in any previous assessment year, scores for minority students other than Asians remain lower than for whites. Score increases for all groups did not result in a significant closing of performance gaps that separate whites from blacks and Hispanics.

Since 1990 fourth grade black students have made a 34-point gain, which is greater than the 28-point gain for whites and the 27-point gain for Hispanics. In 2007 both male and female fourth and eighth graders' average scores were higher than in any previous year, with males' average scores 2 points higher.

NCTM's recently published *Results and Interpretations of the 2003 Mathematics Assessment of the National Assessment of Educational Progress* by Kloosterman and Lester, provides a comprehensive study of the 2003 NAEP which is useful in understanding the results of NAEP 2007. For background and an in depth study of the achievement gap with respect to NAEP, the chapter by Lubienski and Crockett provides useful information.

The National Council of Teachers of Mathematics is a public voice of mathematics education, providing vision, leadership, and professional development to support teachers in ensuring mathematics learning of the highest quality for all students. With 100,000 members and more than 230 Affiliates, NCTM is the world's largest organization dedicated to improving mathematics education in prekindergarten through grade 12. The Council's *Principles and Standards for School Mathematics* includes guidelines for excellence in mathematics education. Its recently released *Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics* identifies the most important mathematical topics for each grade level.



|  |   |  |
|--|---|--|
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# UETCTM News

Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

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Volume 8, Issue 3

<http://www.uetctm.org>

November 20, 2007

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## Meeting Tuesday, December 4 at John Sevier Middle School to Have Three Sessions

The third meeting of the academic year will be held at John Sevier Middle School in Kingsport. Pam Stidham, mathematics coordinator for the Kingsport City Schools, has set up three programs for all levels. Details of the programs are on page 2. The titles are "The Deal Café Specials" by Alicia Deal, "Teaching Mathematics with Tessellations" by Pam Stidham, and "Using the Geometer's Sketchpad" by Sherry Cox. The programs will run simultaneously. As usual, we will begin with refreshments and conversation at 4:00, have a brief business meeting and a time for sharing announcements at 4:30, and then have the three programs. Door prizes will be awarded at the sessions.

John Sevier Middle School is at 1200 Wateree Street in Kingsport.

- For folks coming from Gray, Johnson City, and points south: From westbound I-26 (northbound US 23), take the Wilcox Drive (TN 126) exit. Wilcox more or less dead-ends on Center Street (TN 36). Turn left on Center Street, go one block, then turn right on Wateree and follow it to the school. (Wateree Street runs next to the Renaissance Center.)
- Coming from Bristol on US 11W: 11W becomes Stone Drive in Kingsport. Turn left on Eastman Road, pass a shopping area with restaurants, then turn right on Center Street (just past Indian Highland Park). Wateree Street is the first right after the light that has Wilcox Drive to the left and Wabash and Valley Streets to the right and runs next to the Renaissance Center.

## Remaining Meetings for 2007-08

Monday, February 11      Sullivan County – school site TBA

Tuesday, April 15      ETSU

One more spring meeting      TBA

## Upcoming Events



**April 18-19 (Friday-Saturday)**

Tennessee Mathematical Association of Two Year Colleges (TMATYC), Northeast State Technical Community College

## More Information about December 4 Sessions at John Sevier Middle School

### The Deal Café Specials

(For Grades K-5)

*Presented by Alicia Deal, Roosevelt Elementary School*



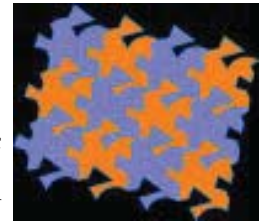
Feast on mathematics! Begin with a few appetizers to excite students at the beginning of math class. The main entrée will include numerous games to teach various mathematical concepts. Finish math class with a fun mathematical dessert! Takeouts (Handouts) will be available so that teachers can easily incorporate the activities in their own classroom.

