

# MONTANA MATHEMATICS

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of Mathematics

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## MEA/MFT Fall Conference

This year's fall conference will be held in Belgrade on October 18th and 19th. There is a list of hotels available at [www.mea-mft.org](http://www.mea-mft.org), just click on the "2007 MEA-MFT Educators Conference" link or visit [www.montanamath.org](http://www.montanamath.org). MCTM is proud to announce our 2 keynote speakers - Markus Hohenwarter and Cathy Seeley.



Dr. Markus Hohenwarter

Dr. Markus Hohenwarter is the keynote speaker on Thursday from 9:00-9:50 in the High School Auditorium. His topic is "Open Source Tools and On-line Collaboration". He is also doing a few sessions throughout the conference.

Markus Hohenwarter is the creator of the free dynamic mathematics software GeoGebra and is currently a visiting professor at Florida Atlantic University in Boca Raton. He holds degrees in mathematics education and computer science from the University of Salzburg, Austria. His PhD project GeoGebra has received several international educational software awards in Europe. Dr. Hohenwarter has been teaching in an Austrian High School and given many technology workshops for teachers. In Florida, he is now working with middle school teachers in the NSF project "Standards Mapped Graduate Education and Mentoring" of Florida Atlantic University and Broward Schools.

Don't forget about the **MCTM Annual Meeting and Luncheon** from 12:00-1:50 on Thursday in the High School Library. The lunch is free to any current MCTM member. The first 100 people to get their tickets for lunch from the MCTM booth will have lunch provided for them.

The **Hospitality Room** will be located at the High School in Room 214. It is a great place to relax, enjoy a treat and network with other teachers. We look forward to seeing you there.



Dr. Cathy Seeley

Cathy Seeley is the keynote speaker on Friday from 10:00-10:50 at the High School Auditorium. Her topic is, "You've Heard it All Before... Or Have You?"

Cathy is a 35-year mathematics educator and change facilitator at the local, state, and national levels. Among her experiences in K-12 education, she has worked as a mathematics teacher, district mathematics coordinator, and state mathematics supervisor for the Texas Education Agency. She has frequently been an advisor and consultant to school districts, state agencies and professional/community organizations. After her recent return from teaching mathematics as a Peace Corps volunteer in Burkina Faso, Dr. Seeley worked with a distance education on-line algebra project. Dr. Seeley is active with the National Council of Teachers of Mathematics, including having served on the writing team for the 1989 *Curriculum and Evaluation Standards for School Mathematics*. In 2006, she completed a two-year term as President of the Council. Dr. Seeley is affiliated as a Senior Fellow with the Charles A. Dana Center at The University of Texas, working on state and national policy and improvement efforts in mathematics education.

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## President's Message

Hello! I hope you had a restful and rejuvenating summer. I did some work and spent time with Bob and the kids. We went camping and visited family. It was great! I know you are now expecting pictures of my children, so I don't want to let you down.



Kari, Victor and Nolan Scott

During the MCTM board vision and planning meeting in June we decide to work on building our affiliation with NCTM. We had the wonderful opportunity to work with the NCTM Western Regional Representative, Dave Brancamp. He was so helpful in setting up new procedures for our NCTM Affiliate Representative. We decided that the President will continue on the board for a fifth year and serve as the NCTM Affiliate Representative. Jim Hamling, although retired, graciously agreed to serve in this position during this beginning year. He will be in contact with NCTM and bringing us important information.



Nolan Scott

In October the MCTM Conference is in Belgrade. MCTM is offering a great slate of presentations ranging from K through 16. I think we have over 100 presentations planned. Rose Steiner and Kathie Daviau have been working over time as our Program Chairs. Tamara Spillum and Ann Brucker have been planning great things for the conference as our General Chairs. When you see them at the conference, please give them a hug and say thanks for all your hard work!

The Leadership Conference is in Bozeman, February 1-2, 2008. This year the theme is Indian Education For All in Math and Science. The keynote presenter, Mike Jetty, (*Spirit Lake Dakota Nation*), is an Indian education specialist with the Montana Office of Public Instruction, Helena. The focus of the conference is to immerse math and science educators into the premise of IEFA. The essential understandings will be explored in depth with a focus of how that translates into classroom practice. Jetty's humor and knowledge will help all teachers get a better perspective on what the implementation of IEFA means to the classroom teacher. Be sure to send your registration in early. Angel Greenley, Ellen Rose, Alyson Mike and I work on this committee and pull off a great conference every year!

I hope you are still checking the website at [www.montanamath.org](http://www.montanamath.org) on a regular basis. There are a lot of opportunities and announcements there for you. Currently, you can find the list of the hotels for the MCTM Conference in October, scholarship and award opportunities, the TMME journal, lesson plans, graduate courses, and the PD presenter application. Tony Riehl is our wonderful web master. He does an incredible job of managing our website.

I am looking forward to seeing you in Belgrade at the MCTM Annual Meeting and luncheon. If you need anything or just want to chat, please call or e-mail me. I would love to hear from you!

Lisa Scott, MCTM President



# Lesson Plans

Complete lesson plans are available at [www.montanamath.org](http://www.montanamath.org)

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## K-6

Elementary (Grades 3-5) Mathematics Lesson  
Beading Input/Output Tables  
Submitted by Angel Greenley  
[greenleya@billings.k12.mt.us](mailto:greenleya@billings.k12.mt.us)

Students will understand the importance of beading in the Native American culture, both present day and past. Patterns will be generalized to an algebraic rule using input/output tables, based on the number of beads needed to complete different projects. For a complete lesson plan, visit [www.montanamath.org](http://www.montanamath.org)

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## Middle School

Middle School (Grades 6-8) Mathematics Lesson  
Missing Values  
Submitted by Lisa Scott  
[scottl@billings.k12.mt.us](mailto:scottl@billings.k12.mt.us)

