The Centroid

Makes Wonders

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The Centroid is the official journal of the North Carolina Council of Teachers of Mathematics (NCCTM). Its aim is to provide information and ideas for teachers of mathematics—pre-kindergarten through teacher education. *The Centroid* is published in January and August. Subscribe by joining NCCTM; see the Membership Form on the last page.

Submission of Manuscripts

We invite the submission of news, announcements, and articles useful to school mathematics teachers or mathematics teacher educators. In particular, K-12 teachers are encouraged to submit articles describing teaching mathematical content in innovative ways.

News and announcements (president's messages, award winner announcements, professional development announcements, etc.) must be received by December 1 for the spring issue and by July 1 for the fall issue.

Articles that have not been published before and are not under review elsewhere may be submitted at any time to the address below. Submit one electronic copy via e-mail attachment (preferred) or diskette in *Microsoft Word* or rich text file format. To allow for blind review, the author's name and contact information should appear *only* on a separate title page. Manuscripts should not exceed 10 pages double-spaced with one-inch margins. Figures and other pictures should be included in the document in line with the text (not as floating objects). Scannable photos are acceptable and should be large glossy prints mailed to the editor or minimum 300 dpi tiff files emailed to the editor. Proof of the photographer's permission is required. For photos of students, parent or guardian permission is required.

Manuscripts should follow APA style guidelines from the most recent edition of the *Publication Manual of the American Psychological Association*. References should be listed at the end of the article, and should also follow APA style, e.g.,

Bruner, J. S. (1977). *The process of education* (2nd ed.). Cambridge, MA: Harvard University Press.

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: Author.

North Carolina Department of Public Instruction. (1999). *North Carolina standard course of study: Mathematics, Grade 3*. Retrieved October 17, 2005, from http://www.ncpublicschools.org/curriculum/mathematics/grade_3.html

Perry, B. K. (2000). Patterns for giving change and using mental mathematics. *Teaching Children Mathematics*, *7*, 196–199.

Ron, P. (1998). My family taught me this way. In L. J. Morrow & M. J. Kenney (Eds.), *The teaching and learning of algorithms in school mathematics: 1998 yearbook* (pp. 115–119). Reston, VA: National Council of Teachers of Mathematics.

General articles and teacher activities are welcome, as are the following special categories of articles:

- *A Teacher's Story*,
- *History Corner*,
- *Teaching with Technology*,
- *It's Elementary!*
- *Math in the Middle*, and
- *Algebra for Everyone*.

About the Cover

The Centroid logo is based on the following theorem: The limit of the sequence of midtriangles of a triangle is the centroid of the triangle.

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The Centroid

OFFICIAL JOURNAL OF THE NORTH CAROLINA COUNCIL OF TEACHERS OF MATHEMATICS
VOLUME 38 • NUMBER 2 • FALL 2012

Articles

News & Information

NCCTM 2012 Conference

October 25-26
Koury Convention Center, Greensboro

The 2012 State Mathematics Conference is a wonderful opportunity to learn about research, classroom strategies, activities, and resources that make mathematics come alive for your students. Registration is now open. Before beginning, make sure your membership is up-to-date.

Online registration (by October 19)		On-site registration	
Members	$65	Members	$85
Non-members	$105	Non-members	$125
Students	$10	Students	$20

Keynote Speakers
Peg Smith -- "Creating Opportunities for Students to Engage in Reasoning and Proof: Modifying Existing Tasks "
Patrick Vennebush -- "Math Jokes 4 Mathy Folks"
Laura Candler -- "Crafting the Perfect Common Core Math Lesson"
Erin Krupa -- "Implementing the High School Integrated Math in the CCSS Era"
NCDPI Mathematics Consultants are presenting 10 sessions on the "Major Work of the Grade"

Featured Speakers
Dr. June Atkinson -- "The State Superintendent's Message to NC Teachers"
Tom McDougal -- "Filling the Gap in Teacher Professional Development"
Joan Holub -- "Creating Zero the Hero"
Jere Confrey and her colleagues at the Friday Institute will present a series of sessions on learning trajectories.

Register Now!!!
<http://www.ncctm.org>

NCCTM Membership Changes

New Definition of the "Membership Year" – July 1 through June 30

Currently, the NCCTM membership year is a non-uniform member specific twelve-month period. For example, if you joined for one year on December 1, 2010, your membership expired November 30, 2011. On October 26, 2011, the NCCTM Board of Directors voted to change to a fixed membership year running from July 1 to June 30 effective July 1, 2012.

Presidents' Messages

State President Betty Long

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The first year of my NCCTM Presidency has flown by. I have had many wonderful experiences during the past year, and I look forward to many more. It is very heartwarming to work with so many people who are dedicated to promoting excellence in mathematics teaching and learning for all. I want to thank all the wonderful folks (Board members, committee chairs, committee members, and other volunteers) who spend countless hours serving NCCTM and mathematics education as they work toward expanding the ways NCCTM can better serve mathematics teachers and students. I believe that by working together we are making a difference in mathematics education in our great state.

I hope you and your colleagues are making plans to attend the State Mathematics Conference on October 25-26 at the Koury Convention Center in Greensboro. Sheila Brookshire and Kelly DeLong, Program Co-chairs; Kathleen Lynch-Davis and Chrystal Dean, Conference Co-chairs; and Karen McPherson, Program Booklet Editing Chair, along with the members of the various conference committees, have worked hard to provide you with a worthwhile professional development experience. I hope you will take advantage of the many opportunities that are available to you at this conference. You will notice there are several new features this year. They include the Lunch and Learn Series, the CCSSM Product Showcase, and a Movie Night.

The theme for this year's conference is "Common Core: The Journey Begins." You will find 240 sessions and 120 workshops on a wide variety of topics for teachers and other school personnel at all levels. The keynote speakers are Peg Smith, Patrick Vennebush, Laura Candler, and Erin Krupa. The featured speakers include June Atkinson, Tom McDougal, Joan Holub, and Jere Confrey. Since we are just beginning to implement the Common Core State Standards for Mathematics (CCSSM), the program for this year's conference includes many informative sessions on the CCSSM. The sessions include content in the Common Core Standards and ideas for incorporating the Standards for Mathematical Practice into classrooms. This is a wonderful opportunity for teachers and administrators to continue educating themselves on this new curriculum and the Standards for Mathematical Practice. To find more details about the conference and to register, visit our web site at NCCTM.org.

The 2012 Fall Leadership Seminar will be held at the Koury Convention Center on Wednesday, October 24 (the day before the State Mathematics Conference). The theme is "Common Core: The Journey Begins." The DPI will do an information session on the CCSSM with updates and time for questions, and the keynote speakers will be Dr. Margaret (Peg) Smith and Ms. Debbie Crawford. Dr. Smith is a Professor in the Department of Instruction and Learning and a Senior Scientist at the Learning Research and Development Center, both at the University of Pittsburgh. She recently co-authored *5 Practices for Orchestrating Productive Mathematics Discussions* which provides a model intended to make student-centered instruction more manageable by moderating the degree of improvisation required by teachers. Her presentation at the Leadership Seminar will focus on "Task, Tools, and Talk: A Framework for Enacting the CCSS Mathematical Practices." Debbie Crawford is the Mathematics Professional Development Program Manager for Pearson's School Achievement Services -- supporting teachers from preparation through practice. She has also served as an educational consultant, classroom teacher, and staff developer and curriculum coordinator in South Carolina. Her presentation at the Leadership Seminar will focus on "Summing It Up: What We Know About the 2014-2015 Assessments." I believe the Leadership Seminar will be another great opportunity for teachers and administrators to educate themselves on the new curriculum, the Standards for Mathematical Practice, and new assessments that will accompany these changes. For more details on the Leadership Seminar and to register, visit our web site at NCCTM.org.

I look forward to seeing you at the State Mathematics Conference and the Leadership Seminar, and I hope you will consider becoming an NCCTM volunteer, if you aren't already one. If you have any questions about the Conference or Seminar or if you would like to become more involved in NCCTM, please contact me at longbb@appstate.edu or 828-262-2372.

