



# UETCTM News

UPPER EAST TENNESSEE COUNCIL OF  
TEACHERS OF MATHEMATICS News

## “Age is nothing but a number”

Do you realize that the only time in our lives when we like to get old is when we're kids? If you're less than 10 years old, you're so excited about aging that you think in fractions.

“How old are you?” “I'm four and a half!” You're never 36 and a half.

You get into your teens, now, they can't hold you back. You jump to the next number, or even a few ahead. I'm gonna be 16! You could be 13, but hey, you're gonna be 16! And then the greatest day of your life ...YOU BECOME 21. YESSSS!!!

But then you turn 30. Oooohh, what happened there? He TURNED: What's wrong? What's changed? You BECOME 21, you TURN 30, then you're PUSHING 40. Whoa! Put on the brakes, it's all slipping away. Before you know it, you REACH 50.

But wait!!! You MAKE it to 60. You didn't think you would!

So you BECOME 21, TURN 30, PUSH 40, REACH 50 and MAKE it to 60.

You've built up so much speed that you HIT 70!

You get into your 80's and every day is a complete cycle; you HIT lunch; you TURN 4:30; you REACH bedtime. And it doesn't end there. Into the 90s, you start going backwards; “I Was JUST 92.”

Then a strange thing happens. If you make it over 100, you become a little kid again. “I'm 100 and a half!”

May you all make it to a healthy 100 and a half!!

*Modified from <http://www.snopes.com/glurge/aging.asp#0XLvfkjGI7WGH5rO.99>*



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## UPCOMING EVENTS

### 2014 NCTM RESEARCH CONFERENCE

- APRIL 7 - 9 • New Orleans  
<http://www.nctm.org/researchconf/>

### 2014 NCTM ANNUAL MEETING & EXPOSITION

- APRIL 9 –12 • New Orleans  
<http://www.nctm.org/neworleans/>

### NCTM REGIONAL CONFERENCES & EXPOSITIONS

- 2014  
Indianapolis, IN • Oct 29-31  
Richmond, VA • Nov 12-14  
Houston, TX • Nov 19-21
- 2015  
Atlantic City, NJ • Oct 21-23  
Minneapolis, MN • Nov 11-13  
Nashville, TN • Nov 18-20  
<<http://iem.nctm.org/link.php?M=3004392&N=1763&L=893&F=H>>



## To Use or Not to Use the TI Nspire

By Kristina K. Hill

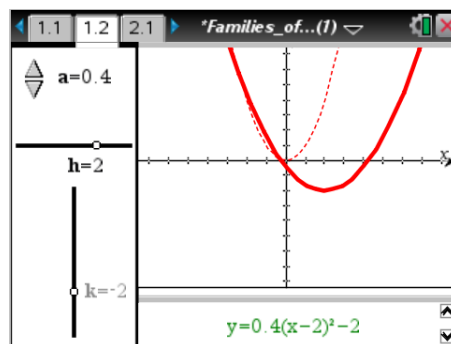
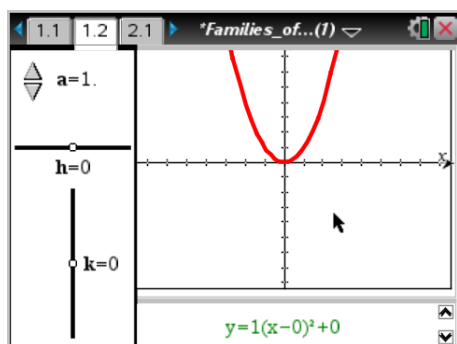
*Washington County School District*

According to PARCC's Approved Calculator Policy, the assessments for high school students "will allow for an online calculator with functionalities similar to that of a TI-84 graphing calculator." So why should we teach our students to use the TI Nspire?

I asked Jennifer Wilson, NBCT and mathematics instructor at Northwest Rankin High School in Flowood, MS, that same question. Ms. Wilson pointed out that the key word is functionalities. She stated, "By suggesting that the online calculator has functionalities similar to that of a TI-84 graphing calculator, they are giving us insight into what the calculator will be able to DO."

Discovery and investigation is an important aspect of the Common Core. This discovery and investigation can occur in numerous ways—manipulatives, questioning, etc. It can also occur with the use of the calculator.

