



# UETCTM NEWS

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## Guess How Many?

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A recent study, published in January of 2014, suggests that by playing guessing games, children can improve their skills with traditional math problems. The researchers asked first-graders to practice tasks that required them to estimate the number of objects in a set. Other children did tasks such as comparing or adding the lengths of lines. Children who practiced approximating the number of objects performed better on arithmetic tests immediately afterward than did the other children.

Thus, the study linked practice with intuitive number tasks with better math performance in students. What does this mean for you as a teacher? It means that you should engage your students into thinking about numbers. Have your students estimate different things, such as how many papers are in a stack or how many pencils are in a pouch and help them improve their mathematic skills!

<http://blogs.kqed.org/mindshift/2014/02/how-guessing-games-help-kids-solve-math-problems/>

<http://www.ncbi.nlm.nih.gov/pubmed/24462713>





“The important thing is not to stop questioning. Curiosity has its own reason for existing.”-

*Albert Einstein*

# Searching for the Next Einstein

By Jason B. Dobbs

I have read that as a small child, Albert Einstein, the greatest scientist of the twentieth century, was considered by some of his teachers to be intellectually inferior, someone that would never amount to much. The reason for this faulty inference by his early teachers was that he was silent. He hardly ever spoke.

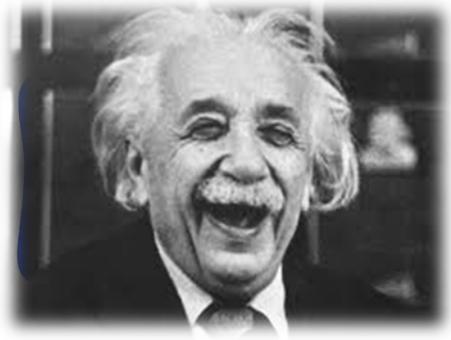
The truth was that Einstein’s brain was superior in its ability to visualize forms, and this supreme power of visualization led him to formulate the theory of relativity. He could visualize what the universe would look like if one was to ride on front of a beam of light.

Now please do not conclude that the implementation of the Common Core standards and its insistence that students visualizing mathematical concepts will lead to the production of a plethora of Einstein’s. No, brains like Einstein’s, in my humble opinion are hard to find as a lone needle in a haystack. But I will conclude that without an emphasis on visualization, mathematics is devoid of any significant meaning. It is rote. It is a chore. It leaves learners with a feeling of hopeless inadequacy.

Let’s think about how visualization is inherently required for the understanding of measurement. Any fourth grade math teacher could easily express their frustration in teaching young children not one but two measurement systems. Since students see them applied in the “real world”, they can typically grasp feet, pounds, and gallons. What about meters, grams, and liters? Without visualization, students’ understanding is severely limited.

Visualization is essential in the understanding of all mathematics. This visualization must be aided by the use of manipulatives. Consistent use of various manipulatives allows learners to touch and see concepts concretely. After much practice, learners will increase their understanding so that they can then draw diagrams, a requirement of common core math tasks.

Believe it or not, there are some critics of common core math tasks, in that, the requirement of drawing diagrams or creating mind maps of the strategies used to solve rigorous math problems is not necessary. But if we as a society are striving to create critical thinkers such as Einstein, mathematics must stress the process of visualization. It is the strongest argument of implementing the common core standards.



# Making Two Digit Multiplication Easier to Understand

By LeAnne DeLeon



*“I was amazed at how much they enjoyed doing the multiplication ...”.*

When I was in elementary school we were taught the traditional algorithm for multiplying two digit numbers. I never gave thought to how or why that method worked. All I knew was if I followed the rules I would get the correct answer. I always struggled with doing the two digit algorithm in my head. Then finally when I was taking a course in college on teaching math, I was taught to do two digit multiplication by using partial products. The partial product method is just a way of breaking the number apart into easier numbers to work with. I found this method so simple and did not understand why I was not taught this method before. By doing this method I could easily see why and how the method worked.

This year I had the privilege of teaching two digit multiplication in my classroom. I was curious if the students would truly understand the method that I was taught in college as well as I understood it. The students picked up on the partial product method very quickly. I was amazed at how much they enjoyed doing the multiplication and how easily they could explain what they had done.

