The TMTA Bulletin

Volume 57, Issue 3 March 2013

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Save the date!
The TMTA Fall Conference will be held September 27th and 28th, 2013 at Memphis University School

The Fall TMTA Conference will be held this year at Memphis University School in Memphis, Tennessee.

Current proposals are to have a variety of sessions per time slot. For example, plans are to include elementary, middle school, high school, post secondary, "table chats", pure mathematics, Common Core, Constructive Response, STEM, and NCTM learn/reflect strands.

The registration fee will include the cost of the banquet. Winners of the TMTA state math contest are honored at this time. Keep an eye on the TMTA website **for speaker proposal forms, registration forms**, updates and more details as they become available. http://www.tmta.info/

Following a rotating cycle, the 2014 Fall Conference will be in East Tennessee (CAMTA Hosting), the 2015 Fall Conference will be held in conjunction with the NCTM Regional Conference in Nashville, and the 2016 Fall Conference will be in West Tennessee (possibly UT Martin). If you wish to contribute in any way to this year's Fall Conference, please contact Steve Gadbois: Steve.Gadbois@musowls.org or Ann Indingaro: aindingaro@gmail.com **Question:** call or text at (901)828-2176

DR. HENRY "HANK" FRANDSEN
(contributed by Holly Anthony)

DR. HENRY "HANK" FRANDSEN, age 79 of Knoxville, passed away Thursday, September 6, 2012. He is survived by his wife of 59 years, Jean Frandsen; son, Peter Frandsen; and daughters, Wendy Frandsen and Karen Maykuth as well as a wealth of friends, colleagues, and former students in mathematics and mathematics education. He was a major influence in broadening the membership of the Tennessee Mathematics Teacher's Association, serving as its president in the early 80's and in other offices as well. TMTA established a scholarship in his name in 1999.

At his September 10, 2012 funeral, one eulogy came from a fellow officer who had served with Hank in the Navy. Some of Hank's former students will remember his stories of being the first of his family to go to college. He spent two years at Wright Jr. College in Chicago and graduated with honors in 1952. He then joined the Navy as a Naval Aviation Cadet, and was commissioned Ensign and designated Naval Aviator in September 1953. He married Jean (Dading) shortly after on November 7, 1953. He flew more than 1000 hours as a Navy pilot and completed 102 landings on various aircraft carriers until 1956 often doing the flying at night. He was then released from active duty and went to the University of Illinois in Urbana, where he completed his bachelor's, master's and doctorate degrees in the field of mathematics. He served in the Naval Reserve until 1968, when he retired as a Lt. Commander.

Dr. Frandsen, known to many of us as Hank, lived only about a week after learning that he did not have long to live. He spent this time reconnecting with friends and family by phone. He left a witty summary of high points in his life on his computer written several years ago. When his daughters read his words at the funeral, those in attendance were deeply touched.

Clearly, his time at University of Tennessee, Knoxville was central to his life story. He was hired in 1967 and retired in 1998 as a Professor Emeritus. While serving in joint appointments in the College of Education and the Department of Mathematics, he had a tremendous impact on many students and shepherded a large number through masters and doctoral degrees. A number of his students served as officers in TMTA. Along with Larry Husch, he developed the Masters of Mathematics degree. Three of a number of National Science Foundation workshops which he spearheaded fostered university and community college cooperation in introducing graphing calculators in the areas of fractals and mathematical modeling with Tom Mathews and Lou Gross. He was active in faculty affairs and served as the President of the Faculty Senate in 1988.

Cheryl Slayden, former TMTA President and friend of Dr. Frandsen, remembered "Hank's greatest assets were his passion for mathematics and encouraging students who were involved in the learning of mathematics. He particularly liked to share entertaining mathematics "stories" that were fascinating to his students. His sometimes funny and yet dry sense of humor was a noteworthy part of his instruction."

In retirement, Hank cared for his wife, Jean, with grace and patience. His passion for mathematics and encouragement of former students, as well as his entertaining stories told with a dry sense of humor will be sorely missed.

The family has honored Dr. Frandsen's wishes by donating $10,000 to the TMTA Frandsen Scholarship fund. If you would like to make a donation in his memory, please contact Dr. Stephanie Kolitsch for details.

Have You Ever Thought of Earning a Master's Degree While Teaching?

(Contributed by Audrey N. Bullock)

As a former high school mathematics teacher, I often debated on whether to try and earn a Master's degree while teaching or take some time off to work on furthering my education. I came to the conclusion that taking time off was just not a financial possibility. I feared that I would not be able to find a program that allowed me to focus on mathematics that I could accomplish without moving, driving across country, or devoting much less time to my current teaching assignment.

I weighed several different options and decided on the Master of Arts in Curriculum and Instruction with a specialization in mathematics program at a local state university. This program fit extremely well into my life and the teaching I was already doing. The classes were designed for working teachers in that they were all offered online, at night, or during the summer and included options for elementary, middle, or high school concentrations. Everything I learned was immediately applicable to the Geometry, Algebra I, and Algebra II classes I taught. My learning included using instructional technologies, examining the mathematics I was already teaching on a much deeper level, and learning to use educational research to inform instructional decisions.

