



Mathbits

Math and Science ❖ Hand in Hand

2007 Fall Conference—Friday October 19th

The Minnesota Council of Teachers of Mathematics

The Minnesota Science Teachers Association

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7:30—Registration—Exhibits Open—Breakfast

8:00—Opening Session with Keynote Speaker

Dr. Claudia Neuhauser, University of Minnesota

Dr. Neuhauser is an applied mathematician at the University of Minnesota in the Department of Ecology, Evolution, and Behavior in the College of Biological Sciences. Her research interests include two areas of biology: ecology and genetics. Dr. Neuhauser is featured in the Science Museum of Minnesota's *MathPacks* module titled *Magnifying Cells* and specifically in the lesson on models and bacterial growth. The following is an excerpt from the *MathPacks* project which can be found at <http://www.smm.org/mathpacks/>

Claudia Neuhauser is a mathematician who studies living things. She uses computer modeling to figure out how to predict behavior of organisms under certain conditions. Students may not be familiar with a "model" that is on paper or in a computer program, but this model is still a simplified image of the real world, just like an airplane model they play with.

The *MathPacks* module includes a video interview with Dr. Neuhauser in which she answers questions for students such as...

What is a mathematician?

Were you interested in math as a young person?

Is working with mathematical models fun?

What do you do at the University of Minnesota?

What does math have to do with the growth of bacteria?

How do models help people understand how disease spreads?

How can I study bacterial growth like Dr. Neuhauser?

See <http://www.smm.org/mathpacks/cells/videos/math.php> for the video.

See you at Fall Conference!



All members are encouraged to attend this day of professional development and networking. There will be many types of 45-minute sessions to choose from. We especially encourage new teachers in their first few years of service to attend since there will be sessions geared toward their interests and opportunities for them to share practical advice with the many pre-service teachers in attendance. And elementary grades teachers have the double opportunity to participate in sessions from both fields of mathematics and science.

President's Memo

Judy Stucki
MCTM President

By the time you receive this you will have been in school for a few weeks and should be adjusting to the schedule again. I trust everyone's school year is off to a great start. It's not too early to be planning for both the Fall and Spring Conferences. (Details at MCTM.org) Ask for staff development funds now, submit a proposal to be a speaker or encourage a colleague to submit, and ask your fellow teachers if they are MCTM members.

The MCTM Board is meeting this week and one of the items under consideration is moving the September meeting to an out-state location to try to involve more people. The idea would be to have a pizza party on Friday night with all local math teachers with MCTM providing the pizza. This would cost the council more money to house the board so we are looking for invitations. If your area is interested in being next year's host please email me.

Judy Stucki
judy@stucki.us



Jim Rubillo, NCTM Executive Director; Paula Bengtson, District 8 Director, Judy Stucki, MCTM President; Francis (Skip) Fennell, NCTM President

Judy and Paula attended the NCTM Leadership Conference in Salt Lake City July 6-8 to share MCTM ideas and learn what some of the other affiliate organizations are focusing on.

What's New in Statewide Assessment?

Rosemary Heinitz

Math Content Specialist
MDE Research & Assessment
Rosemary.heinitz@state.mn.us

Welcome back to a new school year. I hope your summer allowed you to "re-energize" for the 2007-08 school year. Thanks to all who worked on review panels. The summer was busy with panel meetings for range-finding, data review, new item review, and bias review. This important part of the test development process cannot be done without teacher input.

MCA-III

Now that the revision of the Minnesota K-12 Academic Standards in Mathematics is complete, the focus shifts to assessment. Assessments must be aligned to the revised standards in 2011. In order to do this, our work starts now. The proposed timeline and process for developing MCA-III Test Specifications is outlined below. This is subject to change.

- October 2007 – Committees will be identified to begin work on test specifications for MCA-III.
- January 2008 – First draft of test specifications will be completed.
- March 2008 – Test vendor begins new item development for MCA-III.
- 2009 – Content review of new items by teacher panels.
- 2010 – Field testing of new items and review of field test data by teacher panels.
- 2011 – First operational administration of MCA-III and standard-setting process for determining achievement levels.

The process for the development of MCA-III Test Specifications begins in October and work will be carried out by two committees.

