This summer, GCTM took on the largest project we have ever done! We provided three-day Common Core GPS workshops at twelve grade levels for thousands of teachers at eight locations throughout Georgia. And each participant left with a notebook containing hundreds of pages of activities and information, as well as a copy of the complete K-12 CCGPS.

Georgia had an advantage over many other states because our GPS already contained much of the content of the Common Core. More importantly, the standards-based teaching approach introduced with the GPS is the same type of teaching expected in the Common Core. There will be curriculum changes, however, and that is why we conducted the Academies. Comments from participants were overwhelmingly positive, and it wasn't unusual to hear something like "This is the best professional development I’ve ever had!"

A project this massive couldn't be done by a few people. We were fortunate that GCTM has so many members dedicated to providing the best mathematics education possible for all the students of Georgia. The writers, compilers, and proofreaders of the notebooks, the facilitators, and the administrative personnel all generously volunteered countless hours of their summer "vacation" to make it happen. The Georgia Department of Education was an integral partner in providing materials, publicity, and valuable information for participants. And the participants themselves gave up a part of their summer because they want to be the best teachers they can be. I'm proud to be associated with such an outstanding group of people!

We want to especially thank Congresswoman Alisha Morgan for attending each of the 8 Academies and being the closing speaker for the general assembly on day of two each session. Her passion for teachers and students is evident, and we appreciate that she believes that we can make a difference.

There are two people in particular who deserve a special thank you. The Academies were the vision of GCTM president Debbie Poss, who also devoted her entire summer to making that vision a reality. And Academies Coordinator Peggy Pool worked tirelessly for months to coordinate curriculum, presenters, facilities, materials, and everything else associated with the Academies. Both Debbie and Peggy went way beyond what might be expected of a person in their positions. Without them the Academies never would have happened. They didn't do it for recognition or praise, but that doesn't mean we can't give them some. Be sure to let them know how much you appreciate what they've done.
It has been a busy summer for GCTM! GCTM volunteers ran eight different 3-day summer academies, serving grades K - 10 and statistics in different locations across Georgia, helping over 3,000 teachers learn more about the CCGPS.

The first day of the academy focused on the Eight Standards for Mathematical Practice, the second day focused on Grade Level Content Changes, and the third day focused on Formative Assessment.

The Facilitators

GCTM supplied at least one facilitator per grade level per Academy, and they were wonderful! This is what the participants said about them:

"Both our facilitators promoted engagement very appropriately for hands-on activities in our content areas. There was a fantastic "ebb and flow" between facilitators and participants that allowed for wonderful and meaningful discussions. I will take much back to my [2nd] grade level from this conference. Thank you for providing us with enthusiastic and knowledgeable presenters!"

"Great sessions! I want to be the teacher that my [1st grade] facilitators are! What great educators! So inspiring!"

"My favorite part of the experience at the academy was meeting the [4th grade] facilitator. She was extremely knowledgeable and interesting. I'm happy that she modeled how to teach using us!"

Her teaching strategies are awesome and engaging. I really enjoyed her! Also, working in groups (collaboratively) helped clarify ideas."

"My instructor [in Statistics] was very helpful and informative. She explained things well and gave a clearer picture of some things I've already been teaching. I wish I could have had her when I was a student!"

The Resources

The materials were great and were written and proofread by GCTM volunteers and representatives from the GDOE! This is what the participants said about those resources given to them:

"I enjoyed the facilitators and really appreciate the materials that were provided. Knowledge gained from both will really benefit my effectiveness in my classroom."

"My favorite thing is all the new resources that I now have at my fingertips."

"Thank you for the wonderful notebook and book of standards."

The Networking

The camaraderie was fantastic! The participants remarked:

"The overall academy was a wonderful experience and I really enjoyed it. I loved the fact that I was only working with [fellow] Kindergarten teachers. I got lots of great ideas from not only the presenter but also from fellow teachers."
Reflections on Reflections cont.

"My favorite part of the academy was meeting and talking to other [5th grade] teachers that share my same passion for not only math, but also for student success."

My "favorite part of the academy was interacting with other [10th grade] teachers who enjoy teaching mathematics and want to improve what they are doing."

