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MATH FUN http://www.mathsisfun.com/activity/

Draw a 6-pointed star:

Now draw it like this:





It is three lines! Why would 2 triangles **OR** 3 lines make a 6-pointed star? A triangle has three corners, so 2x3=6A line has two ends, so 3x2=6

#### 7-Pointed Star

How many ways could we make a 7-pointed star?

Connecting every 2nd corner

Connecting every 3rd corner





#### Why is 7 so different to 6?

6 can be made from other shapes, but 7 goes around and around until it joins up again.

Could it be because 7 is a <u>prime number</u> and 6 is a composite number?

What happens when you divide 7 by 2 ... is there a remainder?

What about when you divide 7 by 3?



**UETCTM MEETING** Tuesday, October 4, 2012

**Liberty Bell Middle School Johnson City Schools** 1308 Pactolas Road Johnson City, TN 37604 423-232-2192



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### President's Message

want to give a big "Thank You" to all the members of UETCTM that were able to attend the annual meeting of the Tennessee Mathematics Teachers Association. We had a large turnout of over 200 people, and approximately 50 presentations, many by our UETCTM members. For several of you, this was your first time attending a state conference. I hope you enjoyed the meeting. We have heard a lot of good feedback as well as some useful ideas for future conferences to be even better. I hope you can attend the state meeting next year at Tennessee Tech in Cookeville, TN.

For the rest of this school year, I hope you make plans to attend the regional UETCTM meetings we have planned. We make attempts to alternate the evenings they occur on to facilitate our busy schedules. Tara Harrell, our president-elect, or I plan to be at the meetings this year. Feel free to share with us your ideas for the future. I hope to see you soon.

The fall semester is alive with color and cool temperatures.

Sincerely,

Ryan Nivens

Center for Excellence in Mathematics and Science Education

Department of Curriculum and Instruction

Claudius G. Clemmer College of Education

East Tennessee State University

#### MATH TRIVIA

http://www.triviaplaying.com/62\_Math\_.htm

Q: What T-word is defined in geometry as "a straight line that touches a curve but continues on with crossing it"?

A: Tangent.

Q: What geometrical shape forms the hole that fits and allen wrench?

A: The hexagon.

Q: What number is an improper fraction always greater than?

A: One.



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OCTOBER 2011



## **UETCTM News**

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#### IT'S ALL ABOUT GROWTH!

**ByAmber McKee** 



big move to fifth grade math, I experienced feelings of excitement and anticipation as well as anxiety and intimidation. The kids would grow, the desks would grow, and the chairs would grow. These were all very exciting thoughts because I had been waiting for the opportunity to work with the "big kids".

However, as I packed away the counting cubes, the cute little bear counters, and the bean soup addition game, a wave of nerves rushed through me. At this moment I realized that I was packing these items up to be left behind. My library of manipulatives was now bare. I was starting over! How was I going to teach all of these new, more complex concepts to this "grown up" group of students? I began to feel anxious, overwhelmed, and intimidated. The hands-on style of teaching that I had grown accustomed to while I was teaching kindergarten was beginning to seem almost foreign, and I felt as if I were going to try to coach a sports team without any of the equipment.

At this point I realized how important it was going to be for me, as a teacher, to grow! I began researching on the internet, reading books, collaborating with other teachers, and getting geared up for the Mathletes Program. As I grew (expanded my bank of ideas), I became more comfortable with not necessarily WHAT I was teaching, but HOW I was going to teach it. I was able to discuss new ideas and strategies with other teachers. They shared ideas and offered suggestions on manipulatives and many other activities. My manipulation cupboard is no longer bare and my files are fully stocked with mounds of wonderful resources! I am now confident that I am well equipped and ready to teach my students the math skills necessary for each of them to achieve their own growth!