- Test Specifications committee will consist of 15 members:
 - Members from Standards Revision Committee
 - One teacher per grade (grades 3-8 and 11) to represent the Content Limits Committee
- Content Limits committee will consist of 21 classroom teachers:
 - Seven teachers from Test Specifications Committee
 - Two additional teachers per grade level.

(Continued from page 2)

Purpose of Committee Work

- The Test Specifications Committee will monitor the alignment of the Test Specifications and Item Specifications to the revised Minnesota K-12 Academic Standards in Mathematics.
- The Content Limits Committee will establish item specifications for MCA-III that are appropriate to each grade level 3-8 and 11.

This information is available in PowerPoint format on the MDE website

<http://education.state.mn.us>

Accountability Programs: Assessment and Testing: Professional Development: Conferences & Workshops: Annual Conference. Look for the title: "What are the Next Steps to the Mathematics MCA-III?"

Teachers are encouraged to register on the MDE website to be eligible for participation in panels. To register, access the MDE website <http://education.state.mn.us>

Accountability Programs: Assessment and Testing: Professional Development: Advisory Panels.

We will have more information to share at the Fall Conference.

Over the last several years our society has seen a rapid growth in the use of email for regular communication. Those of us used to slitting open an envelope have had to get used to clicking an icon instead. It may be that in a few years our students will be as unfamiliar with snail mail as they now are with rotary dial telephones.

To keep pace with our changing world MCTM is enacting a change. Conference information, normal publicity, and important updates will be sent to our members electronically. *Mathbits* will still be mailed to you, but other communication will be sent to you via computer.

For this to work properly both the MCTM Board and the membership will each have to abide by the following guidelines.

- 1) The MCTM Board will not send too many emails. Our goal is no more than one email every 6 weeks. That way you will not look at our emails as an unwelcome intrusion in your busy life.
- 2) Members will have to remember to notify the MCTM Board whenever their email address changes. The Post Office is very good at forwarding snail mail when you move. Email providers do not perform that service. So if you change accounts, please let us know so you can continue to get our information.

The MCTM Board hopes this new procedure will improve communication to our membership. Any comments, questions, or problems can be sent to us - electronically of course.

Conversations in Mathematics Methods.

The strength of STEM education in MN will ultimately depend on the success of new and beginning teachers. In the past, SciMath^{MN} supported STEM education through teacher programs and the Transforming Teacher Education (TTE) program. Since then, little has been done at the statewide level. A small group of mathematics methods instructors have been meeting informally to converse about ways to improve our practice. In an effort to expand the conversations, we have held sessions each of the past two years at the MCTM conference in Duluth. The sessions aimed to create conversation around the teaching of Mathematics Methods courses and discuss the challenges and successes found in preparing teachers to teach mathematics for understanding.

At the first session, several themes emerged as important components of any course: Experiencing good mathematics teaching and learning, learning, assessment, pedagogical content knowledge, and professional development. Participants tried to imagine how each component might be incorporated into courses in class work, assignments and assessments. With high hopes we tried to get a listserv off the ground but found that it was a hard environment for deep thought, one more suited to short, timely questions seeking help and advice from peers.

MCTM Communication Change

Bill Eppright

wje@nwc.edu

Vance Revenaugh

vlr@nwc.edu

Publicity Committee

Co-Chairs



(Continued on page 4)

Ideas for Starting the Year and Communicating with Parents

At the beginning of the year, explain your math program to your parents. Share kinds of activities children enjoy and help parents see the purpose of the activities. Let parents know they have a great deal of important mathematical knowledge to share. Children must see that math is not just a subject studied in school, but is used constantly in everyday family life. The home is an ideal place in which to learn mathematics because the problems encountered there are real, not just paragraphs in textbooks.

