



MathBits

BOARD OF DIRECTORS ELECTION RESULTS

The Nominations Committee thanks the MCTM membership for using the new electronic voting process this year. This process resulted in a higher percentage of voter participation! We especially thank all the candidates for their leadership involvement, expertise in mathematics education, and willingness to serve. Congratulations to the following people who were elected to a term on the Board of Directors.

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President Elect	Ellen Delaney , Anoka-Hennepin Public Schools
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We look forward to working with these MCTM members, and thank all the candidates for their diligent work in mathematics education. The new officers will be installed and commence their terms of service at the 2012 MCTM Spring Conference.

2012 MCTM SPRING MATHEMATICS CONFERENCE

Framing the Future of Mathematics in Minnesota

The Minnesota Council of Teachers of Mathematics and Minnesota Mathematics Association of Two-Year Colleges are hosting the annual Minnesota Spring Mathematics Conference May 4-5, 2012 at the Duluth Entertainment Convention Center.

Conference Topic Strands

Standards Frameworks Assessment Equity Technology

Featured Speakers

Dan Meyer—*Tools and Technology for Modern Math Teaching*

Dan Meyer taught high school math for six years to students who, in many cases, did not like high school math. He is currently a doctoral candidate at Stanford in the field of mathematics education. He speaks internationally and works with publishers to help them figure out what their textbooks will look like when they leave paper behind. He was named one of Tech & Learning's 30 Leaders of the Future.

See Dan Meyer's TED Talk "Math Class Needs a Makeover" at

www.ted.com/talks/lang/en/dan_meyer_math_curriculum_makeover.html

(Continued on page 5)

2012 Ross Taylor Symposium

The Minnesota Mathematics Frameworks: Linking Minnesota Standards and Classroom Practice

May 3

2012 MCTM Spring Conference

Framing the Future of Mathematics in Minnesota

May 4-5

Electronic Communication Transitions

Important



Please check →

During this year MCTM has been transitioning to electronic communication with the membership. In order for you to receive timely information, MCTM needs to have your current email address on file. You may update your email address by sending a message to Tom Muchlinski at mctm@mctm.org

One of the transitions has been with the delivery of the newsletter, *MathBits*. The current issue is the first issue NOT to be mailed to the entire membership. Over the past several years there has been increased interest in receiving the newsletter via electronic means only (whether for environmental and economic concerns or preference in media). This has been evident in resolutions coming from the members through the Delegate Assembly. In addition, MCTM believes that electronic delivery will provide more reliable and timely receipt of information.

If you received a paper copy of *MathBits* this month, it was a result of one of the following:

- 1) You explicitly requested to continue receiving a hard copy through the USPS mail by contacting the executive director at mctm@mctm.org [Note: This is still an option you may choose.] OR
- 2) Messages sent to your email address came back to MCTM as undeliverable when the election information was sent out in January and February.

Therefore, if you did not directly make a request for hard copies, it is important that you contact Tom Muchlinski at mctm@mctm.org to verify a correct email address. You also need to check that messages from the address mctm@mctm.org are not being blocked by your server or being sent to your spam folder.

Goals of MCTM

- ♦ *To develop an active interest in the science of mathematics.*
- ♦ *To help provide opportunities for the exchange of ideas and materials regarding instruction in mathematics.*
- ♦ *To further the study of problems relating to the teaching of mathematics at the elementary, secondary, and college levels.*
- ♦ *To work for the improvement of mathematics instruction at the elementary, secondary, and college levels in Minnesota.*
- ♦ *To work for the improvement of employment and service of members of the Council and members of the profession in general.*

2011-2012 MCTM Board of Directors

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We are very excited about the Spring Conference and the wonderful speakers and sessions that we are fortunate to offer. Join us in Duluth on May 4-5. Please go to the website for more information. (I found the following descriptions there.)

2012 SPRING CONFERENCE FEATURED GUESTS

Senator Al Franken - Friday Luncheon

Dan Meyer - Friday Morning Keynote

Jeremy Baumbach, Troy Faulkner, Jen Green, and Rob Warnek

- Saturday Afternoon Keynote



The Symposium on May 3 will feature the Minnesota Mathematics Frameworks. The Frameworks are designed to help teachers provide instruction that is related to the Minnesota Mathematics Standards and demonstrate current best practices. The symposium will help teachers, curriculum leaders, and administrators become familiar with the various features of the Frameworks and understand ways to use them to improve the teaching of mathematics in their district.

We have two committees that will meet this spring and summer that need you:

- ♦ Technology Committee—the committee is thinking about how we communicate and collaborate with our members and how to keep our organization tech savvy.
- ♦ Professional Concerns—the committee is working to address equity issues and the gap in mathematics achievement.

Have you thought about summer professional development opportunities? We are featuring some ideas in this newsletter and more will appear on the website as we learn about them. Summer is also good time to catch up on reading. I just downloaded the featured article (free) “From Arithmetic Sequences to Linear Equations” in the March NCTM *Mathematics Teaching in the Middle School* journal by Ryota Matsuura (St. Olaf College) and Patrick Harless and I’m looking forward to reading it. **Happy Spring!**

President’s Message

Michele Luke
MCTM President

Members being sought to serve on committees and task forces.

Contact MCTM President Michele Luke to indicate your interest in being an active part of your professional organization.

MCTM Foundation Grant Awardees

Four teachers have been awarded Foundation funds to support their participation in the MCTM 2012 Spring Conference.

