UETCTM
Newsletter

March 2015

VOLUME XV ISSUE 5

NEXT UETCTM MEETING:
~~Tuesday, Feb. 17th 4:00-6:00~~
Re-scheduled TBA
John Sevier Middle School
1200 Wateree Street
Kingsport, TN 37660

VOTING FOR NEW OFFICERS
Current Nominees:
President: Lawrence Nussio-Hawkins County Schools
President-elect: Andrea Fissel-Johnson City Schools
Treasurer: Jerry Whitaker-Washington County Schools
Secretary: Pam Stidham-Kingsport City Schools
NCTM Representative/Newsletter Editor: Ryan Nivens-ETSU
Contact Ryan Nivens to be added to slate

IN THIS ISSUE

CORRECTION
In the February issue, part of the article "What do Numbers Mean" was inadvertently left out. A corrected version has been re-published.

Exploring Rational Functions- Tuxedo Problem

by Kevin Mooney

One problem that I like to use in class as in introduction to rational functions is to use a scenario of deciding whether or not to buy a tuxedo. Here is the prompt:

After realizing that I have to attend the prom every four years, I have looked into whether or not it would be smart to buy a tuxedo to wear to the prom and for other formal events that I might have to attend. I have decided to look into buy a tuxedo which cost $300. Each time that I wear the tuxedo, it requires that I get it dry-cleaned. It cost $20 to get the tuxedo cleaned. Students will be asked to find the average cost of wearing the tuxedo and getting it dry cleaned each time they wear it.

Students will be asked to make a table to represent the average cost of wearing the tuxedo 1, 2, and 3 times. They will then be expected to write a formula to model how to find the average cost of wearing the tuxedo n number of times. They will be given time to do this by themselves. After 10 minutes they will work in groups. They will compare their results with their group members. They will be asked to graph their data. They will be asked to verbally describe the average cost of wearing the tuxedo and they will be asked to create a picture to model the situation.

After giving the prompt, I would follow with the following questions as students work through the problem:

What do you notice about the formula that is different than what we have studied in the past? How many times would you need to wear the tuxedo for the average cost to be less than $50? How many times would you need to wear the tuxedo for the average cost to be less than $10? What do you notice about the average cost as the number of wears increases?

When you graph the function, what is the same and different about this graph and the ones that we have already studied? What would happen if we changed the original cost of the tuxedo to $500? What would happen if we changed the cost of dry cleaning the tuxedo to $25?

Based on the problem, what values can we not use for the number of wears? What values can we not use based on the formula?

Some possible student misconceptions and questions to help students along their way:

How do you find the average of a set of numbers? What is changing about the cost each time you wear the tuxedo? What stays the same each time you wear the tuxedo? Find the connection between the linear total cost of the numerator and past lessons.

That the tuxedo cost will increase by $300 each time. Since you buy the tuxedo once, does its cost change? What changes each time you wear the tuxedo?

Finding the average. How do you find the average of 2 numbers, of 3 numbers?

Understanding that the cost cannot become less than $20. What happens when the number of wears increases? Why does the formula make sense?

Values of domain. What is limited by the real world problem? What values of the domain are limited by the formula?

Here are the extension questions that I propose:

What are some similarities and differences between a rational

function and other functions that we have studied? What other real world scenarios could you come up with that could be modeled using a rational function? What is another real world example of asymptotes?

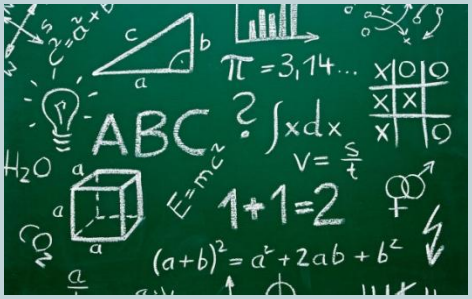
(300 + 20x)/x and (300 + 20(x-1))/x
Which one is correct? If they both work, what is the different between the two? Verbally describe what each one means.

In closing I ask the students these questions:

As a class we will look at the different tables, formulas, picture and verbal representations. We will looks for similarities and differences among the groups. We will also discuss how two different formulas can be used in this problem and how they modeled different scenarios. We will reflect on what they have learned and how this relates to other topics they have studied. We will try to come up with other examples of when rational functions might be needed to model real world scenarios.

