
PCSM NEWSLETTER

Leaders in Mathematics Education

August 2006

PENNSYLVANIA COUNCIL OF SUPERVISORS OF MATHEMATICS

PRESIDENT'S MESSAGE

From the President

- Mary Foley

Are the summers really getting shorter, or do we plan so many things that time gets away from us? I hope you had time for some rest and relaxation. I know many of us were busy with professional development and in-service courses as well as preparation for the coming school year. We have also been busy getting ready for our Twenty-Ninth Annual Conference on Thursday, October 26, at Seven Springs. The conference will begin with breakfast provided through the courtesy of McDougal Littell and Houghton Mifflin and culminate with lunch provided by Scott Foresman. Awards will be presented at the luncheon. Coffee and pastries will be served by Prentice Hall during a mid-morning break. Portfolios will be provided by Macmillan/ McGraw Hill. We are so fortunate to have the generosity of these companies through their representatives who contribute so much to mathematics education in Pennsylvania.

Please check the date on the mailing label of the newsletter. If the date is 2006 (06) or earlier, it is time to renew your membership. Save money by renewing for three years. If each of us signs up a new member, our membership will double!

We have decided to go with only two sessions, so as not to rush our speakers who have so much to offer and to allow time for questions and discussion. Dr. Glenda Lappan of Michigan State University (past President of NCTM and a member of the National Research Policy Priorities Board) and Dr. Frank Marburger from the Pennsylvania Department of Education will be the featured speakers, so come prepared with questions you would like answered and topics for discussion. The program is included in this newsletter.

Once again I encourage you to personally invite teachers who are leaders in mathematics to join PCSM. There are many teachers out there who are lead teachers - please let them know they do not have to be supervisors (are there any of those left?) to join. The work they are doing is very important for the mathematics programs in their districts. One of the most exciting parts of summer programs is watching the novice and pre-service teachers

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interacting with the veteran teachers, many with

30 and 35 years of experience. The camaraderie, exchange of ideas, and collaborative environment all contribute to the improvement of mathematics programs at all levels. These are the people we need to reach out to. I'm counting on YOU.

Enjoy the rest of your summer and I'll see you at Seven Springs.

Mary Foley
foleymmath@earthlink.net

From the Editor

- Cathy Schloemer

I hope the summer has been a time for you to revitalize in preparation for another school year. In just a few weeks, you'll have the chance for more professional growth at the joint PCSM and PCTM Conference at Seven Springs. The planners of these meetings have worked hard to put together an outstanding program, but YOU are the final ingredient that will make all of this hard work worthwhile. If you have not already done so, please make plans to come to this lovely facility for the PCSM Annual meeting October 26, as well as the PCTM Annual Meeting October 25-27. The PCSM registration form is here in your newsletter.

It's hard for me to believe I am already beginning my second year as your editor (along with my steadfast proofreader Chris Czapleski). I hope you find interesting and helpful information in each issue. Remember that I love to hear your ideas for what I need to include in future newsletters. Please send correspondence to me at:

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ELECTIONS

PCSM NEWSLETTER

The PCSM Nominations committee thanks the candidates willing to run for the indicated offices. Please take time to complete the ballot and place it in the mail. It is important to show your support for each election.

The candidate for the office of President-elect is Jane Wilburne.

Jane M. Wilburne, assistant professor of mathematics education at Penn State Harrisburg, received her Ed. D. in mathematics education from Temple University. She teaches mathematics and mathematics education courses and facilitates many professional development programs. She was the author and PI for several professional development grants for K-12 mathematics in the areas of algebra, geometry, measurement, modeling, and problem solving. She taught high school mathematics for the Buffalo Public Schools prior to receiving her doctorate. She is President of the Central Pennsylvania Mathematics Association and is actively involved in mathematics associations such as NCTM, PCTM, AMTE, and NCSM. She has written articles for NCTM journals and serves as a reviewer for the *Mathematics Teaching in the Middle School* journal. Her research interests focus on teaching problem solving, writing in the mathematics classroom, and effective professional development programs.

