MC² Newsletter

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Newsletter Editors: Patricia Carden-Harty & Sheila Hills

District Leadership Learning Team

By Dr. Janice Bradley & Dr. Cathy Kinzer

Transforming the teaching and learning in mathematics classrooms is a shared endeavor. The vision of students learning mathematics with understanding requires a shared understanding of how students learn mathematics and how classrooms should be organized for learning. For real, long lasting change to happen for students, principals, teachers, district leaders, and parents need to share the same mindset, be "on the same page", with knowing what is worthwhile, and how all can move in the same direction to support students.

Four district leadership learning teams for mathematics – Hobbs, Las Cruces, Raton, and Ruidoso - have been meeting regularly to engage in a continuous learning process. They have been learning together about how to create a shared vision for mathematics teaching and learning, what classrooms look like that support student learning, how to use data to impact students in the classroom, and what professional learning experiences teachers need to create classrooms for learning.

As the groups continue to learn together, they are aligning purposes, perceptions, and commitments and are creating action plans for student improvement. By sharing the commitment to ongoing collaborative inquiry, learning from research and classroom experiences, these teams are embracing new professional responsibilities by focusing on student understanding. Our District Leadership Learning Teams/MC² Partnership is a valuable contribution for all of us to learn how district and schools can support teaching for understanding.

Inside This Issue

A Journey Through the Standards!

Dates for Summer Academies for Middle & High Schools

The following dates are set for the MC² Academies:

June 1st - June 5th (Las Cruces - Middle & High Schools)

June 8th - June 12th (Hobbs - Middle School)

June 15th - June 19th (Las Cruces - Middle School)

June 22nd - June 26th (Las Vegas - Middle & High Schools)

High school summer academies are set for the first week in June at the Las Cruces Academy and the last week of June at the Las Vegas Academy. All academies will have middle school sessions.

All grade levels will weave the process standards and the high yield strategies through out the week and have math as the main focus point every day.

To register for any of the summer academies, log onto the MC² web site at http://mc2.nmsu.edu/ Registration deadline is April 23rd.

State Process Standards

The summer academies will dig into the Process Standards. The Department of Education has a page that clearly states what the process standards are and how students should learn math. These process standards describe "how" children best learn mathematics and give teachers ideas for creating a standards-based learning environment. Click this link http://www.ped.state.nm.us/MathScience/dl08/Standards/MathProcessStandards.doc to get a full copy of the New Mexico Standards.

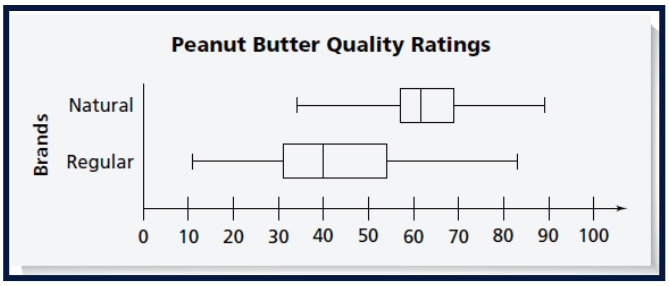
The essence of mathematics is not to make simple things complicated, but to make complicated things simple.

~S. Gudder

Math March Problems with Ted

1. If a chicken and a half lays an egg and a half in a day and a half, how long does it take one chicken to lay a dozen eggs?

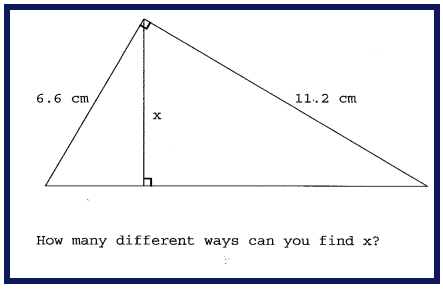
2. The following box plots come from the 8th grade CMP unit, *Samples and Populations.* Some Natural brands of peanut butter and some Regular brands of peanut butter were each rated on a quality scale by a panel of trained tasters. Based on these box plots, if a Natural brand of peanut butter and a Regular brand of peanut butter are selected at random, what is the probability that Natural brand will have a higher quality rating than the Regular brand?



Email your answers to Ted, stanford@nmsu.edu

February Answers:

Problem 1:



Answer: Here are some solutions strategies. Each strategy has several possible variations. Try at least two methods! You should get the same answer, no matter which method you use, although the form of your answer might be different.

1. Use a trig function to find one of the acute angles, then use another trig function on that angle to find x.
2. Find the area of the large triangle using the two given sides. Find the hypotenuse of the large triangle using Pythagoras, then use the hypotenuse as the base and x as the height.

