



# MONTANA MATHEMATICS

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of Teachers  
of Mathematics

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## An Amazing Opportunity Amongst the Season of Testing Frenzy! It's MCTM Math Contest Time!!!

With March comes the dreaded testing season. NAEP testing, the MontCAS, District testing, and sometimes some of us find some chapter tests and quizzes to assess what we do in our classrooms between other tests! It can be exhausting! But take heart! In the midst of the testing season is a wonderful opportunity for your students to *experience the excitement of a math contest!*

The MCTM Math Contest, held across the state in March, presents a wonderful opportunity for 7-12<sup>th</sup> grade students to build a network of students who enjoy math. Not only will they be able to meet and visit with students across their region, but the seniors will have an opportunity to earn scholarships. As a current math teacher states, *"I was one of the contestants in the very first math contests in Havre in the early 80's. The awards I earned at those regional and state contests actually encouraged me to pursue math as a career. It was good for me to learn that not only was I good at math in my school, but also compared to the rest of the state. It gave me the confidence to take the next step, and here I am 20 years later, still teaching math and loving it."* It is MCTM's hope that all students are given this opportunity!

Information about the contest, site locations, registration information, test topics, and more is located on the MCTM website: [www.montanamath.org](http://www.montanamath.org). Take a few minutes to explore all that the contest and the website has to offer to each member and their students.

Please consider applying for the 2010 MCTM Math Contest Writing Conference which will be held in Billings this summer. It is an opportunity to gain college credit, meet colleagues

across the state, collaborate on multiple math topics, write the tests for the 2010 contest, plus earn a little extra spending money. The Test Writing Conference information and application will be posted on the MCTM website in March and in the next newsletter.

My many thanks for each and every person who has helped make the MCTM Math Contest a success for many, many years! We are so fortunate to have professionals who have served for years and 'new bees' who have just started their service to the contest. I would like to recognize Sherry Horyna from Grass Range who has been organizing her region since the inception of the contest; she organizes an amazing contest!

This spring's contest will bring my service as the state director to a close. I have appreciated the amazing opportunities to get to know and work with so many top-notch math teachers across the state. Montana is blessed to have the very best teachers. Each of you will enjoy contest connections with Kathje Dalton, the next state director.

Have a great spring!

Linda Horst  
MCTM Math Contest Director

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## MCTM President's Message

Greetings from Billings! Wow, the school year is flying by. It is hard to believe that the first semester is almost over and that Leadership is right around the corner. Once again we will have a fun, information filled weekend in Bozeman. Hopefully the weather will cooperate and everyone will be able to make it to the Comfort Inn.

This is an exciting year, with many of our members working on the standards revision for OPI. I know that I have mentioned before how pleased we are to have Jean Howard back with us, but I must mention it once again. It is nice to know that we have someone at OPI whose main priority is math education and what we can do to improve it in the state. Those OPI folks probably appreciate having someone that can communicate with the math teachers. I do believe that we can be a bit opinionated! :)

Check out the MCTM website at [www.montanamath.org](http://www.montanamath.org). Tony Riehl does a wonderful job of keeping the site current and providing links to other interesting sites. On our site you will find information about the Math Coach Retreat Feb 20<sup>th</sup> and 21<sup>st</sup> at the Red Lion Inn, in Helena, as well as information about the Summer Professional Development. The K-6 PDA will be offered at Canyon Ferry July 13-16 and will be presented by Angel Greenley Zickafoose on Implementing the Algebra Standard K-6. The 7-12 PDA will be offered in Billings July 20-23 and will be presented by Todd Morstein on Update-Invigorate-Integrate Using the Calculator to Enhance Student Learning. The MCTM Board has decided to offer a middle school PDA starting next summer. We will rotate so there are two PDA's per summer elementary/middle school, middle school/ high school, or

elementary/high school. Those middle school people seem to always be lumped up or down so we thought they deserved direct instruction just for them! : ) The website also provides information about the MCTM math contest which is fast approaching, lesson plans, masters degrees opportunities, GeoGebra applets and software, and scholarship opportunities. If you haven't taken the time to check out the website, put it on your list of must do's for 2009.

Don't forget the elections coming up in March or April. We, once again, have some excellent candidates for the board and president so take the time to vote. Be thinking of people that you would like to nominate for the Dean Preble Award again this year. Nominations are due in June but can be sent in any time. Nominate now while you are thinking about it.