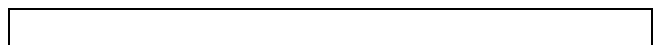
The candidate for Secretary is Jack Mowbray.

Jack has done an excellent job as secretary for the organization and has offered to continue in that position.

If you choose, you may write in name(s) for the above positions as indicated on the ballot.

Thank you for your vote. Remember to mail the ballot to show your support.

The PCSM Nominations Committee
 Kathy Hebert Ann Massey
 Hank Field Carolyn Marchand



**** NCSM Report Summary Service****

The National Council of Supervisors of Mathematics (NCSM) has initiated a new web-based service for anyone who would like to keep up with emerging issues in mathematics (and, sometimes, science) education but doesn't have time to read hefty reports. The NCSM Report Summary Service (RSS) was designed to give readers quick access to the big ideas in the reports by:

- * reducing long reports to 2-4 pages;
- * using a simple, flexible format for the summaries;
- * focusing on the report's structure, findings, conclusions, and recommendations; and
- * providing a web address from which the full report can be downloaded or purchased.

A reader may download, print, or forward any report to other individuals or group without requesting permission from NCSM.

The NCSM Report Summary Service is located at:
<http://ncsmonline.org/OtherResources/rss.html>

The Service presently has over 30 summaries entered, and new summaries are being added at a rate of about two per week. The reports summarized embrace a wide range of issues including teacher/teaching quality, seamless P-16 education systems, impact and opinion regarding NCLB, teacher supply/demand and retention, comprehensive teacher induction programs, education policy proposals, proposals for the mathematical education of K-12 teachers, and surveys of high school and college students that assess their degree of effort and their feelings about the school environment. Additional topics are being added to the mix over time.

Received from:
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Teacher Knowledge and Student Learning in Elementary School

Really, do elementary school teachers need to know much mathematics? How hard can it honestly be to teach mathematics to children 6 or 7 years old? An important recent study reports that even for first graders, "the teachers' own mathematical knowledge has a substantial impact on student learning." "That impact remained even when researchers accounted for other factors that might influence student learning gains, including family background (the number of parents in the home, parent education levels, and family income), how often students were absent, teacher certification and experience, and how much time teachers spent on math lessons. And the impact was quite large: Children taught by educators who have high-level math knowledge gain the equivalent of about two or three weeks of extra instruction compared with students whose teachers have average math knowledge and skills. In fact, teacher knowledge had as big an impact on math learning as student poverty or race." A research team, which included Dr. Deborah Ball, reached these conclusions in a longitudinal study involving 120 schools over a period of several years. (See www.sii.soe.umich.edu/ .)

Teachers were found to need two particular kinds of mathematical knowledge: "common" procedural and conceptual knowledge that they should have received as school students and also "fluency" in being able to figure out, usually instantly and on the spot, how students have gone wrong in solving a problem or whether or not a student's unusual solution method would always work for similar problems, for example. Disturbingly, teachers lacking these skills were found in the study to more likely be assigned to teach minority and low-income students.

The study includes some information about identifying teachers who are deficient in needed skills, and a related study (by the same researchers) suggests ways to provide appropriate professional development for these teachers. Researchers also address the problem of how to help teachers without offending them by seeming to criticize their lack of mathematical knowledge.

Find the entire article from which these quotes are taken and which is summarized briefly here under "Love and Math" by Craig D. Jerald in the March 2006 *Issue Brief* at www.centerforcsri.org .