Eastern Region President Ron Preston

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The leadership of the Eastern Region of NCCTM encourages all teachers of mathematics in the East to attend the 42nd Annual NCCTM Conference in Greensboro this 25-26 October 2012. Further, we have made tentative plans for an Eastern Region spring conference to be held on Saturday, 23 February 2013. Emphasis for the event will be the Common Core State Standards, 21st Century Skills, and Teacher Evaluation, among other items from the individual presenters. Plan is for the conference to run from 8:30-1:30; participants may earn 0.5 CEUs. Site is to be determined.

Officers from the Eastern Region are

- Eastern President – Ron Preston
- Eastern Past President – Ray Jernigan
- Eastern President Elect – Katie Schwartz
- Eastern VP for Colleges – Tony Thompson
- Eastern VP for Secondary Schools – Wayne Williams
- Eastern VP for Middle Schools – Lynnly Martin
- Eastern VP for Elementary Schools – Amy Janning
- Eastern Student Representative – Ryne Cooper

As you think about promoting mathematics in North Carolina, consider adding one or more of the following (as appropriate) to your excellent day-to-day instruction: Math Fair, Math Logo Contest, MathCounts, Math Contest, American Mathematics Competitions, etc.

Finally, we encourage you to take advantage of NCCTM opportunities such as applying for the mini-grant (we did not award all we could have awarded last year) and funds for graduate coursework in mathematics or mathematics education.

Central Region President Pat Sickles

pat@sickles.org

Congratulations to Vincent Snipes who was elected to serve as president of the Central Region for 2013-2015. Vincent, along with the other officers, is in the process of planning for our Spring Conference. It will be held on Saturday, February 23, 2013 at John Lawrence Elementary School at 6068 Suits Road, Archdale, NC. The theme of the conference will be "Using Informative Assessment with the Common Core." Our particular focus will be on new and pre-service teachers, but all are welcome. Look for more information about the conference later in the year. The other officers, Melissa McKeown, Amy Travis, Beth Layton, and Holt Wilson, who serve as vice-presidents continue to make the business of the region go smoothly. All of us welcome ideas and suggestions from our members in the Central Region and encourage you to become involved with the organization.

As we continue to think about our role as a part of the NCCTM, we encourage all members to participate in the opportunities that NCCTM affords us. These include the Mini-grant program, the Math Fairs, the Logo Contest, scholarship and the NCCTM State Conference on October 25-26 along with the Leadership Seminar on October 24 in Greensboro. This will be a great opportunity to learn more about the implementation of the Common Core and to hear what our colleagues across the state are doing in their classrooms. I hope to see you there!

Western Region President Katie Mawhinney

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Mark your calendars! The Western Region Spring Conference will be held on Saturday, March 2nd, 2013 at Charles D. Owen High School in Black Mountain, N.C. The program will include workshops addressing specific mathematics content including probability, statistics, rates of change, and functions, along with a continued focus on the Standards for Mathematical Practices and other classroom practices, including community building and discourse. More information will be posted on the NCCTM website as it becomes available.

The western region leadership would also encourage you to take advantage of the wonderful opportunities NCCTM provides including the 2012 Leadership Seminar (October 24th) and the 42nd Annual NCCTM Conference (October 25th and 26th) both at the Koury Convention Center in Greensboro. Our spring regional meeting and these statewide events are excellent ways for you to collaborate with colleagues and advance your teaching practice. Further, NCCTM annually awards mini-grants and graduate scholarships to support your efforts in the classroom and your career efforts as a mathematics educator. The mini-grant application deadline is September 15th and the graduate scholarship deadline is October 1st. More information can be found at the NCCTM website (link to "Grants and Scholarships").

See you in Greensboro and again in Black Mountain!

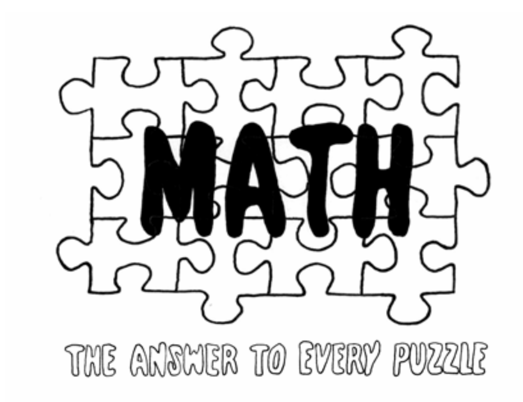
Awards

2012 NCCTM Math Logo Contest Winners

**Reported by Tracie Salinas, Appalachian State University, Boone, NC
and Emily Elrod, Watauga County Schools, Boone, NC**

State Winner

Laura James, 12th grade, Sanderson High School, Raleigh, NC
Teacher: June Blackwell



Regional Winners

Kinley Ferguson, 2nd grade, Liberty Elementary, Liberty
Teacher: Lindy Kirkman
Bahaye Deida, 2nd grade, Gaston Elementary School, Gaston
Teacher: Amy Ramey

Jennifer Sieredzki, 4th grade, Riverwood Elementary, Clayton
Teacher: Anna Bea Dillon
Cayman Carpenter, 5th grade, Oxford Elementary, Claremont
Teacher: Deborah Herman
Lucas Antinori, 5th grade, Charles England Elementary, Lexington
Teacher: Ella Frazier
Hunter Powell, 6th grade, Oxford Elementary, Claremont
Teacher: Amy Loyer
Audrey Hemming, 6th grade, The Magellan Charter School, Raleigh
Teaacher: Wanda Sutton
Jonathan Pineda, 6th grade, Boonville Elementary School, Boonville
Teacher: Lori Maske
Jessica Brewer, 9th grade, Red Springs High School, Red Springs
Teacher: Katasha Oxendine
Brandon Rogers, 12th grade, Victory Christian Center, Raleigh
Teacher: Cheryl Riley
Cameron Movassaghi, 12th grade, Sanderson High School, Raleigh
Teacher: June Blackwell

Regional Finalists

Kevin Hill, North Brook Elementary School, Hendersonville
Teacher: Denise Smith
Harold Jackson, Victory Christian Center School, Charlotte
Teacher: Cheryl Riley
Makayla Archie, Mabel Elementary, Zionville
Teacher: Pamela West
Hannah Drass, Charles England Elementary, Lexington
Teacher: Ella Frazier
Bryce Orbita, Bertie Middle School, Windsor
Teacher: Ganell E. Tyson
Dayshja Lopez, Reid Ross Classical School, Fayetteville
Teacher: Dia Collins
Danielle Clark, Rocky Mt. Prep, Rocky Mount
Teacher: Crystal Shepherd
Kassidy Reynolds, Boonville Elementary, Boonville
Teacher: Lori Maske

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Check out our page on Facebook: Search for North Carolina Council of Teachers of Mathematics

http://www.facebook.com/NCCCTM

Become a member of our group on LinkedIn: Search groups for North Carolina Council of Teachers of Mathematics

http://www.linkedin.com/groups/North-Carolina-Council-Teachers-Mathematics-4432204?

A Tale about Access to 8th Grade Algebra in North Carolina

Peter Eley, Fayetteville State University, Fayetteville, NC
Lee V. Stiff, North Carolina State University, Raleigh, NC

The mathematics courses that students take and when they take those courses have a significant impact on their future success in school and beyond. Students' course-taking patterns significantly impact their future in mathematics achievement (Schweiker-Marra & Pula, 2005; Wang & Goldschmidt, 2003). Furthermore, since mathematics courses in schools are hierarchical in nature, the time when students take courses can hinder or help their overall academic achievement. Schweiker-Marra and Pula (2005) suggest that students who take Algebra I in the 8th grade succeed at higher rates than students who do not. Moreover, they found that students who take 8th grade algebra have better grades and go to college at higher rates than students who were not given the opportunity to take 8th grade algebra.