A few warm-up activities will illustrate the points you have made in your introduction. Choose two or three activities from the following list:

Focus on the Elementary Grades

Judy Hansen
First Grade Teacher
Brown Elementary
Pipestone, MN

1. *What Mathematics Did You Use Today?* Give everyone a blank three-by-five card on which to write something he or she has done that day that involved some math. Put the cards in a hat and have each person pull out a card and read it. You can also have everyone do this orally, listing on the chalkboard all the examples given.
2. *How Tall? How Heavy? How Hot? How Soon?* Give parents five minutes to write down all the measuring instruments they can think of that they own or have in their homes. Compile a master list when they've finished. Don't overlook clocks, automotive instruments, utility meters, or thermometers. Most people are amazed by how many they have.
3. *What's in My Pocket?* Ask for a volunteer to tell you the total amount of change he or she has in pocket or purse. Let the others guess what coins that person could be holding. Since there will be a number of possible solutions, this is a good example of problem solving. Repeat the activity, but this time ask the volunteer also to tell how many coins there are.
4. *How Many Steps?* Ask the parents if they remember how many steps there are on each of their home's stairways. Most of them will have to make an estimate. Then ask everyone to estimate how many steps they climb at home every day. Distribute vertical strips of lined paper and ask each person to color in a space for each step. Post the strips, with names beneath to form a graph.
5. *When's Your Birthday?* Write the names of the months in a horizontal line across the bottom of the chalkboard. Then ask the parents to come up and place a large X above the month of their birthday. After everyone has done so, ask them to study the graph and make observations about the distribution of birthdays.

Source: *Exploring Everyday Math: Ideas for Students, Teachers, and Parents* by Maja Aelman and Julie King (published by Heinemann, 1993).

(Continued from page 3)

Our small group continued to meet and we are still looking for a larger, statewide conversation. Thus, Duluth session two. With a varied and talkative participant group some new concerns about teaching methods emerged: Mathematics understanding vs. memorization, role of content knowledge in teaching and learning, teaching as a cultural activity, how best to use clinical experiences, activities that create cognitive shift, ways to balance expectations, relevance, engagement and rigor.

It seems that people want to be in touch. We want to encourage the larger group to find ways to communicate, to meet whenever possible and to develop a community of mathematics methods instructors. For the moment, the listserv is the operating method, though conference sessions can continue as long as there is interest. Other ideas that have surfaced—Meet for a day, have a TTE type meeting, explore the Association of Mathematics Teacher Educators (AMTE) resources and conferences, continue MCTM sessions or a strand, continue an online resource/discussion, consider writing some grants to support our collaborative work—keep talking.

For now you can join the listserv by emailing Nancy Desmond at ndesmond@gw.hamline.edu

We will start some short conversations in September and encourage everyone to weigh in or send their own questions—at the very least we can begin to have a way to share ideas and information quickly and easily with one another. We look forward to hearing from you.

Nancy Desmond, Anne Bartel, Lucy Payne and Cathy Wick

The Minnesota State High School Math League, 160+ schools strong with over 3000 students participating, is looking for more schools to sign up a team and have fun in competitive mathematics!

The league exists to give all participants more opportunities to further their mathematical knowledge and problem-solving abilities. This is achieved by challenging the students with familiar topics as well as topics not commonly taught in the high school curriculum. Their understanding of the topics is assessed through 5 regular season competitions during the school year. The league recognizes high scoring individuals and teams and invites them to a state tournament in March.

One byproduct of these competitions is increased confidence in regular school classes, higher scores on ACT and SAT tests, and better success on national competitions such as the AMC 10, AMC 12, and AIME.

More information about the Minnesota State High School Math League can be found at <http://www.macalester.edu/mathleague>. You can contact league director, Wayne Roberts, at 651-765-2871, email league assistant director Shari Colvin at mathleague@macalester.edu or call at 651-696-6475.

We hope you can join us in this great activity!

During the week of June 12-18, 810 high school and college mathematics teachers spent their days in Louisville, Kentucky reading and scoring approximately 270,000 Advanced Placement Calculus exams! Among this year's AP Readers were 30 teachers from Minnesota including the following MCTM members.

Tracy Bibelnieks, Augsburg College

Teresa Gonske, Northwestern College

Rose Gundacker, Rosemount High School

Terry Hewitt, Bemidji High School

Karen Hyers, Tartan High School, Oakdale

Linda Meichsner, Jefferson High School, Alexandria

Timm Ringhofer, Falls High School, International Falls

Kathryn Trier, Eagan High School

Although evaluating thousands of calculus problems may not sound appealing to the general population, one veteran reader described the week-long experience as "summer camp for adults." The AP Reading is a unique forum in which academic dialog between secondary school and college educators is fostered and encouraged. Relationships are built with colleagues from all across the U.S. and several other countries that potentially continue for many years and the exchange of ideas strengthens commitments to students and to teaching. Besides the time spent scoring exams there are plenty of opportunities to learn and be inspired by special speakers, to attend local entertainment events, and to spend socializing.

