



Mathbits

Geometry

NCTM 2010-2011 Professional Development Focus of the Year

Inside this issue:

What's new in assessment	3	NCTM states that the intent of this year-long focus on geometric thinking is to help teachers, school leaders, and teacher educators expand their view of what geometric thinking is and how it can be developed across grade levels.
MCTM Foundation	3	This includes reviewing current curricular and instructional practices PreK-12 and considering ways in which to focus more explicitly on ideas that are foundational to the topic of geometry. The Geometry Standard, as described in <i>Principles and Standards for School Mathematics</i> (NCTM, 2000), serves as a framework for this focus. Many resources can be found, indexed by grade band, on the NCTM website http://www.nctm.org/profdev/
MDE Specialist column	4	
Opportunities	7	Do you agree that geometry is amazing?! No strand of mathematics carries more potential for a wide range of integration and interdisciplinary study than does geometry. To study geometry can be to study history, culture, art, science and nature, astronomy, music, architecture, and much more. Geometric thinking even begins to develop in the earliest stages of childhood as young children through their play activities explore their spatial world, classify shapes, recognize and create spatial patterns.
Election information	9	
CONNECT	15	
Matt Mentor	17	In the spirit of this year-long focus on geometry, let's share the ideas Minnesota's teachers implement to enhance learning geometry. For example,
Math activity	20	<ul style="list-style-type: none">• How do you encourage and enable the study of geometry and geometric thinking beyond the mathematics classroom?• How do you enhance or motivate the learning of geometric concepts and applications through interdisciplinary content?• How do you make learning geometry real and motivating via connections with students' interests (art, music, skateboarding, etc)?• How do you use geometry as a means to engage students in acting out skills useful for everyday life?• What have been some of your most unexpected encounters with geometry in "everyday life" that you have subsequently brought into the classroom?• Have you found that taking older students back to experiences resembling "child's play" grounds their thinking and enables them to make sense of abstract concepts?• Have young students exhibited problem solving strategies that amazed you with a natural bent toward geometric thinking?
For students	21	
Honorary membership nominations	22	
Spring conference registration form	23	

Look throughout this newsletter for more on geometry!

Your professional colleagues would like to learn from shared thoughts and experiences. Take some time to seriously consider writing some of your ideas for inclusion in a future issue. It needn't be difficult, a half page will do! See page 20 for details.

NOMINATE A CANDIDATE FOR HONORARY MEMBERSHIP IN MCTM

Honorary membership in the Minnesota Council of Teachers of Mathematics is awarded to individuals who have provided distinguished leadership and service to the Council. The MCTM Board of Directors annually presents honorary membership following a nomination and selection process. The presentation of honorary membership is made at the annual spring mathematics conference. Please consider submitting a nomination for the 2011 Honorary Membership Award. The nomination form and more information concerning honorary membership in MCTM is on page 22 and also available at www.mctm.org under the *Membership* menu.

SPEAK AT THE SPRING MATHEMATICS CONFERENCE SUBMIT YOUR PROPOSAL NOW! VOLUNTEER TO PRESIDE!

The Program Committee invites you to submit a session proposal or to volunteer to preside for sessions at the conference. Presentations should focus on one or more of the conference strands (Geometry, Representation, Standards, the Assessment Principle, and the Technology Principle) and model best instructional practices. Regular sessions are 60 minutes in length, attended by up to 100 participants. Workshops are 90 minutes in length and can accommodate up to 48 participants. Should your proposal be accepted, the conference registration fee is reduced to \$40. (Note: This will be for one person if there are multiple speakers in the session.)

For those who want to participate, but do not want to lead a session, there is the opportunity to **volunteer as a session presider**. Presiders are important to the success of the conference and are greatly appreciated by speakers. Presiders assist speakers by welcoming participants, handing out materials, and tallying the attendance. Please complete the online form found at www.mctm.org. This form is used for both speakers and presiders.

Please submit Spring Conference speaker proposals by December 22, 2010.

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Minnesota teachers have aligned curricula with the 2007 Academic Standards for Mathematics and are anticipating the first administration of the Grades 3-8 operational MCA-III. The folks in the Research and Assessment Division at the Minnesota Department of Education are developing materials that can be used by classroom teachers to help prepare students for the MCA-III. The following materials will be available:

The **Mathematics MCA-III Test Specifications for Grades 3-8** document is currently available in draft form. This document stays in draft form until the standard setting process for the MCA-III is complete.

Item Samplers for both the online and paper versions of the test will be available. Through the MDE website you will be able to link to the online Item Samplers available on PearsonAccess. The paper Item Samplers will be PDFs available directly on the MDE website.

A **tutorial** will be provided to help students and teachers become familiar with the features of the online test items.

Formula Sheets for Grades 5-8 are posted on the *MCA Manuals & Directions* page in the MCA section on the MDE website.

If you have questions about the MCAs, please contact me at rosemary.heinitz@state.mn.us

The MCTM Foundation is committed to continuing excellence in mathematics teaching and learning in Minnesota. The Foundation offers grant opportunities to support participation in MCTM's Spring Conference. **Sarah Johnston**, a fourth grade teacher from Edgerton Elementary in Roseville, was a recipient of such a grant for the 2010 conference. She wrote:

This was my second time attending the spring conference, and my first time as a presenter. It was a wonderful time for professional growth. I was able to attend several informative sessions. ... It was enjoyable to meet people with the common passion for teaching mathematics, as well as reconnecting with friends. I would not have been able to attend the conference without the support of the MCTM grant. This was a great opportunity.

Another MCTM Foundation initiative is the *Arnie Cutler Scholarship for Mathematics Course Work for Middle Grades Teachers*. Detroit Lakes Middle School teacher **Jessica Stuewe**, the first recipient of the Cutler Scholarship, sent these comments to the Foundation:

Your committee chose me as one of the lucky recipients of the Arnie Cutler Scholarship, and I am writing to thank you for the opportunity you helped me to afford. The classes I enrolled in and completed last summer included a number of mathematics courses for teachers, from which I have implemented a significant amount of material into my classroom this year. ... The courses enhanced my understanding of the mathematics as well as provoked my imagination with new approaches to teaching these topics. ... I have been able to use many of the ideas from our summer courses directly into my classroom to make my students' experiences richer.

Congratulations to Sarah and Jessica. For information on how you can apply for a **Spring Conference Support Grant** or for the **Arnie Cutler Scholarship**, talk with these previous awardees or contact Foundation representatives. Application forms and information can be found on the MCTM website under the MCTM Foundation menu tab. Spring Conference Support grant applications are due January 15. Arnie Cutler Scholarship applications are due in March.

What's New in Statewide Assessment?

Rosemary Heinitz

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

MCTM Foundation

Ellen Delaney
Foundation Board Chair
edelan@District16.org

Members' and others' contributions to the MCTM Foundation make these opportunities happen.

Donations of support can be made online through the Foundation link.

Even a \$10 donation can help meet a \$5K Challenge Grant.

Mathematics Specialist Column

Sue Wygant
MN Dept. of Education

susan.wygant@state.mn.us

Geometry: Composing and Decomposing

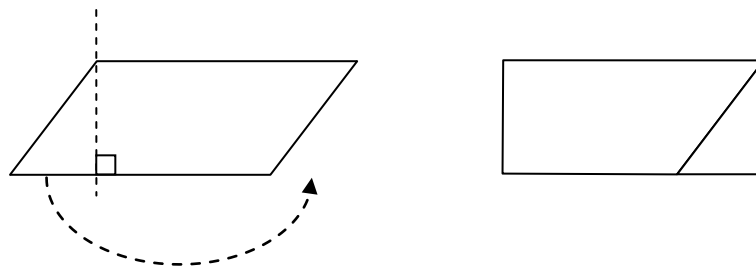
The thinking about what constitutes geometry continues to evolve and further fuse different strands of mathematics. Current thinking is extending geometry from a branch of mathematics devoted to the study of shapes and space to the study of visual phenomena. This thinking could provide for learning experiences that enable better connections of ideas for students.