We would discuss if this would be smarter than renting a tuxedo. Assuming that the average cost of renting a tuxedo is $80, we could find the number of times that you would need to wear the tuxedo to rationalize buying one.

This task could also be used as a system of linear equations if you looked at just the total cost instead of the average cost. A teacher could use this twice in one semester. If you wanted to put a female spin on this problem, you could use the cost of a pair of shoes and that you would have to get a pedicure every time you wear them because they are open toed. Enjoy!



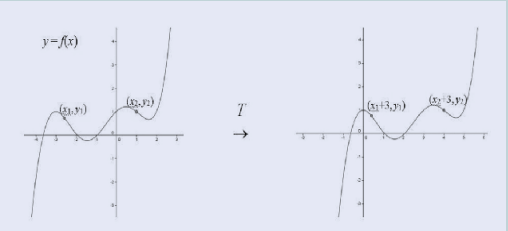
Teaching Functions with Transformations

by Cynthia Drozdowski

Our school uses a different approach to teaching functions than others to which I have been exposed. The thought was to foster student learning and make various functions easier to master for the students. This approach that I was presented with when I joined the team 3 years ago is to teach all functions as a translation. We help the students discover the parent functions through graphing. Then once they learn the idea of how all functions are translated, it is easy to give them any function and have them describe its behavior. After working with quadratics and absolute value functions, our students are usually comfortable in how a function will move from its translation.

While working with professional development and discovering a more "common core approach", I have found that this method is growing in use as common core is moving into the mainstream. This approach ties the idea of congruency from geometry to the behavior of functions. Students understand why a function moves as it does. Once students understand the behavior, they can work with any function and understand important parts and uses of the function as well as how the translation will impact it.

The hardest part for students to comprehend is how the horizontal translations work. We are so often guilty of teaching things like "the x (or what is on the inside) does the opposite". If we begin with having the students discover that it does do the opposite, that helps, but they need an understanding of why for this to stick with them and make sense. The best way to explain this that I have found is to have an understanding of what a translation is verses what a function is. A translation describes what the coordinates do, where a function describes the relationship between the coordinates. Armed with that knowledge, students should be able to understand that a translation defined by T(x, y) = (x + 3, y) will take points in the plane and shifts them 3 units to the right (x becomes x+3) and not change the vertical position (y). This means though that the function y = f(x) for this translation will be the set of all ordered pairs (x, f (x)). If that is the case, then the graph of function T is plotted from the ordered pair whose x coordinate is (x + 3) and whose y coordinate is f (x). The translation T this is T(x, y) = (x + 3, f(x)). We can substitute a=x+3, so we know that a-3 = x. This means that T(x, y) = (a, f (a-3)). Simple knowledge of function operations will let the students see that there is an undoing of the original operation to find the function value. Even though students will memorize the process for quick use, this may help provide an understanding of why this opposite operations in necessary and therefore help the student retain this knowledge longer. Students can then make a table from (a,f(a-3)) and verify that this will indeed move the original function 3 to the right. It would look something like this:



Next, have the students look at the transformation S(x, f(x)) = (2x, f(x)). They should substitute again and fine that the function is S(x, f(x)) = $(\frac{a}{2}, f(\frac{a}{2}))$. You should then switch to a vertical transformation like, R(x, 2y). First students should rewrite the transformations as R(x, f(x)) = (x, 2f(x)). Although it is not necessary, if students want to substitute x =a, they will find the new y coordinate to be 2f(a). This

should not cause too much confusion.

After each individual transformation is understood, you can work on composite functions. The most important thing students need to gather from composite functions is that the order of the transformations will matter in some transformations. Because of this, it is best to always follow the order. To help them see the reasoning for order, they should graph the transformations $T(S(x,y)) = (2x+3, f(x))$ and $T(S(x, y)) = (2(x+3), f(x))$. The students can then experiment with other transformations to develop their own idea of the order for transforming a function.

By having the students understand what a transformation is verses what a function is, they can arrive at their own understanding of how a function is transformed. By developing their own rules and understanding they are taking ownership of the idea and will retain it and be able to communicate about the idea. I am glad that common core is encouraging more people to move to a holistic idea of mathematics.