The TI Nspire was developed to be a dynamic tool for our students. It is not "just" a calculator. It was created for discovery and investigation. With the activities that have been produced for the TI Nspire, students have the opportunity to "see" the math. The TI Nspire allows for multiple representations. Many of the activities are considered to be "action-consequence" activities. An example is the TI Nspire activity "Family of Functions". Students change the variables of the equation by using sliders. The change in the variables is represented by a change in the graph and the equation.





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## Transforming graphs of quadratic functions (high school)

◀ About the task CCSSM Alignment Part a Part b Scoring ▶

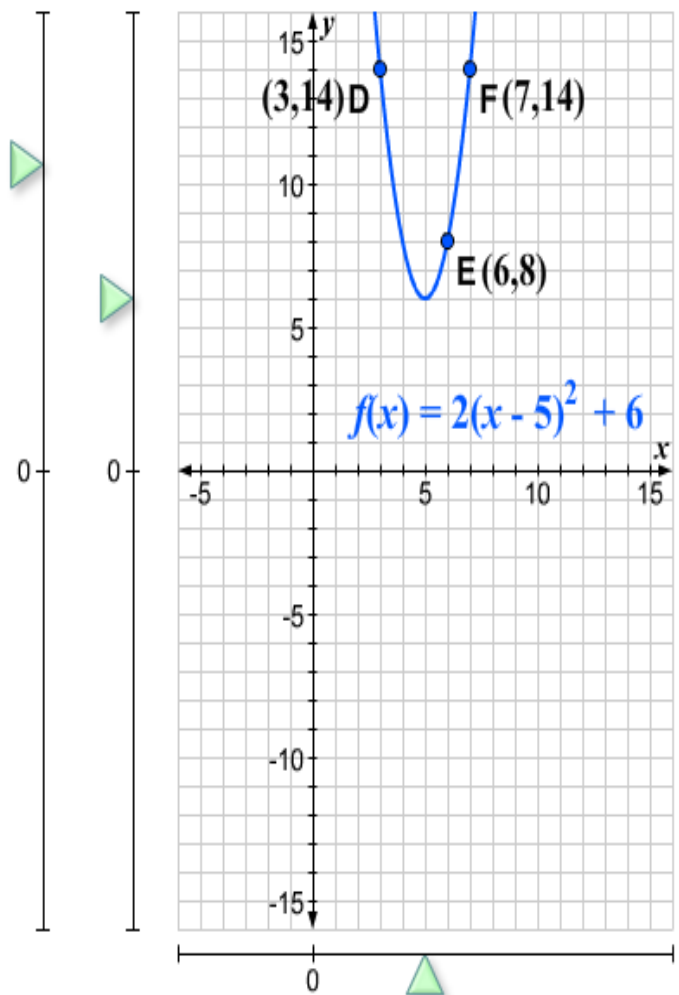
The graph of the quadratic function  $f(x) = 2(x - 5)^2 + 6$  is shown.

A new function,  $p(x)$ , is created from the existing function, such that  $p(x) = -f(x)$ . You may use the coordinate plane and the sliders to show the graph of the new function if you would like. The graph will not be scored.

Fill in the blanks to give the coordinates of points  $D'$ ,  $E'$ , and  $F'$  that lie on the graph of the new function  $p(x)$  and that are the images of points  $D$ ,  $E$ , and  $F$  that lie on the graph of  $f(x)$ .

$D'(\text{ } , \text{ } )$   
 $E'(\text{ } , \text{ } )$   
 $F'(\text{ } , \text{ } )$

Submit Answer





Looks familiar?

TI Nspire activities are accompanied by Student Activity Sheets that allow the students to reflect on the “consequence” of the action they performed:

1. Given any function, describe the effects parameter  $a$  has on its graph when
  - a.  $|a| > 1$
  - b.  $0 < |a| < 1$
  - c.  $a < 0$
  - d.  $a = 0$
2. Given any function, describe the effects parameter  $h$  has on its graph when
  - a.  $h > 0$
  - b.  $h < 0$
  - c.  $h = 0$

As Mrs. Wilson says, “I use technology in my classroom to connect students to each other and to give them a chance to understand mathematics like they are unable to do without multiple representations, even if part of their test will ultimately be without a calculator.”

