



eREFLECTIONS

eREFLECTIONS

Publication of the Georgia Council of Teachers of Mathematics

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2013

Reflections on Reflections

As teachers, we face huge challenges. Regardless of whether one teaches in the public or private sector, significant difficulties await every teacher on a daily basis. Making the connection with each student, every day, is daunting. Such is the nature of our profession and the source of its struggles as well as its satisfactions.



Dan Funsch
President

Mathematics teachers in Georgia face additional pressures. In the span of fewer than ten years, Georgia's curriculum has changed several times placing enormous strain on teachers as curriculum change outpaced the development of resources. New assessment tools loom on the horizon as parents, employers, and teachers grapple with accountability issues. Being a mathematics teacher these days is not a job for the faint of heart.

The support and encouragement offered by others who struggle with the same issues and challenges often provides the most effective helping hand. For over sixty years, classroom mathematics teachers in Georgia have organized to help each other rise to the challenge through GCTM. I encourage you to make the most of this helping hand through the opportunities that GCTM provides. This summer GCTM will hold Academies in four locations throughout the state. Each Academy will offer seventeen different sessions focused on meeting the challenge of implementing the CCGPS and the PARCC assessments for particular

grade bands. In the fall the annual Georgia Mathematics Conference will again be held at Rock Eagle. Our journal, "eReflections," provides readers with timely and useful information. Through its affiliation with NCTM, GCTM offers its members access to nationwide help and resources. Through GCTM, Georgia classroom mathematics teachers continue to help and support each other.

The challenges are huge. The challenges are real. But the dream of equipping each and every student with a meaningful and rich education impels us.

In our last issue, I wrote signs the signs of success that have begun to show themselves. Georgia students are making progress on so many measures! Across the state, classroom teachers are working together. Across the state, classroom teachers are providing effective education to their students.

GCTM is your organization. By bringing together classroom teachers from all sectors and regions, GCTM provides practical ways for teachers to help and support each other. I encourage you to value your membership in GCTM. Register for and attend one of this summer's Academies. Make plans to participate in the Georgia Mathematics Conference at Rock Eagle this October. Contribute an article to "eReflections." Offer to serve on a GCTM committee. Reach out to your colleagues and encourage them to join you as members. For more than sixty years, Georgia's mathematics teachers have turned to each other through GCTM to meet the challenges of their day. In our day, too, working together through GCTM, we will meet the challenges of our times.



REFLECTIONS

GCTM Business Meeting, October 17, 2012 Georgia Mathematics Conference Rock Eagle, GA

CALL TO ORDER:

The Annual Meeting of the Georgia Mathematics Conference was called to order by Debbie Poss, President, at 7:15 pm.

1. Susan Craig, Membership Director, gave a membership report. We currently have 2500 members.

Susan encouraged all speakers to become members of GCTM since their fees are waived as speakers.

Also, all members were encouraged to update their information and enticed with a gift.

2. Mark Cheek, Treasurer Intern, as well as Dan Funsch, gave the Treasurer's Report. The accounts receivable and proposed budgets were presented. The 12 year trend shows where GCTM has been, and what we value highly –teachers. The Georgia Math Conference represents income and dues from the last fiscal year, as well as expenses from the conference, contract expenses, labor expenses, etc. When comparing last year's budget to this year's budget, it shows that we have a greater outlay of expenses than income coming in due to the cost of the academies.

3. Chuck Gardner, Vice-President of Competitions, gave a report on Math Teams and Math Competitions that are sponsored by GCTM. GCTM sponsors two tournaments – a middle school tournament open to any middle school and an invitational high school tournament (always the last Saturday in April). We also help students compete in the American Regional Math league (ARML). Georgia came in 6th in the world last year. The best students are recruited for the team, so if you have a student who might qualify, let Chuck know.

4. Peggy Pool, Vice President for Regional Services, gave a report on the summer academies. There were 8 academies with 2811 registrations, 1376 attendees that qualified for 2 PLUS. ETA Cuisenaire donated all the manipulatives for these workshops. Peggy reminded everyone to go to their regional meetings because those manipulatives would be given as doorprizes. For 2013, there will be 4 academies around the state and 17 subjects including Accelerated Coordinate Algebra, Accelerated Analytic Geometry, Math Support in Analytic Geometry and Coordinate Algebra and Advanced Algebra.