### Teaching Mathematics with Tessellations

(For Grades 5-8)

*Presented by Pam Stidham, Kingsport City Schools*

Discover the mathematics of tessellations! Learn to identify types of tessellations. Participants will investigate several techniques to create an "Escher-type" tessellation. No artistic ability needed!!!



<http://www.wisegorilla.com/images/tessellations/0-tess7.gif>



### Using The Geometer's Sketchpad

(For Grades 7-12)

*Presented by Sherry Cox, John Sevier Middle School/ETSU*

This session will include an overview of the dynamic mathematics software, The Geometer's Sketchpad. Participants will explore activities for Algebra, Geometry & Algebra II. Beginners and experienced users of The Geometer's Sketchpad are welcome.

## President's Corner

*by Daryl Stephens*

I hope your year is progressing well at this point. When I attended the TMTA conference in Knoxville back in September, I realized that our organization seems to lack something that some of our sister regional math teachers' organizations have: a logo! I say "seems" because there's always a possibility that one exists somewhere that didn't get in any of the materials that were passed on to me. Is anyone aware of an existing UETCTM logo? If not, would someone like to design one? Or perhaps there is a student somewhere who might be interested in making one. Let's talk about that in our business meeting on December 4. I hope to see you there.



## Franklin Math Bowl Results

The Franklin Math Bowl contest for middle school students was held Saturday, November 10, at ETSU. There were 176 students registered from nine schools, although a few students weren't able to attend. Congratulations to all the students who participated, and to their teachers, coaches, and parents. Here are the results:

|                          | Small Schools  | Large Schools   |
|--------------------------|--|---|
| 6th Grade:<br>Individual | <ol style="list-style-type: none"> <li>Natalie Cross, Jefferson Middle</li> <li>Emily Cheng, Jefferson Middle</li> <li>Stevie Andress, Jefferson Middle</li> </ol>                           | <ol style="list-style-type: none"> <li>Sarah van Dierdonck, Robinson MS</li> <li>Jimmy Liu, Pizitz MS</li> <li>Sydney McConnell, Robinson MS</li> </ol> |
| 6th Grade:<br>Schools    | <ol style="list-style-type: none"> <li>Jefferson Middle (Oak Ridge)</li> <li>Chuckey Doak MS, Afton</li> </ol>   | <ol style="list-style-type: none"> <li>Ross N. Robinson MS, Kingsport</li> <li>Pizitz MS, Vestavia Hills, AL</li> </ol>                                 |
| 7th Grade:<br>Individual | <ol style="list-style-type: none"> <li>Meg Stuart, University School</li> <li>Megan Lee, University School</li> <li>Matt Gordon, Providence</li> <li>Brantlee Garland, Providence</li> </ol> | <i>(2-way tie for 1st)</i><br>Tony Zeng, Pizitz<br>Botong Ma, Pizitz  |
| 7th Grade:<br>Schools    | <ol style="list-style-type: none"> <li>University School, Johnson City</li> <li>Providence Academy, Gray</li> </ol>  | Pizitz MS   |
| 8th Grade:<br>Individual | <ol style="list-style-type: none"> <li>Tiffany Rednour, McDonald Elem.</li> <li>Kelsi Armstrong, McDonald Elem.</li> </ol>   | <i>(no award)</i>   |
| 8th Grade:<br>Schools    | Chuckey Doak MS  | <i>(no award)</i>   |
| Algebra:<br>Individuals  | <ol style="list-style-type: none"> <li>Katherine Benson, University School</li> <li>Everett Laing, University School</li> </ol>  | <ol style="list-style-type: none"> <li>Jerry Hsu, Pizitz MS</li> <li>Forrest Gamble, Pizitz MS</li> </ol>   |
| Algebra:<br>Schools      | University School  | Pizitz MS   |

A new website for the Franklin Math Bowl has been put up at <http://www.etsu.edu/math/fmb/>. Right now it contains all the tests and answers from this year's contests and the winners. Time permitting, some other old tests will be added.