Any of the AP readers listed above would highly recommend this experience to any calculus teacher. Next year's AP Calculus Reading will take place in Kansas City June 9-15. For more information or to apply to the program, visit the College Board APCentral website at <http://apcentral.collegeboard.com/apc/Controller.jspf>

Note: If you were a reader for the AP Statistics exam and have a copy of the master list of participants, we would appreciate it if you would forward the names of Minnesotans from the list and we will gladly highlight your participation as well. Thanks, Editor.

NCTM Families Web Page—www.mctm.org/families

Brochures and other online resources that recommend practical ways for families to discuss and do math at home together. Responses to FAQs such as

- Why does the math my child brings home look different from the math I remember?
- What can I do to make sure my child succeeds in math and will be able to take challenging math classes in the future?
- Why are students using calculators?
- What happened to timed skills test?

Also in Spanish and French.

Minnesota State High School Mathematics League

Submitted by Tom Young
Math League President

MCTM Members Evaluate AP Exams

Written in one student's exam booklet:

Page 2: "I kind of doubt I will make it as an engineer."

Page 4: "I know I won't make it as an engineer."

Page 6: "Say hello to the world's newest English major!"

The free response questions were challenging! Successful students demonstrated quite an accomplishment in learning.

MENTOR OR MENTEE: Which one are you?

As the school year begins, MCTM's concern, through the CONNECT Committee, turns to those who are in their first few years of teaching and to those who encourage them and help them to have a successful year.

Do you have a mentor?

Many school districts provide mentors to beginning teachers. If you are working with a mentor, please let us know so we can be of support to that person. We'd like to connect them with other mentors and provide some ideas that may be useful. Send the name and email address of your mentor to the CONNECT Chair, Larry Luck, at larryluck@aol.com.

Are you a district mentor?

We'd like to form a support network for math mentors in Minnesota, so please send your name to the address above.

Would you like a mentor?

The CONNECT Committee will find an experienced Math teacher who will serve as a mentor for Math teachers in their first three years. The mentor will be available for telephone and on-line communication and will offer suggestions about teaching mathematics as well as helpful resources. To request a mentor, contact Larry Luck at the address above.

How about a Virtual Mentor?

If you'd like to take advantage of the wisdom, problem ideas and website suggestions of Ann Sweeney, Professor of Mathematics at St. Catherine's College, contact Ann at ajsweeney@stkate.edu

Other CONNECT Events this year- Plan now!!

The MCTM Fall Conference, Oct 19, 2007: Several sessions are designed especially for beginners as well as many more that will be useful to beginners but also of interest to those more experienced who are looking for new ideas.

The Winning Strategies Conference, March 22, 2008: This conference addresses the everyday concerns of novice teachers and paraprofessionals at all grade levels. Get connected with others having similar concerns and explore winning strategies.

The MCTM CONNECT Session. April 24, 2008: Held the evening before the Spring Conference, pre-service and beginning teachers will make connections, learn how to maximize their conference experience, enjoy a meal compliments of MCTM and participate in the famous door prize and book give-away.

The MCTM Spring Conference, April 25-26, 2008: New this year: the Spring Conference, the major Mathematics professional development event in Minnesota each year, will feature a strand of sessions specifically designed for Math teachers in their first three years or those who are changing grade levels. New teachers will become more aware of what others are doing and of the resources available in addition to experiencing great sessions presented by local and national leaders,

To be sure that all new Math teachers are connected to these professional growth and support opportunities, encourage them to contact MCTM. We can't inform them of these activities if we don't know who they are. For more information visit www.mctm.org or to be CONNECTed, contact Larry Luck at larryluck@aol.com or at 763-784-0084.

Dear Matt Mentor:

The topics of sine, cosine and tangent are included in my Geometry course. Students struggle with these ideas and don't seem to catch on to them. Other than the usual "height of tree" type examples, do you have any ideas about how to create interest in these topics?