5. Cheryl Hughes, Publications Editor, described the transition from the print Reflections to e-reflections which began 1 year ago. She asked members to take pictures of what they see and like at Rock Eagle and send to her. The positive impact that has been received from e-reflections was reported.



GCTM Business Meeting, October 17, 2012 Georgia Mathematics Conference Rock Eagle, GA

6. Debbie Poss introduced the remaining Executive Committee Members:

General Executive Board

Executive Director- Tom Ottinger
Vice-President –Advocacy – Shelly Allen
Vice-President – Advocacy & Policy – Patti Barrett
Webmaster – Paul Oser
Editor – Cheryl Hughes
Secretary – Debbie Kohler
NCTM Representative (outgoing) – Cathy Franklin
NCTM Representative – (Incoming) – Dottie Whitlow
Vice-President – Awards & Honors – Melanie Helms
Vice-President – Regional Services – Peggy Pool

Regional Representatives

NW – Regional Representative – Karen Lawrence
NW – Regional Representative Intern – Bonnie Angel
NE Regional Representative – Kaye Haugen
NE Regional Representative Intern – Seyoung Holte
Metro West Representative – Lynn Stallings
Metro West Representative Intern – Jackie Burns
Central West Representative – Kenneth Jones
Central West Representative Intern – Cathy Franklin
Southwest Representative- Jason Williams
Southeast Representative – Emma Salzer

Conference Board Representatives

Conference Chair: Nikita Patterson
Conference Coordinator: Nickey Ice
2012 Program Co-Chairs: Denise Huddleston & Carole Tilley

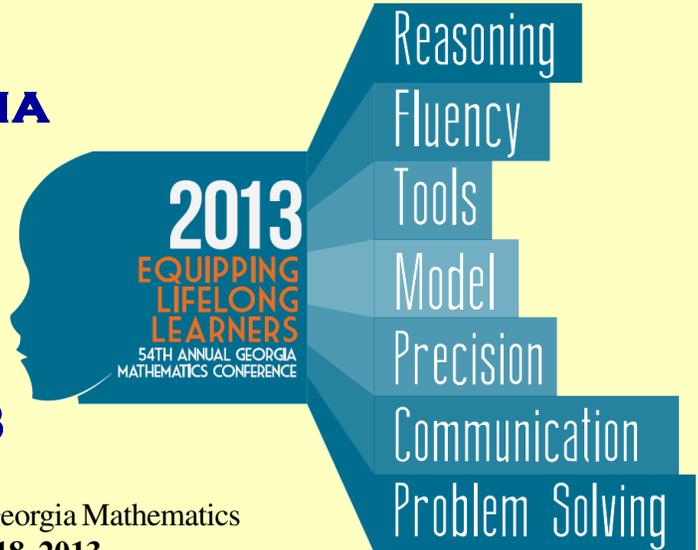
The meeting was adjourned at 7:45 and the speaker for the evening was Dr. Tim Kanold.

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www.thedigitalpen.com 706-346-8731



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54TH ANNUAL GEORGIA MATHEMATICS CONFERENCE AT ROCK EAGLE, GEORGIA OCTOBER 16-18, 2013



Make your plans now to attend the 54th Annual Georgia Mathematics Conference at Rock Eagle, to be held **October 16 - 18, 2013**.

Our keynote speaker for Thursday evening, as well as 2 daytime workshops, will be [Mr. Dan Meyer](#), of blog fame.

His topic for Thursday night will be: *Video Games & Making Math More Like Things Students Like*.



“Students around the world are playing thousands of hours of video games every day and, in many cases, they’re enjoying those games more than they enjoy our math classes,” said Meyer. “Let’s look at several of the most popular video games of all time — Angry Birds, the Portal series, Braid, and others — and pull out some lessons. As task designers, test givers, and classroom managers, what can we learn from those games?”

If you want to learn how to incorporate the Standards for Mathematical Practice into your classroom, GMC is the place for you!

If you are adept at employing the Standards for Mathematical Practice and are willing to share your ideas with others, fill out a [speaker's proposal](#) and be the catalyst to help others in their journey to become excellent mathematics teachers.