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|--|--|---|
| <p><b>Officers of UETCTM for<br/>2007-2008</b></p>   | <p><b>President</b><br/>Daryl Stephens<br/>ETSU Math Department<br/>Box 70663<br/>Johnson City, TN 37614<br/>Phone: (423)439-4676<br/><a href="mailto:stephen@etsu.edu">stephen@etsu.edu</a></p>                           | <p><b>President-Elect</b><br/>Dayna Smithers (becomes president in 2008)<br/>Division of Mathematics<br/>Northeast State Technical Community College<br/>PO Box 246<br/>Blountville, TN 37617<br/>(423) 354-2502<br/><a href="mailto:dbsmithers@NortheastState.edu">dbsmithers@NortheastState.edu</a></p> |
| <p><b>Past President</b><br/>Tara Peters<br/>Mathematics Coordinator<br/>Sullivan County Schools<br/>4154 Sullivan Gardens Dr.<br/>Kingsport TN 37660<br/>Phone: (423) 354-1793<br/><a href="mailto:tara.carverpeters@hotmail.com">tara.carverpeters@hotmail.com</a></p> | <p><b>Secretary</b><br/>Guy Mauldin<br/>Science Hill High School<br/>1509 John Exum Parkway<br/>Johnson City, TN 37604<br/>Phone: (423)232-2190<br/><a href="mailto:maulding@jcschools.org">maulding@jcschools.org</a></p> | <p><b>Treasurer</b><br/>Floyd Brown<br/>Science Hill High School<br/>1509 John Exum Parkway<br/>Johnson City, TN 37604<br/>Phone: (423)232-2190<br/><a href="mailto:brownf@jcschools.org">brownf@jcschools.org</a></p>  |

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# UETCTM News

Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

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Volume 8, Issue 4

<http://www.uetctm.org>

January, 2008

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## Four Sessions Monday, February 11, at Sullivan Central

The fourth meeting of the academic year will be held at Sullivan Central High School, 131 Shipley Ferry Road in Blountville. The meeting will begin at 4:00 with refreshments and mingling in the cafeteria/commons area, followed by a short business meeting and announcements at 4:30. Then there will be four sessions to accommodate teachers at all levels. A door prize will be awarded at each session.

### **Techniques to Help Students Understand Mathematics** (For Grades K-2)

*Presented by Katy Barker, Kingsley Elementary School*

Using simple techniques in the classroom, students develop a more concrete understanding of mathematics. Because students learn differently, this session will explore some techniques that will help students to learn and understand mathematics.

### **Helping Students Understand Division** (For Grades 3-5)

*Presented by Dr. George Poole, ETSU*

The concept of division is usually made more complicated than it really is. Children naturally learn division with repeated subtraction; however, the use of multiplication facts help children learn to divide more efficiently. Investigate the concept of division. Explore ideas to teach division with examples, problems, and manipulatives.

### **The Master Ruler** (For Grades 6-8)

*Presented by Jennifer Hutson, Holston Valley Middle School*

Need some ideas to teach measurement? The Master Ruler is a great tool when teaching students to read a ruler and to visualize equivalent fractions. Various classroom activities will be explored.

### **Pentagonal Fractal in both 2-D and 3-D** (For grades 9-12)

*Presented by Tara Peters, Sullivan County Schools*

Explore the construction process of the pentagonal fractal as a hands-on classroom activity in self-similarity that can be used in a high school geometry class. This process will be extended include fractal designs involving a dodecahedron. All materials provided.

**Directions:** From I-81, take exit 66 (TN 126) and head south (the opposite direction from Kingsport/Carolina Pottery). Go about one block and turn right onto Shipley Ferry Road.

## Remaining Meetings for 2007-08

Tuesday, April 15 ETSU, exact location TBA. Tentative topics: Using the Three Stooges to Teach Statistics, Mental Math

One more spring meeting TBA (Anyone want to host? Let Daryl know.)