As an example, consider the big ideas of composing and decomposing. You will find many benchmarks throughout the Minnesota standards that are about composing and decomposing. Upon deeper inspection, we see that they are in the number and operation strand as well as the geometry strand. Benchmarks K.1.2.2, 1.1.2.2, 1.3.1.2, 5.3.1.2, 6.3.1.3, 9.3.1.2, and 9.3.4.2 actually use the words compose and decompose and others also contain the idea of composing and decomposing. An example of decomposing a number and using the distributive property multiplication over addition follows:

$$16 \times 25 = (10 + 2 + 4) \times 25 = (10 \times 25) + (2 \times 25) + (4 \times 25) = 250 + 50 + 100 = 400$$

An example of decomposing and composing for a geometric figure follows:

A student explains how to determine a way to find the area of a parallelogram by decomposing the parallelogram into a triangle and a trapezoid and then composing a rectangle. (Are there other decompositions that could have been used in each situation?)

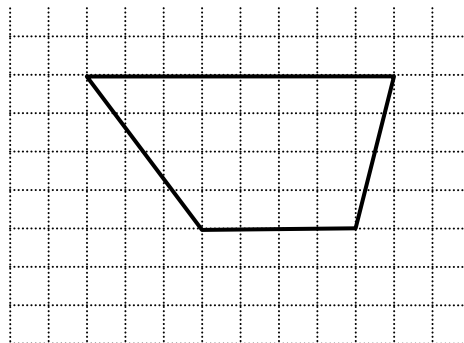


In the same way that the 16 was intentionally decomposed to fit this specific situation, the parallelogram was also very purposefully decomposed with the goal of composing a rectangle.

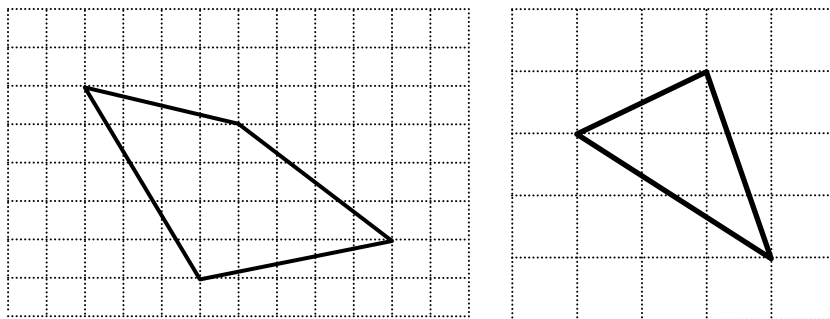
How do we elicit our students' mathematical thinking so that we are able to further develop and nurture even more powerful mathematical reasoning processes? The question below could be asked to invite decomposing and composing.

How do we elicit our students' mathematical thinking so that we are able to further develop and nurture even more powerful mathematical reasoning processes?

Explain how to show that the area of the trapezoid below is 24 square units, without using a formula.



The area is given intentionally to take the focus off the use of a formula and also to take the focus off of computation. Consider the following problems that ask students to find the area of the given figures.



In each case, decomposing the figure might not be so helpful, but try composing a rectangle that can then be decomposed to provide access to the area of the figures.

Investigating, making conjectures, developing logical arguments to justify conclusions, and reasoning are important aspects of studying geometry. Some questions to guide your lesson planning so that students are provided with these experiences are focused on the NCTM Process Standards.

Reasoning and Proof

- Are students required to provide explanations and justify their reasoning?
- Have you included “what, how, why” questions to solicit student explanations or justifications?
- Are you able to guide students so that their explanations focus on conceptual understanding of the concept rather than on procedural steps?
- Have you included feedback, modeling, or examples that promote complex thinking by students?

Communication

- Will students be given opportunities to talk to each other and share mathematical thinking and language?
- Are questions focused on mathematical thinking (processes, strategies, and solutions) rather than on calculations?
- Have you planned a way to incorporate students’ ideas, questions, and input?

Problem Solving

- Will students be engaged in problems that allow them to grapple with mathematical concepts, or are they doing exercises for which they are practicing a procedure?
- Do the tasks connect to underlying concepts, or do the tasks mainly focus on memorization?
- Have you included some of tasks that are open-ended?
- Does the lesson encourage multiple strategies to solve each problem?
- Will students have a chance to create their own problems?

Representation

- Are a variety of representations used during instruction?
- Have you planned to have the students use these representations in meaningful ways as they explore the concepts?

A sampling of free preview articles in NCTM journals

A Lesson on the Slopes of Perpendicular Lines (Geometer’s Sketchpad)

John M. Tucker
Mathematics Teacher
April 2010
Vol. 103, Issue 8, p..603

Deductive Puzzling

Jeffrey J. Wanko
Mathematics Teaching in
the Middle School
May 2010,
Vol.15, Issue 9, p. 524

Fractions and the Funky Cookie

Aimee J. Ellington and
Joy W. Whitenack
May 2010,
Vol. 16, Issue 9, p. 532

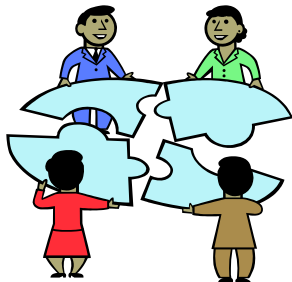
To read these articles
and others, visit
www.nctm.org, select the
grade level, and then
link to *back issues*.

(Continued from page 5)

- Will students have the materials on hand to be able to translate back and forth between different representations to demonstrate their understanding of the concept?

Connections

- How will students be encouraged to make conceptual connections during the lesson?
- Have you provided for explicit connections to be made between the mathematics learned in the lesson, other math concepts, disciplines, life experiences, and the world?
- Does this lesson have students apply the math they learn to the world around them?
- How are connections made between the mathematical tools that are used and the mathematical concepts?



More News from MDE

Update on the Common Core State Standards for Mathematics (CCSSM)

At this time, Minnesota is not adopting the Common Core State Standards for mathematics. The commissioner of education revises the academic standards according to a timetable specified in state statute (Minn. Stat. § 120B.023, subd. 2).

The Minnesota K-12 Standards in Mathematics were revised in 2007 and are not scheduled to be revised again until 2015. Since the commissioner does not have authority to revise mathematics standards at this time, legislative action would be needed in order for the state to adopt the Common Core State Standards for mathematics.

MDE will continue to analyze the Common Core and Minnesota mathematics standards in order to provide information to the legislature, as requested.

Great News! SciMathMN receives a Mathematics and Science Grant

We are excited to announce that the Minnesota Department of Education has awarded SciMathMN a grant to establish the Minnesota Mathematics and Science Resource Teacher Center (MMSRTC).

The MMSRTC will be part of the Mathematics and Science Teacher Academy (MSTA) which is made up of nine statewide regional Teacher Centers located throughout the state. The regional MSTA Teacher Centers support schools and teachers in efforts to improve K-12 student achievement in mathematics and science. The MMSRTC is a Teacher Center that is designed to provide services to the regional MSTA Teacher Centers.

The beginning work of the MMSRTC is to establish electronic curriculum frameworks for both mathematics and science and to develop assessment items for use by regional teacher centers. Stay tuned for more information! This initiative will require the coordination of many mathematics and science teachers. If you are interested in finding out about opportunities to be involved, please contact Mike Lindstrom at mike.r.lindstrom@gmail.com.

Winning Strategies Conference March 2011

Normandale Community College will host a regional conference, "Winning Strategies" for **Paraprofessionals and Future Teachers**. College faculty, staff and students in EdTrAc (Normandale's Education Training Academy) collaborate with Metro ECSU (Metropolitan Educational Cooperative Service Unit), to present a **professional development opportunity** for working educators and those interested in joining the ranks. the 6th Annual Winning Strategies Conference for Paraprofessional Educators and Future Teachers will be on Saturday **March 12, 2011** from 8:00-3:30. Information will be forthcoming online at www.metroecs.org

The **Minnesota High Tech Association** (MHTA) ACE Leadership Alumni are partnering with Minnesota Computers for Schools (MCFS) to award the **Computers to Classrooms grant** to one K-12 teacher in a Science, Technology, Engineering, or Math (STEM) discipline.