My students actually enjoyed doing the multiplication.

When teaching the partial product method I explained that they first needed to break their numbers apart into numbers that are easier to multiply. As noted in Figure 1 below, if you have the number  $12 \times 19$  the student can break the 12 apart to 10 and 2 and 19 apart to 10 and 9. Then they would multiply  $10 \times 2$ ,  $10 \times 10$ ,  $10 \times 9$ , and  $9 \times 2$ . These numbers are much easier to multiply so; most students could do this in their head ( $10 \times 2 = 20$ ,  $10 \times 10 = 100$ ,  $10 \times 9 = 90$  and  $9 \times 2 = 18$ ). Next all they have to do is add the sums together ( $20 + 100 + 90 + 18 = 228$ ). Figure 1 also illustrates how the students can organize their work.

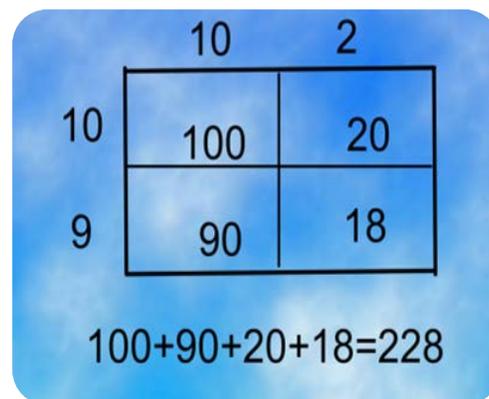


Figure 1

The students can easily use base ten blocks to model their work as noted in Figure 2. They can see that 10 tens strips equal a hundred, 2 tens strips equal 20, 9 tens strips equal 90 and 2 groups of nine equal 18 ones. They can also see the regrouping with the number 18 when they trade 10 ones in for a tens strip.

This method of teaching multiplication fits with Common Core. It helps students not only get the correct answer, but it allows them to see how and why the answer is correct.

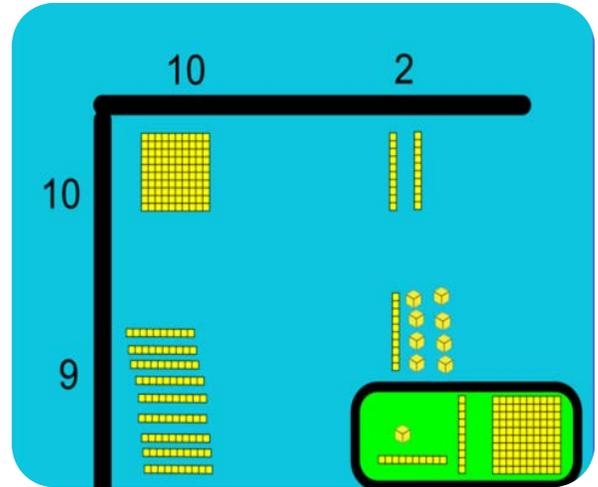


Figure 2

## February Puzzle

This month's math challenge comes from [www.wuzzlesandpuzzles.com](http://www.wuzzlesandpuzzles.com), a great website where you can find many fun puzzles for all ages.

### Try to fill in the missing numbers.

- ❖ The missing numbers are integers between 0 and 10.
- ❖ The numbers in each row add up to totals to the right.
- ❖ The numbers in each column add up to the totals along the bottom.
- ❖ The diagonal lines also add up the totals to the right.

					30
3	4			9	24
	6	10			30
	8	10		3	33
			0	4	19
		5	4	0	26
32	32	28	18	22	19



*“Collaborative teaching is another key factor in student success.”*

## Common Core Standards and Special Education

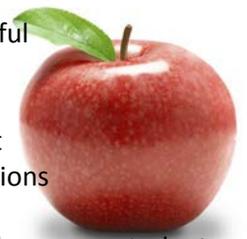
By Ben Armstrong

The adoption of the Common Core State Standards has created the opportunity for students with special needs to be included in the general education curriculum as never before. The Common Core State Standards challenge all students to become prepared for college or workforce environments. While the goal of these standards is to ensure a consistent framework for all students, including students with special needs in the general education classroom can present challenges to regular education teachers, special education teachers, and building administrators.