Students who have taken algebra in 8th grade have more opportunities for future success in all areas. In particular, students' chances of being competitive in the college admission process are increased if they have been enrolled in an 8th grade algebra course (North Carolina Department of Instruction, 2010). Wang and Goldschmidt (2003) support these claims of future success; they discovered that students who experience early success in mathematics continue to be successful in high school.

Algebra in the Schools

Algebra was introduced into secondary schools because it served practical needs of the nation, such as applications in surveying and navigation. According to Overn (1937), its initial introduction was not for disciplinary reasons but to add to the skilled labor force. In addition, algebra was introduced into the secondary curriculum because of changes in admission standards of colleges and universities (Kilpatrick & Izsák, 2008). Algebra underwent significant changes during the 1950s-1970s, changing from "generalized arithmetic to systemic structure and proof" (Kilpatrick & Izsák, 2008, p. 7). These changes in the algebra curriculum were made to better prepare students for more advanced study in mathematics. This era was known as "new math."

Researchers in the late 1970s and the 1980s investigated how students understood algebraic manipulations and function concepts (Kieran, 1992; Leinhardt, Zaslazsky, & Stien, 1990). Many recommended the introduction of algebra earlier in the mathematics curriculum because algebraic concepts were not well-developed in high school. Researchers felt that many of the algebraic concepts that students needed to be successful in algebra could be introduced effectively in the middle grades. In 1989, NCTM identified locations in the mathematics curriculum where algebraic concepts could be introduced: (a) Patterns and Relationship Standards for grades K-4; (b) Patterns and Functions Standards, and Algebra Standards for grades 5-8; and, Algebra and Functions Standards for grades 9-12 (NCTM, 1989).

Standards-based reform in mathematics promoted "algebra for all." NCTM's Standards demonstrated the need for rigorous mathematics for all students with particular attention to algebra (Kilpatrick & Izsák, 2008). Key concerns related to providing algebra to more students involved "economic opportunity and equal citizenship" and the re-conceptualization of elementary school mathematics to better prepare students for the rigors of algebra (p. 11).

Pelavin and Kane (1990) addressed school systems' capacity to engage all students in rigorous curricula. They found that: (a) A relationship exists between course taking patterns and increased college attendance; (b) ethnicity and family income affect high school course-taking patterns; and (c) ethnicity, family income, and courses taken by high school students affect college graduation. Pelavin and Kane found that there were significant differences between minority and White students, and between poor and non-poor students, in college attendance and graduation. Pursuant to Pelavin and Kane's study, the College Board sponsored *Equity 2000* (1998), which addressed access to advance math courses. The primary goal of *Equity 2000* (1998) was to eliminate tracking and to provide rigorous academic courses as the foundation for excellence. In addition, it helped districts raise expectations and student performance levels by providing student assistance and support systems for counselors, teachers, and administrators (The College Board, 1994).

Access to Algebra in the 8^{th} Grade

North Carolina agencies report that students who have low socioeconomic status (SES) take 8^{th} grade algebra at lower rates than students who have high SES (North Carolina Department of Public Instruction, 2010). SES is determined by whether students receive free or reduced lunch or not. Students who qualify for free or reduced lunch tend to have one or more of the following characteristics: minority, low income, and parents who are less likely to have a high school diploma or college education. Students with these characteristics tend to attend schools with fewer resources, which result in fewer course offerings (O'Connor, Lewis, & Mueller, 2007). It has been discovered that in schools with many low-level, less rigorous course offerings, inequalities in course-taking behaviors are becoming the norm (Abu El-haj & Rubin, 2009; Kelly, 2009). Students from low SES families are less likely to take high quality courses, and therefore, have fewer opportunities to learn worthwhile mathematics (Cauley & Jovanovich, 2006; Kelly, 2007; Oakes, 1985; Spade, Columbia, & Vanfossen, 1997; Stone, 1998).

The opportunity to take algebra in the 8^{th} grade is also a mathematics equity and achievement issue. In 2000, the National Council of Teachers of Mathematics (NCTM) released *Principles and Standards for School Mathematics* in which six guiding principles were created to support high-level student achievement in the schools. The first of these principles is equity. According to NCTM, equity is defined as the ability to give "all students, regardless of their personal characteristics, background, or physical challenges, opportunities to study and support to learn mathematics" (National Council of Teachers of Mathematics, 2000, p. 12). NCTM also suggests that equity involves "high expectations and strong support for all students" and "requires high expectations and worthwhile opportunities for all" (p. 12). Consequently, providing greater access to algebra in the 8^{th} grade is an important step toward reaching NCTM's equity goals.

For many years, schools have implemented practices of exclusion in school mathematics (Schweiker-Marra & Pula, 2005). Often the reasons for excluding students from high quality math offerings have little to do with academic qualifications. In today's society, it is important to examine schools' course placement policies and practices in order to provide the Nation with the best talent possible. Beyond the practical nature of placement decisions, proper course placement is also a moral issue: Students should not be denied access to better courses because of social and political inequities.

Access to 8^{th} Grade Algebra in North Carolina

Why do some children gain access to high quality mathematics and others do not? What we know so far is that students' previous course taking behaviors often determine the courses students will take or be eligible to take (North Carolina Department of Public Instruction, 2010). For example, in North Carolina if students are taking a general course in 7^{th} grade math they are less likely to take 8^{th} grade algebra even if they do well. The question is often asked, why can't a student take a general course in 7^{th} grade and take the algebra course the next year? The simple answer is, the student has not taken the prerequisite course for 8^{th} grade algebra, which is usually pre-algebra.

However, a reasonable follow-up question is, if students did so well in the general 7^{th} grade math course, why weren't they placed in pre-algebra? The answer to this question most often is either that students were tracked into the course or the student chose the course. Research on school tracking practices indicate that students are tracked into courses for a variety of reasons, including factors such as ability-grouping, ethnicity, and SES status (Oakes, 1985; Useem, 1992). Research also shows that some students choose courses based on their social contexts and not their academic ability (Frank et al., 2008).

Are such research findings indicative of student access to 8^{th} grade algebra in North Carolina? To answer this question, it is important to examine the characteristics of course predictions and actual course placements. More specifically, examining data from the North Carolina Window of Information on Student Education (NCWISE) should provide insights into this important question. This paper outlines a study conducted to investigate which students gain access to 8^{th} grade algebra.

Access Study

The students in this study were from one Local Education Authority (LEA) in the Piedmont Region of North Carolina. The LEA in the study had an enrollment of 2,617 students with a student ethnicity breakdown of 29.4% White, 48.5% Black, 20.8% Hispanic, 1% Asian or Pacific Islander, and 0.3% Native American. In this district, 80.4% of the students have low socioeconomic status (SES). The study population revealed that about 11.8% of the total K-12 student population was enrolled in 8th grade algebra. It is worth noting that there was only one 8th grade algebra course offered by the LEA.

The LEA that participated in the study employed 151 teachers; 48 of them were middle school teachers. Furthermore, 75% had "A" licensure (general) and of that 19% had a masters' degree or better. The LEA has a policy that students are placed into courses in a systematic way based on performance results according to prediction models that use previous and current-year test score. Students are then assigned teachers based on the courses selected.

We requested detailed files from the LEA, including data from 2005 through 2009 school years. The data files contained 178 records. The data files were reviewed and 86 student records were removed because they were not complete. The remaining 92 complete records included 5th grade course predictions for 2005-06, 6th grade course predictions for 2006-07, and 7th grade course predictions for 2007-08. In conjunction with collecting these data, we collected actual student placements in the 6th grade (academic year 2006-07), 7th grade (2007-08), and 8th grade (2008-09).

Of the students projected to be in 8th grade algebra, about 27% of the students were actually enrolled in 8th grade algebra. There was a significant difference between 6th grade students who were predicted to be in 8th grade algebra and the actual number of those students who were in 8th grade algebra (Table 1).