Parent Involvement and Communication

by Julie Davis

Parent involvement and communication are two things that have been interesting topics for me as a fairly new teacher. I have been teaching for two years now, and will begin my third year this fall. I am originally from a small town in West Michigan where parent involvement was extremely high. We had around 90% attendance at parent teacher conferences throughout all grades (k-12.) As I moved to Northeast Tennessee and began teaching, I found that because of my previous experiences I had an unreasonable expectation about parent involvement.

As my first parent teacher conferences rolled around, I began to get nervous about having to talk to so many parents. I was expecting to be pretty busy, especially since I had around 80 students throughout the day. As that evening came and went I was surprised that I only about 3 parents come to see me. I was slightly frustrated and confused by this at first. I didn't know if it was a lack of interest or if there were

other underlying circumstances preventing parents from attending. I began talking with students and other teachers about parent teacher conferences and quickly found that this is a typical outcome for conferences at my high school. Still confused I began to wonder and ask questions as to why this might be. Were these parents just uninterested in their child's education?

After talking and asking many questions I began to find answers to explain the parent involvement I saw during parent teacher conferences. I learned that many of the parents in our county have jobs that go into the afternoon/evening that they are unable leave. With the economy the way it is, many parents can't afford to leave work, even though they would like to attend. Another reason many parents can't make it to conferences is because some families only have one car. This car is used by the working parent which leaves any other parent or guardian without transportation. So in reality, it's not that the parents of my students don't WANT to come to conferences, it's that they CAN'T.

This is where I realized I was going to have an issue with communicating with the parents of my students. I understand they can't make it to conferences, but I do send home progress reports every week so that my students and (hopefully) their parents can constantly know their grades and what's happening in my class. Here posed another problem, are these students really bringing these progress reports to their parents? Let's be honest, those students making A's and B's don't care to bring their progress reports home. The C and D students are the ones who really need to have their parents see what's happening in their child's class, and they are not going to near as willing to share their progress reports.

I have tried many ways to "bribe" my students into showing their parents their progress reports, but those students who are failing really don't seem to care. So I needed to find a way to communicate with their parents on my own. I tried and tried to call parents, only to get voicemail, as once again they are at work, just like during conferences. On the off chance the parent is reached, we as teachers then need to record the communication, (when it was, what was said, etc.) This is a lot to do on top of everything else we have going on during the day, and even then this can only occur if the parent or guardian was reached.

After I found that calling parents was pretty much a dead end for me, I tried another approach, and I don't know why I didn't think of this sooner. E-MAIL!!! With e-mail, timing doesn't matter because even if the parents are at work when you send the e-mail, they can read it when they get home and reply at their leisure. It's a win win situation when it comes to timing. As for recording the conversation time, content and anything else, well that turned out to be even easier. I simply make a folder in my e-mail and save every e-mail I send and receive from that parent. Since it is all in writing it makes it very simple if there is ever an issue of "he said, she said."

In my two years of teaching I have learned so much from teaching in Northeast Tennessee. At first I thought the parents in the area just didn't care, but that doesn't seem to be the case. As I began to e-mail the parents and really communicate I found that most of them do care, they just don't have the means to make it into the school very often. As a teacher I had to find a way that would work for both the parents and me, and make it easy for me to keep record of it. I have seen tremendous changes from the students whose parents I e-mailed and think that next year I will attempt to communicate strictly via e-mail if at all possible.

From Chore to Challenge

by Stephen Howard

Recently, attending a workshop and playing the role of a student, I was tested on my mathematical ability. This was probably the first time I was so tested in over 30 years. So needless to say, I was a little nervous as I began to look at the test. The very first problem increased my anxiety. It was a problem that involved two people who could perform a task at different rates, and I was to indicate how long it would take if the two worked together. Not having had to think about such a problem for quite a long while, coupled with my nervousness; I had trouble deciding how I needed to attack the problem. However, I remembered the movie entitled *Little Big League*. In the film, the lead character, Billy Heywood, needed to work a homework problem very similar to the one I was facing. Throughout the film, he would seek out the help of various members of the team with no success. Then near the end of the movie with the due date of the homework problem fast approaching, Jim Bowers, a bit of a rebel, comes to Billy's rescue and presents the solution. Somehow, I remembered that solution which allowed me to be able to work the first problem. A few problems later, I was faced with another problem without an immediate solution path. Once again a scene from a movie rescued me. The movie was *Die Hard With A Vengeance*. In this scene, John McClane and Zeus Carver had to perform various tasks to prevent citizens from being harmed by bombs. In this scene, they were in a fountain at a city park and the only way to disarm the bomb was to place exactly 4 gallons of water on a scale provided. Over or under in weight by the very slightest, and the bomb would explode. The two only had a 5 gallon jug and a 3 gallon jug with which to work. Once again, I remembered how they were able to complete the task just as the bomb's timer neared zero, which lead me to solution to the problem I was facing. Upon the completing my test, I started to wonder, "Why was I able to remember these two problems, from movies seen years earlier, with such clarity that it enabled me to recall their solutions?" As I pondered this question, I realized that I always viewed mathematics as a challenge and not a chore.