Amy Grund of St Mary’s Catholic School in Bird Island, MN

Jill Halberg of Skyview Middle School in Oakdale, MN

Joel Hogberg of Isle High School in Isle, MN

Mardi Knudson of Sauk Rapids Rice Middle School in Sauk Rapids, MN

Congratulations!

Applications for the **Arnie Cutler Scholarship for Mathematics Coursework for Middle Grades Teachers** are due by March 31, 2012. See the Foundation page on the MCTM web site for information and application materials.

Your contributions to the MCTM Foundation provide the funds for these two programs. Watch for the announcement of new funding initiatives in the future. Contributions can be made to the Foundation on line, on your membership form or conference registration form, and in person at the Foundation table at the Spring Conference. Thanks to everyone who makes Foundation grants possible.

MCTM Foundation

Ellen Delaney
Foundation Board Chair
edelan@District16.org

What's New in Statewide Assessment?

Rosemary Heinitz

Math Content Specialist
MDE Research & Assessment

Statewide Testing

MCA testing is in progress throughout the state. This year the online Mathematics MCA is an adaptive test. This means the test will adjust to each student's skills. Every time a student answers a question, the response helps determine the next question that the student must answer. Although each student will answer different test questions, the Mathematics MCA will assess only the standards for that grade level and all tests will be the same length. In both the online Mathematics MCA and MCA-Modified, there are segments based on calculator availability.

Resources for preparing students to take the MCA are available to you. The testing resource contact in your district is the District Assessment Coordinator (DAC). Assessment updates are sent from MDE to your DAC each week. You may already be familiar with a number of resources that are currently available on the [Minnesota Assessments portal](http://www.mnstateassessments.org) (www.mnstateassessments.org).

These resources include:

- **Item samplers:** Item samplers are available on the [Item Samplers](#) page or through the secure browser for online tests. The item sampler will allow students to become familiar with the format of the test and the types of items that will be included. All students should practice taking an assessment using the item samplers prior to test administration.
 - To use the online item samplers, either the Firefox browser or secure browser must be used.
 - To use text-to-speech with the online item samplers, the secure browser must be used.
- **Student tutorials:** A student tutorial for the online Mathematics MCA and Mathematics MCA-Modified is available on the [Title I Resources](#) page. The tutorial provides information on navigating in the test, using online tools, and answering different item types. All students must have the opportunity to review the student tutorial before taking an online assessment.
- **Calculators:** Stand-alone versions of the online calculators are available for student practice outside of the item samplers on the [General Resources](#) page. Please note: Firefox must be used to access the calculators.

We look forward to meeting folks at the Spring Conference in Duluth. This will be an opportunity for us to hear your feedback and to share the latest developments in the statewide testing program.

Rosemary Heinitz and Margarita Alvarez

Rosemary.heinitz@state.mn.us

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Seen Any Good Proofs Lately? Raising the Social Currency of Mathematics

Presented in
Summing Up
March 2012

Michael Shaughnessy
NCTM President

<http://www.nctm.org/about/content.aspx?id=32291>

We all probably have had a friend or acquaintance, or even a perfect stranger, raving about a book she has just read, or a movie he has recently seen, and then saying, "Oh, you must read this book!" or, "You must see that film!" But how many of us have had this kind of experience in a social occasion where the person exclaimed, "Oh, you must see this proof!" So it was indeed refreshing to meet someone who really likes mathematics, as I did several weeks ago, in what might seem like a very unlikely setting—the Hart Senate Office Building in Washington, D.C.

On Wednesday mornings when Congress is in session, Senator Al Franken (D-Minn.) holds a breakfast gathering in his office for his constituents. Visitors to the breakfast consist primarily of people from Minnesota, but **I received an invitation from a mathematics teacher who is spending the year working on the senator's staff.** A famous hearty porridge is served up at these breakfasts, and once guests have begun to circulate, Senator Franken drops in and greets everyone. I had been misinformed and thought that the Senator had been a mathematics major in college. When I asked him about this, he said that the rumor was false, but he agreed that his good grades in math had probably helped him get admitted to college....

Read the rest of this story about Sen. Franken's proof demonstration at the link on the left!

(Continued from page 1)

Jeremy Baumbach, Troy Faulkner, Jen Green, and Rob Warneke

—*Embracing Change and Transforming Education*

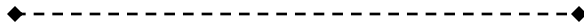
The four are mathematics teachers at award winning Byron High School, an Intel School of Distinction (2011) and Blue Ribbon High School (2010). Each of these four teachers has been a Rochester Area Math Science Partnership (RAMSP) Educator of the Year in different years and have given presentations at TIES (2010, 2011), MSBA (2011), MASSP (2012), MCTM (2006 - 2012), e-Learning Summit (2011), MNASA (2011) on developing a textbook free curriculum and the flipped classroom.

You can read their article, *A Perfect Mathematical Storm: Changing the Face of Education*, in the May-June 2011 issue of the Minnesota School Boards Association Journal.

<http://issuu.com/msbajournal/docs/2011mayjunejournal?mode=window&pageNumber=14>

U.S. Senator Al Franken—*Investigating the STEM Program in Congress*

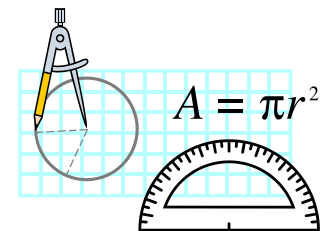
Senator Franken, a member of the U.S. Senate Education Committee, will speak during Friday's luncheon. The senator is a strong supporter of STEM education and will offer his perspectives on the value of STEM to Minnesotans and his current initiatives relevant to STEM in the U.S. Senate. No doubt he will infuse his address with his characteristic humor and entertaining stories.