"[This was an] overall great session! Our [7th grade] instructor was amazing and the information was relevant and resourceful. I would highly recommend [this academy]."

My heartfelt thanks go out to Peggy Pool and the hundreds of volunteers who wrote curriculum, proofread documents, hosted academies, spoke and facilitated grade level sessions. Once again I’d like to publically thank all of them for their dedication as a GCTM member. The fact that they were willing to make this commitment to mathematics education without monetary compensation speaks volumes about their character, leadership, and dedication to the teaching profession. I seriously appreciate all the work that they did this summer to enrich mathematics education in Georgia. Our volunteers are true treasures!

For more information about the CCGPS, come to the Georgia Mathematics Conference at the Rock Eagle 4-H Conference Center October 17 - 19, 2012. The theme is "Common Core: Seeds for Success" and we will continue to emphasize the new curriculum. Several of the summer facilitators will be speaking as well as other experts in their field, including Tim Kanold, former NCSM President, Larry Lessor, the "mathemusician", and Skip Fennel, former NCTM President. I'm really looking forward to hearing all of the speakers scheduled. I'm also looking forward to seeing you there!

Membership Report

We often list the benefits of membership in GCTM as we encourage you to renew, be active, recruit colleagues to join you, and reflect on what a wonderful affiliation you have made. This summer magnified all those reasons a hundredfold.

The eight summer academies manifested some of the best that GCTM has to offer you as a mathematics teacher and learner. Repeatedly the comments from participants echoed the Math Power generated in the 3 days of learning and a newfound respect for the involvement and genuine concern GCTM has for mathematics education in Georgia.

GCTM now has 137 new members that can be attributed to attendance at a Summer Academy. To our new members, we say welcome to the finest professional organization in the state of Georgia. We hope you will encourage your colleagues to join also, particularly if they attended an academy session.

Please visit the website and update your personal data. We have added a field for an alternate email address. This is helpful if you use your school email address. Some systems block bulk email.

Let us know if you have any membership concerns by emailing membership@gctm.org.

See you at Rock Eagle!
Mathematicians observe Pi Day on March 14. But now Aug. 14, 2012 will also be remembered as a special day for the beloved and never-ending irrational number. Just after 2:29 p.m. EDT on August 14th, the American population reached 314,159,265, or pi \((3.14159265)\) times 100 million, according to the Census Bureau's population clock. Check out this irrational story.

Total medal count for Great Britain, host of the 2012 Summer Olympics. It was a spectacular event with endless possibilities for probability and statistics problems for this new school year. Get some of the data here.

GCTM and GDOE hosted 8 academies during the summer of 2012. We learned how to transition to the CCGPS and networked with other teachers to make Georgia mathematics teachers stronger. Read all about it here.

Number of mathematics teachers in Georgia who were part of the United States Olympic Team! Read the story of Chante Lowe here.

The number of miles away from the Earth that Voyager is right now! They are beaming back pictures from parts of the Solar System that have never before been explored. It is literally "going where no man has gone before." Pictures and story here.
Give to GMET!

Recognizing the vital importance of mathematical understanding and proficiency in a technological society, the Georgia Council of Teachers of Mathematics established the Georgia Mathematics Education Trust (GMET) in 2001. It was created for the following purposes:

1. To fund special projects that enhance the teaching and learning of mathematics in Georgia.
2. To fund awards recognizing individuals who have made a significant contribution to mathematics education in Georgia.

Your tax deductible contributions to the Georgia Mathematics Education Trust are an investment in the future of the people of Georgia. They will pay dividends in the success of Georgia’s students, in the enhanced quality of Georgia's workforce, and in the improvement of Georgia’s competitiveness in the global marketplace. Perhaps most importantly, through strengthening mathematical literacy they will help Georgia's people become more responsible and informed citizens.

The trustees of the Georgia Mathematics Education Trust

This photo was taken during July’s NCTM Affiliate Leaders Conference held in Atlanta. From left, Don Slater, Debbie Pass, NCTM President Linda Gojak, and Peggy Pool. Also representing GCTM, but not pictured, was Dan Funsch.
Census at School and Statistics in the Middle School

In this article we will investigate a source of data available to all who are teaching introductory probability and statistics. The data is from an international program called Census at School that is aimed at engaging grade school students in data collection and analysis that is relevant to the students. Through an online survey, participating students submit data about themselves, and an online random sampler allows samples from the whole data set to be drawn. Since the program is about their peers, it provides a meaningful framework for teaching and learning statistics.