Matt responds:

This is an important question, and one many teachers ask. Both national and state documents indicate that this is a topic all students should understand and be able to apply.

The National Council of Teachers of Mathematics' (NCTM) 2000 document *Principles and Standards for School Mathematics*, contains an expectation for grades 9-12 that students be able to use trigonometric ratios to find lengths and angle measures. The newly revised Minnesota standards for

mathematics (2007) contain several benchmarks related to this topic. Finally, this topic is included in the specifications for the mathematics test that all students must pass to graduate beginning with students in 10th grade in 2007-2008. So this is an important topic, and we should all be asking the question: "How can I teach this topic so students will be engaged and the learning will 'stick'?"

One idea would be to use this as an occasion to ask your students to work in pairs to complete a 2 or 3 day project. You can find a variety of contexts to suggest for applications (so everyone is not doing the exact same project). Contexts could include the slope or grade of a nearby bridge, the expression "angle of repose" as used in engineering or geology, the necessary distance required to construct a ramp to the door of the school or other local building, or heights of famous or interesting buildings or sculptures. Textbooks often have additional ideas. The end-of-project report should summarize the problem/issue, explain the context, give several representations of the situation, incorporate technology, and in the summary discuss not only a solution but other questions and issues raised by the problem.

Another suggestion (if the weather is good) is to have students build clinometers and measure the height of the school, a nearby tree, a flagpole, or other local tall objects using trigonometric ratios. You could use both shadows for similar triangles, and trigonometric ratios, and compare the results.

There are many Internet resources available for additional ideas, some more reliable and helpful than others. Two excellent sites are NCTM's Illuminations website, which has a lesson called "Trigonometry for Problem Solving", complete with goals, masters for materials, and an instructional plan. Another site with rich material comes from Carleton College in Northfield. Carleton received a grant from the National Science Foundation to develop a Quantitative Literacy course for students, and triangle trigonometry is a component of that course.

If you are not already a member of NCTM and the affiliated Minnesota Council (MCTM), consider joining now. You will find both a rich source of ideas for your teaching, through journals, conferences, and newsletters.

Good luck, and make it a good year!

Matt

Ask Matt Mentor!!



NCTM is now offering expanded topics in its popular E-Workshop series. But don't pack your bags, because we're bringing the workshops to you!

Gather your colleagues at your school for the workshop to share ideas among yourselves while sharing with fellow teachers around the globe. For only \$95 per computer hook up, one site license will allow your group to get together in one room and join in via computer and speakerphone with other groups of teachers like you.

These E-Workshops provide an interactive overview of grade-band specific expectations as defined in NCTM's Principles and Standards for School Mathematics. Using selected activities from NCTM's Navigations series and NCTM's journals, the E-Workshops will provide insights into ways of using these materials in the classroom.

Registration fee of \$95.00 includes one computer sign in for your entire group. This allows the group to gather in one room and discuss the ideas and how they can be implemented across the board, not just in one teacher's classroom.

Available fall 2007 E-Workshops (Visit nctm.org/eworkshops for a full list of the E-Workshops, including the 2008 dates.)

Initial Date	Follow-up Date	Time (pmET)	Grade Band	Topic	Workshop Leader
Sept. 25	Oct. 16	4:00-5:30	9-12	Reasoning with Data & Probability	Fred Dillon
Sept. 27	Nov. 1	7:00-8:30	6-8	Implementing the Algebra Standard	Jen Seay
Oct. 2	Nov. 13	7:00-8:30	9-12	Implementing the Algebra Standard	Fred Dillon
Oct. 3	Nov. 14	4:00-5:30	PK-2	Reasoning with Data & Probability	Emily Hendricks
Oct. 17	Dec. 5	4:00-5:30	3-5	Implementing the Algebra Standard	Ellie Ennis
Dec. 6	Jan. 17	7:00-8:30	PK-2	Geometric Thinking	Wendy Schudmak
Dec. 13	Jan. 31	7:00-8:30	3-5	Reasoning with Data & Probability	Wendy Schudmak

Professional Opportunities

(Continued on page 9)

MCTM Foundation Dinner

Contributed by
Cathy Wick

Photos by
Alice Guckin

For more information about the MCTM Foundation, see the MCTM web site or contact Cathy Wick, Chair of the Foundation Governing Board, at cwick@ties2.net.