Throughout my "Mathletes" experience, it became very evident to me that this is what the Common Core Initiative is all about. We, as teachers, need to somehow get our students to see mathematics in the same light, as a challenge and not a chore. A chore is something that needs to be done. When faced with chores, all we want to know is how to complete it as quickly as possible, so we can get it behind us with little or no thought. The easy way out is the goal. On the other hand, when faced with challenges, the attitude we take is completely reversed. Completion of a problem is no longer the primary goal. The knowledge gained and the satisfaction that such knowledge provides becomes our purpose. The only delight such students find in the completion of a problem, is the opportunity it provides to start work on a new challenge.

Far too often, we, as teachers, present mathematics in such a way that all our students see are chores. When we simply teach algorithms, this is exactly what we are doing. We teach what needs to be done to get the answer so they can get the problem behind them. Students learn how to "do" problems but without thinking about the problem. Keeping with my movie theme, this reminds me of *Forrest Gump*. Forrest knew how to follow directions; in other words, he could complete an algorithm. His drill sergeant was overjoyed when Forrest said his

main goal in the Army was to do exactly what his drill sergeant told him to do. This is evident when you look at the first half of the movie. It takes place on a bench as Forrest waits for bus number nine to come and take him to Jenny's house, because those were the directions he had been given. Forrest knew how to get to Jenny's house. However, Forrest did not know anything about Jenny's house, and when he finally gains the knowledge that her house is only four blocks away, that knowledge allows Forrest to abandon his directions for a better method. In other words, it allowed him to think.

When we simply show the students how to work a problem, we do not give them the opportunity to think for themselves. Teaching our students in such a manner indicates we, as teachers, view our jobs as a chore. We simply want to get students through our courses in such a manner so they can pass a test. While I would agree that to do so is not an easy task by any means, it certainly does not take the energy and effort that the Common Core Initiative is calling for. To get students to see math as a challenge and not a chore calls for a change in attitude. First, we need to change our attitude toward our profession. Formally, when I taught golf for a living, I quickly realized that when students simply watched me hit shots, they improved very little. To be a successful golf instructor, I had to find ways to help my students discover what worked for them. We must enter our classrooms with the same attitude. Only then can we begin to change the attitudes of students in like manner. It calls for us to totally invest ourselves in our students. Only when we know each student's interests and learning style, can we make math meaningful and of interest to them. We also need to learn to allow students to discover concepts on their own by trusting in their ability to do so. I often wonder if Jenny's lack of trust dictated the directions she gave to Forrest. Perhaps, Jenny gave Forrest the directions she did because she knew that would get him there. It is not easy to stay quiet as students struggle with solutions. We want to make sure they "get there", so we simply give them all of our knowledge. Common Core calls on us to not impart *our* knowledge, but to assist our students in developing knowledge of their own. I truly believe that as we diligently search and find ways to make math meaningful to each student, chores will turn into challenges, both for students and for us as teachers.

Math, When Will I Ever Use This?

by Len Jeffers

Are you one of the few math teachers that has never been asked the question, "When will I ever use this math?" Just wait, your time is coming, and when it does, how will you respond to your students?

Will you use the distraction method and stall around trying to think of examples, or be completely up front and honest with your class? Obviously as a math teacher you want your field to be important and have meaning, but face it, while basic math is used in everyday activities for counting change and balancing a check book, how many people do you know that use differential equations, exponential functions, logarithms, and the list could go on, each day in their professions or everyday life?

