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?
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.
- 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.
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.
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
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.
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.
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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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.
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.
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
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.
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 Now! Right Now!

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) 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.
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 2½ 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

We 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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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.