A Sampling of Conference Sessions and Workshops

- PreK-2** Frogs and Dogs: Transitioning From Arithmetic to Algebra
Differentiation, Flexible Grouping, Guided Math OH MY!!
Children's Literature and Minnesota Frameworks: What a Story
Got Data? Now What...PLCs and Math for K-5 Elementary Teachers
- Grades 3-5** Unlocking Information in Multiplication, Division, Fraction and Ratio Word Problems
Formative Assessment Tools for the 3-5 Math Classroom
Co-teaching Mathematics in the Elementary Classroom
Effective Independent Work and Small Group Lessons in Math
It's Not STEM Without the "M": Adding Math to Science and Engineering Lessons
- Grades 6-8** Building Strong Functional Thinking
Getting Real: Really Awaken Your Students' Number Sense
Standards-Based Grading in Algebra and Geometry: Year Two Changes
Math Club - Active Learning Ideas for Middle Schoolers
Integrating Mathematics, Science and the Arts in 7th and 8th Grades
- Grades 9-12** Don't Leave Home Without Your Camera...Be Nspired
Geometry Projects: Escher, Sierpinski and Snowflakes in Your Classroom
iPads Versus the Geometer's Sketchpad™
Reasoning and Sense Making in Data Analysis and Probability
Pencils in a Pine Tree: Practical Student-Centered Lessons
- College** Wile E. Coyote: Catch Road Runner With Parametrics
Hands-on Activities That Develop Students' Reasoning Skills
Cultivating the Garden of Conic Equations and Inequalities
Making More Move on Moodle
- General** We See Mathematics All Around Us: But How Can We Use It?
Media Clips - Using Numbers in the News in Math Classrooms
Your Future Professional Development as a Teacher
Strategies and Tools for Evaluating Digital Content
YouTube and Math: Hey, It Worked for Justin Bieber
MN Math Standards (K-12) Connected to the MN Mach Frameworks

Events at Spring Conference



For the conference schedule, go to

<http://www.mctm.org/Spring12Program.pdf>

CONNECT

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



New to the Profession? Get CONNECTed!

All teachers in their first few years, along with pre-service teachers, are invited to the CONNECT Session on Thursday, May 3, at the DECC in Duluth. Sponsored by the CONNECT Committee and the MinnMATYC Mentoring program, the session is scheduled from 7:00-9:00 PM so you can come after teaching on Thursday and be on hand for the first session of the MCTM/MinnMATYC Spring Conference on Friday, May 4

This event is offered as a chance to meet other beginning teachers, get connected to MCTM/MinnMATYC and NCTM leaders and to develop some all-important networking with other enthusiastic math teachers. We will preview the Spring Conference program book, making sure that you know about the wide variety of sessions, workshops, exhibits and activities that will be available on Friday and Saturday. We'll help you select the most useful sessions and places to be. You'll be able to sign up for a mentor if you'd like, either a virtual mentor or an actual personal mentor. You'll find out about upcoming conferences and professional growth opportunities. A large amount of teaching materials will be available free as part of the famous "BOOK GIVEAWAY" along with many door prizes.

Best of all, the supper is free, thanks to MCTM!

There is no charge for this event and reservations are not necessary but appreciated. If several people are coming from one school we ask that you notify Betty Johnston, elizabeth.johnston@comcast.net with the number attending.

This has proven to be an enjoyable, useful session where everyone leaves with lots of ideas and some free materials

And the food is free! At 7:00PM. On Thursday, May 3. Don't miss it!

Other CONNECT services:

Dear Matt Mentor: Published in each issue of Math Bits, archived at www.mctm.org

Virtual Mentor: Contact Ann Sweeney at ajsweeney@stkate.edu

Personal Mentor: Contact Larry Luck at larryluck@aol.com

College campus posters: Contact Ryota Matsuura at matsuura@stolaf.edu

The 2012 Ross Taylor Symposium for Mathematics Education and Leadership

Thursday, May 3
Duluth Entertainment
and Convention Center

Check [www.mctm.org/
symposium2012](http://www.mctm.org/symposium2012)

For registration infor-
mation

The Minnesota Mathematics Frameworks:

Linking Minnesota Standards and Classroom Practice

The Minnesota Frameworks for Mathematics and Science (<http://www.scimathmn.org/stemtc>) went live in the fall of 2011. This dynamic, web-based, and fluid resource can be thought of as a digital version of the master-teacher next door. The Frameworks are designed to help teachers provide instruction that is related to the Minnesota Mathematics Standards and demonstrate current best practices. The symposium will help teachers, curriculum leaders, and administrators become familiar with the various features of the Frameworks and understand ways to use them to improve the teaching of mathematics in their district. Authors representing each grade band will demonstrate how the Frameworks can be used to provide quality professional development for mathematics teachers.

Why should you attend? To become familiar with the features of the Minnesota Frameworks for Mathematics. To learn how to use the Frameworks to deliver quality professional development for practicing teachers. To understand the vision of the Frameworks as a fluid collection of resources designed to change and adapt to the most recent best practices in mathematics education.

What should you bring? Bring a group of teachers and administrators. Each group needs a laptop or an iPad to interact with the Frameworks. Bring a desire to make a difference in the teaching of mathematics in your classroom, school, and district.