The learner will describe patterns produced by relationships between two variables. The learner will use the table and patterns to write an equation involving two variables. The learner will make a graph to display data using correct labels and scales. The learner will recognize that a constant rate of change is evident in the pattern established by the data. The learner will use a given equation to produce a table of ordered pairs and graph the ordered pairs. For a complete lesson plan, visit [www.montanamath.org](http://www.montanamath.org)

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## High School

High School (Grades 9-10) Mathematics Lesson  
The Cylinder Problem  
Submitted by Lisa Scott & Angel Greenley  
[scottl@billings.k12.mt.us](mailto:scottl@billings.k12.mt.us) & [greenleya@billings.k12.mt.us](mailto:greenleya@billings.k12.mt.us)

The learner will build a family of cylinders and discover the relation between the dimensions of the generating rectangle and the resulting pair of cylinders. They will order the cylinders by their volumes and draw conclusions about the relation between the cylinder's dimensions and its volume. For a complete lesson plan, visit [www.montanamath.org](http://www.montanamath.org)



## ASK BARNEY



**1. Can you believe that the summer is over? I sure didn't get as much done as I would like. What have you been up to?**

It has been a great summer. I have decided to retire. I am not sure if dogs really retire or they just hire someone else to chase cars and cats for them. This is the last "Ask Barney" column for the math newsletter. It has been a real kick writing these for the last 4 or so years. MCTM will be replacing this column with a great new one – stay tuned. I know it will be a "must read"!

**2. Barney, do you know why I never see dogs on the poker channel? It seems to me that you could teach a dog to play "Texas Hold-em".**

Well, I know the experts have tried it a couple of times with varying success, but it seems that whenever the dog gets a good hand, he ends up wagging his tale. Rats!

**3. Do you have any parting thoughts about life in general? I know that you have always had good ideas for us humans.**

If more people would follow the lead of dogs, I think that this world would be a better place – for instance: a) when you're happy, dance around and wag your entire body b) eat with gusto and enthusiasm and stop when you have had enough c) never pretend you are something you are not, d) be loyal e) if what you want is buried, dig until you find it and f) when someone is having a bad day, be silent, sit close by, and nuzzle them gently.

**4. I think I remember you telling me something about the MEA/AFT Fall Conference in Belgrade this year. Help me out – what should I know?**

There are several great happenings in October this year in Belgrade. Remember that the MCTM will again be having a lunch for all paid-up members at the annual meeting. This is not just for officers, it is a great way for all members to gather and find out what is happening in your organization. Check for the time and place of this meeting in the program book. Also, remember that NCTM past-president Cathy Seeley is going to be the featured keynote speaker for math. She is absolutely fantastic. I always enjoy listening to her thoughts about math education. Cathy currently teaches at the University of Texas. Her speaking engagements have taken her all over the United States, but this will be her first time in Montana.

**5. I am really looking forward to the school year, but as usual I could use some tips to start the year. What should I think about as the school year starts?**

I believe all teachers need to be reflective about what and how they teach. Take a good look at your curriculum. What are the main points that you must get across to the kids – and don't say everything in the book. What are the main objectives that deserve your time and energy? Is there anything that could be deleted from your repertoire, and be replaced with new materials and methods? Are there some new activities and new content that would be more beneficial to your students? Always remember that the students must be your focal point. How can you help them achieve? Don't be afraid to take a class, attend some workshops, talk to colleagues, or read professional articles. Don't be static and teach the same content and methods for 25 years in a row. Step out and change – emerge and submerge yourself in mathematics.

**6. I just heard that this is your last column and I am sad to see you go. I know you have been around teachers and education most of your life. Do you have any final thoughts about the profession?**

Yes, I do and thank you for asking. First and foremost, I would like to thank all of the teachers of Montana (not just math teachers). I have to say that you are some of the finest people I know. Your dedication to teaching is awe inspiring and truly inspirational. Your profession is one the noblest in the world. You have given your life to making the world a better place to live. It would probably be a lie if I said that you have changed each and every child who has been in your class so that they are going to be an outstanding adult, but I know you worked so hard to make it happen. But, I know it would not be a lie if I said that you have positively affected each and every student in your class. Your presence showed them that someone cared and was willing to invest in them. For that, again, I thank you. And also, I thank you for letting me walk with you in that journey, for all of you really are my heroes.

Editor's Note: Jim Hamling has been writing Ask Barney since the induction of the column. He has been an inspiration to the mathematics community and will be greatly missed. Enjoy retirement, Jim!

Deadline for November Newsletter is

# November 10, 2007

e-mail articles to  
greenleya@billings.k12.mt.us

## NCTM Representative Report

Welcome to the first of a series of reports from your NCTM representative. This column will appear in each newsletter and will contain some useful information concerning NCTM's goals, directions, and benefits to its members. The position of NCTM rep has always been a part of MCTM, but was expanded at the last board meeting in June. The rep will have several new responsibilities. One of the duties will be to give information concerning NCTM. For the first newsletter, I would like to write about some of the benefits of joining NCTM. At first it may seem a little pricey, but after examining all of the facts, I think you will conclude that it a worthwhile expense that will more than pay for itself. This issue I would like to look at a basic members.

There are two types of individual memberships to consider. The first is called "Full Individual Membership" and will cost \$76. (Next time I will explain an "e-membership"). With this membership you will receive a hardcopy subscription to one of the following journals:

- 1) **Teaching Children Mathematics** (Pre-K to 6). This journal addresses the teaching and learning of mathematics in grades pre-K to the 6<sup>th</sup> grade. It features the latest developments in curricula and teaching and offers ready-to-use tips for the classroom. It is published August through May with a double issue in Dec/Jan.
- 2) **Mathematics Teaching in the Middle School** (grades 5-9). This journal features teaching concepts, issues, and practical ideas for the middle grades. It concentrates on technology in the classroom, assessment and the use of mathematics in the world around us. It is also published from August to May with a double issue in Dec/Jan.
- 3) **Mathematics Teacher** (8-14). This journal focuses on mathematical instruction in secondary schools, two year colleges, and teacher educational institutions. Highlights include practical applications for more effective teaching and motivation of students, book reviews, technology tips, and research studies. It also is published August through May with a double issue in Dec/Jan.