Many other exciting speakers and workshops are being scheduled, so make GMC part of your long-range plan!



Check the [GTCM webpage](#) for current information on the Georgia Mathematics Conference 2013.



GCTM/GaDOE

SUMMER MATHEMATICS ACADEMIES



TESTING THE WATERS OF CCGPS:
Anchoring Instruction with Assessment



[Click here for more information!](#)

| | |
|---|---|
| <p>Academy 1 June 12 & 13, 2013 Wednesday & Thursday</p> | <p>Sonoraville High School Calhoun, GA Gordon County</p> |
| <p>Academy 2 June 19 & 20, 2013 Wednesday & Thursday</p> | <p>Carver High School Columbus, GA Muscookee County</p> |
| <p>Academy 3 July 9 & 10, 2013 Tuesday & Wednesday</p> | <p>Baldwin County High School Milledgeville, GA Baldwin County</p> |
| <p>Academy 4 July 18 & 19, 2013 Thursday & Friday</p> | <p>Statesboro High School Statesboro, GA Bulloch County</p> |



It's Election Time! And We Are Going Electronic!

by Tom Ottinger, GCTM Executive Director

The 2013 GCTM election is less than a month away. Members will choose a President Elect, Secretary, Vice President for Constitution and Policies, and Vice President for Regional Services. For the first time, GCTM members will vote online instead of mailing in a paper ballot. In order to vote you will be required to enter a unique code which will be emailed to you very soon.



***Tom Ottinger**
Executive
Director*

And that brings up a problem: we need your email address. It should be a personal email address rather than a school one, because school system servers routinely block email sent to large groups of people. If you don't already have a personal email, it's easy and free to set one up at Google (mail.google.com), Yahoo (mail.yahoo.com), or Hotmail (www.hotmail.com).

If you already have a personal email address in your GCTM member profile, you're done. If you

don't, you need to change the email address in your member profile. Go to gctm.org, click on Membership

Management (right below the picture), and login with your current email address if necessary. Then click Edit Profile and change your email to the new address. While you're at it, you might want to update all the other information if changes are needed. Then scroll down and click Save. Finally, look for that email with your voting code coming soon.

At that time you will be able to view the slate of candidates with their bios and pictures. Follow the directions to vote. Online voting should be easier, quicker, and more convenient than paper ballots, and we hope more people will take the time to vote. After voting, please give us feedback on the process. Send your comments to executive-director@gctm.org.



Math Support and Accelerated Math Teachers

Do you have any good strategies for teaching Math Support or Accelerated Math classes? If so, we need your help! GCTM is highlighting special sections for Math Support and Accelerated Math teachers in the 2013 GCTM/GaDOE Summer Mathematics Academies and we'd like to include helpful hints for dealing with the special needs of these classes. If you have any strategies for teaching either of these classes that you'd be willing to share, please email Debbie Poss.

Membership Matters

HELP! We need you to help us make our records more accurate. Your membership records often come from your conference registration, which many times come from your school or district office. **WE NEED AN ACCURATE EMAIL ADDRESS and MAILING ADDRESS** for you. In many cases we have email for a secretary and mailing address for your district office. We are about to send out information for upcoming elections, which will be done electronically. If the mailing is sent to a district office, chances are you will never receive it.



*Susan Craig
Membership
Director*

PLEASE take a few minutes, LOGON to www.gctm.org, and CHECK your CONTACT

INFORMATION. We suggest you use a PERSONAL EMAIL ADDRESS and HOME ADDRESS, rather than your school addresses. Some schools and systems block our messages. We do not send many emails, but surely want you to receive *eREFLECTIONS* and election and event information. THANK YOU for helping us with this huge task!

Your GCTM Membership Committee is working diligently to offer members excellent benefits in return for your support of our fine organization. Our membership stands at 2975 members. Do you have ideas that will make GCTM better or make your membership more valuable to you and your students? Please feel free to make suggestions to your membership committee. We are anxious to always work to make GCTM better and bigger. Email us at membership@gctm.org.

Wilburn Byrd (1932 - 2012)

Georgia Mathematics Education Trust (GMET) would like to publicly acknowledge the many donations that have been made in honor of Mr. Wilburn Byrd (1932 - 2012).