Dear Matt Mentor:

The topic of complex numbers is included in my Algebra II course and the text book just defines i to be the square root of negative one, and then goes on to develop the various rules for computation with these new numbers. It seems to me that there should be some better way to motivate the existence of complex numbers so that the definition and the computation make more sense. Any ideas?

Struggling with complexities

Dear Struggling:

First of all, it is important to remember that the way your students learn is by **doing** and by **thinking**. So the challenge is to develop activities for them to do both. Yours is also an interesting question in terms of Minnesota standards. It points out the difference between the content included in typical textbooks, and the content specified in Minnesota standards. There is only one Standard and two Benchmarks that refer to complex numbers. The statement of these gives some clues to a possible approach.

MN STANDARD 9.2.4: Represent real-world and mathematical situations using equations and inequalities involving linear, quadratic, exponential and nth root functions. Solve equations and inequalities symbolically and graphically. Interpret solutions in the original context

Benchmark 9.2.4.1: Represent relationships in various contexts using quadratic equations and inequalities. Solve quadratic equations and inequalities by appropriate methods including factoring, completing the square, graphing and the quadratic formula. Find non-real complex roots when they exist. Recognize that a particular solution may not be applicable in the original context. Know how to use calculators, graphing utilities or other technology to solve quadratic equations and inequalities.

Benchmark 9.2.4.3: Recognize that to solve certain equations, number systems need to be extended from whole numbers to integers, from integers to rational numbers, from rational numbers to real numbers, and from real numbers to complex numbers. In particular, non-real complex numbers are needed to solve some quadratic equations with real coefficients.

In other words, the context suggested by the Minnesota standards is twofold: to focus on finding solutions to all quadratic equations, and extending the number system to include complex numbers. These are the only aspects of complex numbers that are required. They arise naturally when you teach the Quadratic Formula. Let's back up, though, to see how this idea fits into the whole of the study of number

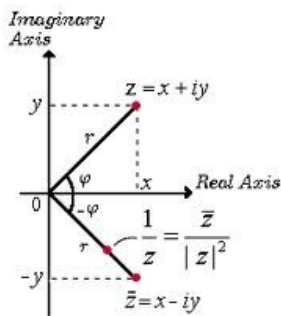
One of the most fundamental properties of numbers is related to taking a set of numbers, and an operation, and checking to see if the result is part of the original set. If the answer is in the set, the set has **closure** for that operation.

For example, the set of Whole Numbers has closure for addition and multiplication, since any sum or product of any two whole numbers is also a whole number. But to have closure for subtraction, it is necessary to expand the set to the Integers, since some differences are less than zero. That is, the answer when you subtract any two whole numbers is not always a whole number, for example $5 - 9 = -4$. For division, we require the set of Rational Numbers, since many quotients are fractions. If the operation is taking roots of Whole Numbers, we need to expand our original set to the Real Numbers, since many roots are not rational numbers. If the operation is taking roots of Integers, we need to develop the set of Imaginary Numbers, which include even roots of negatives. Finally, when numbers include both real and imaginary parts, we have the set of Complex Numbers.

(Continued on page 8)

**Ask
Matt Mentor!!**

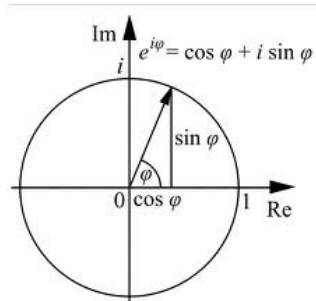
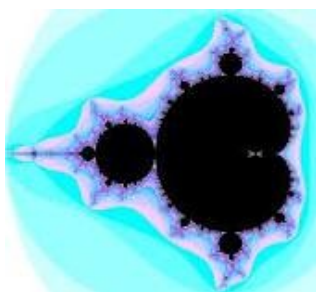
MathBits



(Continued from page 7)

Another approach suggested in Benchmark 9.2.4.1 is to see the closure occurring in efforts to solve polynomials. All polynomials with real coefficients are solvable using the set of Complex Numbers. The place in the curriculum where this arises most naturally is related to the use of the Quadratic Formula, where it is evident that not all solutions produced by the formula represent real numbers. In addition, not all solutions may be applicable for a given problem context (see Standard above.) Here are some ideas for activities. Many lend themselves to individual student investigations and presentations.

- Students could explore the history of the development of Complex Numbers. Mathematicians to study might include Heron, Cardano, Tartaglia, Bombelli, DesCartes, Hamilton, Euler, Gauss, and/or DeMoivre.
- They might have a quick “spell-off” for finding powers of i , which contains some nice cyclic patterns. You could begin with $i, i^2, i^3, i^4, i^5, i^6$, and then start skipping around with powers of i as students begin to see the pattern of repetition.
- They could struggle in pairs or groups with how to represent a complex number graphically. Some might arrive at Argand’s method, some may find other interesting approaches.
- They could investigate uses for complex numbers, applications that would not have been possible without them. (For example, much of electricity!)
- Advanced or highly motivated students might be interested in exploring additional (optional) topics such as moduli and conjugates of complex numbers.
- Students might think about the naming for number sets: Natural, Whole, Integer, Rational, Irrational, Real, Imaginary, Complex. Are any of these numbers any more imaginary than others? (Did you ever meet a **2** walking down the street?)
- Another topic that will be of interest to some students, depending on their prior studies, would be the similarities, relationships, and isomorphisms related to complex numbers, vectors, and trigonometry. Others might explore the group properties, similarities and differences for fields of real and complex numbers.
- Euler is worth an entire exploration of his own, extending beyond complex numbers. He is responsible for much of the notation used daily in the mathematics classroom, including e , the base of the natural logarithm (e for Euler), π , omnipresent in trigonometry, geometry and measurement, and i to represent $\sqrt{-1}$. Furthermore, he is responsible for the celebrated equation $e^{\pi i} + 1 = 0$ which unites the five most fundamental constants in an astonishingly simple identity.