Along with the journal of your choice, you

- 1) will have access to a "Members Only" online resource. The "Members Only" area of the NCTM website allows members to access mathematics education activities and resources, including Student Math Notes, and ON-Math.
- 2) may download up to 5 journal articles per membership year from any NCTM school journal to which you do not already subscribe.
- 3) will receive a subscription to ON-Math. This subscription presents ideas for teaching and learning mathematics at all grade levels, and
- 4) will have access to the "e-Standards". e-Standards provides access to the full text of *Principles and Standards for School*

*Mathematics*, with search capabilities. Electronic examples for each grade band bring the text of the *Principles and Standards* to life with applets and videos.

NCTM also provides the world's largest gathering of mathematics educators with their annual meeting, this year in Salt Lake City in early April. There are also regional meetings held several times a year throughout Canada and the U.S. These meetings are designed to help math educators meet the challenges of teaching mathematics in the 21<sup>st</sup> century. NCTM members will receive a discount registration price when they attend these conferences. NCTM provides a subscription to the NCTM News Bulletin which is published 9 times a year. This bulletin provides details on Council activities, reports on math education issues and articles from the NCTM president. One more plus of joining NCTM is members are able to take advantage of a 20% member discount on a wide variety of books, software and other resources that cover mathematics education.

Each issue of the MCTM newsletter will cover some facet of our national organization. I hope that each article will be interesting and informative.

Jim Hamling, NCTM Representative

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### Now Available!!! MCTM Vests and Polos

Are you in need of a great fleece vest or a new polo? MCTM is now offering vests in royal blue, red, and navy, as well as, short and long sleeved polo's in black, white, grey and red. Each item is embroidered with a beautiful MCTM logo. The vests are high quality R-Tek fleece that are resiliently anti-pill with zip-close pockets. The short sleeved polo is a wicking fabric made of 100% polyester while the long sleeved shirt is a cotton/polyester combination. This clothing looks great!

Order by October 1<sup>st</sup>, and you will save shipping and handling **if you pick up your order** at the MCTM booth during the MEA/AFT Conference in Belgrade. If you aren't attending the conference, include shipping fees.

Contact Linda Horst with questions at:  
horstl@billings.k12.mt.us.

## MONTANA LEARNING CENTER

Help us improve Science and Math Education at the Fall Conference in Belgrade. The MEA-MFT Fall conference in Belgrade will again feature an auction with the Montana Professional Teaching Foundation. We are looking for donations of that special item you would like to see go to supporting excellence in teaching.

Look to our updated web site by the end of October. We plan to showcase:

1. **Montana Math Lessons** from the BITL grant — Lessons for grades 7-12 that highlight the big ideas in mathematics teaching and learning.
2. **The Spring Technology Conference** — Workshops and presentations on how to integrate powerful thinking skills into your classroom.
3. **Professional Development for Teachers** — Get your school ready for AYP and more!
4. **The 2008 Summer Programs for Students** - The Montana Learning Center continues to provide for science and mathematics programs for students across the state.

### **New Executive Director at Montana Learning Center**

The Montana Learning Center at Canyon Ferry Lake has hired a new Executive Director. Diane Fladmo, a Montana native and lifetime educator, is committed to moving the Center forward as a leading educational organization in the state.

Diane's history with Montana education began at a young age, when she attended school in Poplar. Her efforts to support and improve public education since then include eleven years as a special education teacher, administration of a rural education cooperative, numerous roles on the Montana Board of Public Education, and association with a variety of projects at The University of Montana. She also has an active history with education organizations at the national level.

Diane's contract began in August, and she immediately went to work establishing connections and deepening her understanding of the Montana Learning Center's role, vision, and facility. At an early MLC Board meeting in September, Diane outlined a variety of suggestions for expanding collaborations with OPI and other state agencies, AA schools, and higher education. She also offered suggestions for updating materials and refining policies that will streamline the operations of MLC and the Board. These and other issues will be formally considered by the Board at their November meeting.

Other goals and projects discussed at the meeting:

Developing a more efficient committee structure within the Board

Updating and unifying the visual image of MLC presented through the Web site, brochures, and other publications.

Conducting a careful inventory of buildings, equipment and supplies to evaluate their most effective use.

At its regular meeting in November, the Board will revisit the long-range planning process.

## TNT: Professional Development Academy

Technology - to many it is the best tool they have ever found to use in a classroom and they could not imagine teaching a day without it. For others, the simple word stresses them out so much that they would never use it in their own day to day activities. For most of us, we find technology very useful and helpful. We dream of having our interactive classroom where all of our students are actively engaged in learning using the latest invention. We go to workshops and sit in meetings where we hear how important it is to use technology in our classrooms and occasionally we get a little bit of something new demonstrated to us.

So, why do most of us not use technology as often as we should or would like? The first answer that is, of course, time. We do not have the time to explore new ideas or areas of interest. We are constantly bombarded with more and more to do and each time we feel like we are almost caught up we are asked to tackle even more. Yet, we somehow manage to fit in the tasks that we feel are the most important, so I believe that we need to make technology a priority...time problem solved!! I have, however, found another reason (excuse!!) for not incorporating more technology into my math class. There is so much out there to use, how do we know what is best? Teachers 'N Technology (TNT) helped briefly solve this problem for me this summer.

The class was taught at Skyview High School by Tony Riehl and Jacquie McDonald. It was a week filled with introductions to technology that is *useful!!* How do I know it is useful? The instructors introduced us to material that they use in their own classrooms...classrooms much like mine. We were shown how to use things like Excel, Fathom, and TI Interactive, we were given a few dozen websites with useful applets, we were presented with some Geometer's Sketchpad activities that have been useful to students in the past, we went on a Geocaching adventure to get familiar with GPS's, and we explored calculator and CBL use. Best of all, we were given plenty of time to explore these things on our own. The balance of introduction to material and time given to figure things out on our own seemed to make learning easy. I finished the week feeling like I had some new tools to take into the new school year. I feel like these things are ready to be used right now, without any more time needed to prepare, and I feel like the technology I am going to use will be helpful, useful and exciting for my students.