Table 1. Number of 6th Grade Students Predicted to Enroll in 8th Grade Algebra vs. Actual Number of Students Enrolled in 8th Grade Algebra

Number of 6th Grade Subjects	*Predicted to Gain Access*	*Actually Gained Access*	χ^2	*p-value*
92	36	10	12.92	.0346**

*$p < .05$, **$p < .01$

Among 7th grade students predicted to be in 8th grade algebra, only 12% of those students actually were enrolled in 8th grade algebra. The results of the test were significant (Table 2).

Table 2. Number of 7th Grade Students Predicted to Enroll in 8th Grade Algebra vs. Actual Number of Students Enrolled in 8th Grade Algebra

Number of 7th Grade Subjects	*Predicted to Gain Access*	*Actually Gained Access*	χ^2	*Fisher's Exact Test p-value*
92	91	11	2.86	0.02609*

*$p < .05$, **$p < .01$

From the data it was clear that students were not being assigned to courses based on testing scores nor were they being assigned based on a set assignment procedure. We have concluded that qualified students are still being denied access to rigorous mathematics courses because of inconsistent assignment procedures. We also found that the LEA studied did not follow its own assignment procedure, which was based upon an academic prediction model of previous academic performance. Therefore, it was unclear how the students were actually being assigned. We were not able to determine if the grouping were homogenous or heterogeneous ability groupings based on the evidence from this study.

In conclusion, our research clearly indicates that a problem exists regarding students gaining access to the most rigorous mathematics. Students do not gain access to 8^{th} grade algebra because of placement policy procedures that are not appropriately implemented. Not implementing the placement policy procedures maintains the status quo that satisfies this LEA that has limited resources. In turn, this leads to student-limited access to rigorous mathematics.

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Mini-grant Report

iPods and Flip Video in the Classroom

Amanda Fields, Weaverville Elementary School, Weaverville, North Carolina

When checking my e-mail, I read these few sentences that would change my classroom environment and mathematical outlook: *"Congratulations! You have been selected to receive an NCCTM mini-grant. Your request for $515.00 was fully funded."*

I would encourage all NCCTM members to apply for an NCCTM mini-grant. To apply, click on the "Quick Links" section entitled, "Grants and Scholarships" on the ncctm.org website. The website clearly explains the process in detail: "A total of $18,000 is available each year for the state's mini-grants, with each region awarding approximately $6000 in grants to its members. In recent years, approximately 30-35 proposals have been partially or fully funded, for an average grant of just less than $800."

In my grant write-up, I expressed a desire acquire two iPod Touch devices and one Flip video camera. I wanted the two iPod Touches so that my students could learn and practice math strategies with the aid of technology. The Flip video camera was purchased to interview students about math concepts, strategies or questions.

iPod Touch

Now that we have the two iPod Touches, I am overwhelmed by the desire and respect students show towards this technological tool. We made a check out system for our class, had a proper care lesson and discussed Web safety when using the iPod Touches. We had to discuss how to properly turn the devices off, due to batteries running down, yet my students are now trained professionals!

Students who had difficulty with multiplication are learning at a paced, yet driven speed on the iPod Touch. Those students with prior difficulties are the first ones to request the iPod Touch. The students enjoy the hand-held device that provides student choice in selecting the math tool or game and the appropriate level for each student. I have watched students grow in mathematical confidence in just three months.

Students using the iPod Touches

I was surprised to see how students already knew so much about the iPod Touches before they were distributed. I am even learning from the students and their tech-savvy skills. Many students needed no introduction to the device, and some students shared their background knowledge with the class.

Before you purchase the iPod Touches, you should discuss connectivity with your Information Technology specialist in your school system to discuss Internet/server connectivity. The IT specialist in our county was so supportive and quickly came to our classroom to configure our new devices to our server. On each iPod Touch, I downloaded well over 50 math games that were **free of charge** within the first month in the classroom. “Free” is essential when downloading great math games! I have purchased quite a few games with the remaining balance of my grant, and here are a few suggestions that I learned about from a fellow teacher, Jamie Munn, who also received an NCCTM mini-grant:

- Motion Math (fractions)
- Pearl Diver (fractions and decimals)
- Meteor Math
- Number Munchers
- PopMath
- Rocket Math
- Math Bingo

You may want to be cautions to read reviews and look at the games in detail before purchasing, so that quality math games/tools are introduced in your classroom. Some of the apps act like a tutor for so many kids that needed a little push.

Flip Video

The Flip video camera has been used for math interviews in my classroom. Students filmed each other talking about how they solve math problems in different ways to arrive at the same answer. We even shared our videos with our entire school for the morning news. Other students complimented our class on our math strategy of showing mode, median and range. The students in our classroom were even bold enough to share a song with movement in the videos, which received the most compliments from our peers.

I also plan on saving key mathematical videos to share with future classrooms. Students enjoy hearing from other students when learning a new concept, review key ideas or reinforcing content.

What students are saying about our grant on our classroom blog:

- I love the iPod touches. I would like to see more reading games on the screen. I think every teacher should have one. I really like rocket math because if you get the questions right you get to build your own rocket.
- I LOVE THE IPOD TOUCHES! I THINK OTHER CLASSES SHOULD HAVE THYEM BEACUSE IT IS NOT FAIR THAT WE GET TO PLAY WITH IPODS WHILE THEY NEVER GET TO DON'T! WE HAVE A LOT OF MATH GAMES ON THEM WHICH IS KIND OF FAIR BEACUSE THEY ARE MATH GAMES BUT I LOVE THE IPODS. THEY ARE AWSOME:)
- Whoa! I think it rocks! You can play multiplication games, fraction games and more math games. I like the logic puzzles the most. I am really good at using my brain to solve things!
- I think the iPod touches are AWESOMEEEEEEEEEE!!!!!!!!x 1000!!!!!!!!!! They are cool because they teach kids fun ways to learn math and reading!
- The iPod touches are awesome. They allow freedom for the math games on the iPod. Mrs. Fields has put great and educational games that will surely help people learn about math.
- I think the iPod touches and the flip video helped us learn because they're fun and cool. I really like them and I was really happy when Mrs. Fields said she got the grant for them so...YEAH!
- I think the iPod touches are great for us. I LOOOOOOOOOOOOOOOOOOOOVE them!!!!!!!!!! We, kids have to have some technology once and a while. I also think other teachers should have it to because, it lets kids have fun but they are learning. THE IPOD TOUCHES ARE SO MUCH FUN!!!!!!!!!!!!!!!!!!!!
- I liked when the flip video activity was on the news and I liked when I was on the iPod touch. I liked the multiplication game a lot on the iPod.
- I loooove the iPods touch. Here are some good game to play: math bingo, 4th grade math: splash math worksheets app, and neo maths. I think all the teachers should have one, it is a fun way to learn and is very fun to play.;)

Mini-grant Report

Clicking Toward Success

Rachel Hubbard, Vance High School, Charlotte, North Carolina

As the recipient of a 2011 NCCTM mini-grant, I purchased a small classroom set of student response clickers as a means to better engage students in the learning process. Studies have shown that the use of technology for the purpose of teaching mathematics can provide the necessary encouragement for students to become active learners in the mathematics classroom (Raines & Clark, 2011). Thus, it was my hope that the utilization of the student response clickers in the classroom would increase the level of student participation to questions asked in class regarding new material, homework, etc., in an environment that reduced the risk of embarrassment among their peers. According to Curtain-Phillips (1999), one of the leading sources of unproductive tension among students in math class is the risk of public embarrassment. By providing an alternative avenue that would allow students to participate anonymously, I believed I would be able to encourage more students to respond to questions in class without that dreaded fear of embarrassment. Once students respond to questions, the percentage of students who selected each answer choice will display on the projector screen. This will allow me to instantly see which types of questions the majority of students were grasping fairly well or which types of questions I needed to emphasize more in class to clear up areas of confusion. For these reasons, I felt this project would be a wonderful addition to my classroom to benefit both my current and future students.