Mr. Wilburn Byrd and his family moved to Talbotton, GA in 1960, whereupon he began a 33 year high school teaching career.

Teaching Math and Science in Talbot, Upson, and Meriwether Counties, he won numerous awards including being selected as Star Teacher 15 times. He coached Math, Science, and Academic Teams that won numerous tournaments, including four state championships. He was a National Science Foundation Scholar, receiving his Masters of Mathematics Degree from the University of South Carolina in 1966.

Mr. Byrd was a pioneer in the field of computer high school curriculum. He designed and started teaching computer programming classes at

Manchester High school in 1976, and his computer programming team won the first competition held at Columbus State University.

He was also a college professor for many years, teaching for the University of Georgia, Gordon Junior College and Columbus State University. He served as a City Council member in Talbotton for 16 years and as Mayor Pro-Tem for the last 7 years. He retired from that office last December.

On behalf of the mathematics education community, we wish to extend condolences to the family and the many students who were touched by Mr. Byrd's passion for mathematics.

GCTM is honored to pay tribute to those who have contributed to outstanding mathematics education in Georgia. Please send announcements to [Cheryl Hughes, editor](mailto:Cheryl.Hughes@gctm.org).



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NCTM: Plan Now for Fun!

Combining Travel & Math Professional Development Activities



For those of you who enjoy both travel and mathematics, what could be more fun than combining the two! NCTM's Professional Development activities occur regionally around the nation and of course at the Annual Conference of the National Council of Teachers of Mathematics occurs each spring.

NCTM Annual Conference:



This year you can combine travel in the spring with visiting the Rocky Mountains and Denver, Colorado and attending the Annual NCTM Conference. Discounted registration is available through mid-March.

Are you a fan of "The Big Bang Theory" on television? Did you know that the actress, **Mayim Bialik**, is not only an Emmy-nominated performer but also a neuroscientist? She will launch the Denver conference as the opening [keynote speaker](#). The Annual Conference features over 700 sessions, workshops and presentations to choose from. It will include new strands on Research on Algebraic Thinking, Formative Assessment, New Teachers, and Reasoning and Proof. It is also great fun and inspirational to be in the company of tens of thousands of mathematics educators, learning, talking, sharing, networking and getting new exciting ideas for connecting learners and mathematics. I hope to see you there!

NCTM Summer Interactive Institutes:



If you are interested in traveling out of Georgia this summer, NCTM is hosting 3-day summer Interactive Institutes in the fun and interesting cities of New Orleans, LA and Washington, DC.

NCTM: Plan Now for Fun! *cont.*

Pre-K (July 11-13) and Middle Grades Institutes (July 8-10):



Both the Pre-K-5 and Middle Grades Institute activities will take place at the Hilton New Orleans Riverside, adjacent to the New Orleans Convention Center. The hotel is steps from the business district in downtown New Orleans, and a short four block walk to the city's colorful French Quarter.

High School Institute (August 1-3):

The 2013 High School Mathematics Interactive Institute (Engaging Students in Learning: Mathematical Practices and Process Standards) will take place at the Renaissance Washington, DC Downtown Hotel, located directly across from the Washington Convention Center.

Visit www.nctm.org:

Get all the essentials to plan your trip including location and facility information, a schedule overview, ADA information, and more. Visit www.nctm.org and click the tab for Professional Development for additional information about the Institutes.

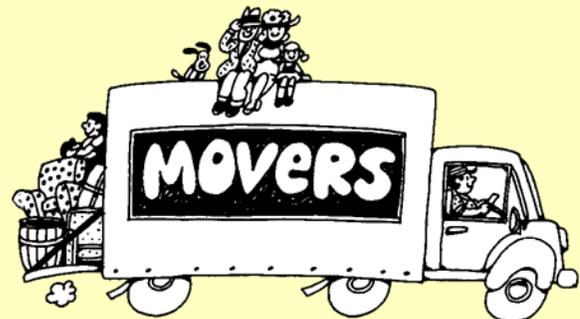
Do you have an idea for an article
for eREFLECTIONS?

Do you have a favorite lesson plan
to share?

Do you want to share a website you
use often in your classroom?

Contact [Cheryl Hughes](#) to submit
your idea or article in the next
edition of eREFLECTIONS.