In order to expose students with special needs to Common Core standards in the regular education classroom with their peers without disabilities, several things must occur. First, students with special needs must have individualized supports designed to meet their needs. This usually occurs during the development of the Individualized Education Program (IEP). The IEP process will require close collaboration among all personnel working with the student. The regular education teacher, parent, special education teacher, and even the student will need to be involved in order to determine the supports needed as well as the level of support the student will require to be successful in the regular education classroom.

In order for all students, including those with special needs, to reach the level of success demanded by the Common Core Standards, instruction must be delivered by teachers who know the standards and are trained to provide quality instruction as well as specialized support. According to the developers of the Common Core State Standards, instructional strategies based on the Universal Design for Learning (UDL) which presents information in multiple ways and allows students to show what they know in a variety of ways is beneficial to supporting students with special needs.

Accommodations may be required for a student to be successful in the general education classroom. Accommodations may include changes in the way material is presented or how the student completes assignments. While accommodations may be needed, it is important to ensure that tasks remain rigorous and accommodations do not deter from the standard being taught or the expectations for the student. While accommodations may be necessary in the classroom, students with special needs will be assessed using the same test as students without special needs. For this reason, it is important that expectations for students with special needs remain as high as those without special needs.



Collaborative teaching is another key factor in student success. Students with special needs should have access to a teacher who is well versed in the Common Core Standards as well as access to a teacher who has special education experience and expertise. These two teachers must work closely to monitor student progress, as well as make adjustments and adaptations as necessary.

Professional development opportunities which allow teachers to become trained in the Common Core Standards, collaborative teaching, and methods for teaching students with diverse needs are also important factors in successful inclusion of students with special needs in the general education classroom.

Other key factors to the success of students with special needs in the general education classroom include a school wide ownership of all students. All staff must take responsibility for all students, regardless of the needs of the student. All staff must also set and expect high achievement from all students. Intervention systems must be put in place to ensure that all students receive the supports needed to be successful.

While the implementation of the Common Core Standards presents exciting opportunities for students with special needs to be taught in a classroom with their peers without special needs, it also presents challenges for those working with these students. By developing a school wide system of ownership of all students, training all staff through professional development, and having a strong collaborative process, students with special needs can reach the same goals as their peers.



#### References:

McNulty, Raymond J., & Gloeckler, Lawrence C. (February, 2011). Fewer, Clearer, Higher Common Core State Standards: Implications for Students Receiving Special Education Services. International Center for Leadership in Education.

## Fun Math Facts! <http://www.makemegenius.com/>

- The word 'mathematics' comes from the Greek *máthēma*, which means learning, study, science.
- Different names for the number 0 include zero, nought, naught, nil, zilch and zip
- 12,345,678,987,654,321 is the product of 111,111,111 x 111,111,111. Notice the sequence of the numbers 1 to 9 and back to 1.
- 'FOUR' is the only number in the English language that is spelt with the same number of letters as the number itself



*"We, as teachers, have to roll with the punches and go old school it when needed."*

# Technology in the Classroom

By Cyndi Turnmire

I teach at a small, rural K-4 school. <http://henryanker.com/> Great assessments in the past we have not been a Title 1 school. That changed approximately 3 years ago. Suddenly we went from very limited resources to an abundance of "technological" goodies at our disposal. My thoughts after that were "how did I ever survive without these!"

The first main purchase for all of the classrooms was Promethean boards. I fell in love instantly. I couldn't wait to create and see how far I could go with my lessons. We were also given ActiveExpressions for our classrooms. These are great for student responses that instantly show on the board. I looked for every bit of training I could find on these to help me use this to the fullest of its capabilities.

It was so exciting to be able to go to the internet and immediately find answers to those questions that came up in our lessons. For example, we read a story on Antarctica and a question came up about where exactly the penguins live. I found, however, to turn off the projection as I googled this. Sometimes some risqué things came up in the search results that I didn't feel I needed to discuss.