I hope that 2009 is a happy, productive year for you and that your friends and family bring you much joy. My niece's baby took two steps on her own this past weekend. It reminds me that we need to celebrate every success, no matter how small! Happy New Year!

Lisa Wood – MCTM President

Deadline for March Newsletter is

**March 10, 2009**

e-mail articles to  
[zickefoosea@billings.k12.mt.us](mailto:zickefoosea@billings.k12.mt.us)

# Lesson Plans

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

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## K-6

### Circle Folding

Submitted by Angel Zickefoose

In this activity, students will use a circle and fold it to create other geometric shapes such as an equilateral triangle, isosceles trapezoid, rhombus and more.

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## Middle School

### Piecing Ideas Together

In this activity, students will relate area formulas for parallelograms, triangles, and trapezoids. They will develop, generalize, and explain area formulas.

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## High School

### Test Your Memory

Submitted by Lisa Wood

This activity explores residuals using the ages of celebrities. Students guess the age of the celebrities, are told the actual ages and find residuals. They compare the coordinate points ( actual age, guessed age ) with the line  $y = x$ .

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### MCTM Membership Report

Has your membership expired? Memberships expire December 31st! Be sure to check your membership by contacting Pam Koterba at [pkoterba@winifred.k12.mt.us](mailto:pkoterba@winifred.k12.mt.us) if you have any questions about when your membership expires. Remember, you will no longer receive newsletters or e-mail reminders if your membership has expired. Hurry, renew now.



## Aunt Sally

Dear Aunt Sally,  
My students are having trouble setting up and solving percent problems such as “7 is 28% of what number?” Do you have any suggestions?

Signed,  
Di Lemma

*Dear Di,*  
*I have taught this topic two ways. One way is to write the word sentence and then write the numbers underneath the numbers, put a multiplication sign underneath the word “of”, an “=” sign under the word “is” and put a “n” for the unknown. Then solve the equation. In my experience, this method works well with students proficient in solving equations and a good understanding of the meaning of percent.*

*With average students, I have been more successful with something called the “is over of” method using proportions. You use the formula “is over of is equal to percent*

*over 100”* 
$$\frac{\text{is}}{\text{of}} = \frac{\%}{100}$$
 *or in this case*

$$\frac{7}{n} = \frac{28}{100}$$
 *The words “of” and “is” have a*

*number associated with it in the word sentence (usually the number next to the word). Then solve using cross products. I like this method better for several reasons. The best reason is that students have less trouble! Another good reason is that it helps students understand that percent means “out of 100”. I also recommend that if the unknown is the percent I use a “p” instead of an “n” for the variable so the students*

*remember to put a “%” sign on their answer. Try it and I am sure you will like it.*

Signed,  
Your Dear Aunt Sally

Dear Aunt Sally,  
My Algebra 2 students have been factoring polynomials and I have been emphasizing that they need to “factor completely”. We have noticed that when we factor the sum (or difference) of two cubes, such as “ $a^3 + 8^3$ ” or “ $a^3 - 8^3$ ”, we get a binomial and a trinomial factor. The trinomial we get is never factorable. Is this always true and why?

Signed,  
Will Factor

***Dear Readers,***  
***I am going to pose this question to you. I will publish the best explanation (with correct answer, of course) in the next MCTM issue. Hint: It has something to do with cube roots. Email Aunt Sally at: [auntsally@bresnan.net](mailto:auntsally@bresnan.net) with your best explanation.***

Signed,  
Your Dear Aunt Sally

Dear Aunt Sally,  
I just got this great idea from a colleague of mine that I wish I had known from the beginning of my teaching career. I want more teachers to know about some of her ideas?

Signed,  
Sharon Buddy

*Dear Sharon,*  
*What great timing! MCTM is looking for presenters for the MEA/MFT/MCTM Fall Conference. Do the whole state of Montana a favor and talk your colleague into presenting her ideas to other teachers. If there is hesitation, offer to co-present with her. I believe every teacher has great ideas and we need to share with each other. It is your responsibility to give back to your profession. For more information on how to sign up as a presenter go to: [www.montanamath.org](http://www.montanamath.org). We’re counting on you!*

Signed,  
Your Dear Aunt Sally

Please email questions or comments to Aunt Sally at: [auntsally@bresnan.net](mailto:auntsally@bresnan.net). Check out her website at [www.montanamath.org/auntsally/](http://www.montanamath.org/auntsally/)

## OPI Math Specialist Report

Happy New Year.