I always knew that I wanted to take more courses and earn a Master's degree, but I had no idea how I would pay for it. Like many students, I expected to borrow thousands of dollars in loans. After researching my options; however, I found that this degree could be completely affordable. There was such a demand for mathematics and science teachers, and because this program included a math specialization, I was able to use a combination of several state and federal grant programs that made my out of pocket cost minimal. Even though these programs may not be ideal for every degree or every teacher, consider that many places of employment offer pay raises for teachers who earn higher degrees and for teachers who have special knowledge in mathematics or science. Some of these pay raises could pay for the cost of a degree in just a few years.

I was able to complete the program in two years, taking one or two classes at a time, even while teaching full time with a newborn baby at home. I could not be happier with the decision I made to further my education, even though the task seemed daunting at first. Because the program I chose included several hours of graduate mathematics, it opened the door to so many more career opportunities. Schools and education officials are extremely interested in hiring and promoting teachers that have advanced knowledge in mathematics or science. The benefits of continuing my education have already surpassed the initial time and costs involved. In fact, I now instruct pre-service teachers at the university where I earned my degree. I encourage anyone considering furthering their education, whether currently teaching or not, to look into the programs that are available, such as the one I completed at Austin Peay State University. The experience is quite rewarding and can be affordable with good planning. For more information, please contact Audrey Bullock at bullocka@apsu.edu.

Dr. Henry Frandsen Scholarship for Teachers

The Dr. Henry Frandsen Scholarship for Teachers was first awarded in September 2000. It is awarded to a post-secondary student who has declared an appropriate major and is committed to teaching mathematics in Tennessee at either the secondary or elementary level.

Past Winners:

- 2000: Lisa Donegon (Austin Peay State University)
- 2001: John Robert Perrin
- 2002: Roger Taylor (Austin Peay State University)
- 2003: Roger Taylor (Austin Peay State University)
- 2004: Brandon Banes (Lipscomb University)
- 2006: Kelly Barbra (Tennessee Wesleyan College)
- 2007: Chantelle Therrien (University of Tennessee Knoxville)
- 2008: Nicole Gary (UT-Martin)
- 2011: Amber Atkins (MTSU) and Emily McDonald (Tennessee Tech)
- 2012: Melinda Pierce (UT Knoxville) and
  Brandy Smith (Austin Peay State University)
- 2013: Now Taking Applications

A completed application must include the following:

1) Scholarship application form: To apply, complete the following application. The application can also be found at http://www.tmta.info/scholarship.php
2) a brief statement of educational/career plans as they relate to teaching mathematics
3) current official transcript
4) two sealed letters of recommendation, at least one of which must be submitted by a faculty member of the mathematics department, and BOTH of which must address the applicant's commitment to teaching

➢ **Application Deadline for 2013**: **June 1**

TENNESSEE MATHEMATICS TEACHERS' ASSOCIATION
DR. HENRY FRANDSEN SCHOLARSHIP APPLICATION FORM

Please furnish complete answers to each item below.

LAST NAME FIRST MIDDLE

STREET & NUMBER

CITY STATE ZIP CODE

UNVERSITY EMAIL ADDRESS* ( ) HOME PHONE

NAME OF COLLEGE OR UNIVERSITY ATTENDING

DEGREE/LICENSE: _____SECONDARY _____MIDDLE _____ELEMENTARY

MAJOR_____

A complete application must include the following:

1) Scholarship Application Form
2) A cover letter that includes a brief statement of educational and career plans as they relate to teaching mathematics
4) Current transcript
5) Two sealed letters of recommendation (may be mailed separate from other application materials) At least one recommendation must be from a member of the mathematics faculty at your university with whom you have completed at least one class.

Applications are due on **June 1**. You will be notified at your university email address when we receive your application.

Send complete application packet to: Betty Mayberry
Pope John Paul II High School
117 Caldwell Drive
Hendersonville, TN 37075

**Please use ONLY your official university email address. We will not accept applications with any other type of email address.

TMTA Mini-Grant

The Tennessee Mathematics Teachers Association will award a $1,000 mini-grant to a Tennessee math teacher to be used for technology or manipulatives. In order to be eligible, your school or district must demonstrate financial need and you must attend the 2013 TMTA Fall Conference at Memphis University School to receive your award.