Some of the best websites I have found for technology are:

[http://www.cellsalive.com/cells/cell\\_mode1.htm](http://www.cellsalive.com/cells/cell_mode1.htm) - This is great for comparing plant and animal cells.

<http://www.sheppardsoftware.com/> - An abundance of learning games for a wide age of learners.

<http://www.superteachertools.com/> This is a great tool to create your own learning games. There is a Jeopardy template that you can just type and go. There is also a place to search for other teacher-made Jeopardy games.

<http://www.coolmath-games.com/> Math games

<http://www.mathplayground.com/games.html> More Math

<http://www.tnhistoryforkids.org/> Great for teaching Tennessee history and facts.

<http://www.multiplication.com/> Practice those facts

<http://www.iknowthat.com/com> Does require a subscription, but we have found several schools willing to share passwords.

<http://www.brainpop.com/> Great movies and quizzes for a variety of topics. I use my ActiveExpressions to do the quiz at the end of the videos.

<http://studyjams.scholastic.com/studyjams/index.htm> Songs and interactive lessons

These are just a few of the ones that I use religiously. If I find a great site I usually bookmark it. I have found that when I do this it is easier to rename the link to give me a hint as to what the link is.

We have also purchased a traveling Ipad cart that can be checked out. There are 20 I pads that can be used in the classroom. We are limited on apps at this point because of having the free versions which only take you so far. We also have 10 I pads to share between 4<sup>th</sup> grade. A teacher I pad was also given to us for class use. Several wireless routers have been placed throughout the school.

This upcoming year is another year to add to my technology collection. The plan is to purchase ELMOs and laser printers for every teacher. We also will be provided money for Math and Language to purchase items needed for our room in those areas.

In looking back and reflecting I have found that technology is great when it works. It never fails that I have something planned and the network goes out. Once my Promethean bulb blew, and I about died, or I sign up to use the computer lab and 10 of the computers are down. This leads to plan B. We, as teachers, have to roll with the punches and go old school it when needed. How did early teachers ever survive?





## Make it Memorable! by Mitzi Hammond

During the first year that I taught 5<sup>th</sup> grade math, I saw a common problem with my students. They could not remember the meaning of many important math terms. When asked to find perimeter, they found area or volume. Which number is the numerator? Factor or multiple? I began looking for catchy songs or sayings related to math concepts. I have added motions and movement to many of them so that they serve a dual purpose; remembering the math concept and providing a break! Here are some that I have gathered so far:

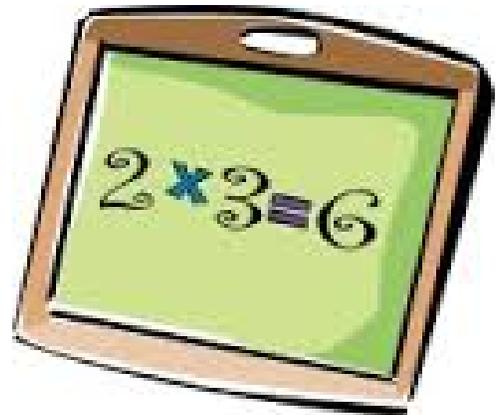
### Multiplication facts:

TouchMath Skip Counting CD: The songs have a theme for each number. For example, the 8 song has a cowboy theme, so we ride and rope as we sing. The songs don't have up to date "rockin" music and the person "singing" has a very robotic sounding voice, but the kids love them!

"Rockin the Standards" has skip counting songs, too, and is available on CD or iTunes

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

These songs are sung to familiar tunes such as "Twinkle, Twinkle, Little Star". This CD also has songs related to other curriculum standards such as place value, quadrilaterals, measurement, parallel/perpendicular lines, and angles.



### Factors and Multiples:

Chant: Millions of multiples, factors are few! (kick) We move around the room in a "conga line" as we chant this one. As an introductory activity for factors and multiples, students explain why the word "millions" is matched with multiple and the word "few" is matched with factors. "Millions" reminds students that every number has millions (infinite) of multiples and the multiples are always greater than (M is for more) or equal to the number. Multiples of eight are greater than or equal to eight! "Few" reminds students that a given number has a definite number of factors and factors are always less than (F is for fewer) or equal to the number.

