



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News



## Halloween math...

**Q:** Wadaya get when you take the circumference of your jack-o-lantern and divide it by its diameter?

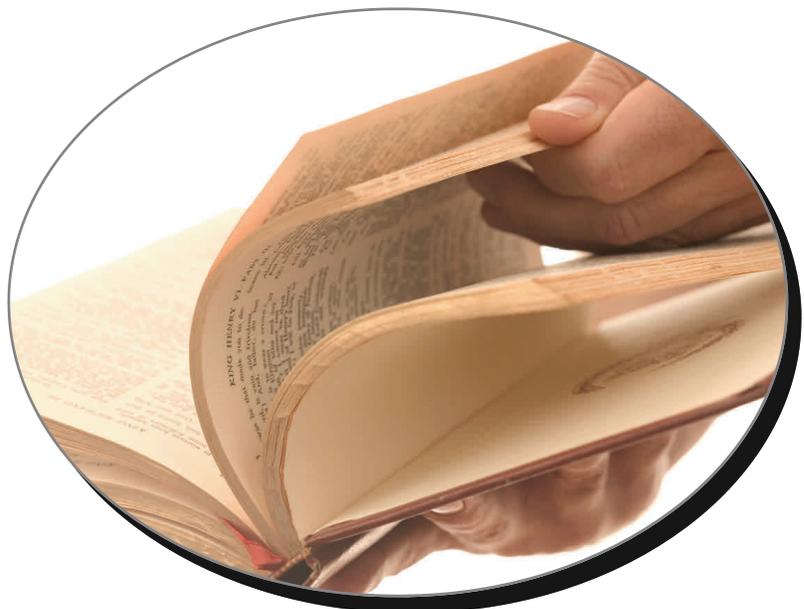
**A:** Pumpkin  $\pi$ .

<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>



### Inside this issue:

- Upcoming events 2
- It only takes one 3
- Collaboration of School Systems 5
- Grand Mathematics Teaching 7
- Stronger Than It Appears 9
- 8 Math Practice Standards in Kid Friendly Language 11
- Special Need Algebra 13



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

## 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>



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

## 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



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

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?



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

## 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



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

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?

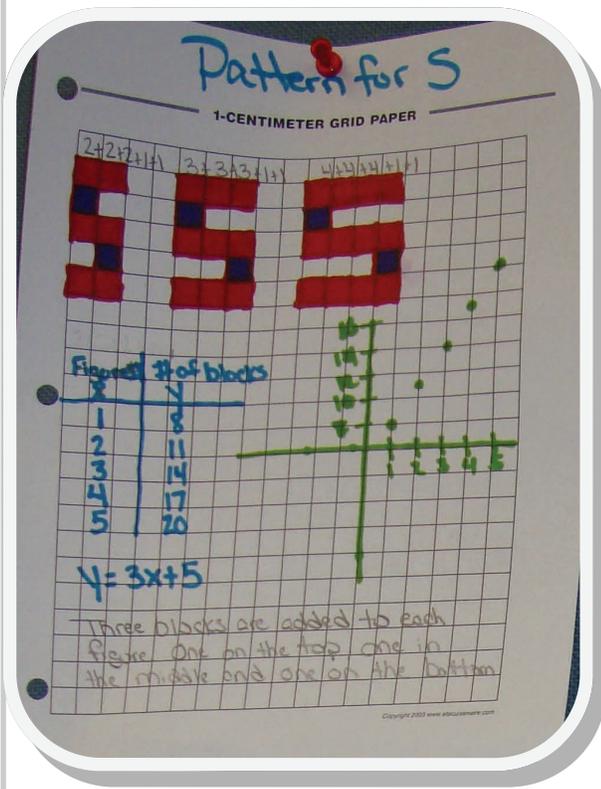
Smaller schools would benefit greatly because most of them only have one teacher per subject while larger schools have more than one teacher to teach the same subjects. This is a benefit to the larger schools but why not have us teachers gather for in-service and have collaborative meetings to give them 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