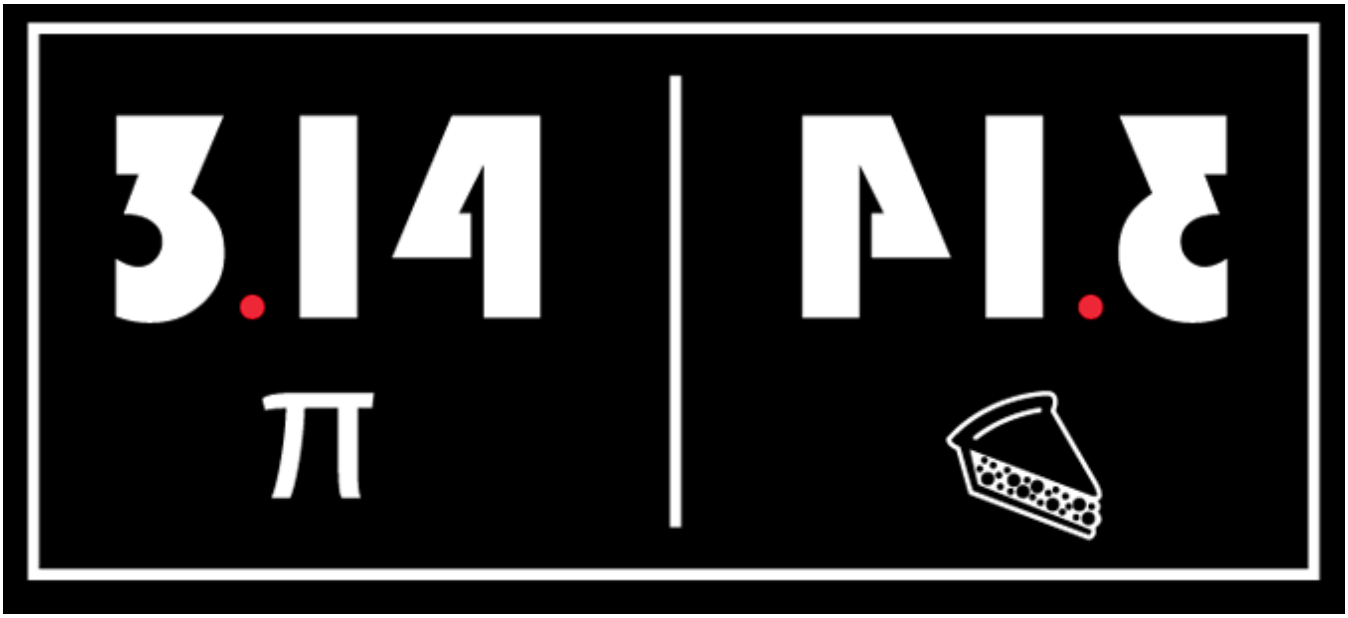
The award recipient will be required to present a session on how they used the mini-grant to enhance their classes at the following year's Fall Conference in East Tennessee.

To apply, go to the TMTA webpage and click on Grant Opportunities.

Or, click on the following link: http://www.tmta.info/grant.php

- **Application Deadline for 2013**: **June 1**

Reflections on π



TMTA Affiliates

- **Chattanooga Area Mathematics Teachers' Association - CAMTA**

  Chattanooga Area Mathematics Teachers' Association
  Deborah McAllister
  University of Tennessee – Chattanooga
  Deborah-McAllister@utc.edu

- **Mathematics Teachers of Tennessee Northwest - MT^{2}NW**

  Mathematics Teacher of Tennessee – Northwest
  George Moss
  Union University
  gmoss@uu.edu

- **Memphis Area Council of Teachers of Mathematics - MAC-O-TOM**

  Memphis Area Council of Teachers of Mathematics
  Phillip Stalls
  Memphis University School
  phillip.stalls@musowls.org

- **Middle Tennessee Mathematics Teachers – (MT)^2**

  Middle Tennessee Mathematics Teachers
  Cyndy Howes
  Ravenwood High School
  cyndyh@wcs.edu

- **Smoky Mountain Mathematics Educators' Association - SM^{2}EA**

  Smoky Mountain Mathematics Educators' Association
  Gary Petko
  gary.petko@knoxschools.org

- **Tennessee Mathematics Association for Two Year Colleges - TMATYC**

  Tennessee Mathematics Association for Two Year Colleges
  Maggie Flint
  Northeast State Technical Community College
  mrflint@NortheastState.edu

- **Tennessee Association of Mathematics Teacher Educators - TAMTE**

  Tennessee Association of Mathematics Teacher Educators
  JoAnn Cady
  University of Tennessee – Knoxville
  jcady@utk.edu

- **Upper East Tennessee Council of Teachers of Mathematics - UETCTM**

  Upper East Tennessee Council of Teachers of Mathematics
  Tara Harrell
  Hawkins County Schools
  harrellt@rcschool.net

A joint public statement of the National Council of Teachers of Mathematics (NCTM), the National Council of Supervisors of Mathematics (NCSM), the Association of State Supervisors of Mathematics (ASSM), and the Association of Mathematics Teacher Educators (AMTE) (http://www.mathedleadership.org/resources/position.html)

Mathematics Education Organizations Unite to Support Implementation of Common Core State Standards

The release of the Common Core State Standards (CCSS) is a welcome milestone in the standards movement that began more than 20 years ago when the National Council of Teachers of Mathematics published *Curriculum and Evaluation Standards for School Mathematics*. By initiating the development of the CCSS, state leaders acknowledged that common K–grade 8 and high school standards culminating in college and career readiness would offer better support for national improvement in mathematics achievement than our current system of individual state standards. The CCSS provides the foundation for the development of more focused and coherent instructional materials and assessments that measure students' understanding of mathematical concepts and acquisition of fundamental reasoning habits, in addition to their fluency with skills. Most important, the CCSS will enable teachers and education leaders to focus on improving teaching and learning, which is critical to ensuring that all students have access to a high- quality mathematics program and the support that they need to be successful.