## Upcoming Events



### April 18-19 (Friday-Saturday)

Tennessee Mathematical Association of Two Year Colleges (TMATYC), Northeast State Technical Community College

**TI-Nspire Workshop:** There are plans to have a TI-Nspire calculator workshop at Greeneville High School during June 24-26, 2008. Registration information is not yet available but should be soon. When we receive information we will e-mail the UETCTM membership.

## Middle School Math Day

Middle School Math Day will take place on Saturday, April 26 from 8am-2pm at Volunteer High School in Church Hill. We had a very positive response last year and look forward to an even more successful event this year. Students will be able to choose from a list of fun hands-on math games and activities and attend four 50-minute sessions during the day with a break for lunch (provided, of course) in the middle and a door prize giveaway at the end. Anyone interested in helping out may email Julia Grecol at [grecolj@hck12.net](mailto:grecolj@hck12.net) or call 357-3641. Student application forms will be sent to area middle schools in February. Please encourage your students to attend. The event will be limited to 200 participants, so be sure your students apply early.

## Free Workshop in July on Teaching Introductory Statistics

### CAUSE '08 Workshop Offerings

CAUSE will be offering two JMM pre-conference workshops. Going to San Diego for the Joint Mathematics Meetings? Consider attending one of these workshops, there is no registration fee for these or any of the '08 workshop offerings. See details for all workshops and access registration on-line at <http://www.causeweb.org/workshop/>

### Teaching Introductory Statistics

East Tennessee State University, Johnson City, Tennessee

Monday, July 14 - Thursday, July 17, 2008

Presented by Roger Woodard, North Carolina State University and Scott McDaniel, Middle Tennessee State University

Details will be available on the website in the near future.

Additional summer workshops will be posted on the CAUSE website as the details are confirmed.

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# UETCTM News

Newsletter of the Upper East Tennessee Council of Teachers of Mathematics

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Volume 8, Issue 5

<http://www.uetctm.org>

March, 2008

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## Final 2007-08 Meeting at ETSU, April 15

The fifth meeting of the academic year will be held at East Tennessee State University in Johnson City. The meeting will begin at 4:00 with refreshments and mingling in Rogers-Stout 328, followed by a short business meeting and announcements at 4:30. Then there will be three sessions to accommodate teachers at all levels:

### **Möbius Madness**

Ivars Peterson, ETSU Basler Chair of Excellence – Rogers-Stout 328

Since its discovery in the 19th century, the astonishing one-sided, one-edged Möbius strip has confounded and fascinated generations of people, inspiring stories, magic tricks, patents, artworks, cartoons, playground equipment, and much else. Learn more than you ever thought possible about how a mathematical object conquered the modern world. (Suitable for teachers at all levels, K-college.)