The grant recipient will have their choice of ten (10) Dell Optiplex GX620/GX520 computers with 17-inch flat panel monitors or six (6) Lenovo ThinkPad X60 laptops. These computers will be awarded to a Minnesota teacher who demonstrates innovation and leadership in the classroom. The purpose of the grant is to advance STEM education by providing computers to a classroom in need.

Eligibility requirements:

- All applicants must currently be teaching within a STEM discipline as outlined by the National Science Foundation (NSF) requirements..
- Only Minnesota teachers/schools are eligible for the Computers to Classrooms grant.
- Applications must be postmarked, emailed or faxed by Friday, February 4, 2011.

For more information, please visit:

http://www.mhta.org/computers_classrooms_grant_application.php

Various Opportunities

MCTM is Seeking Applicants for the NCTM Representative Position

Applicants are being sought for the NCTM Representative position on the MCTM Board of Directors to replace Paul Agranoff who is retiring after 11 years in the position.

The NCTM Representative must maintain membership in the National Council of Teachers of Mathematics and serves as the liaison between MCTM and NCTM. The primary responsibilities of the position are to serve as MCTM's delegate to the annual NCTM Delegate Assembly which is held at the NCTM Annual Meeting, to oversee the consignment process for NCTM materials to be sold at MCTM conferences, and to prepare a report regarding NCTM issues for each MCTM Board meeting.

Anyone interested in applying for the NCTM Representative position should contact Tom Muchlinski, MCTM Executive Director, at tmuchlinski@earthlink.net by December 31, 2010. Questions concerning the position may also be directed to Tom Muchlinski.

Announcing the inaugural **Toyota International Teacher Program** to South Africa. The program will take place July 24 – August 10, 2011. Full-time classroom teachers of all subjects and librarians, grades 7 – 12, are now invited to apply on-line.

The Toyota International Teacher Program is a fully-funded international professional development program for U.S. educators. Funded by Toyota Motor Sales, U.S.A., Inc., and administered by the Institute of International Education, the program advances environmental stewardship and global connectedness in U.S. schools and communities.

The deadline to apply is January 23, 2011. The inaugural Toyota International Teacher Program to South Africa will provide teachers first-hand exposure to the social and environmental complexity of South Africa, focusing on sustainable development and emphasizing the links between history, culture, power, and the environment. Teachers will explore the country's natural and cultural diversity through a range of site visits and hands-on activities.

Visit the website at www.iie.org/toyota for eligibility requirements, application instructions, FAQs, and application. The Toyota International Teacher Program values diversity and encourages educators of all backgrounds, subjects, and school types to apply for this unique professional development opportunity.

**Things we
learned and
experienced at the
MCTM Fall
Conference
October, 2011**

Reflections shared by pre-service teacher education students

Teacher education students from these colleges and universities attended the conference: St. Olaf College, Northwestern College, Southwest Minnesota State, Winona State University, University of Minnesota

I very much enjoyed attending the fall MCTM Conference in Maple Grove, MN. As a pre-student teacher, I found it encouraging to not only find long-term vision in the keynote speech, but to also learn practical (and fun!) activities that I can incorporate on a day-to-day basis within the classroom. *(Mathew Deram)*

We were able to interact with teachers, vendors, speakers, and board members of MCTM quite easily, and this led to some great learning opportunities. The first part of the day was the keynote speaker, Tom Cody. Mr. Cody spoke with much enthusiasm about the reality of classroom teaching...Because most students walk into the classroom asking, "What's in it for me?", teachers must make the classroom a relevant experience for students today, not 30

years ago. Rather than pretending to merely teach parabolas and derivatives, Mr. Cody argued that we must teach Star Qualities such as self-confidence, risk-taking, empowerment, responsibility, persistence, self-motivation, and discipline. *(Sarah Evans)*

I went to another one of Tom Cody's seminars called, "Roadblock to Success: Feeling of I am Stupid!" This seminar was about how all people; even teachers, equate not knowing something to being stupid. Mr. Cody brought to my attention that the greatest danger in school may just be that students are calling other students stupid. This small but incredibly painful word, when not filtered correctly, can begin to define someone, throw him or her out, or completely disengage him or her. His message was all about how we need to teach our students that being confused about something is acceptable and can be a good thing. Being confused does not mean you equal stupid and that word "stupid" is simply not tolerated in our classrooms. Some

tips he gave us that I will use in my classroom will be to embrace confusion, share my own experience with feeling stupid, incorporate multiple intelligences, and finally create a safe learning environment. *(Angie Beckman)*

The first session I attended was titled *Will Your Students be Successful? How Do You Know?* by Claude Paradis. This was a session on the standardized testing of students. The instructor was a retired teacher who discussed his experience of assessment and preparing students for the standardized tests during the

school year. He seemed to believe that if teachers taught their students in a positive classroom setting, students could learn the appropriate mathematics to perform well on the standardized tests. This session was somewhat difficult because there were numerous times

(Continued on page 19)



Board of Directors Election

Five offices on the Board of Directors of MCTM will be filled in this current election. The members of the Nominations and Elections Committee have nominated candidates for each office. Please read the descriptions of the nominated candidates on the attached pages and complete the enclosed ballot. *Please return the ballot within 10 days of receipt of this newsletter.*

Officer Qualifications and Responsibilities:

I. Vice President at Large

The vice-president at large is elected from the MCTM membership at large. A nominee for vice-president must have been a member of the Council continuously during the preceding three years and have participated in the activities of the Council. The vice-president serves a three year term. The vice-presidents plan all conferences sponsored by the Council.

II. Vice President for High School

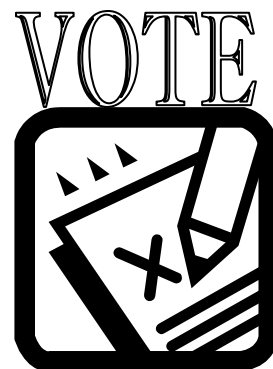
The vice-president for senior high school represents senior high school teachers from across the state.

III. District Directors (Districts 1, 4, and 7)

District directors represent the members in their district. It is the responsibility of directors to promote membership in MCTM, to serve as representatives of their district's members in the Delegate Assembly, and to identify and work to solve problems that may be specific to mathematics teaching in their district. Nominees for district directors must have been a member of the Council continuously during the preceding three years and must work in the district that the director is to represent. The directors shall serve a term of three years.

[The above information is excerpted from *Bylaws of the Minnesota Council of Teachers of Mathematics, effective May 1, 2003.*]

The Minnesota Council of Teachers of Mathematics is a member-driven organization! It is your organization and thus your involvement along with the contributions you make shape the direction and work of the organization. Support your colleagues who have committed their time and talents along with their willingness to serve in the various roles of the organization. You too can play a part as there are many ways to begin getting involved. One of the benefits is getting to know the many wonderful teachers all across the state of Minnesota!



**YOUR VOTE IS
IMPORTANT**

Please complete your ballot and drop it in the mail today!