**LET GCTM KNOW IF YOU'RE
MOVING...**



**...OR IF YOU CHANGE YOUR
EMAIL ADDRESS!**



Pinterest: A Means for Teachers to Beg, Borrow and Steal

by Emily McGrady

Friends introduced me to Pinterest as a way to explore crafty ideas and recipes. In the beginning this social bookmarking site was frustrating because the home page I saw would show skinny gorgeous girls, fancy food dishes, and beautiful clothing lines that couldn't be afforded on my meager teacher salary. Although friends were oohing and ahing about the handiness of Pinterest, I couldn't understand how this site could help me.

After all, when does a teacher have time for making and designing cute recycled wrapping paper or making centerpieces of broccoli and carrot Christmas trees? Later while exploring online for great math lesson plans, I successfully tried Pinterest as a visual list of internet page "bookmarks" for revisiting.

To join Pinterest, one needs either a friend's invite, or a couple of days waiting for Pinterest to accept the request. Once Pinterest membership is accepted, carefully follow the directions for placing a "Pin It" icon on the bookmark bar of your web browser. As interesting websites and activities are found, click "pin it" to attach a visual link to a created folder.

Organizing folders is important. Think of these as folders in a file cabinet. My Pinterest education folders include: basic math ideas, pi, tessellations, and SMART Board activities. I wish I had thought to make specific folders for each of the math units in the common core. It is on my to-do list.

Searching key words is also helpful. Many pinned sites will appear after a search. I have found key words such as "anchor charts", "associative property",



Emily McGrady

"interactive notebooks", "education quotes", and "mean absolute deviation" provide me with numerous classroom resources.

Following others' Pinterest boards will automatically offer interesting websites onto one's homepage. When I see someone's folder titled "Common Core 6th grade", I know the person pinning to their folder might suggest things I want to pin. Click "Follow" to have his/

her pinned pages appear on your Pinterest home page. To get started, I used to use "Follow All" to follow all created boards of my friends. Now that I have quite the network, I am picking and choosing the specific folders I want to follow.

Twenty years ago, begging, borrowing and stealing were face-to-face actions among teachers.

Experienced teachers have learned reinventing the wheel is wasted time. Today, when these great ideas are offered online, we can beg, borrow and steal 24/7 without taking up another teacher's time. With social

media such as Pinterest, we teachers find invaluable ideas for our classrooms. The borrowed-from

teacher, in turn, gets the reward of seeing how many followers or pages repinned he/she has.

Please feel free to check out my Pinterest folders and pages. Happy pinning!

Emily McGrady teaches 6th grade math at Austin Middle School in Paulding County. A proud mother of two teenagers, Duncan and Melanie, she enjoys time with her family, camping, and letterboxing.

Pinterest

Grading by the Standards in the High School Mathematics Classroom

by Nancy Cobb and Heather Lloyd

What do grades really mean? Do they reflect students' knowledge and not just effort? We wanted to pinpoint areas where students were struggling. We began researching grading by the standards and found our solution. Grading by the standards involves assigning a grade to each objective taught, rather than each assignment given. As teachers, we had questions about the practicality of this idea. We have listed our questions and our discoveries from the last four years teaching 9th and 10th grade Mathematics.

Will this take more time?

Designing assessment did take more time. All of our tests cover multiple standards; therefore, each test required multiple grades. In addition, we had to evaluate whether each question accurately reflected all aspects of the standard.

Grading took less time. We developed a 4-point scale using rubrics. Even though a test may cover several standards, grading is simplified because the answer is either right or wrong. There is no partial credit. In addition, we had the advantage of grading only summative assessments. We check formative assessments, such as classwork, by walking around the room and examining student papers.

Students no longer question why we "gave" them a grade. We have changed attitudes about the responsibilities in the classroom. Our job is to teach; the students' job is to learn.