December 12-14 Montana Mathematics Standards Revision Team members braved the weather to meet in Helena. They continued to work even when two out of three broilers stopped working at the meeting site (remember the 20+ below temperatures). The members used blankets as well as coats and gloves to keep warm and continue their work revising the standards and benchmarks. The team is meeting again January 16-18 in Helena and a partial draft will be available for your review. The members to be thanked for their dedication during Friday – Sunday meetings in Helena and time spent between meetings are:

Cliff Bara – Troy  
 Susan Bollinger – Hardin  
 Marie Boothe – St. Labre  
 Karla Cramer – Florence  
 Terri Dahl – Great Falls  
 David Erickson – U of M  
 Renee Floyd – Hot Springs  
 Vicki Green – Eldergrove  
 Judi Grimes – East Helena  
 Mary Jo Hamling – Lewistown  
 Susan Hanna – West Yellowstone  
 Kathy Hill – Bissell  
 Estelle Hill – Cascade  
 Colette Jadis – Bozeman  
 Andrea Johnson – Ophir  
 Sheryl Kohl – Poplar  
 Jennie Luebeck – MSU  
 Bert Mahon – Hamilton  
 Stacey Redding – Hardin  
 Raisa Richards – Browning  
 Hilary Risser – MT Tech  
 Melissa Romano – Helena  
 Theresa Steele – Browning  
 Cherie Stobie – Polson  
 John Stromberg – Hamilton  
 James Taft – Yellowstone Acad.  
 Edi Wagner – Browning  
 Rodd Zeiler – Laurel  
 Stephanie Soderquist – Froid

Please contact Jean Howard, Mathematics Curriculum Specialist, [jhoward@mt.gov](mailto:jhoward@mt.gov) if you have any questions or comments concerning the revision process.

The Mathematics Web Page on OPI website is up and running.  
<http://www.opi.mt.gov/Math/index.html>  
 Please consider the page "youthful" in need of "growing" into maturity. Remember as a "young" page, you will need to visit often to view the growth.

Tab will be updated on a regular basis. The Revision 2008-09 Tab will soon link to a draft Content Standards document for you to review.

Thank you for visiting and contact me if you have any questions or suggestions for the page.

Jean K. Howard  
 Mathematics Curriculum Specialist  
 Montana Office of Public Instruction  
 PO Box 202501  
 1300 Eleventh Avenue  
 Helena, MT 59620-2501  
 406-444-0706

### *Upcoming Math Events*

**OPI Assessment Conference** (Blgs) 1/29 & 1/30  
**Leadership Conference** (Bozeman) 1/30 & 1/31  
**IEFA Best Practices Conf** (Helena) 2/17 & 2/18  
**Coaches Retreat** (Helena) 2/20 & 2/21  
**NAEP Assessment** (Statewide) 1/22 through 3/6  
**CRT (MontCas)** (Statewide) 3/2 through 3/25  
**CRT-Alternate** (Statewide) 2/10 through 3/25  
**MEA/MFT Presenter's Application Due** - 5/8  
**K-6 MCTM PDA** (MLC) 7/13 through 7/16  
**7-12 MCTM PDA** (Blgs) 7/20 - 7/23

## NCTM Representative Report

MCTM is an affiliate of NCTM and the NCTM website has a lot to offer. See a few examples below.

### **The Relation between Reform Teaching and Equity in Mathematics Education**

*Journal for Research in Mathematics Education*  
Volume 38, Issue 4

#### **Questions**

To what extent does reform teaching contribute to higher overall school achievement in mathematics and narrow the achievement gap in mathematics between students who attend schools with low average socioeconomic status and students who attend schools with high average socioeconomic status? And can it reduce the equity gap that divides students within the same school but who are of different socioeconomic status?

To read more go to the NCTM website [www.nctm.org/researchsummaryv38i4.aspx](http://www.nctm.org/researchsummaryv38i4.aspx)

### **The Impact of Middle-Grades Mathematics Curricula and the Classroom Learning Environment on Student Achievement**

*Journal for Research in Mathematics Education*  
Volume 39, Number 3

#### **Question**

What influences students' learning in the classroom? Is it the selection of textbooks, the learning environment, or the teacher's professional development?