If given the opportunity, I would not hesitate to take a TNT class again. There is always more to learn, technology is always changing and everyone knows that we can use more time to prepare for the year ahead.

Submitted by Jennifer Moore

**Jokes and Quotes  
by Charlie**

During a visit to a mental asylum, a visitor asked the Director what the criterion was that defined whether or not a patient should be institutionalized. "Well," said the Director, "we fill up a bathtub; then we offer a teaspoon, a teacup and a bucket to the patient and ask him or her to empty the bathtub."  
 "Oh, I understand," said the visitor. "A normal person would use the bucket because it's bigger than the spoon or the teacup."  
 "No," said the Director, "A normal person would pull the plug. Do you want a bed by the wall or near the window?"

Lena called the airlines information desk and inquired, "How long does it take to fly from Minneapolis to Fargo?"  
 "Yust a minute," said the busy clerk.  
 "Vell," said Lena, "if it has to go dat fast, I tink I'll yust take da bus."

**Basic Flying Rules:**

1. Try to stay in the middle of the air.
2. Do not go near the edges of it.
3. The edges of the air can be recognized by the appearance of ground, buildings, sea, trees and interstellar space. It is much more difficult to fly in the edges.

"I've laid down the law, though, to everyone from now on about anything that happens: no matter what time it is, wake me, even if it's in the middle of a Cabinet meeting."  
 - Ronald Reagan

If you have a joke or quote to share, please email them to [deisher6@midrivers.com](mailto:deisher6@midrivers.com).

**MCTM TEACHER SCHOLARSHIP**

The MCTM teacher scholarship was established by the MCTM board in 1992 to award teacher scholarships, \$100 for instate conferences or \$250 for out of state conferences, to help defray the costs of attending conferences and workshops. The amounts were increased to \$200 for instate, and \$400 for out of state conferences by the MCTM board in 2006. The intent is to encourage our membership to participate in conferences and to help defray some of the expenses in attending conferences.

Any teacher who is an MCTM member is eligible to receive the scholarship except for current MCTM Board members. The application for a scholarship must be submitted at least **thirty** calendar days prior to the starting date of the conference. The recipient(s) must also write an article for the newsletter on a useful idea acquired at the conference. This article should be mailed to the Chairperson of the Scholarship Committee within **thirty** calendar days of the end of the conference. The chair will then submit the article to the newsletter and authorize the issuance of a check to the scholarship recipient. Scholarships will be limited to the applicants each calendar year that:

1. Submit a completed application that is approved by the Chairperson.
2. Receive confirmation that the scholarship has been awarded.
2. Attend the conference.
3. Submit an article to the scholarship chair for the newsletter.

The scholarship chairperson / committee will screen the applications as necessary. Incomplete or late applications will not be considered. After the chairperson / committee has approved an application, a letter should be sent out to the applicant restating the above requirements and timelines. When the newsletter article is received by the scholarship chair, it will be submitted it to the newsletter editor. The chair will then authorize the treasurer to issue a check for the appropriate amount.

**MCTM Membership Form**

New Member       Renewal  
 Elementary     MS     HS  
 College     Other  
 Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 \_\_\_\_\_  
 Phone Number: \_\_\_\_\_  
 Email: \_\_\_\_\_

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|--|-------|
| Annual Dues (September- August)                    |       |
| _____ Regular (1 yr)                               | \$15  |
| _____ Regular (2 yrs)                              | \$25  |
| _____ Regular (10 yrs)                             | \$100 |
| _____ Life Time                                    | \$150 |
| _____ Student                                      | \$8   |
| _____ Retired Educator                             | FREE  |
| _____ MCTM & MSTA                                  | \$30  |
| _____ Contribution to Scholarship Fund \$5 to \$ 8 |       |

**Send Form with correct amount to:**  
 Pam Koterba, MCTM Membership Chair  
 101 Turquoise Drive  
 Lewistown, MT 59457  
[pkoterba@winifred.k12.mt.us](mailto:pkoterba@winifred.k12.mt.us)

eMSS Math  
e-Mentoring for Student Success

eMSS is recruiting 1st – 3rd year middle and high school math teachers to participate in an innovative on-line mentoring project. eMSS was developed to empower the next generation of math and science teachers by providing content-focused mentoring through a national, on-line technology network. Through eMSS, new and veteran teachers – as well as content specialists – collaborate in an interactive community to facilitate the exchange of information, ideas, and experiences to advance high-quality math instruction for all students.

If you are passionate about math education and would like to be matched with a veteran math teacher from Montana for content specific support and mentoring, we would like to hear from you!

There are numerous benefits to becoming an eMSS Mentee:

- Be matched with an experienced Montana math teacher as your personal mentor.
- Participate in a content-focused professional learning community.
- Have access to a vast array of math resources.
- Receive verification of professional development participation.
- Have the option to receive academic credit.

Contact the Montana Coordinator, DeAnna McAleer, or visit <http://emssmath.nsta.org> for more information and to access the mentee application.

Contact Information:

DeAnna McAleer - eMSS MT Coordinator  
dmcaleer@gmail.com or (406)-697-2655

FIVE MONTANA TEACHERS CHOSEN AS STATE  
FINALISTS  
FOR SCIENCE AND MATH TEACHING AWARD

Five Montana school teachers have been selected as state finalists for the prestigious Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) the nation's highest honor for U.S. mathematics and science teachers in grades kindergarten through 12. A committee of Montana science and math teachers selected the five teachers from a pool of over 140 nominees statewide. The 2007 finalists are: Math: **Margaret Aukshun**, Billings West High School; **Susie Bollinger**, Hardin Middle School and **Tim Joern**, Whitefish Middle School, Science: **Anne Keith**, Chief Joseph Middle School, **Bozeman**; **Jan Mader**, Great Falls High School, **Great Falls** - PAEMST finalists have been shown to devote more time to professional development, to incorporate innovative approaches into their classroom teaching, and to be more likely to use computers and other technologies in their classrooms. Awardees must complete a rigorous application process that incorporates video footage of classroom lessons along with substantial written documentation of impacts on student achievement.