Sheri and Blake Smith



The MCTM Foundation held its annual dinner on June 18th at the Canyon Grille in Coon Rapids. About 35 people attended the event. After a social hour, everybody enjoyed an excellent meal. Alice Guckin and Anne Bartel were honored for their service on the governing board of the MCTM Foundation. Jan Cutler, son Mark and daughter Sheri Smith and her husband, Blake, were special guests for the evening.

Jim Foley emceed a program honoring Arnie Cutler who passed away in April. Arnie was the Executive Director of MCTM and was the primary force behind the establishment of the MCTM Foundation in 2000. Attendees were asked to introduce themselves and tell a short story about Arnie.

Don Langlee told about doing much research before purchasing an RV. He was quite pleased with his choice until he found out that Arnie and Jan had purchased a different vehicle. Don wondered what Arnie knew that he didn't. Mary Jo Aiken mentioned that Arnie convinced her to speak at an MCTM meeting by not telling her how large her audience would be. Ed Anderson talked about how much he will miss sharing an office with Arnie at the University of Minnesota. Larry and Noreen Luck reminded everyone that Arnie had once addressed Noreen as "Delores", and she is still known by that name in some circles.

Mark and Sheri shared stories about having their dad as a teacher. Mark thought he was going to get through school and avoid being in dad's class, but another teacher left before the end of the school year, and guess who was the replacement? Arnie's son-in-law, Blake said, "If you think it was hard being Arnie's son, think about how hard it was to date Sheri and want to become part of the family." There was an on-going family joke about wrapping presents. Blake and his son decided to build a wooden box as gift wrapping for some tools. They put the box together with wood screws. In order to "un-wrap" his gift, Arnie had to unscrew these screws with a screwdriver. Always the mathematics problem solver, Arnie devoted considerable thought to determining the fewest number of screws that needed to be removed to open the gift.

The stories were funny and touching, generating both laughter and tears. The evening was a beautiful tribute to a very special person.



Don and Diane Langlee



Mark and Jan Cutler



Jack Sorterberg, Chuck and Pat Ernst



Jim Foley, Bill Tomhave, and Blake Jaskowiak

Sound Modeling

Ruth was a stay-at-home mom with an empty nest. She had decided to refresh her math teaching skills and was enrolled in our Special Methods of Teaching Mathematics at the University of St. Thomas.

When the class arrived for Ruth's micro teaching presentation I darkened the room and started the video. Projected on the large blue screen was the sharp black silhouette of the orchestra taking their seats. You may recall the sequence from the introduction to Disney's Fantasia.

The concert master gave them the pitch on her violin and immediately the room was bombarded with the chaotic sounds of strings playing what sounded like random notes. Then the oboe player sounded his "A" and the avalanche of noise was repeated by the woodwinds and the brass.

When the conductor, Mickey, stepped up and rapped his baton on the podium the silence was palpable. I turned up the lights.

Front left was Ruth seated with her cello near a microphone and an oscilloscope.

"Good Evening." She said. "Have you ever wondered how a musician can precisely tune their instrument to concert pitch amid such a cacophony of sound?"

"Well that is what we are going to explore tonight!"

Ruth's stunning introduction to periodic functions certainly had created "The Need To Know" in her students!

The Storl to the Morey:

Our students may forget the details of much of what we explore and drill with them on functions for example. They will never forget the times we were willing to risk sharing some of our deepest feelings, our passions, our avocations . . . the essentials that enrich the tapestry of our lives.

(Continued from page 7)

If you have questions, email e-learning@nctm.org.

Reasoning with Data and Probability

This is the 2007-08 Professional Development Focus of the Year. Explore ideas of mathematical reasoning with data and probability as defined in NCTM's Principles and Standards for School Mathematics. These pairs of 90-minute E-Workshops will offer investigations of concepts within the data analysis and probability standard and provide activities for classroom implementation. Where appropriate, E-Workshops include references to Curriculum Focal Points and highlight instructional strategies that will foster student understanding of the Data Focal Point. Methods of data collection, statistical analysis, evaluation, and understanding and application of probability will be explored using several instructional approaches, including utilization of virtual manipulatives.