Currently, students in Australia, Canada, Ireland, Japan, New Zealand, South Korea, the UK, and the US participate. Each country asks students thirteen common questions including gender, age, handedness (left, right, ambidextrous), arm span, number of languages spoken fluently, mode of transportation to school, commute time to school, favorite sport/activity, rating of the importance of several issues, results of a short memory game, and results of a reaction test. Nations may include further questions of interest. The US questionnaire, for example, has over 50 items. The American Statistical Association (amstat.org/censusatschool) administers the US program, and its random sampler allows for the sample size, grade level, gender, and data collection year to be selected. One may sample from all 50 states, or any combination of the states. Once these parameters are selected, a random sample is produced in a Comma Separated Value, or CSV, file that can be opened in any spreadsheet or standard statistical program. The international program (censusatschool.com) provides a similar random sampler.

The data from either sampler can be used in activities that are aligned with the middle school statistics and probability performance standards. For example, students in the sixth grade can look at a sample, pick a variable of interest, and explore the shape, center, and spread of the data. These activities and others will correlate with MCC6.SP.1 through MCC6.SP.5, making these standards relevant to 6th graders.

The seventh grader can explore variability of sample proportions or means. A great classroom activity aligned with MCC7.SP.2 would have the students use the random sampler to take a sample of a certain size in order to estimate the proportion of all students who are right-handed, for example. After each student finds his or her sample proportion, the class would plot its estimates collectively in a dot plot (Figure 1), and each student would measure the variation in the sample proportions. This activity emphasizes that such estimates vary from sample to sample, and allow the variation to be measured. The process could even be repeated with a larger sample, and the student can be asked to form a relationship between the variation of estimates and the size of the sample.

![Figure 1: Results of 15 samples of size n=10 (a) and n=50(b). Each dot represents a sample, with its location indicating the proportion of the sample that was right-handed. Note the smaller variability in samples of size 50. This illustrates that larger samples provide better estimates.](image-url)
A seventh grade class can also begin to make informal inferences between two populations as in MCC7.SP.4. A student could compare states, regions of the U.S., nations, grade levels, or gender. For example, students could decide whether more American students get to school in a car than Australian students, or whether seventh grade females or males have a greater average arm span.

The eighth grade Performance Standards for probability and statistics all deal with relationships between two variables. For the first three standards, students could produce a scatterplot (Figure 2) of height against age, sketch a line through their data, and interpret the slope of that line as giving the growth per year. Students could explore the relationship between index finger length and ring finger length, or between the results of the memory game and the reaction test. There are so many variables in the data set that students could be asked to formulate and answer their own questions about possible relationships, or a class discussion could lead to a decision of which variable associations to explore.

**Figure 2: Scatterplot of Height against Age for a sample of 10 Census at School students. After sketching a line through the data, and interpreting the slope, a student should predict from this data a growth rate of about 5 or 6 cm per year.**

### Resources for Census at School Based Activities

This article contains only a brief overview of the Census at School program and some ideas for classroom activities. The websites below have further details on the program and contain complete, classroom tested learning activities.

- **Canada**: [www.censusatschool.ca/](http://www.censusatschool.ca/)
- **New Zealand**: [www.censusatschool.org.nz/classroom-activities](http://www.censusatschool.org.nz/classroom-activities)
- **United Kingdom**: [www.censusatschool.org.uk/resources/data-handling](http://www.censusatschool.org.uk/resources/data-handling)
- **United States**: [www.amstat.org/censusatschool/resources.cfm](http://www.amstat.org/censusatschool/resources.cfm)

### References


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**eREFLECTIONS is designed by The Digital Pen, Rome, GA**

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706-346-8731
After her exciting appearance in the 2012 London Olympic games, Chaunte Lowe has settled down in Loganville, GA, where she lives with her husband, Mario, and two daughters. Though the dazzle of the world's largest track and field event has begin to fade, Lowe now shines with a different brilliance—she revels in numbers. Lowe, who graduated from Georgia Tech with a degree in Finance and Economics, teaches trigonometry at Grayson High School in Gwinnett County.