Each of the five teachers is now eligible to become one of Montana's two state Presidential Award winners, announced in the spring of 2008. Each year, a national panel of distinguished scientists, mathematicians, and educators names up to 108 teachers to receive Presidential Awards—one math teacher and one science teacher from each state, the District of Columbia, Puerto Rico, U.S. territories, and the schools operated in the United States and overseas by the Department of Defense Education Agency. Teachers who are selected as Presidential Awardees receive a \$10,000 award, a Presidential citation, and a trip to Washington, D.C. for a series of recognition events, information exchange programs, and an awards ceremony.

Nationally, the awards program is administered by the National Science Foundation (NSF) on behalf of the White House. In Montana, the state recognition program is sponsored and administered by the Montana Professional Teaching Foundation in association with the Montana Association of Presidential Awardees.

**DRABBLE** By Kevin Fagan





## MCTM Spring Meeting Report

This year's annual meeting will be held on Thursday from Noon – 2:00 p.m in the library. The format of the meeting will change a little, plus there will be many items to vote on, so come and have a voice in your membership and vote on these issues.

The following policy changes will be voted on. If you have any questions, please contact your regional representative. (see the back page of this newsletter for contact information)

**Policy 5.3.1: Currently reads** - MCTM pays travel expenses for two board members to attend the NCTM annual meeting each year and represent MCTM at Delegate Assembly. (June 93, Jan. 91, May 88, Sept. 86) –

**Proposed Change:** MCTM pays travel expenses for ~~two board members~~ the President and NCTM Representative to attend the NCTM annual meeting each year and represent MCTM at Delegate Assembly. (June 93, Jan. 91, May 88, Sept. 86)

**Policy 5.3.3: Currently reads** - MCTM pays travel expenses for the president and either past president or president-elect to attend the NCTM Western Region Leadership Conference. (May 88)

**Proposed Change:** MCTM pays travel expenses for the president and either past president or president-elect to attend the NCTM Western Region Leadership Conference. (May 88)

In addition, you will be asked to vote on the following by-law changes:

**ARTICLE II. Membership: Currently reads** - Membership in this corporation shall be open to all persons whomsoever, said persons shall make simple application to the Council, which shall be submitted to the Board of Directors for approval. The Board of Directors shall determine different classes of membership and the dues of such classes. The membership year of the Council shall begin on September 1 and end on August 31 of each year.

**Proposed Change:** Membership in this corporation shall be open to all persons whomsoever, said persons shall make simple application to the Council, which shall be submitted to the Board of Directors for approval. The Board of Directors shall determine different classes of membership and the dues of such classes. The membership year of the Council shall begin on ~~September 1~~ January 1 and end on ~~August 31~~ December 31 of each year.

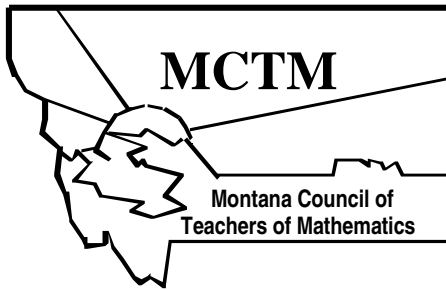
**Article III: Board of Directors: Currently reads** –

Section 2 - The following officers shall be appointed by the Board of Directors at the Board meeting following the annual elections: secretary, treasurer, and an NCTM representative. The duties of these officers shall be those usually associated with such positions in addition to those specifically assigned by these bylaws. The term of office shall be one (1) year. These officers shall be appointed to the same office for not more than three consecutive terms, with the exception of the treasurer, who may be appointed to additional terms.

**Proposed Change:** The secretary and treasurer shall be appointed by the Board of Directors at the board meeting following the annual elections. ~~an NCTM representative.~~ The duties of these officers shall be those usually associated with such positions in addition to those specifically assigned in the procedure manual. Their term of office shall be at least one (1) year. The secretary may be appointed to the same office for not more than three consecutive terms. The treasurer may be appointed to the position for an unlimited number of terms.

Section 3 - The membership of the Council shall elect from its members a president elect who shall assume the office of president after one year. The term of office as president shall be for two years. The past president shall hold office for one year. The cycle shall begin again with the election of a president elect. A person cannot serve more than one term as president.

**Proposed Change:** The presidential role will consist of a five year term. The membership of the Council shall elect from its members a president elect who shall assume the office of president after one year. The term of office as president shall be for two years. The past president shall hold office for one year. This person will have a dual role during this year as the past president and the NCTM Representative. The fifth year the person will serve as the NCTM Representative for one year. The cycle shall begin again with the election of a president elect. A person cannot serve more than one term as president. (continued on page 10)



## Win a Trip to Salt Lake City, UT for the NCTM Convention!

### MCTM Membership Drive

MCTM is hosting a membership drive. Every member that recruits a new member will be entered twice into a drawing for a trip to the NCTM Conference in Salt Lake City, UT on April 9, 2008 through April 12, 2008. (See [www.nctm.org](http://www.nctm.org) for more details about the conference.) Anyone who renews their membership, has a ten-year membership or a life-time membership will be entered once.

The winner will receive paid registration at the NCTM member rate of approximately \$200, four nights at a hotel at approximately \$170/night, an airline ticket estimated at \$500 and food expenses of \$25/day for four days. The total prize is not to exceed \$1500.

Members may copy a registration form for membership to MCTM and hand it out to their colleagues. New members need to write your name on the application and you will be entered into the drawing two times for each new member you recruit.