Though much of this may seem theoretical, you should be able to generate lessons that require students to do some exploration and thinking, making connections with history, other parts of mathematics, and applications of mathematics through these ideas.

NOTE: Currently, in early 2012, Minnesota has not adopted the Common Core State Standards for Mathematics, used by many other states. These standards call for more computation and operations with complex numbers. If at some point in the future, Minnesota decides to adopt those standards, additional content, perhaps similar to that in your textbook, will be needed. For now, you may deemphasize or omit parts of the unit on complex numbers from your textbook that are not related to Minnesota Standards.

Good luck, and keep your students doing and thinking!

Matt

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*.

Exploring Algebraic Thinking and Rational Numbers

The No. St. Paul – Maplewood – Oakdale (ISD 622) School District developed and implemented a three day Math Academy for all of the fifth grade teachers in the district on Exploring Algebraic Thinking and Rational Numbers. The Academy was developed and facilitated by Nancy Nutting and Judy Rohde. The District 622 Department of Curriculum and Instruction funded the presenters and the substitute costs for every fifth grade teacher to attend the three days of professional learning. The full day workshop sessions were held in October, November, and January with time in between for the teachers to conduct action research on the topics covered in the workshops.

The three days of professional learning in this Academy focused on the important mathematical ideas related to algebra with the purpose of helping teachers develop deeper understanding of the fundamental mathematics they teach in Math Expressions.

Academy Goals—Within Algebra and Rational Numbers teachers would:

- ♦ Develop a deeper understanding of the underlining mathematics
- ♦ Explore instructional strategies for learning and teaching
- ♦ Improve understanding of student’s mathematical thinking

The content of the three focused training days included:

- ♦ October: Modeling Story Problems – Beyond the Equal Sign: Problem Types and Using Bar Models
- ♦ November: Enhancing Instructional Strategies for Working with Fractions
- ♦ January: Making Connections Among Algebraic Representations

In 2010-11, ISD 622 developed and implemented a three day Math Academy on Ratio and Proportion, Pattern Generalization, Solving Equations and Working with Multiple Representations of Functions for every middle school mathematics teacher. The material was based on training from the Region 11 Algebra Connected to Number Grades 6-8 Academy and the AFT Thinking Mathematics staff development. In 2012-2013, ISD 622 is making preliminary plans to develop and implement a fourth grade academy for every fourth grade teacher in the district.

Happenings in MCTM District 4

ISD 622’s Fifth Grade Math Academy

Contributed by

Judy Rohde
MCTM Honorary Lifetime Member

Karen Hyers
District 4 Director

MN State High School Mathematics League Tournament Results:

Tier 1 Schools	1st place team	Wayzata High School
	2nd place team	Edina High School
	3rd place team	Mounds View High School
Tier 2 Schools	1st place team	Cotter High School
	2nd place team	Marshall School
	3rd place team	St. Paul Academy
Individuals	1st place	Roy Zhao, Wayzata High School
	2nd place	Joshua Fourre Eden Prairie High School
	3rd place	Jacob Neis, Minnetonka High School

MN State HS Mathematics League Results
mnmathleague.org

MN State High School Mathematics League Regular Season Results:

Tier 1	1st place	Wayzata
	2nd place	Edina
	3rd place	Eden Prairie
Tier 2:	1st place	St. Paul Academy
	2nd place	Cotter High School
	3rd place	The Blake School.
Individuals:	1st place	Abram Sanderson, Wayzata, grade 11
	2nd place tie	Max Timmons, St. Paul Central, grade 12; Roy Zhao, Wayzata, grade 11.

MN State HS Mathematics League Summer Mathematics Institute

A one week residential summer opportunity for students entering grades 8-10 in the fall of 2012. Qualified rising 7th graders and rising 11th graders may also be considered. Dates are June 24-29, 2012. See the brochure at <http://mnmathleague.org/> for more information.

Message from the District Directors



Attending the Spring Conference? Make sure you also attend your District Meeting!

MCTM is YOUR professional organization and seeks YOUR input for direction. This is the one time a year to meet with us and give us your input. Each district selects delegates to attend the Delegate Assembly Meeting Friday after the President's Reception. A fabulous dessert will be served specially for delegates:

Chocolate Fondue: Chocolate Brownies, Sugar Cookies, Fresh Strawberries, Fresh Pineapple, Hot Fudge, Candy Sprinkles, Nut Topping and Whipped Cream.

If YOU would like to be an important part of your organization, want to make a difference, be a delegate and partake in the dessert, contact your district director.

Don't know which district you are in? Contact any one of us and we'll make the connection.

1	Amy Wix	a.wix@komets.k12.mn.us
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The Delegate Assembly and MCTM Resolutions

What they are and how the process works

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Reprint from 2010, edited

Important meetings take place each year at the Spring Conference that help shape the direction of the work done by the Minnesota Council of Teachers of Mathematics. Those in attendance at these meetings make plans and suggest tasks that may directly affect you.