Implementing the Algebra Standard

Gain an interactive overview of the algebra expectations as defined in NCTM's Principles and Standards for School Mathematics. These pairs of 90-minute E-workshops will offer approaches and techniques for integrating algebraic concepts in the classroom and provide activities for classroom implementation. Where appropriate, E-Workshops include references to Curriculum Focal Points and highlight instructional strategies that will foster student understanding of the Algebra Focal Point. Patterns, representations, modeling, and analysis of change will be explored using a variety of formats, including utilization of virtual manipulatives.

Geometric Thinking

Gain an interactive overview of the geometry expectations as defined in NCTM's Principles and Standards for School Mathematics. These pairs of 90-minute E-Workshops will offer approaches and techniques for integrating geometric concepts in the classroom and provide activities for classroom implementation. Where appropriate, E-Workshops include references to Curriculum Focal Points and highlight instructional strategies that will foster student understanding of the Geometry Focal Point. The activities included will promote student understanding of shapes, spatial relationships, transformations, and visualization, using resources that will enable connections among geometric properties and theorems.

What Students Teach Us

Sharing the Stories

Dick Hanson

Our students...will never forget the times we were willing to risk sharing...essentials that enrich our lives.

National Metric Week October 8-12

Break out your rulers. It's time to celebrate National Metric Week. This fall the week of October 8-12 (the 10th month of the year and the week containing the 10th day) will be set aside to celebrate the metric system. Americans will have an opportunity to focus on the importance and convenience of the measurement system based on 10s. For links to the U.S. Metric Association and ideas for metric lessons and activities visit www.nctm.org/metric-week.aspx



www.mctm.org

MCTM Fall Conference

Minnesota Council of Teachers of Mathematics

Math and Science Hand in Hand

Friday • October 19th, 2007

Lakeville South High School
21135 Jacquard Avenue, Lakeville, MN 55044
<http://www.lshs.isd194.k12.mn.us/>

Schedule Highlights

7:30 • Registration & Breakfast
7:30 – 1:30 • Exhibits Open
8:00 — 9:15 • Opening Session
9:30 – 10:15 • Session I
10:30 – 11:15 • Session II
11:30 – 12:15 • Lunch
12:30 – 1:15 • Session III
1:30 – 2:15 • Session IV
2:20 – 2:40 • Door Prizes

Registration Fees

Includes lunch

	<u>Pre-Registered</u>	<u>On-Site</u>
Member	\$35	\$40
Student Member	\$20	\$25
Non-Member	\$60	\$65
Student		
Non-Member	\$32.50	\$37.50

Special \$15 rate for each pre-service Math Ed student if group from same college registers together, in advance, with one payment. Membership is included.

Over 50 Sessions for Kindergarten through Higher Ed throughout the day.

Keynote Speaker

Dr. Claudia Neuhauser, University of Minnesota
author of "Mathematics and Bacterial Growth"

Dr. Neuhauser is a mathematician who studies living things. In the MathPacks project's Models and Bacterial Growth, designed for use at the Science Museum, she uses computer modeling to figure out how to predict behavior of organisms under certain conditions. Students may not be familiar with a "model" in a computer program, but this model is still a simplified image of the real world, just like an airplane model they play with. See an interview of Dr. Neuhauser at www.smm.org/mathpacks/cells/videos/math.php.

Directions to Lakeville South High School

From 35W:
From I-35, exit at County Highway 70.
Go east on Hwy 70, and turn left (north) on Jacquard Avenue.
The school is on the left side of Jacquard Avenue.

For more information contact:

Donna Forbes
Conference Chair

dforbes@mahtomedi.k12.mn.us ajsweeney@stkate.edu

Bill Tomhave
Conference Chair
tomhave@cord.edu

Ann Sweeny
Conference Chair

Tom Muchlinski
Registration
tmuchlinski@earthlink.net

Visit www.mctm.org for registration and speaker forms and more information as it becomes available.



EARLY REGISTRATION FORM

**Minnesota Council of Teachers of Mathematics
FALL CONFERENCE
Friday, October 19, 2007**

Math and Science Hand in Hand

Lakeville South High School
21135 Jacquard Avenue
Lakeville, MN 55044
<http://www.lshs.isd194.k12.mn.us/>

REGISTER BY OCTOBER 10, 2007 TO QUALIFY FOR EARLY REGISTRATION.