The new member will be entered once for their new membership.

The winner of the trip to Salt Lake City will be drawn at the Leadership Conference in Bozeman on January 27, 2008. The winner and an alternate winner will be selected at random. If the winner is unable to attend the conference, the alternate winner will attend in their place. The prize is not transferable.

Any questions about the contest may be sent to Lisa Scott, MCTM President, at [scottl@billings.k12.mt.us](mailto:scottl@billings.k12.mt.us).

## MCTM Spring Meeting Review - continued

Section 4 - The directors and officers shall compose the Board of Directors, hereafter referred to as the Board. Only the elected officers (president, past president, president elect), and the existing directors shall be voting members of the Board. The State Mathematics Supervisor shall be an ex-officio nonvoting member of the Board. The Board shall be the executive agency for the Council. It shall meet on the call of the president or by a simple majority vote of the Board. A quorum of the Board shall consist of six members. It shall perform the duties assigned by the Articles of Incorporation and Bylaws, and assume responsibility for carrying on the business of the Council between annual and special meetings. It shall determine the time and place of annual and special meetings. If any officer or director is unable to perform the duties of office, the Board shall make an appointment to fill the office.

**Proposed Change:** The directors and officers shall compose the Board of Directors, hereafter referred to as the Board. Only the elected officers (president, past president, president elect, NCTM Representative), and the existing directors shall be voting members of the Board. While the past president is acting as the NCTM Representative he/she will only be allowed one (1) vote. The State Mathematics Supervisor shall be an ex-officio nonvoting member of the Board. The Board shall be the executive agency for the Council. It shall meet on the call of the president or by a simple majority vote of the Board. A quorum of the Board shall consist of six members. It shall perform the duties assigned by the Articles of Incorporation and Bylaws, and assume responsibility for carrying on the business of the Council between annual and special meetings. It shall determine the time and place of annual and special meetings. If any officer or director is unable to perform the duties of office, the Board shall make an appointment to fill the office.

We are excited to visit with you at the Annual Meeting.

YOU KNOW, I DON'T  
THINK MATH IS A SCIENCE.  
I THINK IT'S A RELIGION.  
ALL THESE EQUATIONS  
ARE LIKE MIRACLES YOU  
TAKE TWO NUMBERS AND WHEN  
YOU ADD THEM, THEY MAGICALLY  
BECOME ONE *NEW* NUMBER!  
NO ONE CAN SAY HOW IT  
HAPPENS. YOU EITHER BELIEVE  
IT OR YOU DON'T.



Scholarship Application

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Home Phone: \_\_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Work Phone: \_\_\_\_\_

Grade level(s) taught: \_\_\_\_\_ Subjects: \_\_\_\_\_

Have you been a recipient of this scholarship before? \_\_\_\_\_ If so when? \_\_\_\_\_

What conference or class are you planning to attend? \_\_\_\_\_

Location: \_\_\_\_\_

Date(s): \_\_\_\_\_

Why do you want to attend this conference or class?

What other conferences have you attended in the last five years?

How will you share the information gained from this conference or class?

## Problem-Based Approach to Teaching & Learning

### MCTM Professional Development Academy

During June, a professional development workshop was held at the Montana Learning Center near Helena, Montana. The workshop, Problem-Based Approach to Teaching and Learning was taught by Kathy Hill. Participants in this workshop were provided with numerous problem-based activities and opportunities to develop lesson plans for their individual classrooms. Using the Problem-Based teaching style in the classroom was modeled the entire workshop with the participants taking part in the activities and then developing the lesson plans.

One of the problem-based lessons was based on the conceptual idea of equations, relationships, and rules. The lesson began with Kathy modeling how to use the software, Geosketch Pad. Students were then given the task to construct 3, 4, 5, 6, and 8 sided figures, measure their angles, and calculate the sum of their interior angles.

After all figures and angles had been measured the following question was posed. "Is there a relationship between the number of sides of a polygon and the sum of the interior angles?"

| POLYGON       | SIDES | SUM OF ANGLES |
|---------------|-------|---------------|
| Triangle      | 3     | 180           |
| Quadrilateral | 4     | 360           |
| Pentagon      | 5     | 540           |
| Hexagon       | 6     | 720           |
| Octagon       | 8     | 1080          |

Students worked in pairs to determine the answer to this question and to prepare a presentation. Some groups determined the pattern that each time you added a side the sum of the interior angles increased by  $180^\circ$ . Other teams determined the total number of sides minus 2 sides times  $180^\circ$  would result in the sum of the interior angles. This led to the discovery of  $(n - 2) * 180 = a$ ; where  $n$  is the number of sides and  $a$  is the sum of the interior angles. Each group presented their findings which led to a deeper understanding of the concept by everyone. After each group presented, Kathy went on to explain that the "minus 2" actually refers to the number of triangles within the figure as opposed to the number of sides.

Another problem-based activity was called "The Game of Leftovers". This game helps students understand the relationship between multiplication and division. The teacher models the game before handing out the materials. Directions are clarified as materials are being disbursed.

- Teams of 2 players
- Each team needs the following materials; 1 die, 15 counters, 6 paper plates, piece of paper for record keeping

Directions:

1. Start with the 15 counters.
2. 1 person rolls the die.
3. Use as many plates as the number rolled and divide the counters equally among the plates.
4. Each student records the math sentences. For example  $15 \div 4 = 3 \text{ R } 3$ .
5. The person who rolled the die gets to keep the leftover counters.
6. The other player takes a turn using the counters that were left on the plates.
7. Play continues until all counters are gone.
8. The student who has the most counters at the end wins the game.

At the close of the game the class discussion led to an understanding of the relationships between division and multiplication problems. Students were then instructed to write the corresponding multiplication sentence for any division sentence recorded with a remainder of zero.

Problem-based teaching stresses listening to and interacting with the students, but not interfering. Students learn to problem solve by thinking, doing, and sharing. Kathy Hill plans to offer this workshop again next summer (2008) in Billings, Montana. We highly recommend this workshop to anyone who wishes to enhance student's problem solving skills. It will put pizzazz back into your math class!