These meetings are the **MCTM District Meetings** and the **MCTM Annual Delegate Assembly**, both held on Friday evening of the MCTM Spring Conference in Duluth. These meetings are MCTM's mechanism for members to make formal recommendations to MCTM about mathematics education issues and MCTM operational issues. The tasks that shape your future originate from the resolutions submitted by MCTM members. The MCTM Board of Directors wants you, as an MCTM member, to be aware of the process, so that you have an opportunity to shape the future of MCTM as an organization representing mathematics education in the state.

The process is pretty straightforward and logical, just what you would expect from an organization of mathematics teachers. Minnesota has been divided into eight MCTM districts which primarily align with the federal congressional districts. Each district has its own district director elected by the MCTM members from the district. To determine which district you belong to, you can also check the listing of schools on the MCTM website at www.mctm.org/directors.php.

Your district director is interested in hearing from you about your concerns and ideas; email communication often works best. Your district director will compile all the ideas and concerns you submit and bring them to the Spring Conference meetings in Duluth. Following the sessions and workshops on Friday, there are eight **District Meetings** led by the eight district directors. If you are at the conference you are encouraged to attend and contribute to your district meeting. Since there are no other sessions scheduled during the district meetings, it should be easy for you to be able to attend. As an incentive, there is a drawing for a prize from among the attendees names in each of the meetings.

During the district meetings members will discuss and **propose resolutions** to be presented to the board of directors. Each year there are questions regarding what makes an appropriate

resolution and how many resolutions should be submitted from the district. Here are **some suggested guidelines**.

- A resolution should be about **something that we are actually able to accomplish**. We all would like to see world peace, but MCTM can do little to bring it about. Thus, well meaning resolutions that are outside of the scope of MCTM sound nice but will never get accomplished.
- A resolution **should not deal with lobbying**. MCTM is a 501c3 organization. This means we are tax exempt, but it also means we have to be careful not to spend more than a small fraction of our time and resources lobbying the government. Consequently, a resolution that involves a good deal of lobbying cannot be taken on by the board of directors.
- A resolution has to be **handled by volunteers**. Your district directors and all other elected board members get no compensation for their efforts. They are on the board because they care about students and want them to have quality mathematics instruction. They would like to do much to help you, but they have to work on the resolutions after they have marked homework, planned their lessons, and dealt with all of the issues teachers deal with every day. That doesn't give them much time. So please make sure your resolution is important enough to have your colleagues use their spare time to work on it.

With those guidelines in mind, the districts, led by their district directors during the district meetings, craft resolutions and submit them to the Delegate Assembly held Friday night, following the President's Reception.

The **Delegate Assembly** is the annual official business meeting of MCTM members. Each district is allocated a specific number of delegates based upon the proportion of MCTM members in that district. Each district director has the task of finding delegates to represent the district. This is not as easy a task as you might think. So, **if you are interested in serving as a delegate, please let your director know**. Delegates attend the assembly meeting and serve as official voting representatives of their districts. They will discuss and vote on the resolutions. MCTM members who are not delegates are also welcome to attend the assembly proceedings, but are not allowed to officially vote on a resolution or submit a resolution from the floor (that is what the district meetings held earlier are for).

The **delegate assembly and business meeting, and subsequent action** with the resolutions is typically conducted as follows.

- 1) At the assembly (business meeting), the executive director, Tom Muchlinski, and the financial secretary, Craig Rypkema, will present short reports on the state of the organization.
- 2) Then the resolutions are introduced, debated, and voted upon. During this process some resolutions that do not meet the guidelines or do not have the support of the delegates will fail to be passed.
- 3) Those resolutions that do pass with the approval of the delegates are submitted to the board of directors.
- 4) At the board meeting two days later, the board discusses the resolutions, determines whether each can be accomplished and lies within the scope and mission of the organization, and then votes on acceptance of the individual resolutions.
- 5) Those resolutions that are accepted are then assigned to the appropriate committees to start working on them. During the school year MCTM members are giving a status report on the work accomplished with the resolutions via *MathBits* and the MCTM website.

The board of directors wants to serve all of MCTM's members and hopes this article has answered some questions, sparked some interest, and encouraged you to be part of the process.

REPORT ON RESOLUTIONS PASSED BY THE 2011 DELEGATE ASSEMBLY

The following resolutions were passed by the 2011 Delegate Assembly. The resolutions were initially brought before the MCTM Board of Directors on May 1, 2011 and subsequently assigned to committees as appropriate for consideration and action. This report documents the actions taken between May 1, 2011 and April 1, 2012.

Communication

- 1) **Be it resolved that MCTM pursue providing an electronic link on the MCTM website for information pertaining to legislative action on bills pertaining to mathematics education.**

Action Taken: Referred to the Technology Committee (5/1/11)

- ♦ The web master added an electronic link on the MCTM website (May 2011)

COMPLETED May 2011

- 2) **Be it resolved that MCTM include, whenever provided with permission, email addresses for presenters in both spring and continue in the fall programs.**

Action Taken: Referred to the Fall and Spring Conference Committees (5/1/11)

- ♦ Emails were provided in the 2012 Fall Conference Program Book (Oct. 2011)
- ♦ The Spring Conference committee will look into the logistics of putting email addresses in the program book (11/12/11)
- ♦ Speaker Proposal Form for the Spring Conference has been modified to request permission to publicize email address (10/21/11)

COMPLETED 10/21/11

- 3) **Be it resolved that MCTM investigates setting up an online professional network so that teachers can share resources and ask questions.**

Action Taken: Referred to the Technology Committee (5/1/11)