### **Using the Three Stooges as a Data-source for Motivation of Statistics Students**

Drs. Robert Davidson and Bob Gardner, ETSU – Rogers-Stout 327

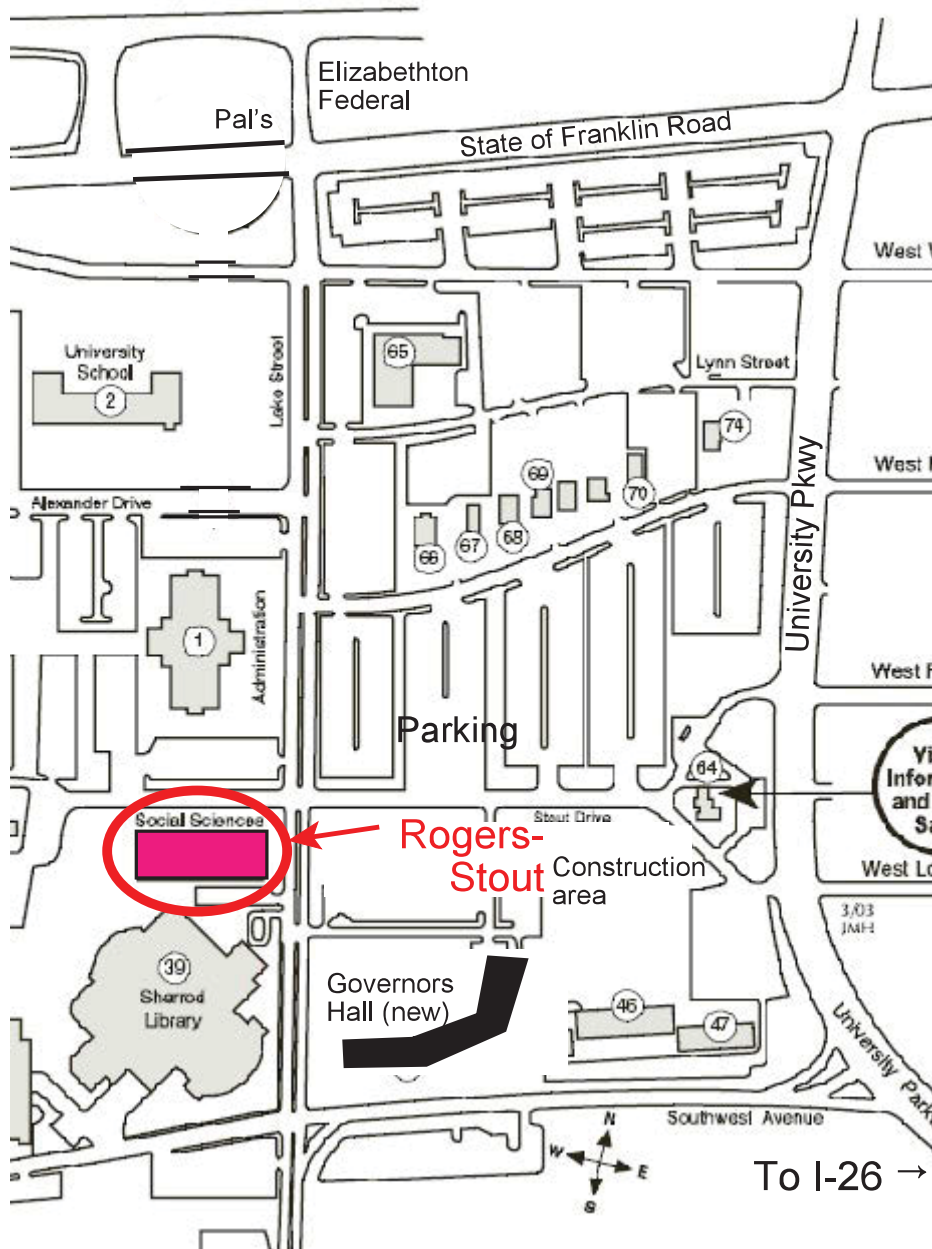
A common approach to engaging students in the undergraduate classroom is to present them with a topic from popular culture and to interpret the topic in light of the academic area at hand. The presenters will use films of the Three Stooges to provide data for students in an introductory statistics class. (Geared more for high school and college faculty.)

### **Mental Math for Fun and Contests**

Dr. Daryl Stephens, ETSU – Rogers - Stout 401

There are all sorts of tricks to quickly do certain kinds of mental computations. Students in Texas from fifth grade up compete in mental math contests, and we will see some of the kinds of tricks they learn for the contest – tricks that can be easily taught in class as five-minute enrichment activities. (This presentation is of general interest, but of most interest to fourth grade through early high school.)

**Directions to ETSU:** A map of Johnson City showing routes to get to ETSU is available at <http://www.etsu.edu/etsu/files/MAPtoETSU.pdf>. From State of Franklin Road, turn south on Lake Street (the light across from Pal's), and Rogers-Stout is just past the second four-way stop. From University Parkway (coming from Elizabethton or the University Parkway/US 321 exit off I-26), turn at Southwest Avenue (there's also a sign showing "Central Receiving") and then turn right at the first four-way stop; Rogers-Stout is the four-story building on the left at the second four-way stop. Or you can turn left onto Stout Drive (across from W. Locust St.), and Rogers-Stout is at the first four-way stop. A printable campus map showing buildings and parking areas is available at <http://www.etsu.edu/maps/ETSUMap.pdf>.