Research:

Research:

Homework: A Key To Improvement In US Mathematics Education

Janet Tedesco; Jesuit High School; New Orleans, LA
With:

Marty Atkins; Bellingham High School; Bellingham, WA
Deborah Costello; Trinity Prep School; Winter Park, FL

Myra Deister; Sunny Hills High School; Fullerton, CA
Paula Evans; Harvard-Westlake School; Studio City, CA
Salvador Juarez; Mulcahy Middle School; Tulare, CA
Jane Monson; Sinaloa Middle School; Simi Valley, CA
Carol Sanderfoot; Appleton North High School;
Appleton, WI;
Lisa Winer; Saint Andrew's School; Boca Raton, FL

Introduction

The United States has a serious problem in mathematics education. Test results show that beginning in middle school, the United States student proficiency declines in comparison with other developed countries throughout the world to near the bottom by 12th grade [PISA]. The Workforce/Education Subcommittee of the President's Council of Advisors on Science and Technology identified two principal reasons for this: too many math teachers are not trained in math, and too many math textbooks are inadequate [Herbold].

This article suggests a third important contributing reason: low homework emphasis. The United States lags far behind in time spent by our students on homework [TIMMS]. Thus, improving homework completion at the secondary level may be a significant opportunity for US math proficiency improvement at that level. This article suggests that new Internet math homework-help resources may be very helpful in getting more students to complete and understand their homework. As an important by-product, more class time will be available for more in-depth teaching than is currently possible. We identify some of the available resources, discuss their application and the background research that supports their use, present comments from several contributing authors, and present a case study of the use of one of the Internet resources.

Homework Not Being Done

Without homework practice, middle school or high school students cannot fully master the concepts presented in class. Homework provides an opportunity for the students to extend their understanding and directs the students to concepts that need further explanation. Homework provides an opportunity for students to make, discover,

and correct mistakes so they can learn from them. Students of teachers who emphasize the importance of

homework score higher than students of teachers who do not [House]. However, teachers are finding that getting students to actually do assigned homework is increasingly difficult. Some students, and often their parents, express that homework is a useless burden. Furthermore, homework competes with TV, video games and other activities. A teacher in Northern California had this to say [Bradley]:

I am a good teacher as evidenced by my experience, by peer, student, and parent feedback, and by advanced certifications that I have earned. Yet, many of my students fail.

Most of those who failed will say it was because they did not do the work.

Worked Examples

The use of worked-out examples is a standard practice in classroom lectures and textbooks. Some students understand the daily lesson after observing just a few worked-out examples. Others need more examples than can be presented during a class period or provided in a textbook section. These latter students would benefit significantly from additional worked examples, but they might not know where to find them or have the motivation to seek them out. The research described below shows that providing worked examples for actual assigned homework problems is beneficial. The websites described below allow students to view worked out solutions for their assigned homework.

Internet Resources for Math Homework Help Via Worked Examples

A website that provided math homework-help by showing tutorial (worked out) solutions for actual math textbook homework problems was first introduced in 2001 [Beall]. Other websites with the same general capabilities have since become available. Students needing assistance on assigned homework problems now can find immediate homework help using an Internet-connected computer, at websites such as www.aolatschool.com, www.encarta.com, education.yahoo.com, www.calc101.com, and www.hotmath.com. Each of these websites provides immediate tutorial explanations for math problems. Thus, teachers may assign homework problems for which there are explanations (worked solutions) available on the Internet. In the case of Encarta and Hotmath, the explanations are correlated to the actual problems assigned from popular math textbooks.

Even students who may have fallen behind in math may be attracted to such websites, as they provide a new

avenue for catching up. The help, via computer, with their assigned homework relieves them of the fear of peer

or supervisory embarrassment. Math teacher Jane Monson noted that more of her students are completing homework since they began using Hotmath.com because it answers the question, "What is the next step?" so that students can continue on their own. According to Math teacher Lisa Winer, "I love that this website gives worked solutions to assigned homework, because students who want it can get instant help right away, on their own. If a student says they didn't understand the homework, my response is that they should have logged on to get help."