Project Description and Implementation

While at Tuscola High School last year, I first integrated the classroom clicker response system into my instruction when review for quizzes or tests was the primary focus of that day's lesson. This avoided the scenarios where either no student answered any questions because they were afraid of stating the wrong answer in front of their peers, or every student wanted to shout various answers at the same time, making it impossible to understand what each student was saying. Neither situation is ideal, and both situations would prevent me from identifying which areas of the material needed emphasis or review prior to the quiz or test.

As the end of the year approached, I also utilized this system to liven up the Algebra I End-of-Course review process for my students in class. The instant feedback capabilities of the classroom response system provide more time to target the areas of material on which students need the most review, which will increase the efficiency of the review process.

Requirements for the Project

The student clickers and the accompanying software for this response system were purchased with the funds I received from the NCCTM mini-grant in November 2011. Because these resources are reusable from year to year, I will be able to implement this project for each group of students that I will teach.

The only other major consideration to enable maximum success for this project would be to ensure that enough time is incorporated into the lesson the day the response system is first used in class. Since this is new technology to many students, (and perhaps to many teachers as well), there is a slight learning curve in the beginning before students have learned how to correctly operate the clicker to respond to questions in class. Once this is accomplished, I have found that my students and I truly appreciate the benefits of using the classroom response system to provide instant feedback to improve classroom instruction.

Student Feedback

After incorporating the classroom response system into several lessons, I provided students with a short survey to obtain their feedback for this project. On the survey, students were asked to state whether they liked, disliked, or had no opinion on the use of the clickers in class and why, as well as to provide other ways that they would like to use this system in the future. The majority of the responses were in favor of using the classroom response system more often than we had, though a few students had no opinion on the matter. There were also that small group of students who were against using the clickers because they would rather just answer questions on their own without waiting for other students to respond to questions. As far as the suggestions I received for future use of the clickers in class, many students liked how we were currently using the clickers, though some suggested using the response system for the tests and quizzes themselves, instead of just the review sessions. (This, of course, was to be expected!) All in all, most students seemed to enjoy using this response system in class, and I was pleased with the results as well.

Future Plans

Since the materials required to implement this project have been funded by NCCTM, this project can be managed with no additional cost each year. The only other need for additional funding on this project would be to purchase additional clickers for students as needed to replace the original set.

This system could have other uses in class as well, such as providing responses to homework answers or bellringer/warm-up questions from the start of class. I have not yet incorporated the classroom response system in to these areas of the lesson, but I expect to test these areas with students in the future.

I am thrilled with the outcome of this project and thankful to NCCTM for the opportunity to put this project into action. I eagerly await the opportunity to use this technology with future students!

References

Curtain-Phillips, M. (1999). *The causes and prevention of math anxiety*. Retrieved from http://www.mathgoodies.com/articles/math_anxiety.html

Raines, J. M., & Clark, L. M. (2011). A brief overview on using technology to engage students in mathematics. *Current Issues in Education*, *14*(2). [online] Retrieved from http://cie.asu.edu/ojs/index.php/cieatasu/article/view/786

Applying for NCCTM Mini-grants

NCCTM provides funding for North Carolina teachers as they develop activities to enhance mathematics education. This program will provide funds for special projects and research that enhances the teaching, learning, and enjoyment of mathematics. There is no preconceived criterion for projects except that students should receive an on-going benefit from the grant. The mini-grants are awarded by each of the three regional organizations to members ***within their geographic boundaries***. A total of $15,000 is available each year for mini-grants, with each region awarding approximately $5000 in grants to its members. In recent years, approximately 30-35 proposals have been funded, for an average grant of just less than $800.

Directions

The application is available on the NCCTM website <http://www.ncctm.org>. Read all directions carefully, and fill out the application and cover sheet completely. Failure to correctly list the NCCTM region and membership number will cause your application to not be considered. Grant proposals must be postmarked or emailed by September 15, and proposals selected for funding will receive funds in early November. You will receive an email confirmation of receipt of your proposal. If you do not receive a confirmation within one week, follow up with the Mini-grant Coordinator. Be sure that your NCCTM membership is current and active for the upcoming year! Each year we have applications that cannot be considered because of the membership requirement.

Awards

Mathematics Contest Results

Reported by Philip Rash and John Goebel, NCSSM, Durham, North Carolina

NC Team wins American Regions Mathematics League (ARML)

Thirty-five of North Carolina's sharpest high school mathematics students recently competed in the 37th Annual American Regions Mathematics League (ARML) Meet in Athens, Georgia, the only on-site national mathematics competition. It included 140 total teams from over 40 states in the U.S., as well as several international teams.

The North Carolina "A1" team took first place at their site and placed first in the nation. The "A1" Team included:

Jeffrey An, NCSSM, Cary
Michael An, Green Hope HS, Cary
Yimo Chen, NCSSM, Greensboro
Calvin Deng, NCSSM, Cary
Brendan Fletcher, Home-school, Charlotte
Zijing Gao, Home-school, Chapel Hill
Jason Liang, NCSSM, Raleigh
Thomas Lu, Early College at Guilford, Greensboro
Sammy Luo, RJ Reynolds HS, Winston-Salem
Jack Munley, Providence Day School, Charlotte
Elizabeth Shen, South Mecklenberg HS, Charlotte
Nick Tobey, NCSSM, Raleigh
Eric Wang, NCSSM, Greensboro
Yu Wang, NCSSM, Chapel Hill
Allen Yang, Cary Academy, Cary

The last time North Carolina's team won the ARML meet was in 2006. Furthermore, NC is the only team in the nation to place in the top 10 every year since 2006. The two 2012 teams of 15 students each were chosen on the basis of their scores on the State High School Mathematics Contest and several national math exams.

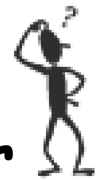
Coaching this year's team were Archie Benton, North Buncombe High School, Weaverville; John Noland, Cary Academy; Ken Thwing, Freedom High School, Morganton; Philip Rash, North Carolina School of Science and Mathematics (NCSSM), Durham; Jeff Lucia, Providence Day School, Charlotte, and Kathy Hill, Athens Drive High School (retired), Raleigh.

"These coaches, under the leadership of Archie Benton, have become an outstanding team at training and identifying the best math students in North Carolina," said John Goebel, past chair of the State Mathematics Competition.

North Carolina State Mathematics Contest

The 34th annual State Math Contest (Comprehensive Divison) was held April 19 at the North Carolina School of Science and Mathematics. Students were chosen based upon their performance at one of the 11 qualifying sites across the state, and 125 students from 42 high schools participated. The top 20:

1. Calvin Deng, NCSSM / Enloe High School
2. Thomas Lu, The Early College at Guilford
3. Michael An, Green Hope High School
4. Yu Wang, NCSSM / East Chapel Hill High School
5. Allen Yang, Cary Academy
6. Sammy Luo, RJ Reynolds High School
7. Jason Liang, NCSSM / Enlow High School
8. Tony Li, Raleigh Charter High School
9. Jeffrey An, NCSSM / Green Hope High School
10. Zijing Gao, School for Advanced Studies
11. Yimo Chen, NCSSM / The Early College at Guilford
12. Yujian Tang, Enloe High School
13. Peter Luo, Enloe High School
14. Jonathan Munley, Providence Day School
15. Justin Luo, Enloe High School
16. Brendan Fletcher, Charlotte Home Educators Association
17. Eric Wang, NCSSM / The Early College at Guilford
18. Angela Deng, Carnage Middle School
19. Parker Garrison, Charlotte Home Educators Association
20. Franklin Chen, Enloe High School

Problems to Ponder 

Fall 2012 Problems

Holly Hirst, Appalachian State University, Boone, NC

Grades K–2: Grandma keeps 10 chickens in her farm yard. Three of them laid eggs. They laid 6 eggs each. A fox stole 7 eggs. How many eggs are left?

Grades 3–5: People come to the state park to camp and must cross a river to get to the best camp sites. On the first day 5 crossed over and 2 came back. On the second day, 7 crossed over and 3 came back. Then 9 crossed over and 4 came back. If this pattern continues for a total of 7 days, how many people would be across the river at the end of the week?