**Geometry:**

Perimeter: We sing a song that was created by a fellow teacher in Kingsport City Schools, Cheryl Lee. I am not sure what song the tune is based upon, but here are the words:

Mr. Perry Meter adds all sides.

Mr. Perry Meter adds all sides.

Mr. Perry Meter adds all sides.

Mr. Perry Meter adds all sides!

**Volume:**

This one is on Youtube. Search for “Volume Song – Length X Width X Height”. It is also available at [www.havefunteaching.com/songs/math-songs/volume-song](http://www.havefunteaching.com/songs/math-songs/volume-song). A catchy tune and fun video make this one very enjoyable for the students—and of course we get up and dance while we sing!

**Area:**

I haven’t found a wonderful song or chant for this one, but last year I just started saying “area, squarea” every time we mentioned finding area. That reminded students that area is measured using square units. Several students even drew pictures of Mr. Perimeter and Mrs. Squarea. They were very creative and incorporated the meaning of area and perimeter into the pictures.

**Fractions:**

I just have a couple of “sayings” for this topic. I write them on chart paper and we read them every time the concept is mentioned.

- ✚ The denominator is DOWN on the bottom.
- ✚ Never add denominators!
- ✚ A fraction is just another way to write a division problem.
- ✚ Division word problems with remainders:
- ✚ Another saying written on chart paper:
- ✚ The answer to the division problem is NOT always the answer to the story problem.

I write these songs, sayings and chants on chart paper and keep them up all year. Students also have copies in a math folder that they keep in their binders. When we solve problems, or when taking a test, students write reminders on their paper related to these songs and sayings. For example, if asked to find perimeter, students circle the work perimeter and write “adds all sides” above it.

At the end of this past school year, I received a letter from a former student. In it he thanked me for teaching him “tricks” to remember math concepts. He said that he got all the perimeter, area and volume questions right on his tests because he thought of the songs we sang. It was fantastic to hear the he was continuing to use these songs in middle school math. So, as you head back to your classrooms this year, be sure to make it memorable!



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

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

### **President:**

**Kris Krautkremer**

Robinson Middle School  
Kingsport City School  
1517 Jessee Street  
Kingsport, TN 37664  
✉ [kkrautkremer@k12k.com](mailto:kkrautkremer@k12k.com)

### **Newsletter Editor**

**Ryan Nivens, Ph.D.**

**Assistant Professor**

✉ ETSU

East Tennessee State University

PO Box 70684

Johnson City, TN 37614-1709

✉ [nivens@etsu.edu](mailto:nivens@etsu.edu)

### **Assistant Editor**

**Jilana Tuttle**

ETSU Graduate Assistant

✉ [tuttlej@goldmail.etsu.edu](mailto:tuttlej@goldmail.etsu.edu)

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## **Officers of UETCTM for 2012 - 2013**

### **President Elect:**

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### **Past President:**

**Tara Harrell**

✉ Hawkins County Schools  
200 North Depot Street  
Rogersville, TN 37857  
✉ [harrell@rcschool.net](mailto:harrell@rcschool.net)

### **Secretary:**

**Kris Krautkremer**

Robinson Middle School  
Kingsport City Schools  
1517 Jessee Street  
Kingsport, TN 37664  
✉ [kkrautkremer@k12k.com](mailto:kkrautkremer@k12k.com)

### **Treasurer:**

**Jerry Whitaker**

Washington County Schools  
3089 Highway 11W  
Blountville, TN 37617  
☎ (423) 753-1106  
✉ [whitakerj@wcde.org](mailto:whitakerj@wcde.org)

### **Webmaster**

**Daryl Stephens**

ETSU Math Department  
Box 70663  
Johnson City, TN 37614  
(423) 439-6981  
[stephen@etsu.edu](mailto:stephen@etsu.edu)



# UETCTM

## Membership Application

***Mail completed form to:***

Jerry Whitaker  
Mathematics Curriculum Coordinator  
Washington County Schools  
3089 Highway  
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***Membership Fee: \$10***  
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**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater Tri-Cities region. This year we will have a single-day conference in the spring at a day and location yet to be announced. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**