Problem 1 answers continued:

3. Choose two new variables, y and z, to represent the two horizontal line segments. Use Pythagoras to set up several equations involving x, y, and z, and solve these.
4. Same as 3, only use similar triangles to set up your equations instead of Pythagoras.
5. Put the triangle in a coordinate plane, and use facts about the slopes of perpendicular lines, and the distance formula.
6. Draw the figure carefully with a ruler and other geometry tools, then measure x.

Problem 2: I'm thinking of a secret number. If you divide 100 by my number, the remainder is 4. If you divide my number by 11, the remainder is 5. What is my number?

Answer: The number is 16. Explanation: The number must be a factor of 96 to satisfy the first condition. The factors of 96 are 1,2,3,4,6,8,12,16,24,32,48,96. The only one of these that gives a remainder of 5 when divided by 11 is 16. Other solution strategies are also possible.

Getting to Know the MC² Staff

Dr. Ted Stanford has been working with MC² since 2004. This summer will be his sixth set of summer academies. His job with MC² is as a Mathematician. He has a course release from his teaching at NMSU to work with MC² during the school year. When Ted is not working with MC² he enjoys reading, hiking, and making mathematical designs. The monthly math problems are created by Ted to increase everyone's math content knowledge and to get the brains thinking about math problems.

Publications & Upcoming Presentations

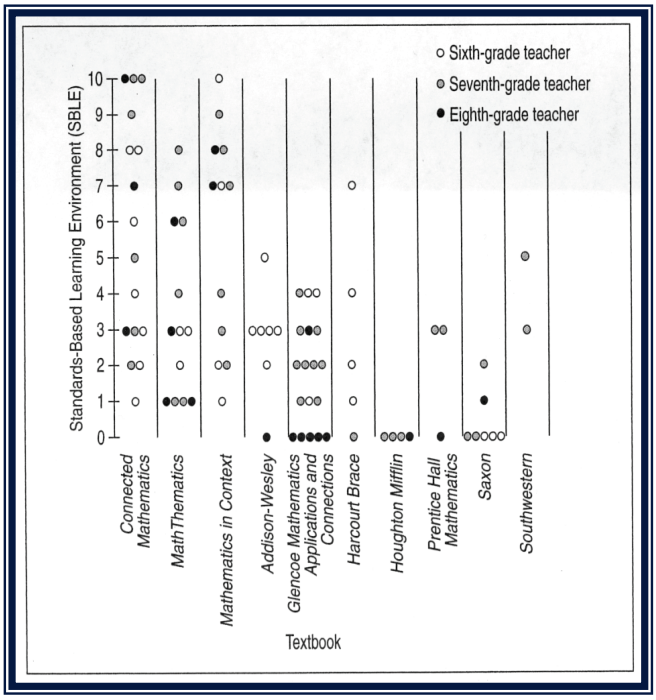
- The Spring 2009 NCSM Journal will have an article by **Cathy Kinzer & Janice Bradley**, titled *Developing a Shared Vision for Mathemtics*.
- The Fall 2009 NCSM Journal will have an article by **Cathy Kinzer & Janice Bradley**, titled *A District Mathematics Leadership Team: Deepening Collective Focus*.
- The following will be presenting poster sessions at the MSP Regional Conference, San Francisco, CA, April 27-29.

  Doug Kurtz & Wanda Tamez about MC² Partnerships; **Karin Wiburg & Ken Korn** about MC² Evaluation; & **Cathy Kinzer, Janice Bradley, & Lisa Matthews** about MC² Leadership.

Congratulations!

Understanding the Teacher's Role in Creating SBLE

During the last MC^2 summer academy planning meeting, the MC^2 staff and teacher facilitators discussed research about standards-based learning environment (SBLE), different mathematics textbooks, and student achievement on standardized tests. The summary chart* below represents the correlation between specific textbooks resources used in middle school classroom and the level of implementation of an SBLE. Students using a problem-solving based textbook such as *CMP*, *Math in Context*, or *Math Thematics* tended to show higher levels of SBLE. The study found that higher levels of SBLE correlated to higher student achievement on standardized tests.



Tarr, J. E., Reys, R. E., Reys, B. J., & Chávez. "The Impact of Middle-Grades Mathematics Curricula and the Classroom Learning Environment on Student Achievement." *Journal for Research in Mathematics Education*. 39, (May 2008): 247-280.

*Visit MC^2 website to download the PDF version.

The study also showed that just because a school has adopted a problem-solving based textbook, this does not automatically mean that classrooms will exemplify a SBLE. The textbook can serve as a foundation for good mathematics experiences. However, the instructional moves made by the teacher are key in creating the SBLE.