Grades 6–8: A biologist caught a total of 1050 lightening bugs on four consecutive nights. Each night she caught 25 more than on the night before. How many did she catch on each night?

Grades 9–12: The four numbers $a < b < c < d$ can be paired in six different ways. If each pair has a different sum, and if the four smallest sums are 1, 2, 3, and 4, what are all possible values of d?

Directions for submitting solutions

1. Neatly print the following at the top of each solution page:
   - Your full name (first and last)
   - Your teacher's name
   - Your grade
   - Your school

2. Submit one problem per page.

Students who submit correct solutions will be recognized in the next issue of The Centroid. We wish to publish creative or well-written solutions from those submitted. If you would rather not have your solution published, please so indicate on your submission.

Proper acknowledgement is contingent on legible information and solutions.

Send solutions by 15 December 2012 to:

Problems to Ponder, c/o Dr. Holly Hirst
BOX 32068 Appalachian State University
Boone, NC 28608
OR: scan and email as attachments to HirstHP@appstate.edu

As these problems are intended to stimulate independent thinking, it is expected that a submitted solution indicates the student completed a significant part of the work. Please try to have the students use complete sentences when they write up their solutions to promote effective communication of their ideas.

SOLUTION: Grades K–2 Spring 2012 Issue

Madison has earned 5 credits for completing her chores. Her dad lets her trade her credits for things each month: 1 credit – one candy bar; 2 credits – one song from iTunes; 3 credits – one milkshake; 4 credits – one video game rental. What are all the different combinations of things can Madison get using all 5 credits?

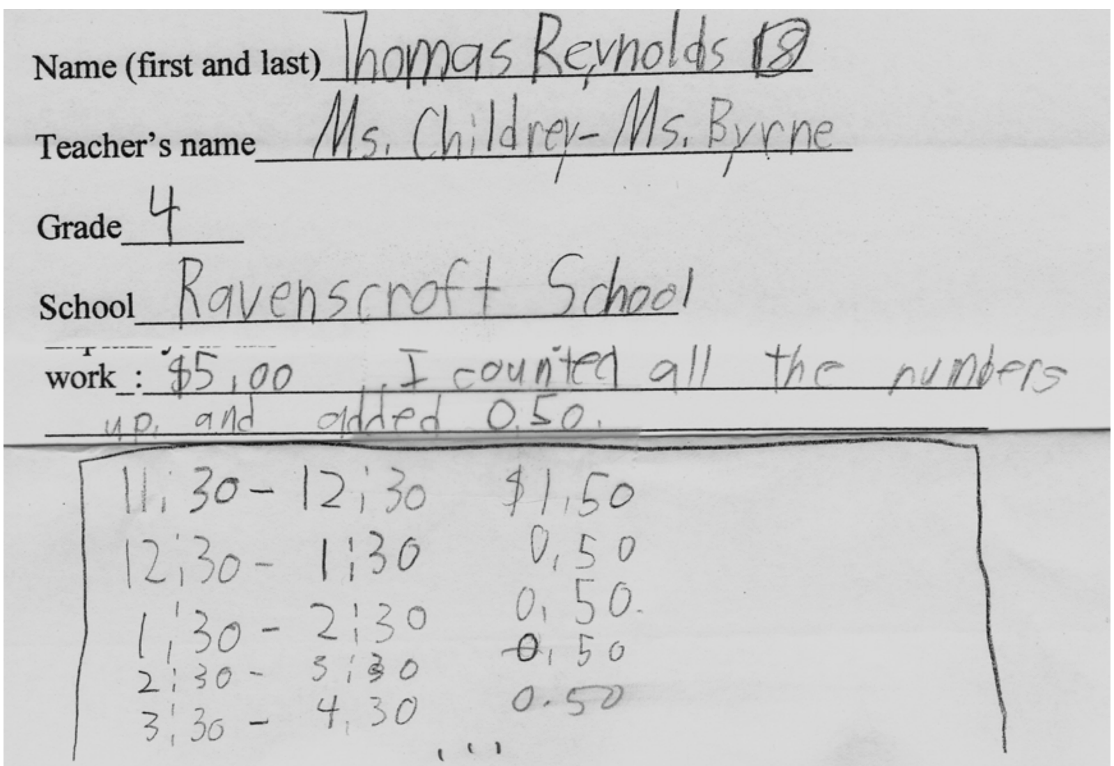
Editor's Note: Noone submitted a correct solution. Try again and see if you can get an answer!

SOLUTION: Grades 3-5 Spring 2012 Issue

Byron's mom parked her car in the town's pay parking lot from 11:30 AM to 6:45 PM. The parking lot sign is shown below. How much will she pay?

PARKING RATES	
First hour	$ 1.50
Each additional half hour	$ 0.50
Maximum daily rate:	$10.00

Example Correct Solution by Thomas Reynolds (Grade 4 at Ravenscroft School (Ms. Childrey and Ms. Byrne)).


Name (first and last) Thomas Reynolds 18
Teacher's name Ms. Childrey- Ms. Byrne
Grade 4
School Ravenscroft School
work : $5,00 I counted all the numbers up and added 0.50.

11:30 - 12:30 $1,50
12:30 - 1:30 0,50
1:30 - 2:30 0,50.
2:30 - 3:30 0,50
3:30 - 4,30 0.50
...

Correct Solutions were submitted by:

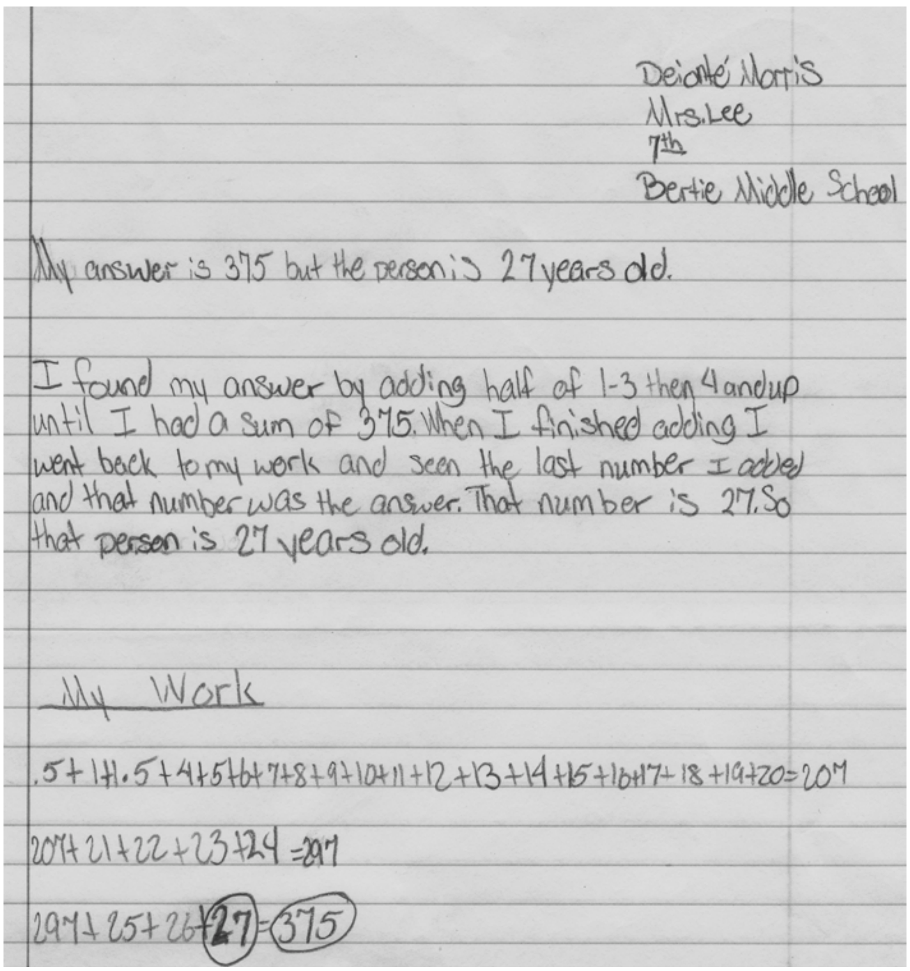
- **Ravencroft School - (Ms. Childrey and Ms. Byrne)**: Ainsley Paradise, Charlie Queen, David Gaul, Devin Scioletti, Katelyn Butters, Riley Pretter, Thomas Reynolds

Editor's Note: There were two "correct" answers submitted. Some students, like Thomas, assumed that the last 15 minutes would cost the same as the full hour, i.e., 50 cents. Some assumed that they would only have to pay a fraction of the last 50 cents.