- ♦ Strategic Planning meeting discussed the need to use a variety of technology to communicate with our members (6/16/11)
- ♦ There will be task force charged with creating recommendations for all aspects of a potential blog. (8/15/11)
- ♦ Current Technology committee will work on developing a task force. (9/10/11)
- ♦ This task force should have members that are digital immigrants and natives that would explore the potential for a blog and other methods to connect members. The Task Force would come to the MCTM Board of Directors with a plan and a budget report in February and April of 2012 with a final report at the September 2012 Board Meeting. (12/2/11)
- ♦ The task force is still being formed. Digital natives are especially needed. (2/5/11)

ONGOING

- 4) **Be it proposed that MCTM provide an advertising blip when promoting the conference such as U-tube or video attach to email, encourage members to watch instead of just read.**

Action Taken: Referred to the Publicity Committee (5/1/11)

- ♦ The Publicity Committee discussed the feasibility of producing a video to publicize the Spring conference. We don't currently have video to promote the conference but do have pictures. We could video at the 2012 Spring Conference to use in future advertising. (9/10/11)
- ♦ You can view a slide show advertising the MCTM Spring Conference on mctm.org. (12/2/11)

COMPLETED 12/2/11

- 5) **Due to the limited number of people who vote through our present system, MCTM should investigate and implement an electronic voting process for electing board positions.**

Action Taken: Referred to the Executive Committee (5/1/11)

- ♦ A mock electronic election was conducted (8/29/11)
- ♦ By-laws revised in order to allow for an electronic ballot. Motion passed (9/10/11)
- ♦ Our first online election is developing. Biographies for candidates will be in *MathBits* as well as online. Notification for the election will be sent in *MathBits* as well as online. (12/2/11)

(Continued from page 12)

- ♦ The online election will run from February 8 through March 2 (1/30/12)
 - ♦ First Electronic Election Certification - Motion passed (3/5/12)
- COMPLETED 3/5/12

6) To save printing and mailing costs MCTM should investigate and make available the ability for members to opt out of receiving the newsletter, *MathBits*, via mail, but instead get an email that indicates when it has been posted online.

Action Taken: Referred to *MathBits* Committee, Technology Committee and Publicity Committee (5/1/11)

- ♦ Continue to look at the feasibility of *MathBits* going paperless (9/10/11)
- ♦ *MathBits* will transition to online. *MathBits* would be emailed to members. *MathBits* archived to website and available to print (10/21/11)
- ♦ A link is provided via email when there is a new *MathBits*. Members must now notify the Executive Director if they want to continue receiving a paper copy beginning with the April 2012 edition (January 2012)

COMPLETED April 2012

Achievement Gap and Equity

7) Be it proposed that MCTM focus a conference on closing the achievement gap: strategies, seminars, webinars, sessions for teachers to share ideas.

Action Taken: Referred to the Executive Committee (5/1/11)

- ♦ Create a task force so that MCTM can take a leadership role in the subject of equity and the role of mathematics in equity (8/15/11)
- ♦ Current Professional Concerns committee will work on developing a task force (9/10/11)
- ♦ Professional Concerns committee would like volunteers for this committee. Board was solicited as were volunteer sheets from the 2011 Spring conference (2/4/12)

ONGOING

8) Be it resolved that MCTM create a task force to address the issue of equity in mathematics instruction in Minnesota. The charge to the task force would be to identify those issues related to equity that impact the membership and have the potential to educate the membership.

Action Taken: Referred to the Executive Committee (5/1/11)

- ♦ Create a task force so that MCTM can take a leadership role in the subject of equity and the role of mathematics in equity (8/15/11)
- ♦ Current Professional Concerns committee will work on developing a task force (9/10/11)
- ♦ Professional Concerns committee would like volunteers for this committee. Board was solicited as were volunteer sheets from the 2011 Spring conference (2/4/12)

ONGOING

Passing the Baton

9) Be it resolved that MCTM simplify opportunities for volunteering. This could be accomplished by:

- ♦ **Making the list of volunteering opportunities more accessible/easily accessible,**
- ♦ **Matching talents and interests to available opportunities.**
- ♦ **Incorporating electronic communication and conferencing to allow more participation from greater Minnesota.**

Action Taken: Referred to the Membership Committee (5/1/11)

- ♦ The Executive Director asked a board member to volunteer to coordinate this (9/10/11).

ONGOING

If you have any questions or concerns regarding this report, please direct them to MCTM President Michelle Luke. The MCTM Board of Directors appreciates the feedback.

Project MARS

**An opportunity for
7th grade teachers**

Project MARS representatives will attend the Spring Conference in Duluth and welcome the opportunity to further discuss their study with any interested teachers.

Project MARS

The University of Minnesota, College of Education and Human Development (CEHD), is recruiting 100 seventh-grade Minnesota public school math teachers to participate in a research study, Project MARS (Mathematical Reasoning Strategies).

- ♦ In collaboration with Harvard University and the Institute of Education Sciences (IES), this study will investigate the effectiveness of schema-based instruction to improve proportional problem solving performance.
- ♦ Teachers are required to participate for two consecutive years (2012-2014). Project responsibilities include attending a two-day professional development workshop on the University of Minnesota Twin Cities campus and implementing a 6-week intervention.
- ♦ Teachers will be paid a generous stipend for attending the professional development workshop, for implementing our curriculum, and will be reimbursed for any long distance travel or substitute teacher related costs incurred during the study.