Lowe is anxious to put aside her personal disappointment at the Olympics (she placed sixth in women's high jump) and concentrate on the new school year. "Now, it's time for me to put everything into [teaching]," she told reporter Frank Reddy in an interview for the Gwinnett Daily Post (8/15/12). "I don't want to be an average educator. I want to be the best. I want to be the teacher that students will remember for the rest of their lives."

About Chaunté

Lowe's high school coach didn't want her to try the high jump because he wanted to keep her in the sprints. Little did he know that she would go on to become one of the best high jumpers not only in the U.S. but also the world. Thankfully, Lowe (née Howard) was able to convince her high school coach to let her try the high jump. After moving across the country to study at Georgia Tech and train with jumps coach Nat Page, Lowe was able to realize her childhood dream of going to the Olympics at only 20-years-old, making her the first woman from Georgia Tech's track and field team to become an Olympian. The following year, Lowe won silver at the 2005 World Championships to become the first American woman to win a world outdoor championships high jump medal since Louise Ritter won bronze at the inaugural event in Helsinki in 1983. Lowe is always a crowd favorite with impossibly defined abs, dramatic dance moves and even the occasional back flip. Lowe graduated from Georgia Tech with a degree in economics and Finance. Married triple jumper Mario Lowe on August 21, 2005, and gave birth to daughter Jasmine in July 2007 and Aurora in April 2011.

Click here for registration and information about the Georgia Mathematics Conference.
Stepping on the Numbers

by Cheryl Hugues, Editor

Graphic representations of points, lines and regions are crucial to mathematics education. From kindergarten, teachers enhance number sense and function sense by first graphing on a number line, then on a coordinate plane.

Many teachers give students, especially in the early grades, a kinesthetic experience by attaching a number line made of plastic or paper to the floor. When middle school students learn to graph on the coordinate system, teachers temporarily stick adhesive tape on the floor to represent the x and y axes.

A creative teacher in Bulloch County went one step further. Mary Jones, an eighth grade teacher at Southeast Bulloch Middle School, had the vision of a permanent x-y coordinate grid-in vinyl composition tile-installed on the floor of one of the school’s common areas. There, it could be used anytime by all math teachers and students.

After discussing the idea with her principal and the Bulloch County School superintendent, the school system agreed to fund Mary’s brilliant idea. She consulted with Waterjet Works, a custom waterjet design and fabrication company in Dallas, Texas. The company created and installed the unique, numbered floor tiles according to Mary’s specifications. The results were better than expected! Students and teachers could hardly resist walking on the tiles and staking out their own coordinate points. The new grid became so useful and popular it was soon evident that one coordinate system would not meet the needs of all the math classes with so many eager students.

continued on next page
Due to the enormous success of the first, floor-mounted x-y system, Mary submitted a proposal to NCTM for the 2010-11 Engaging Students in Learning Mathematics MET grant to fund another grid. With funding awarded, a second "life size" coordinate plane was installed. Next, Mary took her project to another level by adding three number lines to the floor of the school commons. Providing large-scale number lines came from a desire to create a visual representation of zero to one, showing the relative placement of common fractional parts including the decimal and percent equivalents. By placing number lines parallel to each other, students can easily compare thirds with fourths and fifths; sevenths with sixteenths, etc., making it easy to see which fractions are smaller/larger than others. There remains a space for a fourth set of number lines and Mary hopes to include irrational numbers such as square roots, cube roots and π on those lines.

Since the completion (to date) of her project, Mary has written many activities and labs using these floor tiles. Please email Mary for activities for middle school mathematics.
Join NCTM!

Are you a member of NCTM, our parent organization? You should join now because you can take advantage of the following benefits:

- Illuminations - lesson plans, performance tasks, illustrations for every level
- eSeminars available to watch any time you wish
- Keep up-to-date with the latest trends and new in mathematics education
- Great publication specific to your grade range
- Resources on the web page, some of which are free to all

Don't forget that GCTM has a mailing address and telephone number. If you need anything, just call. Your call will be directed to the appropriate person.

PO Box 5865
Augusta, GA 30916
1-855-ASK-GCTM

The GCTM website has a new look! Check it out!