SOLUTION: Grades 6-8 Spring 2012 issue

Here is a math riddle: Every birthday of my life, my cake contains my age in candles. Starting on my fourth birthday, I have always blown out all my candles. Before that age, I averaged a 50% total blowout rate. So far, I have blown out exactly 375 candles. How old am I?

Example Correct Solution by Deianté Morris (Grade 7 at Bertie Middle School (Mrs. Lee)).



Deianté Morris
Mrs. Lee
7th
Bertie Middle School

My answer is 375 but the person is 27 years old.

I found my answer by adding half of 1-3 then 4 and up until I had a sum of 375. When I finished adding I went back to my work and seen the last number I added and that number was the answer. That number is 27. So that person is 27 years old.

My Work

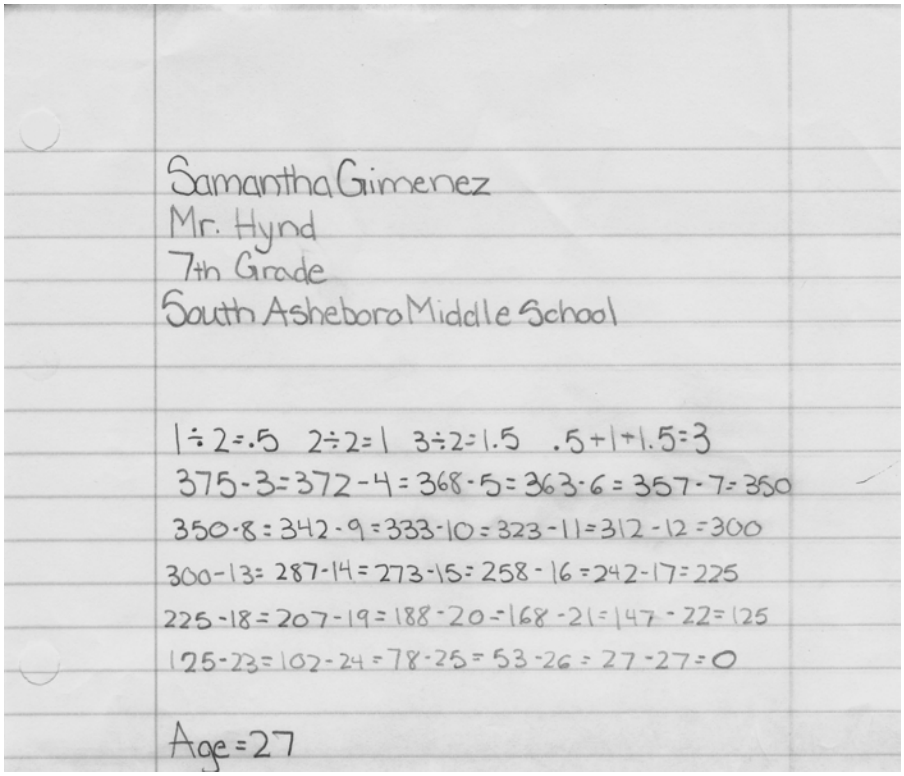
$.5+1+1.5+4+5+6+7+8+9+10+11+12+13+14+15+16+17+18+19+20=207$

$207+21+22+23+24=297$

$297+25+26+27=375$

Editor's Note: Most students found the answer as Deianté did by starting with birthdays 1 through 3 and adding candles until they sum to 375. There were a few students who worked backwards, like Samantha, shown below.

Example Correct Solution by Samantha Gimenez (Grade 7 at South Asheboro Middle School (Mr. Hynd)).


Samantha Gimenez
Mr. Hynd
7th Grade
South Asheboro Middle School

$1 \div 2 = .5 \quad 2 \div 2 = 1 \quad 3 \div 2 = 1.5 \quad .5 + 1 + 1.5 = 3$

$375 - 3 = 372 - 4 = 368 - 5 = 363 - 6 = 357 - 7 = 350$

$350 - 8 = 342 - 9 = 333 - 10 = 323 - 11 = 312 - 12 = 300$

$300 - 13 = 287 - 14 = 273 - 15 = 258 - 16 = 242 - 17 = 225$

$225 - 18 = 207 - 19 = 188 - 20 = 168 - 21 = 147 - 22 = 125$

$125 - 23 = 102 - 24 = 78 - 25 = 53 - 26 = 27 - 27 = 0$

Age = 27

Correct Solutions were received from

- **Bertie Middle Schoo**l - **(Mrs. Carlton)**: Ashlynn Lee, Kaitlyn Irrera, Shydae Garrett; **(Ms. Eley)**: Azana Riddick, Sha'Tyra Barnes; **(Ms. Griffin)**: Dashawn Clark: **(Ms. Lee):** Abbigail Castelloe, Amanda Hill, Branahjo Peel, Craig Steeley, DeArion Cofield, Deianté Morris, Eboney Slade, Ieshia Richardson, Kemonte, Quan Sedrick Horton, Taheem Williams; **(Mr. Orbita):** Amonte Puller, Andrew Haggard, Aniya Williams, Christian Eure, Erick Speight, I'munique Mann, Keandrea Higgs, Tatyana Watford, Tyrisse Shemar Holley; **(Ms. Riddick):** Tevin Jacobs, Tykwon Leard; **(Ms. Sauls):** Emiley Dawson; **(Mrs. Smallwood)**: Christian Gunn, Davante Smallwood, Ellen Pratt, Javin Moore, Katelynn Evans, Laneice Phillips, Patrick Chamblee, Tiffany Cox; **(Mrs. Tyson):** Jared Speight, Melanie Taylor, Tyree Hyran
- **South Asheboro Middle School - (Mr. Hynd):** Alex Elliott, Allison Kauffman, Amar Singh, Anna Hutsell, Aranza Gallegos, Austin Fausnett, Austin Romero, Austin Turner, Ben Clauser, Carlos Chaves, Dakota Ciriello, Dylan Hoffman, Emma Nunn, Gleisy Cruz, Hannah Eldara, Jahmina Ollison, Maci Bunting, Maibri Nardali, Marvin Castaneda, Matthew Swaney, Matthew White, Molly Wells, Sam Crawford, Samantha Gimenez, Tatiana Chavez, Vivian Spencer

SOLUTION: Grades 9-12 Spring 2012 Issue

For how many values of *a* does the system $\{x^2 - y^2 = 0, (x - a)^2 + y^2 = 1\}$ have exactly 3 solutions?

Editor's Note: Noone submitted a correct solution for this problem. See if you can figure it out! Hint: Graph the equations for a few values of a to get some insight.

Awards

Rankin Award Nominations

The Rankin Award is designed to recognize and honor individuals for their outstanding contributions to NCCTM and to mathematics education in the State. Presented in the fall at the State Mathematics Conference, the award, named in memory of W. W. Rankin, Professor of Mathematics at Duke University, is the highest honor NCCTM can bestow upon an individual.

If you have nominated someone in the past who has not received the award to date, or if you would like to nominate someone new, please submit as much of the following information as possible!
Nominations are accepted at any time.

Please submit the following information. Use as many typewritten pages as needed. If possible, attach a vita of the nominee.