**Candidate
Information**

2011 MCTM Spring Mathematics Conference Theme: Finding Mathematics in the Real World

Strands and Principles: Geometry, Representation, The Assessment Principle, The Technology Principle and Standards

Friday Keynote Speaker: Current NCTM President J. Michael Shaughnessy.
You can learn more about our Friday keynote speaker at <http://www.nctm.org/about/>

Saturday Keynote Speaker: Karim Kai Louge the creator of the new website full of rich technology based math lessons called Mathalicious. <http://mathalicious.com/>

Plan to attend April 29-30, 2011

Registration information on page 23 and www.mctm.org

Candidates for Vice President at Large (*Conzemius and Salzer*)

Lisa Conzemius


Current Position:

Mathematics Teacher
Detroit Lakes High School

Education:

B.A., Mathematics,
Concordia College, Moorhead, MN
M.A., Curriculum and Instruction,
SDSU, Brookings, SD

Goals as MCTM Officer:

As a member of MCTM I have learned so much from others. I truly appreciate the professionalism and dedication of Minnesota math teachers and would like to give back to others by helping them to become aware of opportunities available to them by being a member of MCTM. I want to help MCTM to continue the tradition of providing high quality learning opportunities for math teachers at all levels as well as opportunities to network with outstanding math educators. I want to help MCTM continue towards its goal of a quality mathematics education for ALL.

Professional Affiliations:

Minnesota Council of Teachers of Mathematics
National Council of Teachers of Mathematics
Council of Presidential Awardees in Math
Education Minnesota

Involvement with MCTM and Mathematics Education:

MCTM Vice-President High School, 2008-2011
MCTM District 7 Director, 2002-2005
Presenter/Presider at MCTM State Conferences
Presenter at NCTM Regional Conferences
Presenter at NCTM National Conferences
2007 Minnesota State Standards Committee Member
MCA Advisory Panel Member
Past Member of MN Quality Teaching Network
and MN Best Practice Network
Past Core Plus Trainer

Jeannine Salzer


Current Position:

7th grade Pre-Algebra and 8th Grade
Algebra Teacher
Hopkins North Junior High

Education:

B.S., Elementary Education, Middle
School Mathematics endorsement
St. Cloud State University
M.A., Curriculum and Instruction
St. Thomas University
National Board Certification in
Adolescent Mathematics

Professional Affiliations:

Minnesota Council of Teachers of Mathematics
National Council of Teachers of Mathematics

Involvement with MCTM and Mathematics Education:

Vice-President Junior High (2004-2008)
Minnesota Mathematics Standards Committee (2007)
NCTM Regional Conference Volunteer Co-Chair (2009)
MCTM Spring Conference Program Committee (current)
MCTM Technology Committee (current)

Goals as MCTM Officer:

MCTM is an organization that promotes professional development to advance the learning and teaching of meaningful mathematics for all. As Vice-President At Large, I will strive to effectively communicate the learning and networking options for the mathematics teachers statewide. I will do this by keeping the members informed of the many opportunities to learn and network with other Minnesota teachers and by helping to recruit new members to MCTM.

Did you know?

The earliest recorded beginnings of geometry can be traced to early peoples, who discovered obtuse triangles in the ancient Indus Valley, and ancient Babylonia from around 3000 BC. Early geometry was a collection of empirically discovered principles concerning lengths, angles, areas, and volumes, which were developed to meet some practical need in surveying, construction, astronomy, and various crafts.

Candidates for Vice President for High School (*Bengtson and Johnson*)

Paula Bengtson


Current Position:

Junior and Senior High Mathematics Teacher
Rush City High School

Education:

B.S., Elementary Education,
University of Minnesota, Duluth
LD Certification,
University of Minnesota
M.S. Mathematics,
Bemidji State University

Professional Affiliations:

Minnesota Council of Teachers of Mathematics
National Council of Teachers of Mathematics
Education Minnesota

Involvement with MCTM and Mathematics Education:

MCTM District 8 Director, 2006-2009
Presenter and Presider at MCTM Fall and Spring Conferences
Presenter at Regional NCTM Conferences
Past Committee Member of MCTM Teacher Incentive Grant
Representative to past MCTM Delegate Assemblies
Worked on State Committee to develop and evaluate 7th and 11th Grade MCA's
Workshop Presenter for Teachers, Parents, and Students from
Preschool to High School Level

Goals as MCTM Officer:

To be an active member of MCTM and work to continue providing the high quality educational opportunities for mathematics teachers at all levels .

Other Information:

I taught 6th grade for two years, special education at the junior/senior high school level for 14 years, and the last 21 years have been in junior and senior high mathematics. Currently I teach three 7th grade math classes, one advanced algebra class, and two courses through concurrent enrollment: College Algebra/Trigonometry and Calculus over interactive TV.

Kristin Johnson


Current Position:

Mathematics Teacher
St. Louis Park Senior High
Math team coach

Education:

B.A., Mathematics
Gustavus Adolphus College,
St. Peter, MN;
Mathematics Teacher Licensure
University of Minnesota,
M Ed , Mathematics,
University of Minnesota

Professional Affiliations:

Minnesota Council of Teachers of Mathematics
National Council of Teachers of Mathematics
Education Minnesota

Involvement with MCTM and Mathematics Education:

MCTM District 5 Director, 2006-2009
Member of MCTM Algebra Task-Force for implementation of the new math standards
Presenter and presider at MCTM and NCTM conferences
Member of Mathematics Best Practice Network
Member of the evaluation team for the 11th grade MCA test
Facilitator of student work grant through the Prep Center at District 287

Goals as MCTM Officer:

The 2007 state standards in math are here. I want to make sure that teachers are comfortable with the standards implementation within their schools. I will promote the fall and spring conferences with sessions that teachers can learn new, better and more creative strategies to teach their students. I will encourage all teachers, including teachers in training, to become active in the pursuit of better educating ALL of our students. I will promote the attributes of the Principles and Standards for School Mathematics. I will support teachers by listening to their needs and concerns and seeking ways to improve them.

Did you know?

Around 500BC, the Greek mathematician, Pythagoras, was the first to realize that harmonious musical tones are derived from a natural geometric pattern. During his travels through Egypt and India Pythagoras began to understand the structures of harmonious music. He experimented with the creation of lyres/harps, altering string tensions and string lengths to find harmonious tones. Pythagoras discovered the geometry and associated mathematical ratios behind modern western music.

Candidates for District 1 Director (Oswald and Wild)**Megan Oswald****Current Position:**

7th grade pre-algebra course
4/5 multi-age elementary classroom
Lincoln K-8 Choice School,
Rochester

Education:

Teaching degree with a specialty in
middle school math,
Concordia College, Moorhead
Currently earning M.Ed.
University of Minnesota-Duluth.

Goals as MCTM Officer:

I would like to provide members relevant networking and development opportunities closer to their home so they are able to take part in more of the MCTM functions. I would also like to reach out to elementary and middle school math teachers to provide them with enrichment opportunities to bring back to their classrooms.

Professional Affiliations:

Minnesota Council of Teachers of Mathematics
National Council of Teachers of Mathematics

Olmstead County Youth Commission which provides community youth the opportunity to make positive changes throughout the county.

InSciEd Out organization, a partnership with Mayo Clinic to promote a constructivist view of science education using zebrafish as a model organism.

Involvement with MCTM and Mathematics Education:

I am a member of the CONNECT Committee with MCTM which sponsors a CONNECT night the Thursday before the spring conference for pre-service and first year teachers to expose them to all the conference and MCTM have to offer.

I have also been a member of several panels at both the MCTM fall conference and the NCTM conference.

I took a three week course at the U of M which focused on the connections between algebra and geometry in the middle school classroom. At Lincoln, I organize a math tutoring over the lunch period for struggling students.

Amy Wild**Current Position:**

High School Math Teacher
Caledonia High School

Education:

Luther College
Winona State

Professional Affiliations:

Minnesota Council of Teachers of Mathematics
National Council of Teachers of Mathematics
American Mathematical Association of Two-Year Colleges
ASCD

Involvement with MCTM and Mathematics Education:

Attendance at MCTM conferences
Organized local conferences with MN Dept of Education

Goals as MCTM Officer:

My goals as an officer revolve around making a teacher's job easier.

I would support any activity that involves working directly with school districts and their teachers.

With the new Minnesota standards, teachers are being expected to teach materials that they are unfamiliar with or have never taught. I would support adding opportunities at the MCTM conferences for teachers to address these issues. In addition, I would support providing local opportunities for the many teachers who are unable to attend the MCTM conferences.

