UETCTM News

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

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 √32 into 4√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

UETCTM News

A message from your President

As 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 11th and 12th grade mathematics, but those ideas begin as early as kids begin counting. Using area and perimeter explorations in the 4th and 5th 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

UETCTM News

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

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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 $y = x2$). 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.
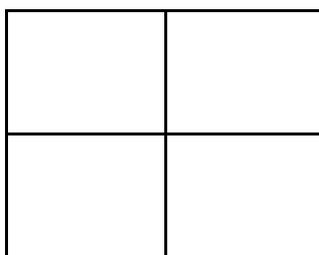
UETCTM News

FACTOR BOXES TO THE RESCUE!!

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

*I*t 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
x	2x(x)	3(x)
-5	2x(-5)	3(-5)

$==>$

	2x	+3
x	$2x^2$	3x
-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

*I*n 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 assign-ments, 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.

UETCTM News

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.

UETCTM News

WRITING IN MATH CLASS… ARE YOU CRAZY?

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

Writing 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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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!
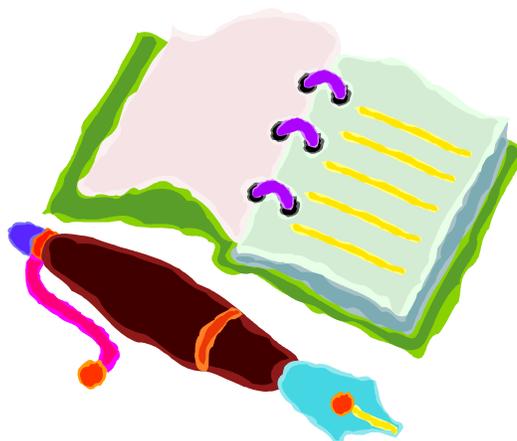
MATH FUN—SOLUTION

- 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.

UETCTM News

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

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

Have 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!

UETCTM News

STRUGGLING FOR PARENT INVOLVEMENT

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

I just 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!

UETCTM News

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 re-sume 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 par-ticipating 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?

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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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UETCTM News

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*!

UETCTM News

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 6th grade one year, and the following year she had been assigned to teach 7th grade. When her 7th 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 luck 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

UETCTM News

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.

UETCTM News

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.

UETCTM News

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 OFMATHEMATICS 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

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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