Throughout the many times I've been asked that question, you would think I would be prepared with a better response and examples. Truth is, beyond the basic math, with the exception of about one in every 500 jobs that require it, higher order math is not needed. But don't think that math is now useless and unnecessary. Math goes beyond answers and the required steps and procedures, it delves into the thought processes. Math stretches and exercises the brain and expands the student's thoughts concerning the ability to comprehend a situation, develop a plan of action, and ultimately work toward a resolution. They are building new pathways in the brain that may be used later in some other weird way like business, automotive or recipes.

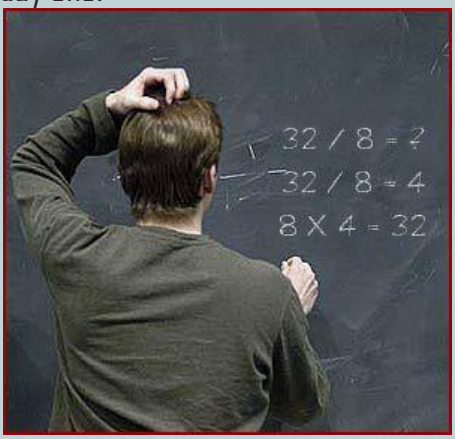
With Math, there can be more than one path to a solution, and interaction among students helps each learn such things as how to teach or explain to others, how to listen and comprehend facts, and see things from others perspectives. It is not so much in the answers themselves, but learning how to attack a situation, think back to similar problems and use past experiences.

So the next time you are put on the spot with the question, "When will I ever use this math", try using the honest approach. Be completely up front with them and explain that while they may never use most of the topics from this class in their everyday lives, think of this class as a play time to do different things and develop their brains in new and interesting ways.

Math Doesn't Have to be Scary

by Tavia Stroud

The math classroom can be a scary place for many students. Many have fears of failure or embarrassment before arriving in the Freshman Algebra I classroom. Therefore it is imperative to build a positive relationship with the students and build a positive mathematical environment from day one.



Building an open and respectful relationship with students is key to developing the desire to learn mathematics. Students that feel wanted and needed in the classroom are more likely to participate in class. If the student has a relationship with you as the teacher they also feel more comfortable in making mistakes and learning from them.

Building a relationship is only part of building the positive mathematical environment. The

first item to maintain in the math environment is routine. A routine where the **only** language accepted is math language (vocabulary, symbols, etc.), explanation and participation are always expected, and I don't know is never accepted. With these policies, students become fluent in math verse and therefore understand what they are discovering and learning. A math environment also consists of math activities and projects that reinforce and promote collaborative, student lead learning. Each time a project is assigned it will strengthen the classroom team.

The positive math environment results in students that are curious, receptive, and positive that have no fear of tackling math problems. By doing this students of all levels are given the confidence to succeed in any math class.

Starting Your Math Block Off on the Right Foot

By Justina Sain

The beginning of the school year is always exciting and new for your students. New room, new tables, new coat closet, new books, new teacher and, of course (Eek!) new expectations. Beginning the year with Harry Wong's guidelines of establishing discipline, procedures and routines will make sure your year is happy and productive. How can these routines be put to specific use during the math block?

Common Core has changed how we teach. No longer does a teacher lecture at a chalkboard, give an example or two and then assign workbook pages to be done independently at a desk in silence. Yes, it sounds boring. It WAS boring! (And mind numbing if I remember my own early childhood years correctly.) Thank goodness the educational community is constantly evolving. Math is now all about investigation, exploration and communication. Each student is taught multiple solution paths instead of a single algorithm to solve a mathematical computation. This involves the freedom of flexible thinking. You know what? Freedom is intoxicating. It's exciting! It is also an open invitation to chaos if the classroom teacher doesn't have her procedures and routines in place at the very start of the year. This is how Harry Wong's guidelines become invaluable.

Routines are very important to a productive and focused small group activity. Setting the routines of the small group, assigning jobs to each other (such as the recorder, the time keeper, the manipulative supervisor, and the presenter) before the activity starts, allows the group to share the activity responsibilities equally and prevents arguments during investigation and share time. The first few weeks of school, I will have laminated colorful title cards for each small group or partner-pair. The students will assign these jobs themselves before the activity starts. It is also crucial to establish the routine of presenting group finding to the class. I have laminated cards to hand each presenter in the group with questions such as "What does your audience need to know about your picture?" And, "How will you explain your solution path?" These questions will need to be answered with each presentation.