Along with understanding their own material, I feel it is important for teachers to understand the connection between what they are teaching and how it impacts the curriculum that will be covered in subsequent classes. I feel this can be accomplished by working with teachers K-11 on each standard and helping them understand how each benchmark flows from one grade to the next. I believe that this will also help districts create a K-12 vertical alignment for their math curriculum which in turn will strengthen not only teachers understanding but student understanding as well.

Candidates for District 4 Director (Hyers and Reiners)

Karen Hyers

**Current Position:**

Mathematics Teacher
Tartan High School,
North St. Paul-Maplewood-
Oakdale Schools

Education:

M.Ed., Mathematics Education,
University of Minnesota
M. S., Mathematics,
University of Minnesota
B. A., Mathematics,
The College of Wooster, Ohio

Professional Affiliations:

Minnesota Council of Teachers of Mathematics
National Council of Teachers of Mathematics
Council of Presidential Awardees in Mathematics
Association for Supervision of Curriculum Development
Phi Beta Kappa
Delta Kappa Gamma
Education Minnesota

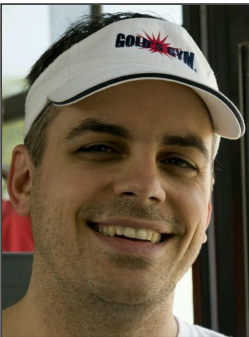
Involvement with MCTM and Mathematics Education:

Speaker at Fall and Spring MCTM Conferences 1996-present
MCTM Delegate Assembly and Publicity committee
NCTM speaker at national conferences and volunteer for
regional conferences
District 622 high school mathematics curriculum coordinator
Presidential Awardee for Excellence in Mathematics and
Science Teaching
MDE Panel Review Committees for GRAD, TEAE and
MCA-II exams
Mentor for new teachers and student teachers
College Board AP Calculus Exam Reader
MN High School Math League coach

Goals as MCTM Officer:

MCTM focuses on encouraging instructional best practices and connecting math professionals. Our conference sessions, *Mathbits* articles, and website continue to be leading resources for my professional journey. As a Board member, I will work to promote and increase awareness of these opportunities with the teachers in District 4. I will also look for new ways to network as a mathematics community and better support our members' participation in MCTM activities.

Mike Reiners

**Current Position:**

Math/Science Department Chair
Christ's Household of Faith
School (St. Paul)

Education:

Licensure: Secondary Mathematics
University of Minnesota
B.S. Mathematics,
University of Minnesota
double degree program
(Mathematics & Piano Perform-
ance) Oberlin College, OH

Professional Affiliations:

Minnesota Council of Teachers of Mathematics
National Council of Teachers of Mathematics
Mathematical Association of America

Involvement with MCTM and Mathematics Education:

Frequent presenter at MCTM Fall & Spring Conferences, NCTM
Regional Conferences, NCTM Annual Meetings, and various other
local & state conferences
Instructed Algebra I/II for 7 years in the UMTYMP program
Consultant for various math education projects, including scripting
intervention software for middle grades math students who are
poor readers, and co-authoring the new Pennsylvania Standards
Aligned System for K-12 Mathematics (<http://www.pdesas.org>)
Head Writer & Executive Board Member,
MN State HS Mathematics League
Head Coach, MN All-State Math Team

Goals as MCTM Officer:

To enhance my level of service toward mathematics educa-
tors in Minnesota.
To increase my awareness of current Minnesota mathematics
education issues.
To act as a liaison between MCTM and the MN State High
School Math League.
To represent the interests of small-enrollment and minimally
-funded schools.
To enhance and promote higher-math opportunities for Min-
nesota students.

Candidates for District 7 Director (*Kruger and Zsedeny*)**Sherri Kruger****Current Position:**

7th – 12th grade Mathematics Educator
Badger, MN

Education:

M.S. (in progress), Mathematics
Bemidji State University
B.S., Mathematics Education
Bemidji State University

Professional Affiliations:

Minnesota Council of Teachers of Mathematics
National Council of Teachers of Mathematics
National Education Association

Involvement with MCTM and Mathematics Education:

12 yr membership
Numerous Presentations at MCTM Annual Conference
The Algebra Project

Goals as MCTM Officer:

Encouraging Mathematics Educators to take an active role to further or refresh their educational practices through the power of sharing and presenting their passions of education.

Encourage membership growth of MCTM to reflect the teacher population of our state and the voice of our teachers.

Linda Zsedeny**Current Position:**

High School Mathematics Teacher
Fergus Falls Public Schools
IQ Academy Online Mathematics
Teacher

Education:

Mathematics Education Degree
Concordia College, Moorhead
Masters in Education Degree
St Thomas University, St Paul
National Board Teaching Certificate

Professional Affiliations:

Minnesota Council of Teachers of Mathematics
National Council of Teachers of Mathematics
Former member of Best Practice

Involvement with MCTM and Mathematics Education:

Taught Middle School for 16 years
Member and past chair of local Math committee
District 7 Delegate
Presenter at State and National Conferences
Presider at State and National Conferences
Involved in discussions and decisions surrounding the state standards.
Participated in various panels concerning the Basic Skills Test (BST) and the Minnesota Comprehensive Assessment (MCA) Tests
From involvement with state grants:
Presented workshops on Algebra which also incorporated Learning Communities
Created curriculum using STEM topics with a focus on conservation
Created curriculum and podcasts centered around the health care field in which I was matched up with educators from the technical college

Goals as MCTM Officer:

My main goal is to represent my district and be a voice for their ideas and concerns. Communication and networking are big factors in helping math teachers not feel alone in what they do. Another goal is to work with members of the board on creative ways to provide accessible staff development. In this time of budget reductions, we need to look at options such as online podcasts (youtube in a math way!) Also, we could look at how other groups use membership drives and how that might work in our organization. I would like to be a catalyst for the board to help them come up with creative ways to improve our organization; whether it's membership, staff development or networking.

MCTM CONNECT PLANS FOR THIS YEAR:

- ♦ To inform all colleges and universities who prepare math teachers about the offerings at the Fall Conference.
- ♦ Increase attendance at the ever-popular CONNECT session at the Spring Conference.
- ♦ CONNECT with beginning teachers in the buildings, with the help of all MCTM members.
- ♦ Enhance the MCTM NING site.
- ♦ Continue the Matt Mentor feature in *Mathbits*.
- ♦ Update CONNECT and MCTM posters on college campuses every six weeks

The committee offers the following article:

“Teaching Secrets: Hang on to the Magic” by Gail Tillery as our advice for the beginning of the school year and not just for beginning teachers.

It was a Monday last spring in the middle of testing season. At the lunch time "venting" session, people were whining and complaining about the testing schedule, which was indeed an indescribable disaster. I totally understood why people were so angry and frustrated, and I didn't blame them for getting their frustrations out among friends. However, as we were leaving, one of the young teachers in the room said something that really resonated with me: *"Twenty-six years and four days."*

It took us a moment to get what she was saying. What did that random time period have to do with anything? Then it hit me: She was pointing out how long it would be until she could retire. The other teachers and I kind of giggled nervously. But it got me thinking. What kind of a profession are we in where people count down the days and years to retirement? How could such an amazing young teacher become so disheartened in her fourth year of teaching?

When I thought more about these questions, I understood the reason for her despair. She would absolutely tell you that her unhappiness has nothing to do with the kids, and everything to do with the forces outside of her control. They're the same things that drive every teacher crazy. Politicians. Testing. Merit pay. Budget cuts and teacher furloughs. Parents who don't care. Parents who care too much and hover. People in charge of our work who are clueless and don't know what they're doing. All the extraneous forces that combine to suck the life out of even the most positive teachers in the profession.