# CHANGING YOUR TEACHING: USING RESEARCH BASED STRATEGIES

By Sarah Squibb



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oday's youth have become quite bored with the traditional way of learning and therefore, teachers now have to provide a variety of methods for learning that engage all students. As a teacher with over 20 years of teaching experience, I have found it necessary to change my way of teaching math. For years, teachers have used the "kill and drill" method of teaching mathematics. Research has shown that each of the four major learning modalities – visual, auditory, kinesthetic, and tactile – must be incorporated in every learning opportunity to ensure long-term retention. (Tate, 2009) When students are actively engaged in firsthand experiences, they have a greater chance of learning the skill being taught. It is also important to incorporate into your lesson need, novelty, meaning, and emotion. If your lesson has at least one of these, the students will be able to make a connection, and it has a good chance of being remembered (Tate, 2009). To accomplish this goal, I have begun using research based strategies to best meet the needs of the students in my classroom. The most effective strategies I have used are games, reciprocal teaching with cooperative learning, and technology. Each of these has been quite helpful in the constant battle of keeping my students engaged in the lesson.



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Games have proven to be an effective learning strategy in my classroom. My students get very excited when they know they will be playing a game in class. They are motivated and engaged in the game, as they want to do well for themselves and their team. These games bring out a spirited competitiveness in all students. There are numerous math games available that provide an effective way to practice and reinforce math skills while participating in a fun activity.

No matter how well you present your lesson, your students will not retain every concept covered, but I have found reciprocal teaching with cooperative learning to be very effective. When students are able to share with a partner or group what they have learned, the students will glean information from each other. Conversations about the skill or concept will reinforce the concept taught. Average or low achievers benefit from peer tutoring and high achievers benefit from being able to teach someone else the skill, as well. People remember 95% of what they are able to articulate to someone else (Glasser, 1990). People learn...

10% of what they read

20% of what they hear

30% of what they see

50% of what they both see and hear

70% of what they say as they talk

90% of what they say as they do a thing (Ekwall & Shanker, 1988)

When a student is accountable to a partner or group, they seem to become somewhat more engaged in the lesson.



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Today, students are exposed to various forms of technology in their daily lives, so it has become necessary for teachers to incorporate technology into their lessons in order to keep them engaged. Youth are very fascinated and efficient with modern technology. It is an effective strategy for presenting math concepts and skills. Calculators are useful learning tools for all students, and are helpful for students who struggle in math. They are especially effective for students with special needs. Calculators and computers are quite beneficial with performing complicated computations and working on real life problems. The students do not get bogged down with computation and can concentrate on the application process instead.

An old Chinese proverb says, *Tell me, I forget. Show me, I remember. Involve me, I understand!* If we, as educators, understand the wisdom of this proverb, we can provide our students with the most effective instruction that will yield outstanding results. Today's highly effective teachers embrace this, and their students reap the rewards.

#### Works Cited

Ekwall, EE., & Shanker, JL. (1988). *Diagnosis and remediation of the disabled reader*. Boston:: Allyn & Bacon.

Glasser, W. (1990). *The quality school: Managing students without coercion*. New York: HarperCollins.

Tate, ML. (2009). *Mathematics worksheets don't grow dendrites*. Thousand Oaks, CA: Corwin Press.



### MATH TRICKS TO LEARN THE FACTS (MULTIPLICATION)

**By Nicky Ward** 



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ore and more in my teaching career, I'm seeing that students no longer commit to memory their multiplication tables. With the math curriculum as extensive as it is,

teachers cannot give the time needed to ensure that students learn the basic multiplication facts. Parents are partners in the process and will have greater opportunities for their children to succeed in math if they support the learning of the basics at home. Parents can work with their children to ensure that they do not fall between the cracks. They can help their child learn the facts. There are many tricks to teach children multiplication facts in mathematics. Some tricks that I have discovered are listed here.

#### The 9 Times Quickie

Hold your hands in front of you with your fingers spread out.

For 9 X 3 bend your third finger down. (9 X 4 would be the fourth finger etc.)

You have 2 fingers in front of the bent finger and 7 after the bent finger

Thus the answer must be 27

This technique works for the 9 times tables up to 10.

#### The 4 Times Quickie

If you know how to double a number, this one is easy.

Simply, double a number and then double it again!



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#### The 11 Times Rule #1

Take any number to 10 and multiply it by 11.

Multiply 11 by 3 to get 33, multiply 11 by 4 to get 44. Each number to 10 is just duplicated.

#### The 11 Times Rule #2

Use this strategy for two digit numbers only.

Multiply 11 by 18. Jot down 1 and 8 with a space between it. 1 8.

Add the 8 and the 1 and put that number in the middle: 198

#### Deck 'Em!

Use a deck of playing cards for a game of Multiplication War.