Perhaps this will help better explain:

<u>Statement</u>	<u>Justification</u>
Common Core = Discovery and Investigation	Given
TI Nspire = Discovery and Investigation	Given
<b>Common Core = TI Nspire</b>	Substitution Property

References:

<sup>1</sup><http://www.parcconline.org/sites/parcc/files/PARCCApprovedCalculatorPolicyJuly%202012.pdf>

<sup>2</sup>[http://www.ccsstoolbox.com/parcc/PARCCPrototype\\_main.html](http://www.ccsstoolbox.com/parcc/PARCCPrototype_main.html)

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## “I’m Terrible at Math”

By Lori Hill

*Sullivan County School District*

How often do we hear students saying that certain students are “good at Math” while others are “bad at Math”? Everyone seems to accept the premise that some people are math - or numbers-oriented and some people are not. Our classroom experiences sometimes bear this out. The “smart” students most of the time call out the answers; we praise them and move on, while the others watch. So the idea that there are those who “get” Math and those who do not gets reinforced over and over. But what if that is not true? What if there are truly no students who are “bad at Math”, only classrooms that do not deliver enough opportunity for everybody to learn, each perhaps at a different pace? What if the most important gift I can give my students is the ability to tolerate frustration long enough to solve a complex, difficult problem?

Few people enjoy giving up short-term comforts and pleasures for long-term gain, but at this point in human history, it seems that Western society is producing more and more of us who are simply not willing to make that trade. Many people, especially younger people, want immediate gratification and do not often stop to count the costs. And they will do almost anything to avoid frustrating tasks and situations.

Malcolm Gladwell has addressed this subject in his book *Outliers* (2008). Mr. Gladwell observed that Asian students are often better at Math than their Western counterparts. He began to wonder why, and took a step back to view the larger picture of Asian and Western cultures. He found that, for literally thousands of years, Asian culture has been founded upon perseverance, patience, and hard work.

The cultivation of rice is a painstaking, back-breaking procedure that really never ends. There are no rest periods, and, in fact, the more you terrace, plant, weed, irrigate, harvest, and re-plant, the more successful you will be. The work is labor-intensive and tedious. No machines can replace human commitment in a rice paddy. In this culture, perseverance and hard work are rewarded.

Western culture, by contrast, was built upon the growing of wheat, barley, and rye. These crops require lots of work, too, but machinery adds to the efficiency of production. Every time a new piece of equipment is invented and put into place, the harvest goes up, and labor decreases. And, perhaps the most telling difference of all: these crops do better if the land is given a rest.

Gladwell is convinced that Asian students outperforming Westerners has nothing to do with genetics

or social situations. He believes firmly that hard work, perseverance, and frustration tolerance are learned values and that Asian families tend to instill them in their children more than most Western families do, perhaps because of the different ways their cultures have evolved agriculturally.

Dr. William J. Knauss wrote about frustration tolerance in his paper, "How to Conquer Your Frustrations" ([www.rebtnetwork.org](http://www.rebtnetwork.org)). Knauss paper presents a survey with several questions; one of which was "If I can't solve a problem right away, I tend to give up."

The possible responses are "rarely", "sometimes", and "often". An "often" response suggests that you need to develop goal persistence. People who give up easily follow a recognizable pattern: They tend to get easily distracted, often have a poor sense of timing and pacing, and commonly exhibit a strong desire to dodge discomforts. In other words, low frustration tolerance (Knauss).

Low frustration tolerance can be the cause for lots of dysfunction in our everyday lives, as well as in Math class. The ability to tolerate frustration, stated differently, looks like this in our Mathematical Practices standards: Make sense of a problem and persevere in solving it ([www.corestandards.org](http://www.corestandards.org)). The new standards seem to be calling for more of an ability to pay a short-term price of frustration and discomfort in exchange for a payoff in the form of a completed task. To be successful under the new common core standards, our students need to work to build up their tolerance of frustration and increase their ability to stay with a complex problem long enough to develop a meaningful and justifiable solution.

As Knauss states, our students need to be taught that "some things in life will feel uncomfortable" and that people who can learn to bear more and more discomfort will learn to be better problem-solvers. And the good news, according to Gladwell, is that perseverance and hard work are values that can be learned.