Greater Coherence Built on a Strong Foundation

The National Council of Teachers of Mathematics (NCTM), the National Council of Supervisors of Mathematics (NCSM), the Association of State Supervisors of Mathematics (ASSM), and the Association of Mathematics Teacher Educators (AMTE) support the goal of the CCSS to describe a coherent, focused curriculum that has realistically high expectations and supports an equitable mathematics education for all students. Many aspects of the central elements of the CCSS echo the longstanding positions and principles of our organizations:[1]

- All students need to develop mathematical practices such as solving problems, making connections, understanding multiple representations of mathematical ideas, communicating their thought processes, and justifying their reasoning.

[1] As articulated in NCTM's Standards publications (1989, 1991, 1995, 2000), NCTM's *Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics: A Quest for Coherence (2006),* NCSM's *Principles and Indicators for Mathematics Educators (PRIME)*

- All students need both conceptual and procedural knowledge related to a mathematical topic, and they need to understand how the two types of knowledge are connected.
- Curriculum documents should organize learning expectations in ways that reflect research on how children learn mathematics.
- All students need opportunities for reasoning and sense making across the mathematics curriculum—and they need to believe that mathematics is sensible, worthwhile, and doable.

Supporting and Facilitating Implementation

The collective strengths of our organizations give us the potential to generate the momentum necessary to implement the CCSS effectively. Together, our organizations represent mathematics teachers, mathematics education leaders at the school, district, state, and national levels, researchers, and mathematics teacher educators in schools and colleges of education and departments of mathematics, who collectively have the expertise to lead implementation efforts.

The critical first steps will be to help educators interpret and understand the CCSS and to support the development and implementation of comprehensive, coherent instruction and assessment systems. To this end, we intend to do the following:

- Work with our local, state, and national affiliates to feature the CCSS in our professional development opportunities, including annual and regional conferences, academies, and seminars, and infuse them into our teacher education classes.
- Support the development and implementation of the corresponding assessment system, particularly with respect to preparing teachers, leaders, and teacher educators to use assessment results effectively to inform instruction and to incorporate formative assessment practices in the classroom.

Finally, we strongly encourage and support both research about the standards themselves (e.g., research on specific learning trajectories and grade placement of specific content) and their implementation, as well as periodic review and revision based on such research.

Pendulum Problem from *Reconceptualizing Mathematics for Elementary Teachers*

(Contributed by Dorothy Assad)

A pendulum gives a good place to look for relationships. You will conduct three experiments to determine what quantities affect the number of times a pendulum swings in a certain amount of time. You will need the following materials: string; several heavy objects like washers, nuts, bolts, screws, or fishing sinkers; tape; and a watch with a second hand.

a. *Make a pendulum by tying a heavy object (such as a washer) at the end of a string (**Figure 1**). Measure the number of swings a pendulum makes in 10 seconds. One swing is the distance the washer travels from the far right to the far left.*

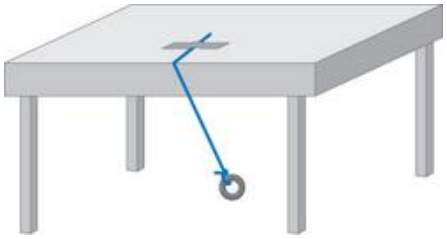


Figure 1 Making a pendulum from string and a weight

b. *Conduct an experiment to see if the weight of the pendulum bob (the object at the end of the string) affects the number of times the pendulum swings in 10 seconds. You will need to decide how to conduct the experiment. Then collect and record your data in a table. Finally, write a sentence expressing your conclusion.*
c. *Conduct an experiment to see if the length of the string affects the number of times the pendulum swings in 10 seconds. Decide how to conduct the experiment. Then collect and record your data in a table. Finally, write a sentence expressing your conclusion.*
d. *Conduct an experiment to see if letting the pendulum go from different positions affects the number of times a pendulum swings in 10 seconds (see **Figure 2**). Again, decide how to conduct the experiment, collect and record data, and write a sentence expressing your conclusion.*