- Name of the nominee
- Current position
- Your relationship to the nominee (e.g. principal, co-worker, etc.)
- The nominee's contributions to mathematics education, NCTM, NCCTM, etc. (Please include information on specific offices held and honors received by the nominee.)
- Any information about contributions to the community, teaching, and education that would be of value to the Rankin Award Committee in its deliberations
- Other relevant information
- Letters of endorsement from other colleagues may be included.
- Date of nomination

Nominator*Name
Current position; Business or educational institution
Preferred mailing address; Preferred telephone number

*The Rankin Award Committee reserves the right to use portions of nomination information in the presentation of the award if the candidate is selected.

Send to:, Lee V. Stiff
326-D Poe Hall, Box 7801
North Carolina State University
Raleigh, NC 27695-7801
Sending information in the form of emails is okay: lee_stiff@ncsu.edu

Awards

Innovator Award Nominations

The North Carolina Council of Teachers of Mathematics accepts nominations for the Innovator Award at any time. The purpose of this award is to recognize and reward individuals or groups who have made an outstanding and noteworthy contribution to mathematics education and/or NCCTM by having founded, initiated, pioneered, or developed some program in mathematics education of service to a geographic region of the state or the entire state. Further, this program must have been sustained for a period of at least three years. A number of organizations have made significant contributions to mathematics education in North Carolina; the Committee encourages the nomination of organizations as well as individuals. Any NCCTM member may submit nominations by sending in the form below. Nominations will be retained in the active file for at least three years.

NOMINATION FORM

Name of Nominee: ____

Present Position: ____

Outstanding contributions to mathematics education in North Carolina, which serves as the basis for this nomination:

Additional information that would be of value to the selection committee:

Signature: ____ Date: _______________

Name (print/type): ____

Position: ____

Business or Institution: ____

Address: ____

Phone: Business ___________________________ Home: ___________________________

Email: ____

Send to: John Parker
316 West Soundside Road
Nags Head, NC 27959

Donating to the Trust Fund

If you wish to memorialize or honor someone important to you through a donation to the NCCTM Trust Committee, please send your donation to:

Rebecca Hoover, NCCTM Business Manager
P.O. Box 4604
Cary, NC 27519

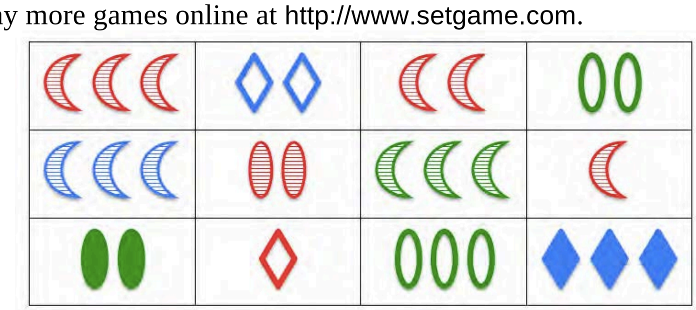
Contributions (checks) should be made payable to Pershing LLC for the NCCTM Trust Fund. Please provide the name of the person being honored or memorialized through the donation and the name and address of the person that NCCTM should notify of your gift. For more information, contact John Kolb, Trust Fund Chair.

Puzzles

SET is a pattern matching game designed by geneticist Marsha Falco in the 1970s and packaged as a card game in the 1990s. The game provides a fun way for students to practice reasoning and pattern recognition. One way to play: Lay out 12 cards and find SETs of three cards that have all four of the following properties:

- All three cards the same color OR three different colors.
- All three cards the same shape OR three different shapes.
- All three cards the same fill pattern OR three different fill patterns.
- All three cards the same number OR three different numbers.

The game below has 6 SETs. Can you find them? Note: Cards can be reused to form different SETs. Learn more about SET and play more games online at http://www.setgame.com.



Solutions are posted on the Centroid page.

The Combinatorics of SET

Each card has one, two or three shapes. There are also three colors, three shapes, and three fill patterns. There is one card for each possible combination of color, number, shape, and pattern. Here are some questions to ponder:

- How many cards are in the deck?
- How many different SETs can be formed if all the cards are laid out (allowing cards to be reused)?
- Does there always have to be at least one SET in a game with 12 cards?
- What is the smallest game (number of cards) that would be guaranteed to have at least one SET?
- If you choose two cards at random, will there always be a third card that can be added to make a SET? If so, how many different SETs can be formed by adding another card?
- What is the probability that three cards drawn at random will be a SET?

NCCTM Trust Fund Scholarship

North Carolina Council of Teachers of Mathematics

$600 scholarships are available from NCCTM to financially support North Carolina teachers who are enrolled in graduate degree programs to enhance mathematics instruction.

Applicants must be:

- Currently employed as a pre-K - 12 teacher in North Carolina;
- Currently an NCCTM member (for at least one year) at the time of submitting this application;
- Currently enrolled in an accredited graduate program in North Carolina;
- Seeking support for a mathematics or mathematics education course in which they are currently enrolled or have completed within the previous four months of the application deadline.

Applications will be reviewed biannually, and the deadlines for applications are:

- **March 1**
- **October 1**

Send completed applications to:
NCCTM Trust Fund Chair
1302 Oakview Dr.
Greenville, NC 27858

Direct inquiries to:
Robert Joyner, Chair
phone: (252) 756-6803
e-mail: rjoyner3@suddenlink.net

(Please print all information.)

PERSONAL INFORMATION:

Name: ______________________________

Home address: ______________________________
Street

______________________________, NC ______________
City Zip

Home phone: ______________ Home e-mail: ______________

NCCTM membership number: ______________________________

EMPLOYMENT INFORMATION:

How many years of teaching experience? ______________________________

Currently employed in what school system? ______________________________

School name: ______________________________

School address: ______________________________

School phone: ______________ School e-mail: ______________

Current teaching assignment: ______________________________

Principal’s name: ______________________________

COURSE INFORMATION: (One course only)

Institution of higher education: ______________________________

Graduate degree program in which you are currently enrolled: ______________________________

Course name:______________________________ Course number: ____________

Dates of enrollment: *(circle one)* Fall semester Spring semester Summer session Year: ______________

Name of course instructor: ______________________________

PROFESSIONAL ACTIVITIES WITHIN PAST 5 YEARS WITH EMPHASIS ON ACTIVITIES RELATED TO MATHEMATICS EDUCATION:

BRIEF STATEMENT OF FUTURE PROFESSIONAL GOALS:

REQUIRED SIGNATURES:

Applicant signature: ______________________________ Date: ________

Principal's signature: ______________________________ Date: ________

Instructor signature (if currently enrolled): ______________________________ Date: ________

REQUIRED ATTACHMENTS:

Please attach a copy of

1. A letter of acceptance to an accredited graduate program in North Carolina;
2. Official verification of enrollment in the graduate course described in the COURSE INFORMATION above if the course is currently being taken, **OR** official transcript containing the grade awarded to the applicant if the course described in the COURSE INFORMATION above has been completed.

NOTE: Applications must be complete to be considered. If your application is approved, an official course grade report must be submitted to verify successful completion of the course before scholarship funds will be issued.

Internal Revenue Information for Grant Recipients: Please be aware that NCCTM is required to report all grants of $600.00 or more to the Internal Revenue Service. In such a case you will receive an IRS Form 1099-MISC from NCCTM. However, you should be able to avoid the payment of any income tax on this. NCCTM has been advised that, if you receive one of the NCCTM grants, you must include the grant proceeds in income unless you made a binding commitment to have the proceeds paid directly to the sponsoring school.

NCCTM Board

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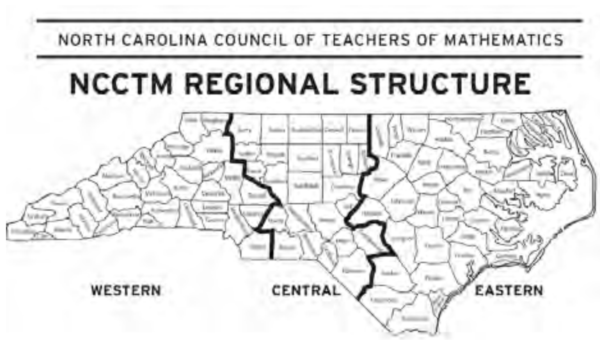

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