Scientific research has investigated the use of "worked out" examples in algebra, and the results show that this increases effective learning [Carroll, 1992]. A study was done in Texas: two groups of students, one of poor performers and the other of good performers, were taught together with only one difference; the poor performers were given their homework assignments with 50% of the problems accompanied by worked solutions. The good performers were given the same homework assignments without worked solutions. Interestingly, the poor performers achieved higher scores on the final exam than the original good performers. In related research, students in the worked examples group completed their work more quickly while perceiving the work as less demanding and displayed better performance on tests [Carroll, 1994]. The researchers suggest that the reduced cognitive load allows the students to process the underlying similarity of problems and integrate the methodology with existing knowledge [Grillmeyer, 2001]. They also note that less "wrong learning" results.

The availability of worked solutions also benefits advanced students. They can tackle the more challenging problems with more success and move forward with less outside help. Advanced, motivated students can work ahead in their textbook knowing that an instant tutor is available.

Homework review in class is an important part of math teaching. Teachers need their students to ask questions about processes, rules, and properties as a part of assessing both the students and their own teaching. Yet, routine questions of interest to only a few students can be a very inefficient use of class time. According to Math Teacher Marty Atkins, "As our students have begun to use Hotmath.com ... I am beginning to get more 'Why did they take that step?' questions rather than 'How do I start?' questions." A survey of math teachers using one of the homework-help sites concluded that about 20 minutes per class time was freed up [Grillmeyer, 2004]. According to math teacher Paula Evans, "We saved class

time, which we immediately reallocated to activities which allowed students to develop insight about the

material. ... We have used this time to develop in-class activities which ask students to extend their homework."

When teachers assign homework problems with solutions available on any of the listed Internet homework help websites, their students can receive step-by-step explained solutions to their actual homework problems. Students are able to see their mistakes and learn from them, and parents are in a better position to see the methods being taught so they can amplify them as needed. Use of these sites is not simply checking or getting answers, but may be considered a directed, self-paced, tutorial experience. Teachers justifiably want to balance the amount of available homework help so that students are certain to be challenged. Some students might mindlessly copy down solutions if they are available for every problem. The research concludes that 50% of assigned problems should have the available help. Two of the websites that provide solutions to actual textbook homework problems (Encarta and Hotmath) only explain the odd-numbered problems for which numerical answers are already available in the back of the textbook.

Jesuit High School Case Study

I am a mathematics teacher at Jesuit High School in New Orleans, LA. This is a private Catholic urban school with approximately 1500 students. The student body is primarily middle class students from educated, success-oriented families. Our class size averages 25 students and 99% of the graduates attend a university.

When our math department introduced Hotmath.com to our students, only the most diligent took advantage of it. As individual teachers and as a department, we learned to approach the homework review in the classroom differently. Instead of asking, "What problems gave you trouble last night?" we began to ask "For what problems did you not understand the solution given on the website?" and "At what point did you not understand what Hotmath did?" Eventually, homework review went from over 30 minutes a class to under 10. Even better, we saw students' grades improve!

With the extra class time, our teachers were able to delve into problems or topics that focused on higher-level thinking skills. We could use open-ended problems to stimulate thinking both in a small group setting and to individual students. Even the lower track students became more able to think, rather than just repeat steps, to attain a solution.

As I listened to and read the experiences of the

contributing authors, I realized that our school's experiences were not unique. Almost universally they

achieved additional instructional time in class. They found that they could limit the amount of time spent on homework review, maintain or increase their rates of success, and introduce creative classroom activities to stimulate mathematical thinking.

Conclusion

In addition to the recommendation that teachers consider these Internet math resources, we feel strongly that our school and political leadership should actively and repeatedly stress the importance of homework as well as the importance of mastering math and science classes, so as to effect an attitude change over time that will benefit everyone.

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FREE HOTMATH OFFER FOR YOUR STUDENTS!