As I thought about this wonderful young woman who is like the daughter I never had. As I thought about future novice teachers who will face the same issues, I asked myself, *"How can I be part of the solution? How can I help young teachers see that, despite the current insanity around our work, this job is still the most magical one there is?"* I offer the following to the novice teachers out there who are about to embark on their careers.

Lesson one: Acceptance. One of the best prayers ever is the Serenity Prayer, which teaches us to accept the things we cannot change. The way education is set up in this country, teachers do not control their own work. Until legislators get out of the middle of it all, we will continue to struggle with top-down decisions that aren't good for kids. We can rant and whine and cry about it all we want, but we still have to get on with the business of teaching the kids who come to us every day. (Although I firmly believe that if enough legislators had to be in a building for even one day, standardized tests would end tomorrow.) Thus, we must take a deep breath, remind ourselves to control the things we can control, and go from there.

Lesson two: Holiness. No, I don't really mean this in the religious sense. What I mean is, what we do with kids is holy and sacred because it changes lives. We provide lifelines to kids who have no one. We turn kids on to knowledge. We listen to their dramas, let them cry themselves out, help them work through their problems...I could go on and on about what millions of teachers do for millions of kids every day. The excellent teachers in the world are

CONNECT

Committee to Orient and Network New/Novice Educators into a Community of (math) Teachers

**I asked myself,
"...How can I help
young teachers see
that, despite the
current insanity
around our work,
this job is still the
most magical one
there is?"**

not in the classroom to deliver knowledge and skills alone; they are also there to provide life lessons to children whose futures will be brighter because a teacher cared for them.

I was watching M*A*S*H the other day (my favorite show, ever, forever) and thinking of all the lives that were saved by units like these in the last few wars. I was also thinking, "What must it feel like to know you saved a life?" And then I realized I've done the same thing many times in my classroom. Not literally, of course, but just as importantly. When I help a kid learn a new skill, when I help him or her try one more time instead of giving up and quitting school or making life-altering negative decisions, I am saving lives, too.

Lesson three: Don't take it personally. This lesson is especially important for high school teachers. When we pour our time, energy, and hearts into planning lessons for students, and then they grouse and complain and aren't engaged, we get our feelings hurt. Let go of that. The students' lack of interest and snarky attitudes are not about you as a person. The flip side of this, of course, is to spend the time and energy to create the most engaging lessons possible, but we have to understand that we can't reach every kid every day.

Lesson four: Understand that there are people out there who are content to be mediocre. When I first came to a public school after 12 years of teaching in a private school, I jumped in with both feet and got involved in as many leadership positions as I could. While many of my new colleagues were supportive, others were a little judgmental and critical. I went to a trusted administrator about it, and she told me, "If you step out in front, there will always be people who try to shoot you down." Step out anyway.

Lesson five: Stay away from the Dark Side. You will learn quickly who the positive people are. Gravitate to them in your department and in your building. Stay away from the people who hate their job and are counting down the days until school ends. They will pull you down with them if you let them.

Lesson six (a corollary to lesson five): Don't let the turkeys get you down. College in the 80's was all about how many buttons you could display on your clothing or your bag. One button I still have in my classroom is a picture of an elephant who is lying on his stomach with his legs spread everywhere. He is covered in turkeys. Enough said.

Lesson seven: Be in balance. Remember that your job is not your life. Your life is your life. When you leave the building, leave everything in it: the kids you can't reach, the kids who are hurting, the Eeyorish colleagues, the insane demands, all the negative stuff. Do not burden your spirit with it. After all, it will all still be there when you come back. Work out, be quiet, worship, sleep, read, laugh. You'll be suicidal by Thanksgiving if you don't.

Lesson eight: Own your power. I have written in other places about how to take charge of your classroom. This version of owning your power is about realizing that every day of your life, you have the power to make a child's life better or worse. You will interact with hundreds, if not thousands, of children through your career, and you will not remember them all. But they will remember you and how you made them feel—whether it was good or bad. Choose your words carefully, take deep breaths, and understand the impact you can have on a child.

Teaching is an art and a science. It is hard every day and challenging every day. But every day something akin to miracles happen in teachers' rooms. Use these lessons to make your room miraculous.

Gail Tillery teaches at North Forsyth High School in Cumming, GA, where she was teacher of the year for 2009-10. Among her many roles are British literature lead teacher, literary coordinator, and mentoring coordinator. She earned National Board Certification in 2002.

http://www.edweek.org/tm/articles/2010/06/16/tln_tillery_magic.html

Teaching is an art and a science. It is hard every day and challenging every day. But every day something akin to miracles happen in teachers' rooms.

Dear Matt Mentor:

The other teachers in my department allow the last 5-15 minutes of class time to start on the homework so that they can make sure students understand the topic. But I find that many students just waste this time and don't get any meaningful work done or they just do the first few "easy" ones and there are many who still don't have the assignment done the next day. Is this a good use of instructional time? Do you have any suggestions about how to be more effective with this?

From: Harried by homework

Dear Harried:

You raise a great question. And this is a good time of the school year to revisit the topic of homework. If you feel this might be a good topic for discussion for you and your colleagues, either across departments or within your department, you might look at a book such as Cathy Vatterott's *Rethinking Homework: Best Practices that Support Diverse Needs* (ASCD, 2009). Other groups of Minnesota teachers have found this a way to provoke valuable discussion.

Issues: The overall purpose for homework should be consistent with the overall purpose of instruction in general: to support lasting learning for all students. Our challenge is to create lessons that will help all students reach Minnesota standards in mathematics, and judiciously supplement classroom time with out-of-class assignments that are clearly focused on that learning. Effective assignments are often part of formative assessment, used to check for understanding. Other valuable assignments might include pre-learning, practice or processing of learning. The purpose for any assignment should be apparent to everyone, including the student.

Today's students come from homes and families with multiple demands on their time and attention. Parents and students may believe that they have the right to determine how time outside of school is used. Some students work more slowly than others; some may not understand what they are expected to do. Daily, overnight assignments are especially problematic.

Research results: Though there is not extensive research on homework, there is enough to take us in some new directions. Homework practices that lead to more effective overall learning include:

- ♦ Spreading practice out over days and weeks (called distributed practice)
- ♦ Preparing for future learning
- ♦ Providing feedback to students on homework
- ♦ Clearly identifying the purpose for all homework
- ♦ Building on students' own interests.

There is virtually no evidence of enhanced learning from homework for students in elementary school. There is a small increase for students in middle school when the total amount of homework in all subjects is an hour or less. For high school students, there is a greater effect on learning, provided the total is about one and a half hours; beyond two hours there is a negative effect. In international assessments, teachers in high performing countries assign much less homework than do U.S. teachers.

Classroom implications: Here are some suggestions on how to be more effective in your classroom.

Based on your initial question about the use of time at the end of class, you may wish to select several problems of medium difficulty from what might have been your assignment for the whole class, and ask them to work with a partner or group on one or two problems, followed by a class discussion. This should immediately give you feedback on understanding,

Ask Matt Mentor!!



The overall purpose for homework should be consistent with the overall purpose of instruction in general: to support lasting learning for all students.

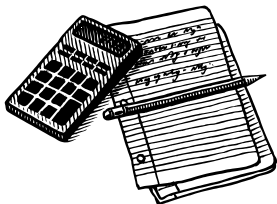
Have a Question for Matt?

Send your questions about teaching math topics to MattMentorMCTM@aol.com and watch for Matt's response in the next issue of *Mathbits*.

(Continued from page 17)

after which you can select additional problems for the class, or select a few good problems for homework. If students do not need the “easy” ones, why spend valuable time on them?

Assign the majority of homework problems from earlier lessons, reinforcing the “distributed practice” strategy referred to above. Avoid assigning all the problems from today’s lesson, and include some problems that lay the groundwork for future lessons, (without expecting students to know the content, of course). This could include collecting data about what adults know about the upcoming topic, or what the student remembers from prior learning related to the topic. Assignments should not include practice of skills and concepts not covered in class.