Initially, children may need a multiplication grid to become quick at the answers.

Flip over the cards as though you are playing Snap.

The first one to say the fact based on the cards turned over (a four and a five = Say "20") gets the cards.

The person to get all of the cards wins!

Children learn their facts much more quickly when playing this game on a regular basis.

#### **Seeing the Patterns**

Use a multiplication grid or let your students create one.

Look carefully at all of the patterns, especially when the numbers correspond with the facts, e.g., 7X8 and 8X7 = 56

Let students practice the 'fast adding' which is what multiplication is.

When students can count by 3s, 4s, 5s 6s, etc. they will automatically know their multiplication tables.



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THE ONE-MINUTE MANAGER,
BLANCHARD & JOHNSON,
WILLIAM MORROW & CO., 1982.
A SHORT-READ REFLECTION.



By Z. Bennah Johnson City Schools



Ithough written in 1982, the strategies of "the one-minute

manager" are applicable in many current classrooms. Stu-

dent management skills are applied in three distinct compo-

nents:

**One Minute Goals** – Clarity and focus of goals must be shared with students.

Focus is the key to whittling the time needed to achieve classroom objectives.

Time wasters, such a repetition, are eliminated, as much as is possible. Student goals are clear and achievable.

One Minute Praising – Blanchard and Johnson recommend praising specific behaviors in a personal way. Telling students not only how good you feel about their actions, but also how good you feel about them personally, enhances the productivity of the classroom.

One Minute Reprimands – The authors recommend the following steps in administering this sometimes quite difficult task:

Tell students beforehand that you are going to let them know how they are performing.

Immediately tell students what they did wrong in specific terms.

Tell students how you feel about what they did wrong, in specific terms.



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Stop for a few moments of uncomfortable silence to let them feel how you feel.

Shake hands or touch their arm in a way that lets them know you are honestly on their side.

Remind them how much you value them.

Reaffirm that you think well of them, but not their actions.

Realize that when the reprimand is over, it's over.

Although one minute solutions may or may not be achievable in many situations, the idea may serve as a guide. Many times the situations mentioned are difficult, time-consuming, and emotional. Eliminating time-wasters and implementing focus is helpful. Focusing on attainable behaviors and objectives, as opposed to criticism of students and personalities, is a more efficient approach to serving the needs of the classroom. Most importantly, students are human beings with needs and wants. The dignity, respect, pride, and importance of the student must be recognized and cultivated. The very best classrooms thrive, not only under the auspices of accountability, but also through warm, caring, and genuine human interaction.



#### Why Classroom Discussions?

By Jan McCall System-wide Mathematics Coach Kingsport City Schools



"Do the math!" "That just doesn't add up." "Go figure!" Math talk is common language for us just about everywhere except for in our classrooms. Suzanne Chapin, co-author of *Classroom Discussions: Using Math Talk to Help Students Learn*, would like to see that change.

"Why isn't math talk used more in the classroom?" Chapin asked a room full of math teachers attending the NCTM Annual Conference this year in Indianapolis. We discussed many ideas and listed the following:

- → Math talk can reveal understandings and misunderstandings.
- → Math discussions support robust learning by boosting memory (language is key to remembering).
- → Math talk supports deeper reasoning by linking evidence to claim.

Math discussions support the development of social skills, especially in a hightech world.

Chapin was making a lot of sense, but from my experience as a math coach, I have found that teachers, often times, think they do not have time for classroom discussions, or that no one will talk. Teachers also worry that their students will not be able to follow the discussion and might shut down.

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Chapin must have been reading my mind when someone asked, "How do we get these discussions started? Our kids expect to *do problems* in math class, not talk about them. How do we get them involved and keep them interested?"

"Good questions," Chapin said and then she laid out a strategy for introducing students to learn to talk about math. She said that we could ease our students into the discussions by asking them simple questions that "will allow students to engage more fully in mathematical thinking and reasoning." Questions as simple as, "Do you agree or disagree and why?" can be used to get students talking about their work.