As a National Council of Teachers of Mathematics affiliate, all members of the PA Council of Supervisors of Mathematics are eligible to receive a school-wide free trial to Hotmath.com this fall. Hotmath.com provides tutorial explanations to the odd numbered homework problems in over 150 math textbooks, so students can get self-paced help, online, away from class, to complete their assigned homework. It also provides tutorials in the use of graphing calculators. Members can email schools@hotmath.com with their name, school name and school zip code to receive your free trial. Also, you will need to mention "PA Council of Supervisors of Mathematics" (or "PA Council of Teachers of Mathematics") in your email. You will receive a password for use by all students in your school, valid through November 30, 2006.

THE NCTM REPRESENTATIVE'S 2006 REPORT EASTERN 2 REGIONAL CAUCUS AND DELEGATE ASSEMBLY

Each year at the annual meeting of the National Council of Teachers of Mathematics (NCTM), representatives from NCTM Affiliate Groups are invited to participate in Regional Caucuses and a Delegate Assembly. The Caucuses serve as an opportunity for delegates and alternates to meet informally to discuss current proposed resolutions (and responses from NCTM), to make revisions to the proposals, and to share other information pertinent to Affiliates. The Delegate Assembly is NCTM's formal structure for Affiliates to make recommendations about mathematics education issues or Council operational issues.

THE 2006 EASTERN REGIONAL CAUCUS

My reports for the past two years have contained constructive criticisms of the Regional Caucuses. It is a pleasure to report that this year's Eastern Regional Caucus was beneficial and indeed accomplished the goals of meeting members of neighboring NCTM Affiliates and sharing information with them.

Dick Evans presided over the 2006 Eastern Regional

Caucus held on April 26, 2006, in conjunction with the NCTM annual meeting in St. Louis, Missouri. The other

Affiliates Service Committee (ASC) members present were Rodney McNair whose term is expiring and Bill Barnes whose term is just beginning. Mari Muri represented the NCTM Board of Directors and provided valuable insights.

Since no resolutions had been submitted to ASC by November 1, 2005 and none of the Affiliates in the Eastern Region had a resolution to be considered, Dick led discussion about the 2005 Affiliate Survey Results, Student Affiliates, the NCTM consignment program, and the challenges faced by NCTM Affiliates. There was consensus that the greatest challenge faced by the Affiliates concerned increasing younger membership. Suggestions proposed were to involve younger teachers on committees for local and state meetings and to recruit co-presenters for sessions at these meetings.

One publication that was distributed at the Caucus, a Self-Study Form for NCTM Affiliates, may be helpful to the Pennsylvania Council of Supervisors of Mathematics and will be shared. Another handout, the 2005 Affiliate Survey Results, will be useful and a report on this survey will be made.

THE 2006 NCTM DELEGATE ASSEMBLY

Delegates from 107 Affiliates met on Thursday, April 27th in the Renaissance Grand Hotel in St. Louis, Missouri. Cathy Seeley, the NCTM President, gave a report that included the actions taken by the NCTM Board of Directors on resolutions passed by the Delegate Assembly in 2005. Those two resolutions and the actions taken were as follows.

Resolution O.R.05.01: Be it resolved that the Delegate Assembly recommends to the NCTM Board of Directors that registration at NCTM regional and annual conferences for full-time students who are not members of NCTM be set at \$25 for the full meeting and \$10 for a single day. NCTM student members would receive free registration at NCTM regional and annual conferences. Action: The Board rejected Resolution O.R.05.01 because of the "impact on the financial picture."

Resolution O.R.05.04: Be it resolved that the Delegate Assembly recommends to the NCTM Board of Directors that NCTM reinstate the policy of accepting at most one resolution adopted by each caucus and presented at the Delegate Assembly. A resolution brought in this manner must be accompanied by a rationale and supporting evidence.

Action: The Board accepted Resolution O.R.05.01. (This

resolution went into effect at the 2006 Caucuses. No resolutions had been received by the November 1, 2005

deadline so Affiliates had the opportunity to have resolutions considered in the regional caucuses. The Southern Caucus initiated a resolution.)