I introduce the procedures of teamwork to my students right off the bat. The first procedure is

to learn is how to work with others in a way that they are communicating their thinking. Everyone in the group is valuable and will have a chance to share ideas and ask questions. We will train how to use the procedures during the first week of school to practice pair-share and Math Club activities. It is a must to teach your students how to communicate with others in order to make the most of any hands on math investigation. I have laminated cards with thinking stems such as "I am a little confused about your solution path, can you explain it to me a different way?", "My solution path is a little different – can I show you?" or "I don't understand how you got your answer, can you draw me a picture?"

I don't believe "discipline" is exactly the right term for productive Math investigation groups. I think setting a rule of "accountability" would be more to the point. Setting the expectation in each student that everyone in the small group must participate in each investigation makes sure that the student knows that they will be held accountable for contributing to the in the small groups and must participate. Each child in the class has different life experiences and each child can bring important views to the lessons. A teacher shouldn't need to discipline a student for not helping the group, because the students themselves will know that they will be held accountable for their participation by their own peers.

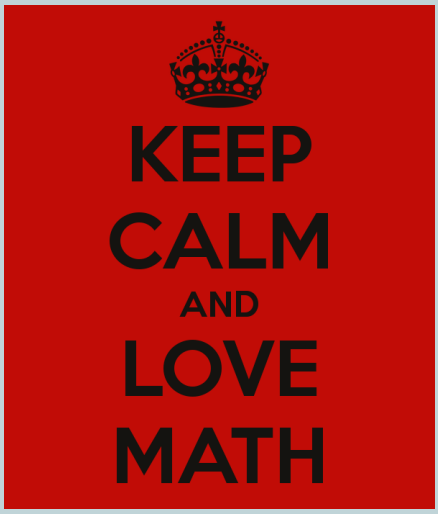
The beginning of a new school year is truly an exciting time. There are so many new experiences and new areas of knowledge to master, that everything seems a bit overwhelming. We want our students to develop a profound understanding of the fundamentals of mathematics. Taking the time to establish these routines and procedures in the first week of school will be a comfort to the students, and a time saver to the teacher.

Evolving Math

By Ashley Barbe

Growing up I absolutely loved school. I loved learning and making new friends. I was normally a straight A student. However, in math I was a straight B and C student which was not OK as far as my parents were concerned. My struggle with math became most apparent in 5th grade. I remember my teacher modeling problem after problem. It seemed crystal clear in class, but when I got home and began homework crystal clear became murky pretty quick. I would ask my dad for help almost every night and become very upset when he would solve the problem a different way than I learned at school. I believed if I didn't solve the problem the way my teacher solved it, than it was not correct regardless whether or not I understood the strategy my teacher taught.

What I love about math today is how much it has changed. Math has evolved from being a subject where there is only one way to get the correct answer to being a subject where there are multiple ways they get the correct answer. I love how it is encouraged to pick the strategy that works best for you. During my time at mathletes, I have learned many different strategies that I am super excited to implement in my classroom. Through these strategies, I know I can help my students master math skills and build his or her confidence in math.



The Exciting Subject of Math

By Rachel Black

Let's be honest, I would never have considered myself a good math student while in school. Math never made sense to me no matter how hard I would try to understand it. I never expected to make an A in math classes. I never seemed to be able to commit anything pertaining to math to memory. I "crammed" for a test just to get by. Strategies were never a part of our math lessons!

The same year I started teaching, my son, Kodi, started kindergarten. I knew that we were going to have many obstacles to face, not only going to school but also adapting to society. Kodi is autistic and I knew I was going to have to work diligently with him and his teachers to find the best learning style for him. I honestly didn't think math would be an area of struggle because he had developed good fundamental skills in an excellent early intervention program. When Kodi started kindergarten he was doing great, spending half the day in an extended resource class and the other part of the day with his typically developing peers in the kindergarten class. Kodi and I would work on math homework at

home and I knew he was mastering the kindergarten skills. He really had a great team in the extended resource class working with him, pushing him to succeed.