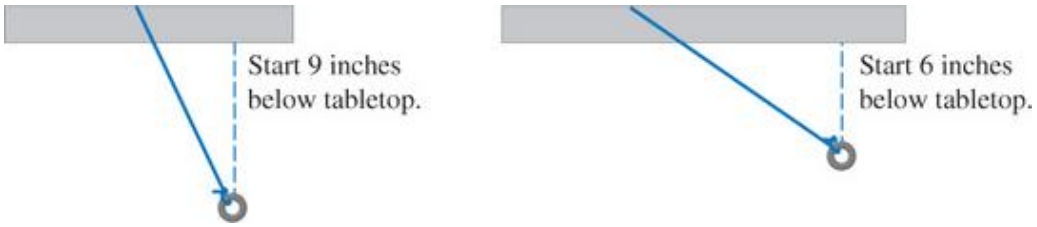


Figure 2 Letting a pendulum start from different positions

Sowder, J., Sowder, L., & Nickerson, S. (2009). *Reconceptualizing Mathematics for Elementary School Teachers*, First Edition, pp. 283-284. **ISBN:** 0716771969 **ISBN-13:** 9780716771968

Additional Instructions:
For parts b, c, and d, you must provide data tables and graphs. Take at least six data points for each graph. You must also explain your setup and the results of your experiment. You need to show that you took a logical, mathematical approach to this task.

Note: For part b, you might want to use similar weights as you add to the weight. For example, paper clips, washers, fishing weights, etc. work well.

Important! Only control one variable at a time. You may want to use what you found out in part b to inform your work in part c and your results in part b and c to inform your work in part d.

Please include clear pictures or a diagram to explain your setup. Note that the setup shown in the drawing is flawed. Your string should not touch the table. You can suspend it from a ruler or stick that extends past the edge of the table.

Measurement Journal Entry

(Contributed by Audrey Bullock)

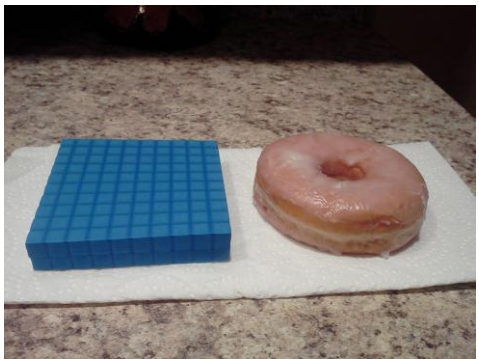
The following problem was given to pre-service teachers after they had an informal introduction to volume.

Determine the volume of a doughnut. Include the following:

1. A picture of your doughnut sitting next to a metric ruler. Zoom in enough to be able to see centimeter marks so that someone looking at your picture could get a good idea of the diameter of the doughnut.
2. Describe any assumptions you are making about the shape of the doughnut.
3. Describe how you determined the volume of the doughnut.
4. Clearly state why your approximation of the volume of the doughnut is reasonable by comparing it to objects of known volume.

Positive Responses:

A) I assumed that the doughnut and the hole through the center were cylinders. A way to find the volume of a cylinder is to calculate $\pi \times r^2 \times h$. I did this for both the radius of the entire doughnut and for the radius of the doughnut hole. My calculations are as follows:
$\pi \times (4.5cm)^2 \times 3cm - \pi \times (1cm)^2 \times 3cm$ = about $181.3cm^3$ for the volume of the doughnut. It is important that we say this is just an estimate though, because we measured and rounded numbers, and our doughnut isn't really perfect. I think it is reasonable because I can put 181 mL of water into a bowl and see that it takes up about the same amount of space as my doughnut. It is also comparable to a little less than 2 flats from our base ten blocks.



B) I assumed the base of the doughnut was an octagon. I looked at it as a square with 4 right triangles cut off of the corners. I also subtracted out the circle in the middle of the base. I know that the volume of a prism can be calculated by multiplying the area of the base by the height of the prism. The area of the square would be about 9cm x 9cm, or 81 cm^2. The right triangles that are cut off of each corner have a base and height of 3 cm. Their area is about $4.5cm^2$ each. The circle in the middle of the base has a radius of about 1 cm. Its area is approximately $3.1cm^2$. The area of the octagon base would be about $81-(4.5 \times 4)-3.1= 59.9\ cm^2$. The height of the doughnut is about 3.2 cm. So the volume should be about $59.9cm^2 \times 3.2\ cm = 191.7cm^3$. This is reasonable because I can arrange 191 unit cubes from our base ten blocks into the shape of roughly my doughnut and it looks about the same size.

Incorrect Responses:

A) The length and width should be the exact same measurement, and those, multiplied by the height, should equal the volume, which should be around 100 cm^3 or so, as the doughnut is approximately the size of a flat base 10 block manipulative used in class.

B) I wrapped my doughnut in plastic wrap and submerged it under water like displacement in biology. I took the water level before and after the submersion and determined that the volume of my doughnut is about 4 ml. This must be reasonable because I subtracted correctly.

Misconceptions Discovered:

A) Volume is LxWxH for every type of three-dimensional figure.
B) A lack of sense about metric units and their size related to concrete objects.
C) Volume should be expressed in cubic units as opposed to square units.

Constructed Response Assessment meets Terrible Tommy

(Contributed by Jackie Vogel)

Kathy Lawrence, a fourth grade teacher, was looking for ways to include open-ended assessments in her classroom. One technique that she used was "Terrible Tommy". Terrible Tommy was a fictitious student who was always goofing off and getting into trouble. She would give students examples of problems that Terrible Tommy did wrong and ask her students to explain to Tommy what he did wrong and help him understand how to do the problem correctly.