**Parking Information:**  
You may park in any student (gold curb), faculty (dark blue), or carpool (light green) space after 3:00. Avoid no parking (yellow), fire lanes (red), handicapped (light blue - it's OK if you have a permit), or 20-minute spaces.

## Upcoming Events



### April 18-19 (Friday-Saturday)

Tennessee Mathematical Association of Two Year Colleges (TMATYC), Northeast State Technical Community College. Registration information is available at <http://tn.matyc.org>. Friday sessions are from 2:00 – 7:15. Saturday sessions run 8:00 – 1:30. Registration of \$50 includes Friday dinner and breakfast and lunch on Saturday.

### TI-Nspire Workshop at Greeneville High School June 24-26

This will be held Tuesday through Thursday from 8:00-5:00 at Greeneville High School, 210 Tusculum Blvd. Exploring mathematics with TI-Nspire technology - These institutes, held at nationwide locations and facilitated by T<sup>3</sup> Instructors, will focus on the integration of TI-Nspire technology into the classroom with the use of content-specific activities for Algebra 1, Algebra 2, Geometry, Precalculus and Calculus. The cost to attend is \$325. Each participant will receive a TI-Nspire handheld and TI-Nspire computer software. The online registration form is at [https://baskowsecure.com/ei/getdemo.ei?id=185&s=\\_22O1D5CED](https://baskowsecure.com/ei/getdemo.ei?id=185&s=_22O1D5CED). Look on <http://education.ti.com> for more information.

### Middle School Math Day

Middle School Math Day will take place on Saturday, April 26 from 8am-2pm at Volunteer High School in Church Hill. We had a very positive response last year and look forward to an even more successful event this year. Students will be able to choose from a list of fun hands-on math games and activities and attend four 50-minute sessions during the day with a break for lunch (provided, of course) in the middle and a door prize giveaway at the end. Anyone interested in helping out may email Julia Grecol at [grecolj@hck12.net](mailto:grecolj@hck12.net) or call 357-3641. Student application forms will be sent to area middle schools in February. Please encourage your students to attend. The event will be limited to 200 participants, so be sure your students apply early.

### Free Workshop in July on Teaching Introductory Statistics

East Tennessee State University, Johnson City, Tennessee

Monday, July 14 - Thursday, July 17, 2008 from 9:00 am - 5:00 pm on Monday through Wednesday and 9:00 am-2:00 pm on Thursday.

Presented by Roger Woodard, North Carolina State University and Scott McDaniel, Middle Tennessee State University

Details are at <http://www.causeweb.org/workshop/etsu/>.



## Math Panel Releases Final Report

*Editor's note: This article came from <http://www.nctm.org/news/content.aspx?id=14213#2> on March 18, 2008. It was part of the NCTM Member Legislative Update, which is sent to NCTM members approximately once a week.*

Last Thursday [March 13, 2008], the National Mathematics Advisory Panel held its final meeting to release its final report to the president and the secretary of education. The final report, "Foundations for Success," focuses specifically on improving the teaching and learning of algebra in prekindergarten through grade eight, in an effort to improve achievement in higher levels of mathematics in high school. Findings of the report include recommendations to improve the areas of instructional policies, course content, learning processes, assessments, and professional development for instructors.