Spend the bulk of your time planning and preparing good lessons and assignments rather than grading homework. Select high quality, interesting tasks for assignments, which are more likely to be completed. Omit assignments that are simply busywork, or that require little thinking. Learning that is remembered requires thinking. Focus on those ideas that are worth remembering next month or year. A few high quality tasks make for a rich, interesting and appropriate homework assignment.

Prioritize assignments, indicating a realistic maximum amount of time for students to work. After that, they may continue if they choose, but could also indicate where they were at the maximum time. Students can also be asked to indicate how confident they are about the learning, whether they “got it”, partly understood, or feel lost.

Work to narrow achievement gaps with homework practice. Ensure that homework policies do not penalize students for situations that are beyond their control. Effective homework builds confidence and success for all.

Survey parents early in the year about the student’s typical out of school schedule. Encourage parents to expect students to complete assignments independently. Invite parents to give you feedback on when students struggled, or why a particular assignment was not completed.

Give multiday assignments, which give more flexibility for completion. Some teachers assign homework over 2-3 days, and allow time during class for questions. When there is poor completion, find out why. Intervene when one or two assignments are not complete rather than waiting until the task is overwhelming.

Give feedback. If the task is worth doing for students, it is worth the teacher’s time giving feedback. Record completion rather than a grade. This could be recorded as a non-academic rating, possibly raising a grade, but not lowering the grade.

Give students homework choices as often as possible. For example, ask them to select 3 of 5 problems to complete. Differentiate whenever possible, for difficulty, quantity, level of scaffolding, and learning style.

For those students who need additional support for completing their homework, provide in school and after-school opportunities.

Revisiting homework practices and policies with consideration for students’ situations will lead to more successful learning of mathematics. Remember that most learning of mathematics occurs in the interaction within the classroom – between student and teacher and among students. Homework can supplement that, but can never take the place of the classroom venue.

Good luck and continue to have a good year!

Matt

NCTM Homework Tips
<http://www.nctm.org/resources/content.aspx?id=6338>

Families Ask: Homework—Practice for Students or a Snack for the Dog? By Kay Gilliland
Mathematics Teaching in the Middle School,
 Sept. 2002, Vol. 8, 36-7

Families Ask: Homework: How Much Help Is Enough?
Mathematics Teaching in the Middle School,
 Dec. 2009, Vol. 15, 292-3

Beyond Helping with Homework: Parents and Children Doing Mathematics at Home
 By Marlene Kliman
Teaching Children Mathematics,
 Nov. 1999, Vol. 6, p. 140-6

(Continued from page 8)

where the instructor gave us an opportunity to discuss how we use assessment in our classroom. Seeing that I have not actually conducted a classroom as the main teacher before, these questions were kind of hard to answer. I did really enjoy hearing how the other teachers present used assessment and prepared students for the standard tests in their classes. (Cody DeBoer)

Last semester, I did a project on the integration of mathematics and paper folding. I was excited to find that there was a seminar on paper folding and polynomial equations [Using Origami to Model Linear Equations]. We folded multiple boxes out of paper with a constant width and lengths which varied by an inch at a time. Then we calculated the



volumes of the boxes and found the polynomials that described the situation. Rebecca Schmitz, the presenter of this seminar, works with students at multiple levels, and she has used the activity with Algebra I students as well as calculus students. This is just another example of how you can do an activity again and learn even more from it than you did the first time. I am continually finding that a problem can be looked at in greater depth than I thought. (Jaclyn Ellis)



Even more relevant to me ... was a panel of 2nd and 3rd year teachers [Survival: A Teacher's Perspective—J.P. Heisel, Sun Lim, Larry Luck, Terry Wyberg], who answered some questions, most on the topic of classroom management and focusing specifically on behavior management. The answer that I liked the most came from a 3rd year teacher in Minnetonka. She said that she came into the classroom pretending to be this tough teacher so that her students would not mess around. She realized that

she could not really pull that image off since some of her students were bigger than her and it was not her nature to be that type of person. She encouraged us to go into the classroom as who we are and set clear expectations for the students in many different aspects: respect for the teacher, respect for each other, and respect to themselves. (Sarah Plattes)

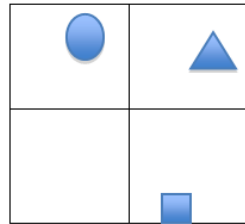
Overall, I learned a lot and really enjoyed listening to the speakers and talking with some of the exhibit representatives. I received beneficial information from all the sessions I attended, and I got to look at and see mathematical games, curriculum, and manipulatives available. I also witnessed the benefits of meeting with many other teachers in the same profession because everyone gets the opportunity to learn from and get ideas from each other. This experience was very beneficial to my development as a teacher, and I fully intend on taking this learning with me into my teaching experiences. (Maria Yunger)

MCTM was a totally new experience for me. I was not sure what to think about it before I went. I thought it might be full of very nerd-like people and nothing too exciting. Overall it was a wonderful experience. I was able to listen to teachers who have been teaching for a while, hear different ideas on what to do in the classroom, and to have a common ground with so many people. The people there were so nice and wonderful, I didn't go to one session I didn't enjoy! The food was very good. And I learned more than I thought I was going to. (Kari Swanson)



Focus on Elementary Grades

Judy Hansen
Pipestone, MN



EXAMPLE

Match My Grid

Students work in pairs. One student arranges three to five shapes on a piece of paper that has been separated into four sections. Using positional and geometric vocabulary, the student describes the arrangement of the shapes to the partner. Using a set of the same shapes, the partner places the shapes in the arrangement described by the first student.

Activity instructions:

Place two chairs side by side at a table. Place a barrier (such as a tall book or a file folder) on the table between the two chairs so that neither student can see the other's work.

One student will play the role of the "teacher" with the task to put three to five shapes (pattern blocks, attribute blocks, or logic blocks) on the grid and then describe relative positions. The "teacher" should use positional vocabulary (above, below, right, left, in front of, behind, two fingers below, etc.) to describe the arrangement to the other student without actually showing the arrangement. The student's job will be to make with their shapes the arrangement the "teacher" describes.

Decide before the start of play whether questions (e.g., Is the circle near the rectangle?) may be asked. Lift the barrier so the players can verify that the locations and positions of the shapes that match. Have the students repeat the activity taking turns playing the teacher's role.

Match My Grid is an example of a learning activity adapted from *Navigating through Geometry in Prekindergarten-Grade 2* (NCTM, 2001)

Authors: Carol R. Findell, Marian Small, Mary Cavanagh, Linda Dacey, Carole E. Greenes, and Linda Jensen Sheffield

Make a plan and put it on your calendar—before you file this newsletter away—to share your ideas or experiences connected to the many facets of learning geometry!

One-half to two pages in a Word document is sufficient.

Graphics or pictures are great!

Please provide references for published materials that you've used or adapted.

Don't let concerns about your writing not being polished enough make you hesitate—the editor and *Mathbits* committee members are glad to provide you with feedback.

Send your write-up electronically to *Mathbits* editor at tlgonske@nwc.edu by February 15. Questions are also welcomed.

MCTM is a members' organization. We want to spread the wealth of Minnesota teachers' knowledge and experience.

Did you know?

Euclid's *Elements* (300 BC) is second only to the Bible in number of editions published, was used as the basic text on geometry for nearly 2000 years, was carried in the saddlebag and studied by Abraham Lincoln while he was a traveling lawyer, and influenced phrases in his Gettysburg address such as "dedicated to the proposition."

Sharing your ideas
and experiences with
Geometry

Math competitions add up to fun!

Every year, **Math Masters of Minnesota** provides Math competitions for 5th and 6th grade students. There are 38 sites throughout Minnesota and Wisconsin that will host competitions next spring. Math Masters is designed to challenge students to use critical thinking and problem solving skills as well as give recognition for academic effort and achievement. These competitions are the culmination of special preparation during which students work to improve their math skills.