You may also refer to the Project website at: www.cehd.umn.edu/EdPsych/MARS/

This study uses an instructional approach called schema-based instruction (SBI), and it incorporates four features: priming the mathematical structure of problems, visual representations, procedural flexibility, and metacognitive strategy knowledge. All instructional materials are provided along with professional development. Teacher stipends range from \$1700-\$2300. Teachers are being recruited this school year and the study will begin during the 2012-2013 school year.

Please contact Susan Slater for further information.

Susan Slater, Project MARS Coordinator
slat0013@umn.edu 612/626-8486

Univ. of MN Duluth**Summer Mathematics Education Course****Geometry for Teachers in Grades 5-8 (EDUC4226)**

Course description: The development of geometry concepts through investigations of geometric relationships and informal properties provides the basis for examining the teaching and learning of geometry in grades 5-8.

Time and Dates: 01:00 P.M. - 05:30 P.M. , MTWRF June 18-June 29

For more information, contact Kay Wohlhuter at kwohlhut@d.umn.edu

Colloquium on P-12 STEM Education Research July 9-10, 2012

Mark the calendar to join us for the **2nd annual Colloquium on P-12 STEM Education Research!** This interactive national forum provides an opportunity to join researchers, teachers, practitioners, legislators, and other STEM professionals from the state of Minnesota and around the nation for a colloquium focusing on sharing problems and creating solutions for those involved with P-12 STEM Education. Hear different perspectives on how to integrate STEM, learn strategies to implement what works, find out about emerging research, and get clarity on how to meet common-core standards. Gain the knowledge to make a difference in theory and practice, and bridge the gap between teaching STEM in the 21st century using 20th century methodology. Learn about the importance of formal, non-formal, and informal STEM as different avenues to increase the interest in and success of STEM education. Active participation in the breakout sessions will provide a customized experience for each involved. This event is sponsored by the STEM Education Center and the College of Education and Human Development (CEHD) at the University of Minnesota.

For more information: <http://www.cehd.umn.edu/stem/>

New Free Online Formative Assessment Tool

The Math Reasoning Inventory (MRI) is an online formative assessment tool that is available free to all teachers. Information about the tool and how to sign up for a free account is on the MRI website (<https://mathreasoninginventory.com/Home/Index>), which provides information about preparing to give MRI interviews and includes more than 80 video clips of actual interviews, samples of MRI reports, and the reasoning strategies students need to be numerically proficient.

The MRI questions focus on number and operations and are based on content from the Common Core State Standards for Mathematics prior to sixth grade. They are questions that we expect...and hope...all middle school students to answer successfully.

There are three assessments in MRI—Whole Numbers, Decimals, and Fractions. Each assessment has two sections—the Interview and the Written Computation sections. The Interview (10–12 questions), done face-to-face, focuses on core reasoning strategies and understandings. We ask students questions, give them time to think, and listen to them explain. The Written Computation section is completed independently by students.

The MRI team is led by Marilyn Burns and the available MRI resources can be used for a range of purposes, including assessment of individual students to uncover individual strategies, understandings, and misconceptions, assessing, gathering, and reporting data on an entire class of students, and for professional development purposes in learning how students think, reason and respond to questions all middle grades students are expected to be able to answer successfully.

Resources

The American Mathematical Society, the American Statistical Association, the Mathematical Association of America, and the Society for Industrial and Applied Mathematics announce that the theme for **Mathematics Awareness Month, April 2012**, is **Mathematics, Statistics, and the Data Deluge**.

Every day, massive amounts of data are collected, often from information we have provided to the services we use regularly. Scientific data are generated daily from sensor networks, astronomical numbers of instruments, biometric devices and other sources, in amounts we almost cannot fathom – and all that data need to be sorted out.

In addition, personal data from numerous sources, including Google searches, Facebook and Twitter activities, credit card purchases, and airline and hotel reservations, are being mined for information and insight. All of these data sets provide great opportunities for marketers and others, but they create potential dangers as well.

Resources for this year's Mathematics Awareness Month are designed to show how mathematics and statistics provide the tools to understanding these data and to helping mitigate against their misuse. At www.mathaware.org, you can download these articles and essays, as well as an 8.5 x 11" copy of the 2012 poster, "What Would You Do with All This Data?"

WHAT WOULD YOU DO WITH ALL THIS DATA?

Mathematics and statistics provide the tools to understand ever-increasing amounts of data. To learn more, visit the Mathematics Awareness Month website and enter for a chance to win an iTunes gift card at www.mathaware.org

Mathematics, Statistics, and the Data Deluge
MATHEMATICS AWARENESS MONTH

Sponsored by the Joint Policy Board for Mathematics—American Mathematical Society, American Statistical Association, Mathematical Association of America, Society for Industrial and Applied Mathematics

For more resources, including theme essays, visit the website at www.mathaware.org/

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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

April 25-28, 2012	NCTM Annual Meeting & Expo, Philadelphia, PA
May 1, 2012	PAEMST Applications due
May 4-5, 2012	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 and a CURRENT EMAIL ADDRESS. Is your correct address printed on the label of this issue of *MathBits*? Contact Exec. Director Tom Muchlinski at 612-210-8428 or mctm@mctm.org or visit the MCTM web site (www.mctm.org) membership page to make changes.

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 print newsletters at USPS bulk rates. As a result, delivery times may vary by postal district and time of year.

If you receive the newsletter via USPS mail, check the mailing label for your membership renewal date. Renew online at www.mctm.org

Please submit items for publication in the next issue of *MathBits* to tlgonske@nwc.edu by May 21, 2012. Email or call 651-631-5228 with any questions. - Teresa Gonske, Editor