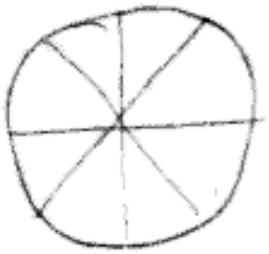
Since my preservice teacher candidates have trouble with explaining their conceptual understanding of fractions, I started using Terrible Tommy in my 4th-6th grade math methods course several years ago. It was very eye-opening; my preservice candidates have trouble articulating why fractions work without merely stating rules and algorithms. Once the Teacher Performance Assessment (TPA) became part of their graduation and licensure requirements, Terrible Tommy became even more important. The preservice candidates are expected to be able to analyze students' mistakes and provide feedback that will further their learning. Terrible Tommy problems help them develop those skills.

Recently, I pulled a National Assessment of Educational Progress (NAEP) Released Item to share as a Terrible Tommy problem. This was a 12th grade problem, but I thought my students could handle it. It is classified as a hard problem and only 22% of 12th graders got the problem correct. It turns out that only about 25% of my college seniors also got it correct. I gave them the problem as stated in the NAEP Released Items and included a sample incorrect result provided by NAEP. (I like to use these items since they come with data and sample student responses.)

Terrible Tommy did the following problem incorrectly. Can you explain to Terrible Tommy what he did wrong and show him the correct answer?

In a certain restaurant a whole pie has been sliced into 8 equal wedges. Only 2 slices of the pie remain. Three people would each like an equal portion from the remaining slices of pie. What fraction of the original pie should each person receive?

1/8



Typical incorrect responses from my preservice teacher candidates were as follows:

- *Since you only have two pieces, you can't share them with three people.*
- *Two people would get 1/8 each and one person would not get any pie.*
- *1/16 because you split each 1/8 in half.*
- *2/3 because you split 2 pieces into 3 parts.*

I was surprised by these results, but it gave us a place to start the class discussion, particularly as it refers to number sense and reasonableness of answers. If you would like some sample problems that you can use for your Terrible Tommy problems, you can search the NAEP Released Items Question tool at http://nces.ed.gov/nationsreportcard/about/naeptools.asp .

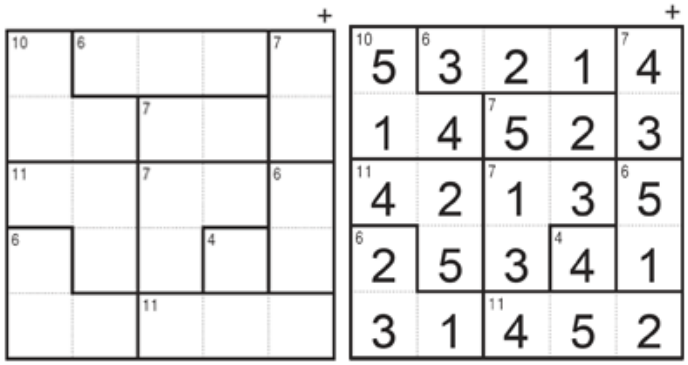
References:

Leatham, K., Lawrence, K., and Mewborn, D. (2005), Getting Started with Open-ended Assessments, *Teaching Children Mathematics*, pp. 413-419.

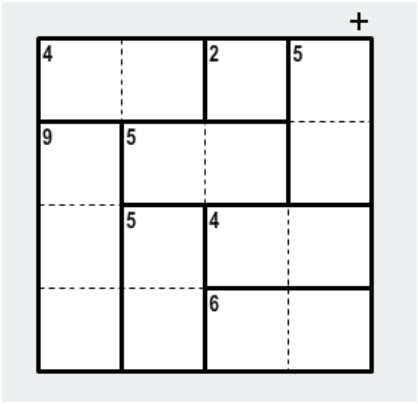
Single Operation CalcuDoku

Each puzzle consists of a grid containing blocks surrounded by bold lines. The object is to fill all empty squares so that the numbers 1 to N (where N is the number of rows or columns in the grid) appear exactly once in each row and column and the numbers in each block produce the result shown in the top-left corner of the block according to the math operation appearing on the top of the grid. In CalcuDoku a number may be used more than once in the same *block*.