From the 16,000 studies reviewed for this report, the Panel presented 45 findings and recommendations based on the best evidence presented in these studies. Included in its findings, the report recommends increasing the emphasis on mathematics early in a student's educational process, specifically focusing on proficiency with numbers and knowledge of fractions. The Panel has offered a timeline of when students should master critical topics in order to succeed in algebra. The report also suggests either improving mathematics content knowledge of elementary school teachers, or utilizing teachers that specialize in elementary mathematics. In addition to improving the teacher and content quality in elementary and middle school math, the Panel recommends that the National Assessment of Educational Progress should be revised to provide an increased focus on mathematics skills critical to succeeding in algebra.

Supporting the findings of the Panel, Secretary of Education Margaret Spellings noted the positive correlation presented in the report between achievement in algebra and success in college and the workforce. She also emphasized the importance that all students succeed in mathematics, stating, "Studies have shown that it is effort, and not just inherent talent, that makes the critical difference between success and failure. When it comes to math, it seems hard science says it is truly worth the effort!"

Read NCTM's news release at <http://www.nctm.org/news/content.aspx?id=14136> and the final report at <http://www.ed.gov/mathpanel>. Also, read news articles at [http://www.nctm.org/nctminthenews.aspx?ekmense=c580fa7b\\_20\\_558\\_572\\_2](http://www.nctm.org/nctminthenews.aspx?ekmense=c580fa7b_20_558_572_2) that feature NCTM.

## Call for Proposals for SVCTM Conference Sept. 13

*This request comes from Susan Fleming of our neighbor organization, SVCTM.*

Greetings:

I am in the process of planning the fall meeting of the Southwest Virginia Council of Teachers of Mathematics. I would like to have teachers from across our region present workshops so we can share our best teaching ideas with each other. I am e-mailing contacts in each school system in our region hoping to find math specialists or teachers who have ideas they would like to share at the conference. I would greatly appreciate your help in forwarding this to math specialists and teachers in your system who might be interested in presenting at the conference.

The conference will be Saturday, September 13. The theme this year is "Number Sense." Dr. Thompson from the University of Louisville will be our keynote speaker. I understand he worked on this topic with John Van de Walle. TI is also coming to do a workshop on the Navigator.

The presenter form can be printed from <http://www.vhcc.edu/sfleming/SVCTM/presenter.htm>, or I will be happy to e-mail it to anyone who is interested.

Thanks so much for any help you can give me in planning an informative conference.

Susan Fleming  
Virginia Highlands Community College

## Math and Science Education Conference May 29-30

The ETSU's Center of Excellence in Mathematics and Science Education will host a math and science education conference at the Johnson City Millennium Center and Carnegie Hotel on May 29-30, 2008. The conference will bring together math and science teachers, policy makers, corporate leaders, state legislators, and Tennessee math and science education leaders. Conference presenters will focus on topics of interest in math and science education. Broaden STEM participation and workforce issues are major themes of the conference. Highlights of the tentative conference schedule include:

- National Math Panel: A Report from NCTM
- Important...But Not for Me: Students and Parents Talk About Math and Science Education (Public Agenda)
- Tools for Building Community Engagement and Support for High Quality Science/Math Education and Workforce "Pipeline"
- Critical Role of Industry in Science/Math Education Workforce: A Discussion One Year Later (Panel Discussion)
- A More Rigorous Math/Science Curriculum for Tennessee Students
- Content of Professional Development for Teachers: National Research Council
- International Look at Math and Science Education
- Tennessee revised math and science standards
- Business-Higher Education Forum Session
- What Research Says to Math and Science Teachers

Check <http://www.etsu.edu/cas/math/mathexcellence/index.jsp>, the website of the Center of Excellence in Mathematics and Science Education, for more details later on.

## Wanted: UETCTM Logo

To the best of anyone’s knowledge, UETCTM doesn’t have a logo. Does anyone want to dream one up? Let’s talk about it at the April meeting. Maybe you or one of your students might have a great idea for one. If you dream one up by the time of the meeting, bring it with you, either on paper or on a USB drive, CD, or floppy disk. The computer in Rogers-Stout 327 should have some Adobe software such as Photoshop on which to show it, or we can use the document camera to display a paper version.

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