On the first day of school, we are upfront and honest with students explaining that only test grades will be recorded. Their eyes light up and we can see their thinking: "Yes! I don't have to do homework anymore!" It does not take students long to discover we will still check their homework and speak to them when they do not complete it. They also quickly realize when they are unprepared for the test. For the majority of students, they are more willing to attempt assignments knowing they will not be penalized for mistakes made during the learning process.

| 6 Questions: | | 9 Questions: | |
|--------------|------------|--------------|------------|
| Score: | # Correct: | Score: | # Correct: |
| 4 | 6 | 4 | 9 |
| 3.5 | 5 | 3.5 | 8 |
| 3 | 4 | 3 | 5-7 |
| 2 | 2-3 | 2 | 3-4 |
| 1 | 1 | 1 | 1-2 |

Sample Assessment

SSE.1b: Interpret complicated expressions

1. One hundred twenty-two vans were supposed to be shipped by railroad, but 2 vans could not fit on the railroad cars. There were 8 railroad cars each holding the same number of vans. How many vans were on each car?

Let v = the number of vans on each railroad car.

- What does the expression $8v$ represent? _____
- Write an expression using v that represents the 122 vans. _____
- Write an equation using the information that you know. _____
- Solve the equation and answer the problem. _____

Will students complete assignments?

The real issue is accountability. Who should be accountable for making sure students learn? With this grading system, students know that if they are going to succeed they will have to master the standards.

What is the benefit?

Since the gradebook lists the standards, not the assignments, it is much easier to describe weaknesses



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Grading by the Standards in the High School Mathematics Classroom *cont.*

to a student or parent. For instance, if Sue comes in after school, we can easily determine she needs help solving multi-step equations. We can get right to work helping her with the topic she needs. With our previous grading system we would know only that she needed help with Unit 2, which might cover many different standards (some of which she understood perfectly). Now we are more focused on each student's individual needs.

Why allow students to retest?

The goal is for students to master all standards at any point within the year. Therefore, students are able to retest any standard after school. Tutoring or proof of completed assignments is required before retaking a test. We utilize various methods to measure student learning, including verbal assessments and projects. Students must tell us the specific standard with which they need help. Students now use the language of the standards when talking about their strengths and weaknesses. Imagine that!

Does it work?

Without effort grades in the mix, students' averages are a much more accurate predictor of their performance on standardized tests. At the end of the year, most of our students score within five points of their average on the end-of-course tests.

Gradebook Sample

| Grade Summary | Total Points | In Progress | Final Grade |
|---|--------------|-------------|-------------|
| Key: ** Group excluded from grade calculation | | | |
| Term 92 - FINAL GRADE | 59.5/72 | 81.94% | 82 |
| 100% Algebra Standards | 28.5/28 | 82.54% | 85 |
| 100% Geometry Standards | 19.5/28 | 81.25% | |
| 100% Statistics and Probability | 30/36 | 83.33% | |
| 100% Cumulative Tests | 75/100 | 75.00% | |
| 100% End of Course Test (EOCT) | | | |

| Assignment Detail | Group | Due Date | Pts | Score | % |
|---|-------------------|------------|-----|-------|------|
| Key: ** Missing * Late * Incomplete *C* Cheated *D* Dropped *E* Exempt **Assignment excluded from grade calculation | | | | | |
| Term 92 - FINAL GRADE | | | | | |
| Assignment | Group | Due Date | Pts | Score | % |
| ISE 1a - Interpret parts of an expression | Algebra Standards | 08/01/2012 | 4 | 4 | 100 |
| CE2 1 - Create equations in one variable | Algebra Standards | 08/08/2012 | 4 | 3 | 75 |
| NG 20 - Define quantiles, accuracy level | Algebra Standards | 08/13/2012 | 4 | 4 | 100 |
| ISE 1b - Interpret complicated expressions | Algebra Standards | 08/13/2012 | 4 | 4 | 100 |
| CE2 2 - Create and Graph Equations | Algebra Standards | 08/20/2012 | 4 | 3 | 75 |
| CE2 4 - Rearrange Formulas | Algebra Standards | 08/20/2012 | 4 | 4 | 100 |
| NG 1 - Label Graphs Appropriately | Algebra Standards | 08/20/2012 | 4 | 3 | 75 |
| RE1 1 - Explain Steps in Multi-step Equations | Algebra Standards | 08/20/2012 | 4 | 4 | 100 |
| RE1 3 - Solve Equations and Inequalities | Algebra Standards | 08/20/2012 | 4 | 2 | 50 |
| RE1 5 - Prove equivalent exp. have same solution | Algebra Standards | 09/05/2012 | 4 | 4 | 100 |
| RE1 6 - Solve Systems of Equations | Algebra Standards | 09/05/2012 | 4 | 4 | 100 |
| IF 2B3 - Functions and Sequences | Algebra Standards | 09/21/2012 | 4 | 3 | 75 |
| IF A6G, LE 1 - Rate of Change, Graph Key Features | Algebra Standards | 09/21/2012 | 4 | 3 | 75 |
| BF 1b - Combine functions use arithmetic operations | Algebra Standards | 10/05/2012 | 4 | 3.5 | 87.5 |
| IF 3, LE 3 - Compare functions, rate of change | Algebra Standards | 10/05/2012 | 4 | 3 | 75 |
| IF A4, LE5 - Identify intercepts & end behavior | Algebra Standards | 10/05/2012 | 4 | 3 | 75 |
| BF 1a,2, LE 2 - Sequences | Algebra Standards | 10/22/2012 | 4 | 1 | 25 |