President Seeley presented charters to four new affiliates, an Associate Affiliate in Texas and Student Affiliates in Missouri, Louisiana, and Ohio. She recognized six Partner Affiliates that qualified as members of the new NCTM Affiliate Leadership Circle. To qualify for the Leadership Circle a Partner Affiliate must have at least 65 percent of its members be NCTM individual members; this in turn involves comparing/sharing membership lists.

Hank Kepner presided over the session of the 57th Delegate Assembly and called for resolutions. Only one resolution was presented and is as follows.

Resolution O.NR.06.01: Be it resolved that the Delegate Assembly recommend to the NCTM Board of Directors that any policy or requirement entailing the sharing of Affiliate membership lists and information be amended to provide alternative criteria.

Discussion concerning the rules established for the new Leadership Circle and the accompanying privacy issues ensued. This resolution was passed by the Delegate Assembly and will be forwarded to the NCTM Board of Directors for review at its July meeting.

Respectfully submitted by Ann Massey
NCTM Representative for PCSM



National Mathematics Advisory Panel

U.S. Secretary of Education Margaret Spellings announced the 17 expert panelists and six ex-officio members chosen to comprise the National Mathematics Advisory Panel. The panel will advise President Bush and Secretary Spellings on the best use of scientifically based research to advance the teaching and learning of mathematics.

"To keep America competitive in the 21st century, we must improve the way we teach math and we must give more students the chance to take advanced math and science courses in high school," Secretary Spellings said. "America's high school graduates need solid math skills, whether proceeding to college or going into the workforce."

The National Mathematics Advisory Panel (NMP), modeled after the National Reading Panel, will examine

and summarize the scientific evidence related to the teaching and learning of mathematics, with a specific focus on preparation for and success in learning algebra. The NMP will issue an interim report by Jan. 31, 2007 and a final report no later than Feb. 28, 2008. These reports will provide policy recommendations on how to improve mathematics achievement for all students.

The National Mathematics Advisory Panel will be chaired by **Dr. Larry Faulkner**, president of the Houston Endowment and President Emeritus of the University of Texas at Austin.

Other panelists:

- * **Dr. Deborah Ball**, Dean, School of Education and Collegiate Professor, University of Michigan
- * **Dr. Camilla Benbow**, Dean of Education and Human Development, Vanderbilt University, Peabody College
- * **Dr. A. Wade Boykin**, Professor and Director of the Developmental Psychology Graduate Program in the Department of Psychology, Howard University
- * **Dr. Francis "Skip" Fennell**, Professor of Education, McDaniel College (Md.); President, National Council of Teachers of Mathematics
- * **Dr. David Geary**, Curators' Professor, Department of Psychological Sciences, University of Missouri at Columbia
- * **Dr. Russell Gersten**, Executive Director, Instructional Research Group; Professor Emeritus, College for Education, University of Oregon
- * **Nancy Ichinaga**, former Principal, Bennett-Kew Elementary School, Inglewood, Calif.
- * **Dr. Tom Loveless**, Director, Brown Center on Education Policy and Senior Fellow in Governance Studies, The Brookings Institution
- * **Dr. Liping Ma**, Senior Scholar for the Advancement of Teaching, Carnegie Foundation
- * **Dr. Valerie Reyna**, Professor of Human Development and Professor of Psychology, Cornell University
- * **Dr. Wilfried Schmid**, Professor of Mathematics, Harvard University
- * **Dr. Robert Siegler**, Teresa Heinz Professor of Cognitive Psychology, Department of Psychology, Carnegie Mellon University
- * **Dr. Jim Simons**, President of Renaissance Technologies Corporation; former Chairman of the Mathematics Department, State University of New York at Stony Brook
- * **Dr. Sandra Stotsky**, Independent researcher and consultant in education; former Senior Associate Commissioner, Massachusetts Department of Education

* **Vern Williams**, Math Teacher, Longfellow Middle School, Fairfax, Va.