This study sought to compare and contrast the systemic effects of adopted textbooks, teacher practices, and standards-based learning environments on student achievement in mathematics.

To read more go to the NCTM website [www.nctm.org/news/content.aspx?id=15513](http://www.nctm.org/news/content.aspx?id=15513).

### **2007 TIMSS Shows Continued Improvement in Math**

The TIMSS report includes a number of encouraging findings:

- On average, American fourth graders scored above the international average in all content areas in 2007. They outscored their international peers in number, geometric shapes and measures, and data display by 22 to 43 points.
- American fourth graders, on average, scored higher than the average international fourth grader in knowing, applying, and reasoning, with scores between 23 and 41 points higher than their international peers.
- At the eighth-grade level, U.S. students, on average, outscored their international classmates in the content areas of number and data and chance by 10 and 31 points, respectively.
- On average, U.S. eighth graders outperformed students in 38 countries in data and chance and 35 countries in the number domain.

To read the entire article on the NCTM website [nctm.org/news/content.aspx?id=17021](http://nctm.org/news/content.aspx?id=17021)

**Wanna Be Famous?  
MEA/MFT Fall Conference**

Have an idea or two that works beautifully in your classroom? Exploring a new idea that you'd love to share with others? Just want your name in print? The MEA/MFT/MCTM fall conference needs you to star in our "show" October 15-16, 2009! Sign up to be a presenter and find your self in famous (or infamous) company. We are looking for more than 150 speakers in all levels and on all topics of math education. This year is an especially good one to be involved. We are hosting the Texas Instruments T-cubed regional conference in conjunction with MEA, so folks who love technology are especially needed as speakers (but we want lots on non-techie workshops too!). We all know two or three people in our school, district or area who we'd love to learn from, so grab a friend or two and get signed up to present. Applications can be found on the MEA-MFT website – there's a link on our very own MCTM site ([www.montanamath.org](http://www.montanamath.org)). If you have questions concerning the conference and/or presenter forms, please contact one of us.

Kerry ([gruizengak@billings.k12.mt.us](mailto:gruizengak@billings.k12.mt.us)),  
Tony ([riehlt@billings.k12.mt.us](mailto:riehlt@billings.k12.mt.us)) and  
Mary Ann ([byrdm@billings.k12.mt.us](mailto:byrdm@billings.k12.mt.us))

**MCTM Math Coach Retreat  
Revised!!!**

MCTM is sponsoring a Math Coach Retreat in February. There is still plenty of room available. The format of the retreat has changed. The retreat will **begin at 8:00 AM on Friday, February 20<sup>th</sup> and continue until 4:00. We will then restart at 8:00 on Saturday, February 21<sup>st</sup> and continue until noon.** The retreat will be held at the Red Lion in Helena. Cost is \$200 per person which includes meals (breakfast and lunch Friday & breakfast on Saturday) and registration. OPI Renewal units will be offered.

This promises to be an excellent opportunity to network with other coaches around the state, while learning stress management skills and more about coaching models and significant problems in mathematics education.

Come join us! Want more information? Go to [www.montanamath.org](http://www.montanamath.org) and download a registration form – or contact Angel Zickefoose [zickefoosea@billings.k12.mt.us](mailto:zickefoosea@billings.k12.mt.us)

We can't wait to see you there!

**MCTM Membership Form**

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

<b>Annual Dues (September- August)</b>	
<input type="checkbox"/> Regular (1 yr)	\$15
<input type="checkbox"/> Regular (2 yrs)	\$25
<input type="checkbox"/> Regular (10 yrs)	\$100
<input type="checkbox"/> Life Time	\$150
<input type="checkbox"/> Student	\$8
<input type="checkbox"/> Retired Educator	FREE
<input type="checkbox"/> MCTM & MST A	\$30
<input type="checkbox"/> 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)

**MCTM NEWSLETTER**

c/o Angel Zickefoose  
 18 S. Santa Fe Drive  
 Billings, MT 59102

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**Editor: Angel Zickefoose**

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 Zickefoose at 18 S. Santa Fe Drive; Billings, MT 59102 or e-mailed to zickefoosea@billings.k12.mt.us. All entries will be reviewed.