Final thoughts...

As with any other new idea in the classroom, there are always challenges. We are constantly changing small details to help our students become more successful in class. Because we focus on the standards, our students understand that we want everyone to reach mastery and are willing to help in any reasonable way. Overall, we love grading by the standards and have no intention of going back to the "way we used to do it!"

Nancy Cobb and Heather Lloyd have been teaching as a team at Hart County High School for the past five years. Both have classroom experiences as well as experience in the corporate setting. They are both currently pursuing advanced degrees in mathematics education.

Learning Math Through Movement by Cheryl Hughes

Many of our students learn through movement, so what better way to learn mathematics! Here are some ways that simple childhood games can be used to reinforce number recognition and simple math facts.

"Twister" offers vast opportunities for children to practice the knowledge of numbers and mathematics. The teacher should prepare the mat by painting a one-digit number (0 - 9) randomly in each circle.



Here are some possible activities:

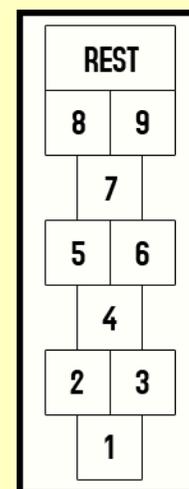
1. One student at a time can speak the name of each number as they place a hand or foot on a circle.
2. Each student can compare the numbers they have chosen using appropriate terminology.
3. Students can add and/or subtract the numbers they are touching, increasing the number of addends (circles) for greater difficulty.
4. Students can multiply the numbers indicated.
5. As the student on the mat generates the math problem, the remainder of the class writes it down and solves it.
6. Students may use 2 feet or 2 hands to represent 2-digit numbers for use in addition, subtraction, and multiplication.

"Hopscotch" can be adapted to almost any level of learning, K through 8. The Hopscotch board (or mat) can also be altered to include operational symbols as below:

| | | |
|---|---|---|
| 1 | 2 | + |
| 5 | 8 | - |
| 3 | 7 | × |
| 9 | 4 | = |

Besides the activities listed for "Twister" above, here are some suggestions that involve equations using the symbols added to "Hopscotch."

1. Player One jumps to indicate an equation such as $3 + 4 =$. Player Two must jump on the answer. If he is correct, he creates the next equation. Player Three jumps on the new answer, etc.
2. Variation One: Player One stands on a number and the remainder of the class must write an equation whose answer is that number. Each student in turn has the opportunity to choose a new answer.
3. Variation Two: One player tosses a marker onto a number, and the second player must jump a new equation that equals that number.
4. Variation Three: Use a timer to see how many different equations a player can jump whose answer is a given number.
5. Variation Four: After having played the game using "x" as a multiplication symbol, use "x" as a variable. Students can create algebraic equations to be solved by their classmates.





A Picture is worth 1,000 Lesson Plans by Cheryl Hughes

The first day this sign was erected at an eating establishment near my house, I thought to myself, "This would make a great mathematics problem for my students!"

Have you ever seen something in your "real life" and thought that? I'm sure you have and you intended to take a picture of it and incorporate it into a lesson plan!

It isn't really difficult to see math all around us, so let's give it a try!