* **Dr. Hung-Hsi Wu**, Professor of Mathematics, University of California at Berkeley

Ex-officio members:

- * **Dan Berch**, National Institute of Child Health and Human Development, National Institutes of Health
- * **Diane Jones**, White House Office of Science and Technology Policy
- * **Tom Luce**, Assistant Secretary, U.S. Department of Education
- * **Kathie Olsen**, Deputy Director, National Science Foundation
- * **Raymond Simon**, Deputy Secretary, U.S. Department of Education
- * **Grover (Russ) Whitehurst**, Director, Institute of Education Sciences, U.S. Department of Education

All meetings of the NMP will be open to the public and will be announced in the Federal Register.

For a fact sheets on the NMP and the American Competitiveness Initiative please visit

<http://www.ed.gov/news/opeds/factsheets/index.html?src=gu>

Source: U. S. Department of Education as reported in COMET 7(18), 17 May, '06
(<http://csmp.ucop.edu/cmp/comet/>)

Upcoming Conferences and Events:

PCSM Annual Conference

October 26, 2006, Seven Springs Mountain Resort, Champion, PA

(See the enclosed program of events.

Remember to register for the conference, even if you do not need to renew your membership.)

PCTM Annual Conference

October 25-27, 2006, Seven Springs Mountain Resort, Champion, PA

For more information visit: www.pctm.org.

NCTM 39th Annual Conference

Mathematics: Representing the Future

March 21-24, 2007

Atlanta, GA

For more information, see: www.nctm.org.

NCTM Regional Conference

October 19-21, 2006, Atlantic City, NJ

For more information go to: www.nctm.org.

(More distant NCTM Regional Conferences coming this fall:

Chicago, Sept. 20-22

Phoenix, Oct. 5-7

See <http://www.nctm.org/meetings/#regionals>)

NCSM Annual Conference:

"ACHIEVE SUCCESS"

March 19-21, 2007

Atlanta, Georgia

For more information: www.ncsmonline.org

International Conferences in Mathematics Education - The Mathematics Education into the 21st Century Project

Next conference: September 7-13, 2007,

Charlotte, NC

Go to:

http://csmf.ucop.edu/cmp/comet/2006/01_23_2006.html#B3) or contact conference coordinator

Alan Rogerson at arogerson@inetia.pl

2007 T³ (Teachers Teaching with Technology) International Conference

March 9-11, 2007

Chicago, IL

Hyatt Regency - Chicago

Go to: education.ti.com

The Association Of Mathematics Educators (AMTE) 11th Annual Conference

January 25-27, 2007

Irvine, CA

Visit: www.amte.net

ELECTRONIC RESOURCES

Exeter Math Course Materials

<http://math.exeter.edu/dept/materials/>

The Mathematics Department at Phillips Exeter Academy freely provides problem sets that they have developed for their courses. For an overview of the Exeter courses, view this page:

http://www.exeter.edu/84_735.aspx

"Early Development of Estimation Skills" by Robert S. Siegler and Geetha Ramani

<http://www.psychologicalscience.org/observer/getArticle.cfm?id=1988>

Read fascinating research about activities that can help young children learn to estimate.

"Learning From Symbolic Objects" by David H. Uttal and Judy S. DeLoache

<http://www.psychologicalscience.org/observer/getArticle.cfm?id=1989>

Manipulatives may enhance the learning of mathematics – or may interfere. Learn more!

Free SAT Practice

<http://www.satprepplan.com>

National Mathematics Advisory Panel

<http://www.ed.gov/about/bdscomm/list/mathpanel/index.html>

Use this U. S. Department of Education site for general information about the National Mathematics Advisory Panel as well as to post comments or ask questions. You can also read a blog of a “watcher’s view” of the panel’s deliberations at

http://mathpanelwatch.blogspot.com/IMA_education/home.asp?levelid=1