Starting in first grade Kodi no longer required the extended resource setting and was able to spend most of his day with his typically developing peers, which continued through fifth grade. He spent a small portion of his day in the resource setting. I knew Kodi had a great memory with the ability to memorize anything. He knew his math facts and didn't have a problem with single digit addition and subtraction. Kodi was making progress in certain areas of math but in other areas I started seeing him really struggle. I remember how I struggled in school with math and was overcome with fear for Kodi because I didn't want him to struggle the way I had. I didn't want life to be any harder for him than I knew it was already going to be. We studied for what seemed like hours at home, working on double digit addition and subtraction. I would show him how to borrow and carry, the way I was taught, but he still couldn't get it. I couldn't understand why he wasn't grasping that concept. That was the easiest part of math to me.

Kodi had always had difficulty expressing himself. He could tell me that he didn't like doing something but he had a hard time communicating what he needed. Math continued to be a constant struggle for us. We have had our share of arguing and crying when it came to math. When he was in fifth grade we were working on math homework and we had both gotten to the point of crying. Kodi looked at me and said "You can't do this! You aren't doing this right! You are my mom not my teacher. My teacher didn't show me this way and you are wrong. You are doing this all wrong! You are fired! "(On a side note, when Kodi was upset with someone he would fire them from the job they were doing) I told him that I most certainly did know how to do the math he was doing because I was a teacher and I knew how to do math like that. We went back and forth for a while and I finally realized that he was right, his teacher taught him in a way that I didn't know and actually he didn't either because he couldn't show me.

When Kodi went to middle school we both decided that we would do some homework together but if we were going to get upset with each other we would take a break. Over the past four years I have reflected about that moment in fifth grade with Kodi. He hit the nail on the head. I wasn't teaching him the way his teacher had but most importantly I hadn't given him any strategies that would make math meaningful to him.

In the summer of 2012 I had the opportunity of attending ETSU's Early Childhood Conference and participated in a math workshop that Debbie Diller was presenting. After that workshop I wanted to learn everything I could about math. Math finally became real to me, it became my new favorite subject! When I was approached about attending the Eastman Scholar Mathlete Program, I was honored to have the privilege to attend. I knew it would be a good opportunity to learn new strategies to take back to my school. I was very wrong about the good part, this has been the **BEST** learning experience I have ever had.

The first day of class Dr. Poole gave the class an activity to complete. I was excited to take it home and figure it out. I decided to work on the activity with my niece because it was on her grade level, Kodi also asked if he could be part of the group. I really didn't think he would attend to the task for as long as it would take to complete it. At the end of 45 minutes he was still engaged with excitement in his eyes! I would see him decomposing the number and using

some strategies that he has been taught to work this problem. When I told him it was time for us to stop he asked if we were going to get to work on the activity again the next day.

I feel like I have had so many "aha" moments these past two weeks. I wish I had been taught strategies like I have learned in this class back when I was in elementary school. I am grateful to Dr. Rhoton, Dr. Poole, Eastman Chemical Company, ETSU, and Kingsport City Schools for giving me this unsurpassable opportunity. I am excited for the coming year to share this knowledge with my students and my son.

Change is on My Horizon

By Monica Hart

My perspective on teaching and learning math is definitely changing. As I reflect on my elementary education, I remember practicing a lot of math facts and learning the steps with which to solve problems. I don't recall the need for understanding the math concept, and certainly not the idea of stepping outside the box and using nontraditional methods for problem solving. The mindset may have been more "a means to end (the correct answer)". We didn't ask questions like, "Where do I want to go?" or "How do I get there?" We were mastering math facts and using predetermined generic formulas. Many of us didn't understand why.

This method of learning worked for some students. Others weren't able to follow the pre-mapped path. They were lost and confused. Some students exhibited frustration. They may have wondered, "How will I use this when I grow up?" They may have experienced self-doubt asking, "What if I don't get it?" These questions were valid then and are still valid today.

As an educator, I must respond to these questions. To the children that ask:" How will I use this when I grow up?", I need to show scenarios where they will benefit from acquiring knowledge. For the students that don't follow the traditional path, I must give them options.

As the sun sets, so will my traditional way of teaching mathematics. The sun will rise with me learning to adapt my teaching. There will be a change on *my* horizon. My goal will be creating thinking students that have confidence in themselves and their own reasoning. I will encourage my students to think outside of the box, to map their own ways to solution and follow their own paths to mathematical success.

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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.