Using the picture above, here are some prompts you could use, depending on the grade level or objective of your lesson plan:

1. What shape is the whole sign? (How can we know for certain that it is a square? What IS a square?)
2. What shape do you think the "Panda Express" part of the sign is?
3. Why can't we see the entire circle of the "Panda Express" sign?
4. Why doesn't the circle fit into the square?
5. How could we MAKE the circle fit into the square?
6. What would be some logical dimensions for the 2 parts of the sign?
7. What must the relationship be between the circle and the square for the sign to be perfect?
8. How can we find the area of the square not covered by the circle?



Suggested activities:

1. Construct (with compass and straightedge on graph paper, or dynamic software) a sign that works perfectly.
2. Construct a rectangular sign with an ellipse inscribed in it. Is this sign comparable? Better?
3. Write a letter/email from the store manager to the sign manufacturing company describing the problem.
4. Answer the letter/email with a suggestion as to how to remedy the situation.

Challenge:

Send in a picture that will make a great mathematics lesson plan. Besides the photo, send either a lesson plan for your grade level, or some prompts to get us started on our own lesson plan.

Remember the opening words of the TV series "N3MBERS" - "We all use math every day!"

So show us the math around you, GCTM members! Send your pictures and prompts to [Cheryl Hughes, editor](mailto:Cheryl.Hughes@GCTM.org).

Musings by Karen Lawrence, Northwest Regional Representative

I had a student who said this everyday: "I am smart, I am pretty, and I don't take no crap off of anybody."

Through the years I have reflected on that phrase a lot. She was not only pretty, she was beautiful and she was very intelligent.

The fact was that she didn't need to tell others as much as she needed to tell herself. Who knows



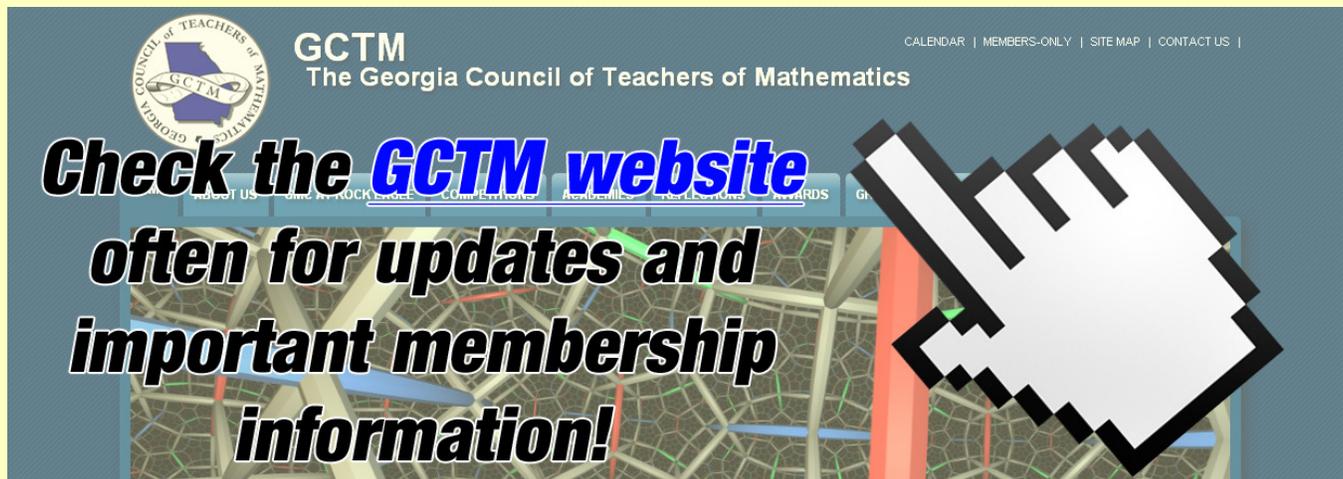
[Karen Lawrence](#)
Northwest
Region Co-
Representative

what she had been through before she became my student?

Someone taught that young lady that phrase, she so dutifully repeated. So.....

Think about phrases that could impact your students for a lifetime. When my former students see me out and about, they remind me of things I said to them that they remember, or they will still remember those math facts and formulas with song or rhythm and chant them back to me at the grocery store.

Leave your students this year with something that you want to hear back in years to come. Then you will know that you touched a life forever.




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