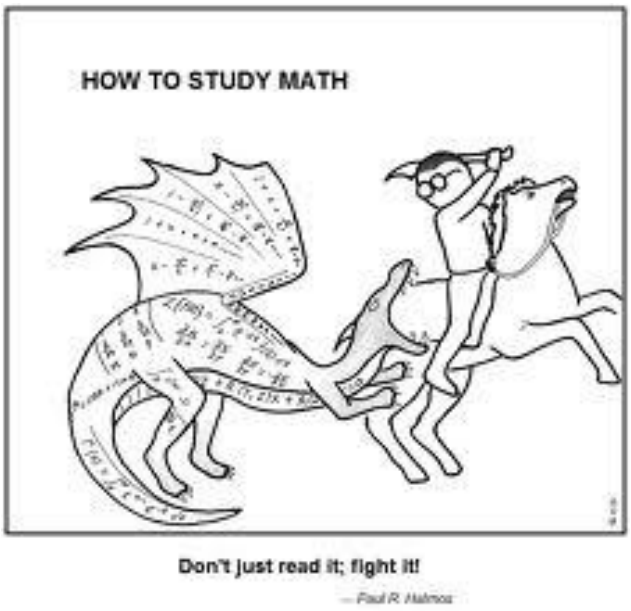
Example:

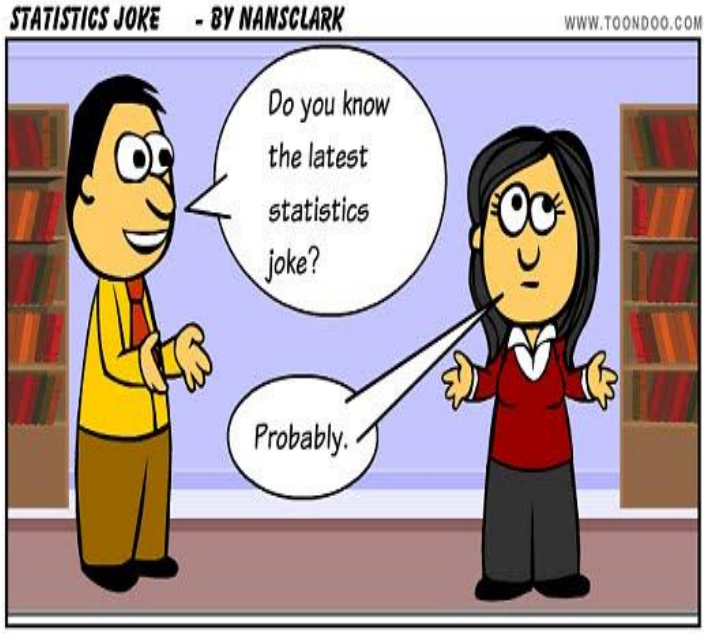


Try this one (easy!)



Favorite Math Cartoons!





Send Your Favorite Lesson Plans, Activities and Journal Ideas!

Do you have an article to share? New Ideas? News?
Lesson Plans? Teaching Strategies?
Submit your article for the next TMTA Bulletin to
Kathy Eskew at eskewks@gmail.com

TENNESSEE FIRST TO THE TOP

BATTELLE FOR KIDS IS COMMITTED TO IMPLEMENTING SUSTAINABLE EDUCATIONAL IMPROVEMENT ACROSS TENNESSEE.

Battelle for Kids is partnering with the Tennessee Department of Education (TDE) and educators throughout the state to support and build upon existing educational-improvement initiatives to provide the best opportunities for every student as part of First to the Top. Our goal is to provide K–12 educators with the resources, data, training and support they need to ensure college- and career-readiness for every child.

Our work in Tennessee will align with key components of district Scopes of Work by:

- Creating awareness and a sense of urgency in building the case for change
- Empowering K–12 public school teachers, administrators and other instructional staff to use value-added information to improve teaching and learning
- Providing teachers with methods and strategies to implement formative instructional practices daily in their classrooms
- Supporting district leaders in using value-added information and achievement data to meet established performance goals
- Providing tools such as the Tennessee•Focus process to use with Professional Learning Communities and support the current school improvement planning process

In addition, Battelle for Kids, TDE and other Tennessee education organizations will build support for:

- Researching and sharing the practices of highly effective educators
- Building capacity among rural and urban educators statewide to use data to guide decision making, formative instructional practices and coaching techniques
- Building successful strategic compensation models

Battelle for Kids
Bringing clarity to school improvement

About Battelle for Kids

Battelle for Kids is a national, not-for-profit organization that provides strategic counsel and innovative solutions for today's educational-improvement challenges. Our team of education, technology, communications and business professionals specializes in creating strategies that improve teaching effectiveness and student progress; inform instructional practice in real time; recognize and reward teaching excellence; and align goals and maximize impact in schools. For nearly a decade, Battelle for Kids has partnered with educators to build their capacity to implement educational-improvement initiatives, including the use of value-added analysis, in districts within Ohio, New York, Pennsylvania, Texas, Louisiana, Massachusetts and Tennessee.

Battelle for Kids is partnering with the Tennessee Department of Education to expand the use of value-added analysis and formative instructional practices as well as other educational-improvement strategies to increase student progress and achievement statewide as part of First to the Top. For more information, visit the **Tennessee Student Progress Portal at www.BattelleforKids.org/Tennessee.**

Battelle for Kids will provide professional development in support of Tennessee's First to the Top priorities and goals to:

EMPOWER TEACHERS TO USE VALUE-ADDED INFORMATION

SAS® TVAAS® provides the most robust student progress data currently available. Battelle for Kids will build educators' capacity to maximize the use of SAS® TVAAS® value-added information and make an explicit and actionable link between this world-class data system and the educational-improvement process.