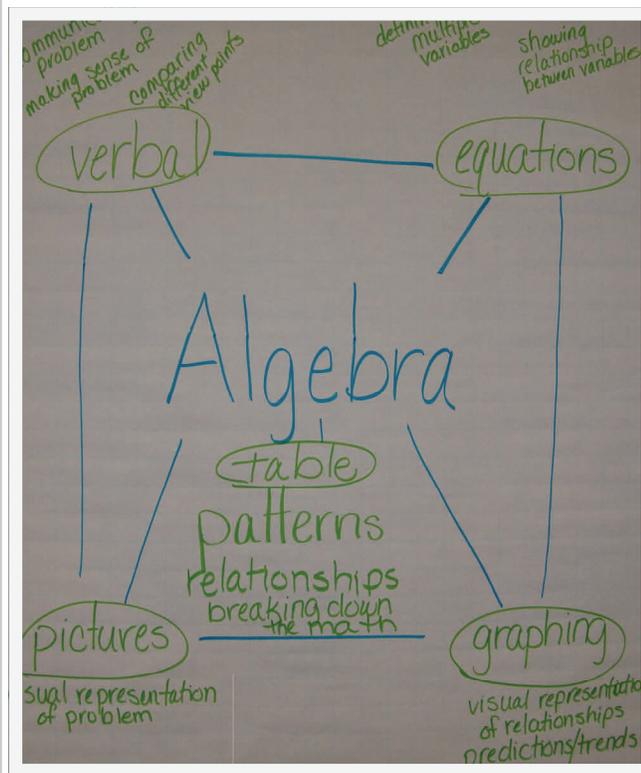


# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

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.



## 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



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

## Grading Rubric:

Points Earned

	Points Earned	
1 original design for each group member Sketches of design need two views- side and top (drawn to scale)	20 possible points	
Design adjustments Turn in sketch for each design tested	20 possible points	
Number of attempts needed (max 3) 1 attempt 20 points 2 attempts 17 points 3 attempts 14 points	20 possible points	
Maximum number of books held Percentage of class best score	20 possible points	
Average number of books held per attempt Percentage of class best score	20 possible points	

## Process:

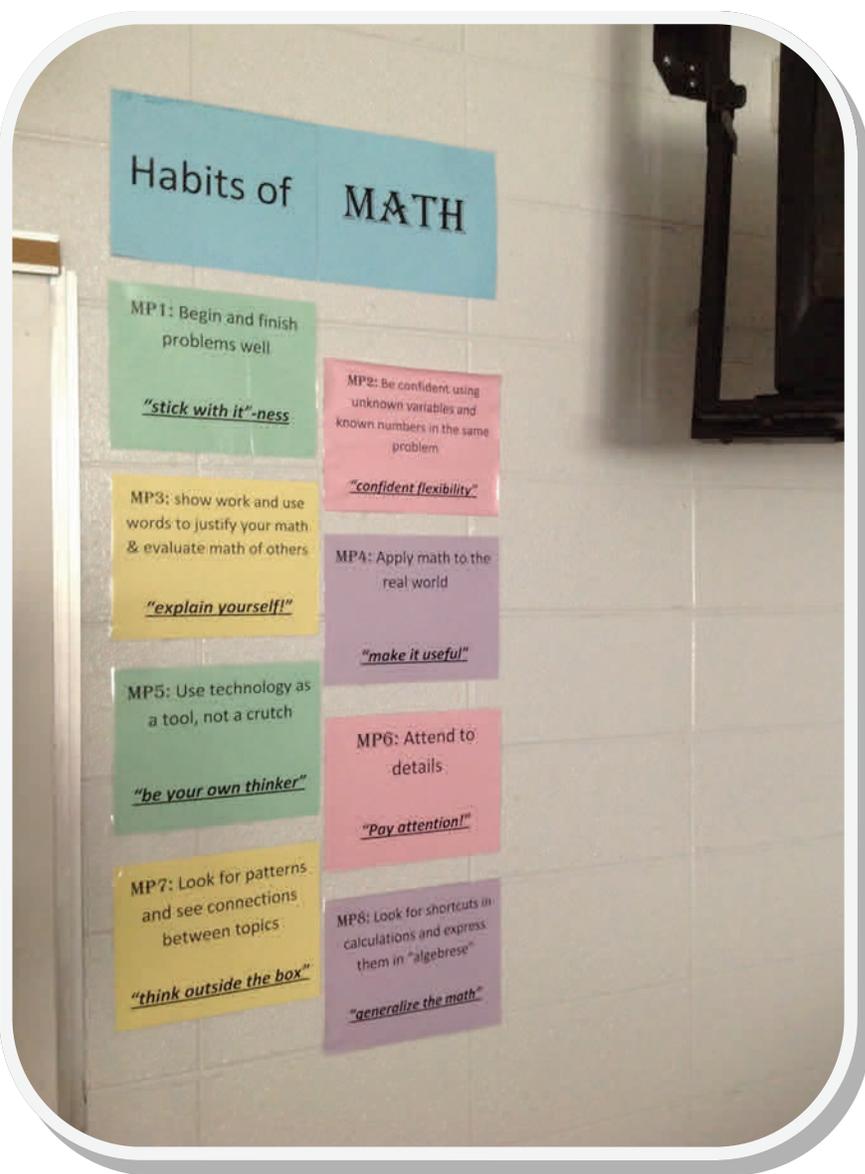
1. Each group member needs to come up with a design.
2. Once groups are formed, a collective design needs to be created or chosen.
3. Teams test their design.
4. Teams throw away old materials and get new material if they desire
5. Alterations and made to the design. The new designs sketches are created.
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





# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

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”

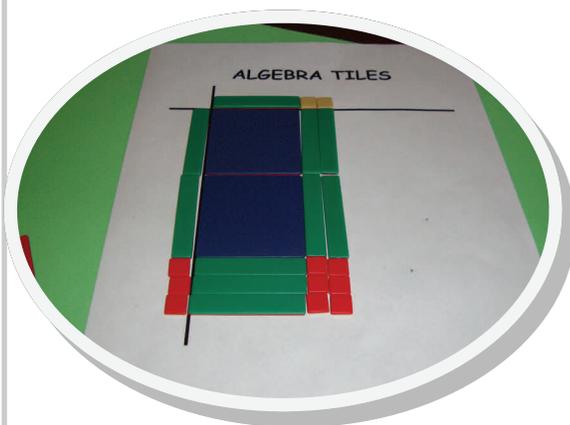


## Special Needs Algebra

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-



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

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:

### National Council of Teachers of Mathematics (NCTM)

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

### Tennessee Mathematics Teachers Association (TMTA)

<http://www.tmta.info/>

#### President:

**Tara Harrell**

📍 Hawkins County Schools  
200 North Depot Street  
Rogersville, TN 37857  
☎ 423-272-7629  
✉ harrell@rcschool.net

#### Newsletter Editor

**Ryan Nivens, Ph.D.**  
**Assistant Professor**

📍 ETSU  
East Tennessee State University  
PO Box 70684  
Johnson City, TN 37614-1709  
✉ nivens@etsu.edu

#### Assistant Editor

**Tsitsi C Nyabando**

ETSU Graduate Assistant  
✉ nyabando@goldmail.etsu.edu

## Officers of UETCTM for 2013 - 2014

#### President Elect:

**Kris Krautkremer**  
Robinson Middle School  
Kingsport City Schools  
✉ kkrautkremer@k12k.com

#### Past President:

**Ryan Nivens, Ph.D.**  
**Assistant Professor**  
📍 ETSU  
East Tennessee State University  
PO Box 70684  
Johnson City, TN 37614-1709  
✉ nivens@etsu.edu

#### Secretary:

**Kris Krautkremer**  
Robinson Middle School  
Kingsport City Schools  
✉ kkrautkremer@k12k.com

#### Treasurer:

**Jerry Whitaker**  
📍 Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617  
☎ (423) 753-1106  
✉ whitakerj@wcde.org

#### Webmaster

**Daryl Stephens**  
📍 ETSU Math Department  
Box 70663  
Johnson City, TN 37614  
☎ (423) 439-6981  
✉ stephen@etsu.edu



# 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.**