In Mathletes, Denise Strong led an activity for the class which required all students to go through a maze made by tape on the floor. There was one correct pattern through the maze, which only Denise knew. We were instructed to attempt to make it through the maze, one at a time and to learn the pattern by Denise's responses to our moves. It was frustrating and took a while. This task gave us all a bit of practice raising our frustration tolerance, and, more importantly, it required no math at all! So a student with only basic math skills would have no excuse not to persevere through this maze. It was not about "good at Math" and "bad at Math"; it was just about Perseverance with a capital P.

Other tasks we tried in Mathletes involved working together with one hand behind your back to build a paper airplane, and building a shape from blocks with piece meal instructions. We can use tasks like this to build frustration tolerance and perseverance into our students, no matter what their ability levels are. Additionally, beginning the year with complex tasks that require relatively low-level math skills will aid in building perseverance and will also allow students to feel successful early on in a math class. Also, teachers can model to students how to persevere through a problem by demonstrating steps and thinking out loud through the activity.

Our goal as educators should be to never again hear the words, "I'm terrible at Math!" Our new common core standards are setting us up to reach that goal. Our common core tasks can become the rice paddies of this generation, producing students who will believe that they can succeed at Math, and subsequently, at the complex problems life throws at them.

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## Professional Learning Community

By Luci Creech

*Sullivan County School District*

Recently I had the opportunity to work in a Professional Learning Community (PLC). A PLC is teamwork between coworkers, fellow Algebra 1 teachers in my case. This was new to all of us. We were both excited and nervous about the teamwork ahead. In the following paragraphs, I will describe my experience in our PLC from this past school year.

When we first met, all 7 of us, had to not only listen to each other's ideas, but also share ideas. This was teamwork after all. We discussed where to start in the book, which sections needed to be included in Unit 1, and the amount of time to spend on each section. We also approximated the dates for quizzes and tests. After charting that on the calendar, we set out to create our daily lessons and assessments. After this first PLC meeting, we had accomplished the planning for the first few weeks of school including when to assess and how to assess. Several teachers stepped up and provided the first round of quizzes and tests. We scheduled our next meeting before breaking our huddle.

At our second PLC meeting, which took place before the final assessment in Unit 1, we shared what worked (and didn't work). We discussed the pace of our classes and examined the speed (or lack thereof) at which we were able to cover the material. Unit 2 was planned. The pacing was put on the calendar. Another set of teachers volunteered to provide the assessments. We closed our gathering after scheduling the next meeting.

One difficulty arose...getting all seven Algebra 1 teachers together at the same time. We didn't have common planning or common lunch. Our meetings took place before or after school which interfered with coaches (after school) and those with children (dropping off at daycare/school). We did communicate via email. We also discussed our progress with those Algebra 1 teachers we interacted with daily.

Another way we overcame the difficulty of contact was to place "mailboxes" in the copy room for sharing of assessments and worksheets. (I'd like to explain the location of our math teachers. Six teachers are on one hall, and the others are on the other side of the building.) With the mailboxes in the copy room, we were able to share materials as well as make copies for another teacher if requested.

The benefits to our PLC were more than I imagined. Better communication developed within our department. Ideas were shared. The task of preparing assessments was shared which increased the amount of time we were able to spend on other tasks. The Algebra 1 students were all "on the same page". They were able to work together even if they had different teachers. And we were able to help out fellow teachers' substitutes in case of last minute absence. There are many more benefits which would be unique to individual teachers.

I look forward to improving the PLC at my school. Consider starting one at yours.

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## Social Media is NOT Evil

By Tim Smith

*Bristol Tennessee City Schools*

I have started using social media in my math classes. Some of the outlets I use are Today's Meet, Screen-casting, Twitter, and U-stream. I can honestly say my classes have not been the same since I began using them. I want to explain how I use each outlet and how it has changed my class for the better!!

### **Today's Meet (todaysmeet.com)**

Kids love to text (need I say more)! I have a back channel running in my class along with my Promethean board. This allows the students to discuss problems from one side of the room to the other. It also allows them to discuss problems at home if they have a question. If a student is not in class they can text in questions from home or wherever they may be. I will talk more about that when I explain how I use U-Stream. They will sometimes joke with each other but my rule is POSITIVE AND PROFESSIONAL. I have only had one incident where a student was not and it was dealt with quickly. I have had no problems since. I can show parents what their son/daughter is texting.