Submitted by Pam Okland, Rachel Stevens, Theresa Steele



**MCTM CLOTHING ORDER FORM**

(see a picture on page 5)

Item: \_\_\_\_\_ Quantity: \_\_\_\_\_

Color: \_\_\_\_\_ Size: \_\_\_\_\_

Cost per unit: \_\_\_\_\_

Total Cost (include shipping and handling rate of \$4.00 for 1 item; add \$1 for each additional item mailed): \_\_\_\_\_

**VESTS: Men's Sizing:** S, M, L, XL.....\$33.00  
 2XL..... \$35.00  
 3XL, 4XL..... \$38.00  
**Colors:** Red, Royal Blue, Navy

**POLO SHIRTS: Men's Sizing**  
 Short Sleeved (100% Polyester) \$30.00  
 Long Sleeved (60/40 - Poly/Cotton) \$33.00

**Please include a check, payable to MCTM, with your order.**

**Orders cannot be processed without payment.**

Sorry, no credit or debit cards accepted.

Ship to:  
 Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

**Send order forms to  
 Linda Horst  
 1200 30th Street West  
 Billings, MT 59102  
 horstl@billings.k12.mt.us**

**We Need Leaders!**  
**by Francis (Skip) Fennell**  
**President, National Council of Teachers of Mathematics**

Like NCTM itself, many Affiliates are in search of leaders. Our challenge is ongoing. We all, NCTM included,\* need to attract new members and leaders, invest them in our respective Affiliates, and keep them engaged. I get tired of conversations with former NCTM members who say they grew dissatisfied with their Affiliate or with NCTM. We all need to look into a mirror! How did we lose these members? Members keep us going. Members support our conferences, our publications, and eventually become our leaders. We need to find and develop new leaders, but how do we do this?

**Connecting.** The first step toward increasing membership and developing leadership is getting connected to an organization. This means NCTM Affiliates need to actively pursue potential members. How? Locate potential new members who are new to your department or your school. Be creative. Get the list of new teachers, teacher educators, or leaders in your area. Send them an e-mail. Visit them personally. Then encourage them to come to one of your meetings. Okay, let's be more direct—drive them to the meeting yourself. Share your publications with a new colleague. Recruiting members is not a passive act. In short, pursuit is good. Make sure to talk about why your own involvement in an Affiliate is important to you—whether it is the annual conference or their publications that you value, or the camaraderie that grows from such involvement.

**Engaging.** Once we find new members, the challenge is to engage them in the work of our Affiliate. This could be assisting at the annual conference, helping to edit the group's newsletter or journal, or serving on Affiliate committees. The analogy to teaching is important. Recruitment of new members is important, but retaining them may be even more important. Teacher retention is a challenge all across the country. Your challenge, as an Affiliate, will be to find ways to engage your newest members. All too often Affiliates, even our most effective ones, can give the appearance of an "old boy or girls club" that is very hard to get into. We need to change this image of a closed network unwelcoming to newcomers.

**Leading.** Here's the challenge for all of us. We all need new leaders. We need to find a way to encourage and promote new Affiliate leaders, as well as a way to ensure a diverse leadership pool. This diversity should include race, ethnicity, gender, and age, as well as teaching level (elementary, middle, and high school, and college or university). We know that although experienced (dare I say older!) Affiliate leaders help keep things moving, meet deadlines, and get things done.

## Leadership Conference 2008

Building a better future for Montana's children

You are invited to attend the 2008 Math and Science Leadership Conference held in Bozeman, Montana February 1-2, 2008. In order to broaden the leadership network that exists in Montana, you are encouraged to invite and bring a fellow educator or administrator.

Registration will begin at 7:45 AM on Friday, February 1, 2008. The conference will start at 8:15 AM and conclude by 12:00 PM on Saturday, February 2. The conference will be held at the Comfort Inn located at 1370 North 7<sup>th</sup> Ave., Bozeman, MT 59715. Rooms have been blocked for Thursday and Friday nights. Please contact the Comfort Inn at (406) 587-2322 to reserve a room in your name. The reservations must be made by January 1, 2007 to assure a conference rate of \$66 for a single and \$74 for a double, plus tax.

The cost for this conference is \$125 for MCTM/MSTA members. Registration for non-members is \$150 and includes a two-year membership in either MCTM or MSTA. The registration price includes meals. Renewal credits through OPI will be offered. You can register by email to Angel Greenley at [greenley@billings.k12.mt.us](mailto:greenley@billings.k12.mt.us) or mail it to her on the form provided. Registration is first come first served basis.

The topic of this year's conference is Indian Education for All. The presenter, Mike Jetty, (*Spirit Lake Dakota Nation*) is an Indian education specialist with the Montana Office of Public Instruction, Helena. The focus of the conference is to immerse math and science educators into the premise of IEFA. The essential understandings will be explored in depth with a focus of how that translates into classroom practice. Jetty's humor and knowledge will help all teachers get a better perspective on what the implementation of IEFA means to the classroom teacher.

It is a significant moment in history that provides an opportunity for each of us to participate in the creation of a progressive and successful model of Indian Education. Other states are looking to Montana as a leader in these efforts as we strive to make the promise of Indian Education for All a reality, and as we work to ensure that Indian students are offered an opportunity for a quality education.

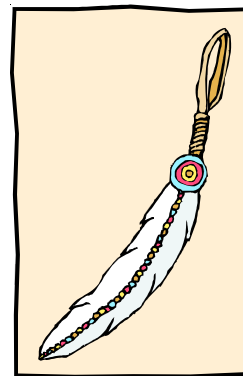
In addition, members of the Montana math and science community will be presenting on a variety of topics addressing Indian Education for All in addition to sessions about leadership opportunities for Montana educators. The topics will be appropriate for all grade levels. Opportunities will be available for teachers to discuss ideas for presentations at local, state, and national levels. The "State of the State" address for both math and science is always a highlight.