Registrations postmarked or submitted on-line after October 10 will be charged an additional \$5.00. You may register for the Fall Conference by completing this form or you may register online at www.mctm.org

Name _____

Address _____

City _____ State _____ Zip Code _____

If you are a new member OR if any of the following has changed, fill in the information below.

Home Phone (_____) _____ Work Phone (_____) _____

Email _____

District Name _____ School/Institution _____

Early Registration Fee (includes lunch)	Level	Position
<input type="checkbox"/> MCTM Member \$35.00	<input type="checkbox"/> Elementary	<input type="checkbox"/> Teacher
<input type="checkbox"/> Non-member \$60.00	<input type="checkbox"/> Junior High/Middle	<input type="checkbox"/> Specialist/Coach/Supervisor
<input type="checkbox"/> Student Member \$20.00	<input type="checkbox"/> High School	<input type="checkbox"/> Principal
<input type="checkbox"/> Student Non-member \$32.50	<input type="checkbox"/> District	<input type="checkbox"/> Student
<input type="checkbox"/> Speaker \$20.00	<input type="checkbox"/> Post Secondary	<input type="checkbox"/> Retired
<input type="checkbox"/> Undergraduate Mathematics Education Student Group Rate \$15.00/person	<input type="checkbox"/> Other	<input type="checkbox"/> Other

(Non-member fee includes one year membership)

(Group from the same institution sent together with one payment and individual forms attached – includes one year of membership dues)

MCTM Dues

New Renewal Do not need to renew

Regular Membership

One Year - \$25.00 Two Year - \$40.00

Student/Retired Membership

One Year - \$12.50 Two Year - \$20.00

I would like to make a tax-deductible contribution of \$ _____ to the MCTM Foundation

<p>Amount Due</p> <p>_____ Early Registration Fee</p> <p>--- _____ Dues</p> <p>_____ Foundation Contribution</p> <p>_____ TOTAL DUE</p> <p><input type="checkbox"/> I do not wish to have directory information published.</p>	<p>Method of Payment</p> <p><input type="checkbox"/> Credit Card __ V __ MC __ D</p> <p>Card Number _____</p> <p>Expiration Date _____</p> <p>Signature _____</p> <p><input type="checkbox"/> Check</p> <p><input type="checkbox"/> PO Number _____</p> <p><i>(Purchase order must be attached)</i></p>	<p>Mail to: MCTM</p> <p>PO Box 289</p> <p>Wayzata, MN 55391</p> <p><i>Register online at www.mctm.org</i></p> <hr/> <p>For office use only:</p> <p>Record _____</p> <p>Received _____</p> <p>Payment _____</p>
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Mission Statement:

The MCTM is an organization of professionals dedicated to promoting the teaching and learning of meaningful mathematics for all students by supporting educators in their efforts to improve mathematics education.

Mark Your Calendar

October 8-12	National Metric Week
October 19	MCTM Fall Conference, Lakeville South HS
November 1-4	AMATYC Annual Conference, Minneapolis, MN
April 25-26, 2008	MCTM Spring Conference, Duluth, MN
November, 2009	NCTM Regional Conference, Minneapolis, MN

Do we have your correct address?

MCTM strives to provide membership with current information regarding mathematics education in the state of Minnesota. To accomplish this goal, we need an accurate, permanent address for each member. Is your correct address printed on the label of this issue of *Mathbits*? If not, contact Executive Director Tom Muchlinski at tmuchlinski@earthlink.net or visit the MCTM web site (www.mctm.org) membership page to make your change. Student MCTM members and members in transition are encouraged to provide a permanent address. Newsletters mailed to student members will not be forwarded. Thank you for helping us stay in touch!
FYI: In an effort to be cost effective, MCTM sends newsletters at USPS bulk rate. As a result, delivery times may vary between postal districts.

**Check the mailing label for your membership renewal date.
Renew online at
www.mctm.org**

Please submit items for publication in the September issue of *Mathbits* to tlgonske@nwc.edu by October 29, 2007. Email or call 651-631-5228 with any questions. - Teresa Gonske, Editor