Students are excited to be able to join teammates throughout the year to work on Math. Ben, a fifth grader from Albert Lea said, "It's fun. Math is one of my stronger subjects. I especially like being able to get together with friends and work on the problems."

Math Masters of Minnesota started in 1995 and continues to grow every year. It provides a fun competitive atmosphere and every student who participates in the competition receives a t-shirt, pencil and participation certificate. Students who score highest at each site are awarded plaques, medallions and ribbons. Last year, Math Masters awarded the top scorers statewide with Minnesota Twins tickets. These students were recognized during the game.



Coaches, students and parents continue to tell us through evaluations how much they appreciate the Math Masters experience. Teachers and parents express their appreciation for the opportunities offered by Math Masters through a competition in math at these grade levels.

There is a competition in your area! For more information on Math Masters of Minnesota go to www.mathmastersmn.org
e-mail mathmasters@austin.k12.mn.us
or call 507-437-9366 or 507-884-9932

Did you know?

- There are over 38 sites hosting Math Masters competitions in the spring of 2011.
- Over 4800 5th and 6th graders throughout Minnesota, North Dakota and Wisconsin will compete in Math Masters.
- Math Masters is designed to provide educational resources and opportunities for young students.
- Students compete both as individuals and teams.
- Math Masters of Minnesota provides practice materials that help coaches prepare students.
- MN Statute 126C.10 2(b) provides funding to school districts for gifted and talented education. It is possible for districts to use these funds for expenses associated with Math Masters of Minnesota.
- Math Masters started in 1995.
- Registration begins in late September. Go to www.mathmastersmn.org to register!
- Register early as some sites fill up quickly!

Change the way you think about geometry!



What if geometry meant climbing inside giant 3D shapes, or watching yourself in a big curved mirror as you try to play hopscotch?

Whether you couldn't wait for your math classes to be over or couldn't wait for them to begin, **Geometry Playground** offers a lesson in geometry like you've never had before. Through exhibits that will have you climbing, building, drawing, and playing, you'll learn about the ways in which mathematical principles affect how you move, see, and fit things together in the world around you.

Curved mirrors will reveal and resolve image distortions, a playground climber in the shape of a gyroid will let you climb through a geometric design, space-filling blocks will let you build repeating patterns, and many more exhibits await your exploration.

Geometry Playground is on levels 3 and 4 of the **Science Museum of Minnesota** through **January 9, 2011** and is included with museum admission. (www.smm.org)





MINNESOTA COUNCIL OF TEACHERS OF MATHEMATICS
HONORARY MEMBERSHIP NOMINATION FORM



Honorary membership in the Minnesota Council of Teachers of Mathematics is awarded annually by the MCTM Board of Directors through a nomination and selection process. Honorary membership is awarded to individuals who have demonstrated outstanding leadership and service to the Council. It is important to note that honorary membership is based on an extensive record of leadership and service during a person's career, rather than on the basis of one particular accomplishment, regardless of how extensive.

**Nominations must be postmarked
on or before January 3, 2011**

Completed nomination forms should be mailed to:

**MCTM
PO Box 289
Wayzata, MN 55391**

CRITERIA:

1. To be considered for honorary membership, a person must be nominated by three different individuals.
2. The nominee must have an extensive record of leadership and service in the Minnesota Council of Teachers of Mathematics.
3. The nominee must have at least twenty-five years of experience in mathematics education.

SELECTION:

Honorary membership is conferred by the MCTM Board of Directors upon the recommendation of the Honorary Membership Selection Committee.

RECOGNITION:

The person(s) selected for honorary membership are honored at the annual spring mathematics conference.

NOMINATION FORM

Nominee's Name _____
Address _____
City _____ **State** _____ **Zip** _____
Phone _____ **E-Mail** _____

Nominator's Name _____
Address _____
City _____ **State** _____ **Zip** _____
Phone _____ **E-Mail** _____

Describe the nominee's record of leadership and service and how this record has impacted the work of the Council. Please limit this description to two type-written pages double-spaced using 12 point font.

**2011 SPRING MATHEMATICS CONFERENCE
ADVANCE REGISTRATION FORM**

REGISTER PRIOR TO APRIL 8, 2011 AND RECEIVE THE EARLY REGISTRATION DISCOUNT RATE
ADVANCE REGISTRATION CLOSES FRIDAY, APRIL 22, 2011 – AFTER THIS DATE YOU MAY REGISTER ON-SITE



Finding Mathematics in the Real World
 • Geometry • Representation • Standards
 • Assessment Principle • Technology Principle
Duluth Entertainment Convention Center (DECC) – Duluth, MN
April 29 - 30, 2011

Register for the 2011 Spring Mathematics Conference by completing this form or online at www.mctm.org

You will receive an email confirmation of your registration. Please be sure to provide a current email address.

Name _____
 Address _____
 City _____ State _____ Zip Code _____

I am willing to be a presider

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 _____
 School _____

POSITION

Teacher/Professor/Instructor Specialist/Coach/Supervisor Administrator Undergraduate Student Retired Other

LEVEL

Elementary Junior High/Middle High School District Post Secondary Other

UNDERGRADUATE STUDENTS ONLY – Please Indicate Your Level of Certification K – 8 5 - 12

SPRING CONFERENCE REGISTRATION FEES

- Friday and Saturday registration fee includes two lunches and the Friday afternoon Presidents' Reception
 - Saturday only registration fee includes one lunch
- Non-member and lead speaker registration fees include a one year MCTM membership fee
 - **There is no Friday only registration**

CANCELLATION POLICY

For refund requests received by Friday, April 22, 2011, MCTM will refund 50% your registration fee. After this date, no refunds will be given.

CONFERENCE REGISTRATION

	Friday and Saturday		Saturday Only
	Discounted Rate	Regular Rate	<i>(No Discounted Rate)</i>
	<i>(Before 4/8)</i>		
MCTM Member	<input type="checkbox"/> \$160.00	<input type="checkbox"/> \$175.00	<input type="checkbox"/> \$105.00
Non-member	<input type="checkbox"/> \$185.00	<input type="checkbox"/> \$200.00	<input type="checkbox"/> \$130.00
Student Member	<input type="checkbox"/> \$ 80.00	<input type="checkbox"/> \$ 95.00	<input type="checkbox"/> \$ 60.00
Student Non-member	<input type="checkbox"/> \$ 92.50	<input type="checkbox"/> \$107.50	<input type="checkbox"/> \$ 72.50
Lead Speaker	<input type="checkbox"/> \$ 40.00	<input type="checkbox"/> \$ 50.00	<input type="checkbox"/> \$ 30.00

Vegetarian meals requested

MCTM DUES

New Renewal Do not need to renew

Regular Membership

1 Year - \$25.00 2 Year - \$40.00

Student/Retired Membership

1 Year - \$12.50 2 Year - \$20.00

Amount Due

_____ Registration Fee
 _____ Dues
 _____ Fall Conference Discount
 (if applicable)
 _____ Foundation Contribution (optional)
 _____ **TOTAL DUE**

Method of Payment

Credit Card V MC D
 Card Number _____
 Expiration Date _____
 Signature _____
 Check payable to MCTM
 PO Number _____
(Purchase order must be attached)

Mail to: MCTM
PO Box 289
Wayzata, MN 55391
Phone: 612-210-8428

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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

March 12, 2011	Winning Strategies Conference
April 13-16, 2011	NCTM Annual Meeting & Exposition, Indianapolis, IN
April 28-30, 2011	MCTM Spring Conference, Duluth, MN

Do we have your correct address and email?

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 Exec. Director Tom Muchlinski at 763-475-3168 or 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

MCTM's *Electronic Times* is sent out by the Publicity Committee. Do we have your correct email address? Contact Tom Muchlinski with changes.

Please submit items for publication in the February issue of *Mathbits* to tlgonske@nwc.edu by January 15, 2011. Email or call 651-631-5228 with any questions. - Teresa Gonske, Editor