### **Screen -casting (screencast-o-matic.com)**

This has been a great tool to show the process of how to work problems. Students can watch this at home as a reteach. I usually throw a bone in by giving a phrase that if they repeat to me in class they will get a bonus. The truth is I am not crazy about hearing my own voice but I am slowly getting over it and realize IT'S NOT ABOUT MY VANITY. It is about the students learning.

### **Twitter**

This has been an adventure. I do use Twitter in class for the students to discuss math with each other and other people who may include math teachers, professionals (talk about real life application). I am about to embark upon setting up a weekly discussion with my students and others to talk about how math is used and any other question my students may have. One way I use twitter outside of school is to tweet questions like tell me how to solve system of equations or tell me something specifically you learned in class today and you will get 5 bonus points on your next assignment. During class I will usually show Twitter by using Tweetdeck or Twitterfall. I can be followed @coachtmsmith.

The one rule I have is to always be positive and professional with your comments. If a student is not posi-



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tive and professional I will first talk with them. The second offense I will call home and write them up. There are offenses where I will call home and write them up on the first offense depending on the offense.

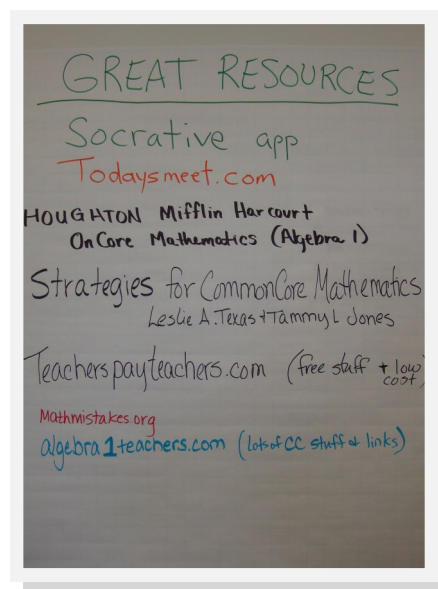
## U-stream (ustream.com)

This has been fun. I live-stream my class through this site. The first thing I tell my students is that when your parents ask "What did my son/daughter do?" I can show them. The first couple of times I used this I did not go live so the kids and I could get used to how it works. I would record class and upload it. This tool became very real to me when a student was out of class because she was sick. She was able to log on and watch class live. She used Today's Meet to text in her answers and questions as the lesson unfolded. She was able to learn quadratic equations from home!! When she came to class the next day she didn't have to worry about asking me what she had missed because she hadn't missed anything.

By using these tools my class has definitely changed for the better. Kids love technology and respond well to it. I believe social media can be used for the good and safely.

Before I end I must give credit to Adam Taylor (@2footgiraffe) who teaches Biology and Chinese in Nashville TN. I attended a tech. conference where he shared many of these tools. I don't think he knows about the impact it had but Thank you Adam!!

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## Interview

By Dillon Faver

*Sullivan County Schools*

INTERVIEWER

Hello, my name is Dillon Faver. We are going to talk about your perspective on inclusion, special education, and general education. How are you this evening?

TRENT

I'm doing fine, and excited to give my perspective.

INTERVIEWER

Great! Let's get started. How long have you been a part of an education program, and where did you study?

TRENT

Well, I graduated from King College in 2010 with Bachelors in Mathematics and currently getting my teaching license at Tusculum College. Before I actually became a teacher I substituted at Sullivan East High School for a year so I was familiar with the school. The very next year I was the teacher's aide at Sullivan East giving me even more practice with students and teaching strategies. At the half way mark one of the Algebra teachers had to back out so I became the interim teacher for the rest of the 11 year.

INTERVIEWER

What are your thoughts about inclusion in the general classroom and the negative and positive effect on the teacher, Special Ed. students and general students?

TRENT

Inclusion definitely has a positive and negative outcome for everyone. The Special Ed. students benefit socially because they are a part of the regular everyday classroom with general students and learn social skills while not missing the high school experience. However, some students may not benefit. In my algebra class it is difficult for those students to keep up. Many of the students are not ready and not prepared for the mate-



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rial we cover in algebra. This may cause problems in the classroom because the students lose focus because they are not prepared and cannot keep up with the rest of the class. Another negative effect is when those students are in groups. The average or above average students get frustrated and do the assignment individually without the help of the special ed. students. However, if the teacher groups the students correctly, the above average student can work with the lower student and both of the students benefit. If a student is not prepared with the basic math skills and knowledge they should not move forward and continue to work on their basic skills.