The goals for the 2008 Math and Science Leadership Conference are:

- To encourage leadership by fostering partnerships between math/science teachers, students, and university faculty
- To continue to build a network of colleagues within the K-16 math and science community
- To enhance professionalism by bringing new teachers into math and science leadership roles in Montana.

If you have any questions, please contact Alyson Mike at the address and/or telephone numbers listed below.

Alyson M. Mike  
3778 Fox Crossing Road  
Helena, MT 59602  
[amike1@mac.com](mailto:amike1@mac.com)  
**(406)431-7722 (H)**





Building a better future for Montana's children  
**February 1<sup>st</sup> and 2<sup>nd</sup>, 2008**  
**Comfort Inn - Bozeman, MT**

CONFERENCE REGISTRATION FORM [registration is on a first come first serve basis]

Name: \_\_\_\_\_ Nickname: \_\_\_\_\_

Mailing Address \_\_\_\_\_ Home \_\_\_\_\_ School \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

School City \_\_\_\_\_ Email \_\_\_\_\_

Work Phone \_\_\_\_\_ Home Phone \_\_\_\_\_

Please indicate your grade level(s) and subject(s):  
 Elementary      Middle School      High School      College      Math      Science

**Nonmember Rates:** Conference ..... \$150.00  
 Includes membership to a professional organization. Choose one from the list below:

**MCTM/MSTA Member Discount Rate:**  
 Conference..... \$125.00  
 Please check all that apply:  
 Current member of MCTM

- 2 year membership to MCTM
- 2 year membership to MSTA
- 1 year membership to MCTM and MSTA
- Current member of MSTA

**Meals:**

Registration costs include Lunch & Hors d'oeuvres on Friday. For an accurate count it is important that you indicate your intentions for both meals.

- I intend to eat Lunch on Friday
- I intend to attend the Social Hour/Hors d'oeuvre on Friday [dinner on your own]

Please list any food allergies or special dietary needs: \_\_\_\_\_

**Method of Payment:**

- Check (made payable to **Leadership Conference**)
- My district will be paying by P.O.
- Presenter, Registration waived
- MSTA/MCTM Board Director

Cancellations after January 3<sup>rd</sup> will be charged full conference price.

Please return this form to:  
 Angel Greenley  
 415 N. 30<sup>th</sup>, Room 234 - Billings, MT 59101  
 Work: 247-3818 Fax: 255-3571 E-mail: greenleya@billings.k12.mt.us

**MCTM NEWSLETTER****Billings Public Schools**

415 N. 30th Room 234R

Billings, Montana 59101

Non-Profit Organization

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**PAID****2007-2008 MCTM Board of Directors**

|                 |             | <u>Grade</u> | <u>Region</u> |            |  | <u>Elected</u> |
|-----------------|-------------|--------------|---------------|------------|--|----------------|
| Lisa Scott      | Billings    | 5-8          |               | President  | <a href="mailto:scottl@billings.k12.mt.us">scottl@billings.k12.mt.us</a>       | 05-09          |
| Lisa Wood       | Billings    | 9-12         | IV            | Director   | <a href="mailto:woodl@billings.k12.mt.us">woodl@billings.k12.mt.us</a>         | 05-08          |
| Angel Greenley  | Billings    | K-4          | IV            | Director   | <a href="mailto:greenleya@billings.k12.mt.us">greenleya@billings.k12.mt.us</a> | 05-08          |
| Terri Dahl      | Great Falls | 9-12         | II            | Director   | <a href="mailto:terri_dahl@gfps.k12.mt.us">terri_dahl@gfps.k12.mt.us</a>       | 06-09          |
| David Erickson  | U of M      | 13-16        | I             | Director   | <a href="mailto:David.Erickson@mso.umt.edu">David.Erickson@mso.umt.edu</a>     | 06-09          |
| Angel Greenley  | Billings    | K-4          | IV            | Director   | <a href="mailto:greenleya@billings.k12.mt.us">greenleya@billings.k12.mt.us</a> | 05-08          |
| Jennie Luebeck  | MSU         | 13-16        | III           | Director   | <a href="mailto:luebeck@math.montana.edu">luebeck@math.montana.edu</a>         | 05-08          |
| Carl Anderberg  | Helena      | 9-12         | III           | Director   | <a href="mailto:canderberg@helena.k12.mt.us">canderberg@helena.k12.mt.us</a>   | 06-09          |
| Deanna Reynolds | Glasgow     | 9-12         | V             | Director   | <a href="mailto:dkreynolds@nemont.net">dkreynolds@nemont.net</a>               | 07-10          |
| Kathy Hill      | Kalispell   | 5-8          | I             | Director   | <a href="mailto:kathymarie56@hotmail.com">kathymarie56@hotmail.com</a>         | 07-10          |
| Tony Riehl      | Billings    | 9-12         | IV            | Director   | <a href="mailto:triehl@bresnan.net">triehl@bresnan.net</a>                     | 07-08          |
| Pam Koterba     | Lewistown   |              |               | Membership | <a href="mailto:pkoterba@winifred.k12.mt.us">pkoterba@winifred.k12.mt.us</a>   |                |
| Jim Hamling     | Lewistown   |              |               | NCTM Rep   | <a href="mailto:hamling@midrivers.com">hamling@midrivers.com</a>               | 03-08          |
| Cliff Bara      | Troy        |              |               | Treasurer  | <a href="mailto:cliffbara@hotmail.com">cliffbara@hotmail.com</a>               |                |

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**Newsletter Committee:** Angel Greenley, Terri Dahl

Montana Mathematics is a newsletter published for all members of the Montana Council of Teachers of Mathematics. The publication comes out 5 times/ year and is free to all members of the MCTM.

Any information pertaining to MCTM can be sent to Angel Greenley at Billings Public Schools, 415 N. 30th, Billings, Montana 59102. All entries will be reviewed.