For more information regarding SBLE, you can download the full article from NCTM at http://www.nctm.org/news/content.aspx?id=15513. We will also explore what it means to develop a Standards Based Leaning Environment at our 2009 Summer Academy.

PLC Corner

Look at the Standards-Based Learning Environment (SBLE) Graph on this page. Ask the following questions in the next PLC.

- Do we, as math teachers, agree on what a SBLE classroom looks like and sounds like?
- When and how do we share our student's learning/work?
- What resources are available to us right now to help us work on being a stronger SBLE school?
- What resources do we need to continue our work?

New Mexico Standard-Based Assessment (NMSBA)

The following are the National Council of Teacher of Mathematics (NCTM) tips for helping students to prepare for tests such as the NMSBA (tips retrieved from http://www.nctm.org/resources/content.aspx?id=2147483737):

- *"Continue teaching a rich, standards-based curriculum.*
- *Become involved in writing state standards and developing state tests.*
- *Help students become acquainted with the format and grading schemes of tests by using them in your classroom on a regular basis.*
- *Review content every day.*
- *Involve students in creating questions for the review.*
- *Use a variety of approaches when teaching new content.*
- *Focus on solutions, not answers.*
- *Celebrate Improvement.*
- *Be creative in how you are assessing understanding.*"

For more tips about preparing for tests visit the NCTM website at http://www.nctm.org/resources/content.aspx?id=2147483737

For more information regarding the New Mexico Standards-Based Assessment visit the New Mexico Public Education Department's website at http://www.ped.state.nm.us/AssessmentAccountability/AssessmentEvaluation/index.html#sba

Q&A's

Principles for Principals

Question: "How can administrators make the vision set forth in Principles and Standards a reality in their schools?"

Answer: "*Administrators must create the school climate and energize teachers and students in ways that will challenge current expectations and set new goals for mathematics teaching and learning. Supporting the professional development of teachers, establishing mathematics teacher-leaders, providing time in the school day for teachers to collaborate and work together, developing effective processes for the analysis and selection of instructional materials, and examining the impact of high-stakes testing are all ways that administrators can contribute to the goal of a high-quality mathematics education for all students*."

This month's question and answer is from the NCTM's website: *Frequently Asked Questions* about the NCTM Standards and Standards document found at http://www.nctm.org/standards/faq.aspx .

Secondary Mathematics Leadership Academy

During the summer Academies there will be a leadership component set for Wednesday and Thursday of each week. ***Lens on Learning*** is partnering with MC^2 to provide professional development for MC^2 partner 6^{th}-12^{th} district administrators and teacher leaders. For more information contact your MC^2 field specialist or visit http://mc2.nmsu.edu/ .

Test Item Protocol & Student Thinking

Below is what Bea Etta Harris, Ed.D. Superintendent from Ruidoso, had to say about the test item protocol that MC^2 has been using to strengthen student's math thinking dispositions on multiple choice practice SBA test items.

"*Teaching strategies for test taking doesn't necessarily teach children to think through the problems. But teaching children to think is a skill developed through a process. Think individually, think in pairs, and think as a class. Each step of the way, students are encouraged to share their thinking, their different ways of thinking*."

If you would like more information on the test item protocol contact either your MC^2 field specialist or pcarden@nmsu.edu.

Web Resources

- ✓ Check this great **NCTM** web page out. You can choose a Math standard and grade level, and then find an interactive program to give examples of it. http://standards.nctm.org/document/eexamples/index.htm
- ✓ The NM Public Education Department has the following educational resources for teachers. Take some time to look at them: http://www.ped.state.nm.us/Teachers/index.html

  http://www.centeroninstruction.org/resources.cfm?category=math&subcategory=materials&grade_start=4&grade_end=12
- ✓ Web article, *The Forgotten Middle: Ensuring that All Students are on Target for College and Career readiness before High School*, recommended by Dr. Rick Scott, Director, P-20 Policy and Programs, New Mexico Department of Higher Education http://www.act.org/research/policymakers/reports/ForgottenMiddle.html
- ✓ Some web resources recommended by Edwina Henslee, CMP Lead/Math Specialist, Hobbs Municipal Schools

  NCTM News Bulletin
  http://iem.nctm.org/display.php?M=153633&C=087121566ac6e4f81a5b8791599d939b&S=102&L=1&N=56

  CMP Resources
  http://showmecenter.missouri.edu/showme/cmp.shtml

We want to hear from you!

Think back to your first year teaching CMP. What helped you the most and what do you wish you knew then? If you were to make a notebook to help a first year CMP teacher what would be in it?

Email your ideas and suggestions to: Patricia at pcarden@nmsu.edu

Thank you to everyone who provided information for this month's newsletter!