INTERVIEWER

Are students with IEP's a distraction in the classroom?

TRENT

Not all students with IEP's are distractions in the classroom. Just like the average students you have 28 students that will work hard and students that don't care and are a distraction. Students with IEPs just struggle in particular areas. A student in my algebra II class has an IEP and the student has trouble focusing. Sometimes that student acts as a disturbance, other times they work really well. It really just depends on the student.

INTERVIEWER

Does inclusion have an effect on the teacher? If so how?

TRENT

Yes, inclusion does affect the teacher. The teacher has to take into consideration this student with an IEP and has to accommodate their needs. Sometimes teachers have to make a lesson that will mold around the individual student.

INTERVIEWER

How will the new Common Core affect the students, and how can you, as the teacher instruct and use the new Common Core objectives to benefit the students and their education?

TRENT

Students have to learn how to think on their own and process information. Using manipulatives and



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having students collaborate with one another will help them learn and become better educated. We as teachers can expand students' minds by looking into the mathematics and the processes to problem solve. For example, the teacher must have students investigate further by using the 5 strand method (graphing, creating a table, verbalizing their methods, creating a picture, and create an equation) to solve problems.

## INTERVIEWER

Thank you Trent for your time and honesty. Have a good rest of the day.

## TRENT

Thank you.

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## What Motivates Students To Learn?

By Deborah Redman  
*Sullivan County Schools*

One of my biggest hills to climb in education was to try to motivate students. Many of my students fall in the category of future drop outs or students who do not see the need for an education. It can be very difficult to find what motivates these students to want to learn. There are three areas that I have found which usually work with most of my students. I don't think that one person can motivate all kids by themselves, but if we all change the thought patterns of a few it will help our education system.

One semester I had a group of students who all had been through algebra I at least three times. They were feeling no success in school and were understanding that they would not be able to graduate. They did not have the best of home lives, nor did they have a support system at home to encourage them. By the end of the semester, we were one happy family that would go to bat for each other on our trials. At the beginning of the class, I would allow time for the students to share or ask questions about their personal lives. These were life lessons that were more important to them than learning to solve equations or graphing a line. By taking time to listen, they saw that I cared about them as a person and they began to take interest in what I was trying to teach them. By the end of the semester, my group of potential drop outs were solving equations and learning Algebra. Since then most of them have graduated or received their GED, and gone on to become working members in society.

*If we continue to teach in the traditional manner of everyone sitting quietly in rows doing practice worksheets every day, we will continue to lose our students.*

If we continue to teach in the traditional manner of everyone sitting quietly in rows doing practice worksheets every day, we will continue to lose our students. Times have drastically changed and so must our teaching styles. I am looking forward to teaching with Common Core this year. I think that this will grab the attention of a lot of students who we have been letting slip by. When a student can build or discover ideas, it will help them to learn. In Geometry, I love to implement an activity with line curves. I take card stock and copy a basic coordinate graph on one side. Each child gets a needle, cross-stitch thread, and directions. We continue with the activity by poking holes on key points on the grid. They learn to thread a needle, tie knots and sew by graphing points on the coordinate grids. If they don't remember any math, they will at least be able to darn socks or sew a button on a shirt. The boys and girls beg to do this project each year. Even the students who I can't get to do work will participate in this activity and succeed. With Common Core ideas, I think we will see more and more students engaging in learning.

My last suggestion for motivating student is to attend as many ball games, parades, competitions, or





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performances as you can. When students see your face in the crowd it makes them realize that you care about what they are doing. I have observed that many students do not have family members that are able to follow their activities. In this day and time it takes both parents working to live an average life. Many parents want to but cannot afford time off to follow the interest of their child. When they see your interest in their success, they will work for you so they can make you proud.

I realize that these suggestions will not work for all students, but in my experience it has helped reach many students who do not have success in the traditional classroom. All children can learn, but they are driven by different sources. If we all work together, we might be able to reach more children and make lasting changes in their lives.

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

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

### Tennessee Mathematics Teachers Association (TMTA)

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

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## 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.**