IMPLEMENT FORMATIVE INSTRUCTIONAL PRACTICES

To enhance the pre-existing benchmark assessments used in various districts, Battelle for Kids will provide support to deepen teachers' understanding of formative instructional practices and build understanding of balanced assessment systems. This work will focus on classroom practices to continually assess where students are in meeting benchmarks. Support will include formative instruction online courses and face-to-face training.

RESEARCH AND SHARE THE PRACTICES OF HIGHLY EFFECTIVE EDUCATORS

Battelle for Kids will work with like-minded institutions to identify highly effective teachers and principals. Battelle for Kids will provide professional development resources, such as white papers and online courses, to help replicate these best practices across the state.

SUPPORT RURAL AND URBAN EDUCATORS

Battelle for Kids will train educators to work in rural and urban schools identified by TDE. These educators will coach others in the use of value- added and achievement data along with formative instructional practices for educational improvement.

BUILD SUPPORT FOR SUCCESSFUL STRATEGIC COMPENSATION MODELS

Battelle for Kids will assist districts in researching, developing, implementing and enhancing strategic compensation/performance-pay programs. We will reference research-based models as we partner with schools to successfully incorporate strategically-aligned performance incentives. A series of online courses will be available in the future.

Specialized Training and Resources to Support This Work

VALUE-ADDED ONLINE COURSES

Designed for educators to work independently or with a professional learning team, these courses offer the flexibility educators need—
any-time, any-place and any-pace learning. Educators will have access to role-based learning paths for teachers, as well as building- and district-level leaders, for a differentiated experience. Courses make explicit the link between value-added reports and practical application for school improvement.

FORMATIVE INSTRUCTION ONLINE COURSES

Designed for teachers of all grade levels and subjects, these courses will build educators' capacity to implement effective formative instructional practices in their classrooms. Like face-to-face professional development, these courses encourage collaborative learning as the best way to move this work forward.

BFK•Learn™ SOLUTION

The BFK•Learn™ solution is an online learning management system available in the Tennessee Student Progress Portal. The BFK•Learn solution helps teachers keep track of their learning, and district and building administrators can manage their staff's learning experiences.

TENNESSEE•FOCUS PROCESS

The Tennessee•Focus process is an online planning tool that enables teacher teams to analyze their achievement and value-added information together. The Tennessee•Focus process guides teams to address root causes for their strengths and areas of challenge.

UNDERSTANDING AND USING VALUE-ADDED ANALYSIS: A TOOLKIT FOR EDUCATORS

This toolkit includes a DVD, guides for specific users and other materials to build educators' capacity to use their TVAAS® data to inform instruction.

A View to the top MAP

A View to the top: exploring the Changing trends that Are impacting our Children's Future map is an interactive discussion tool that will engage Tennessee educators, school board members, legislators, professional organizations and other community stakeholders in understanding the First to the Top plan and their roles in its success.

Student Progress Portal at **www.BattelleforKids.org/Tennessee.**

Our former TMTA President, Eddie Keel, is now with Battellefor Kids. You may reach him at Eddie Keel ekeel@battelleforkids.org

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SOURCES OF MATHEMATICS TASKS

Institute for Mathematics & Education. (2012). Illustrative mathematics. Retrieved December 3, 2012, from http://illustrativemathematics.org/

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(Scroll down the right navigation bar to "My Curricula." Click "Three-Act Math.")

Noyce Foundation. (2012). MARS tasks, scoring rubrics, & analysis. Retrieved December 4, 2012, from http://www.insidemathematics.org/index.php/tools-for-teachers/7th-grade-math/mars-tasks-scoring-rubrics-a-analysis

NYC Department of Education. (2012). Tasks, units & student work. Retrieved December 4, 2012, from http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default.htm

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TENNESSEE DEPARTMENT OF EDUCATION

From our new Coordinator of Math Content and Resources, David Williams.

David.S.Williams@tn.gov

I have been:

- Mid-Cumberland Regional Math Coordinator
- Instructional Coach
- TN Core Coach
- High school math teacher (algebra I, geometry, precalculus, advanced algebra with trigonometry, AP Calculus AB/BC, IB math SL/HL)
- IB MYP coordinator
- Vanderbilt University student teacher mentor
- Department chair
- Basketball coach
- Worked in MNPS, Williamson County and Fulton County, GA.
- Earned B.S. Mathematics, Auburn University;
- M.A.Ed. Secondary Mathematics Education, Wake Forest University

I started my role as the state math coordinator December 3, 2012. I am excited about the opportunity to support the work of teachers across TN as we transition to the Common Core State Standards. I have formed a math leadership team with representatives from across the state and multiple levels of math education to be a part of this effort.

Though the work ahead brings challenges, it also brings opportunities for success. I am hopeful that this work will foster new collaborations within and across districts as we seek to improve math education in our state. Given the fast pace of change in education today, we must choose to view the change as part of a process for continuous improvement. I look forward to meeting and working with you.