Chapin then said she could relate to today's math teachers. When she was in school, during math class -- the traditional math class -- there was not any discussion about math. It was "do the problem, get the right answer, and turn it in." She said that teachers today often lack images of what classroom discourse looks like. This is because of teachers' own experiences in math class where discussions about math were all but absent. Teachers have no frame of reference. I could relate, and so could just about everyone else at the conference. She made some great points, and I decided to read her new book when I got back home. I'm glad I did! And you will, too.

Math Solutions recently published the second edition of *Classroom Discussions*. This new edition includes a CD with video clips of math classrooms and demonstrates the tools to having the kinds of math talk that increases student abilities in reasoning, understanding, and problem solving. To get you started, here are Chapin's four steps to productive classroom discussions:



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## **UETCTM News**

Step 1: Get your students to clarify and share their own thoughts. Students will get better at saying what they are thinking by getting a simple discussion started. Students can also get used to using the academic math vocabulary. Once the new vocabulary gets internalized and becomes part of their common language, it will have real meaning.

Step 2: Help your students think of other students. We could do a better job of getting students to listen and learn from each other. Students helping students goes a long way in understanding the math.

Step 3: Help your students deepen their reasoning.

Step 4: Help your students engage in the reasoning of others – and respond!

Students are working with the thinking of others, which helps them make sense of the math.

Classroom Discussions describes how to initiate conversational strategies (talk moves), lists ways to structure the classroom to achieve goals (both social and cognitive), and provides techniques for students to make mathematical conjectures. These strategies promote the students' learning of mathematical concepts and procedures. Research says "instructional methods that support and promote student sharing, questioning, and active listening enhance student reasoning and problem solving" (McREL, 2010).

Chapin and her *Classroom Discussions* have had an important influence in my own classroom and the classrooms of other teachers. I find that students of



all ages become more confident in communicating and understanding the math when the strategies of talk moves are incorporated. I have Chapin's five talk moves posted in my room where I can see them from anywhere in the classroom. The five talk moves are listed below.

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Revoicing

"So you're saying that..."

Asking students to restate someone else's reasoning

"Can you repeat what (another person) just said in your own words?"

Asking students to apply their own reasoning to someone else's reasoning

"Do you agree or disagree and why?"

Prompting students for further participation

"Would someone like to add on?"

Using wait time

"Take your time...we'll wait..."

I encourage my students to use talk moves when working in small groups, especially when another student asks for help. Rather than giving students the answer, they now ask more questions. And that's where we want to go!



In the words of Marilyn Burns, *Classroom Discussions* "has had a direct, positive, and important influence on my math teaching. The ideas are clear and persuasive and I gained new and important tools for engaging students and improving math classroom discussions."

Math talk is a win-win...a learn-learn...and a talk-talk situation. Go figure!

#### References

McREL, What We Know About Mathematics Teaching and Learning, Solution Tree Press, 2010, pp.18-19.

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#### UPCOMING CALENDAR DATES



UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS

Tuesday, October 4, 2011 Liberty Bell Middle School, Johnson City Schools, Johnson City, TN

November 2011 TBA, Washington County Schools

Monday, February 6, 2012 Mt. Carmel Elementary School, Hawkins County Schools, Mt. Carmel, TN

Tuesday, March 6, 2012 John Sevier Middle School, Kingsport City Schools, Kingsport, TN

Tuesday, April 10, 2012 Central Office, Sullivan County Schools, Blountville, TN

Monday, April 30, 2012 Vance Middle School, Bristol City Schools, Bristol, TN



#### NATIONAL COUNCIL OF TEACHERS OFMATHEMATICS 2011 REGIONAL CONFERENCES AND EXPOSITIONS

Atlantic City, New Jersey • October 19-21, 2011

St. Louis, Missouri • October 26-28, 2011

Albuquerque, New Mexico • November 2-4, 2011

Annual Meeting, Philadelphia, PA • April 25—28, 2012



#### TENNESSEE MATHEMATICS TEACHERS ASSOCIATION

TMTA Fall Conference September 2012 Tennessee Tech, Cookeville, TN

#### **Request for Article Submissions**

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

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

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

#### **Newsletter Editor**

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# **UETCTM**

### Membership Application

#### Mail completed form to:

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

Membership Fee: \$10 Payable to: UETCTM



Name:
Home Address:
Home Phone: (
School:
School Address:
School Phone: ()
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The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater -Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.  $\mathcal{P}_{\text{age }18}$