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(T a l k i n g L e a f)

South Dakota Council Teachers of Mathematics Newsletter

Presidential Ponderings

I hope that the new school year started smoothly for each of you and that the good times continue for another few months. Our task again this year is collectively as difficult and as important as any. Thankfully, it is also the most rewarding. Thank you for everything you do for the students in South Dakota.

We are going to try something different with this edition of the SDCTM Newsletter. For the first time we are going to send the newsletter electronically to as many people for whom we have email addresses. We hope it works. You will be the judge. Pepper us with your feedback. We will have regular mail backup, if needed.

The highlight of our year is the Professional Development Conference in Huron every February. This year the “high” is even higher and the “light” is even brighter. The old Crossroads Convention Center has been transformed into the bigger and better Huron Events Center. In early August, board members from SDCTM and SDSTA were given a tour of the new structure. More meeting rooms, more area for vendors and functions, wireless high-speed internet, along with new carpeting and lighting will say “Welcome!” when you attend the 14th Annual Professional Development Conference hosted by SDCTM and SDSTA on February 2-4, 2006. The entire conference will be **self-contained** in this beautiful structure. ***There will be no need to venture outside except to remind oneself of the February wind chill.***

As long as you will be attending the Conference, you may as well put together a little session and join our outstanding list of presenters. The state of South Dakota does very well in national rankings of all kinds of test scores. Our students achieve those scores because we have the best teachers any state could claim. We must still strive to improve, and a huge stride in that direction will be facilitated with the sharing of ideas and strategies with our colleagues. Each one of you is doing something “right” and the rest of us are waiting for you to give us a glimpse of your secret. I promise a warm and attentive audience for each presenter.

We always have door prizes and great food at the conference in addition to our wonderful presenters. This year, we will have a big surprise at the end of the conference. Someone will win a trip to Costa Rica with all expenses paid. Stay tuned for the details.

Anne Thompson, our state specialist in mathematics, has left her post at the Department of Education to again pursue her passion as an educator. She has joined the staff of SDSU and will be teaching mathematics courses in Brookings and Sioux Falls. We wish her the very best, but we will miss her greatly! She provided energy, vision, leadership, and the continuity we needed to fulfill the goal of rolling out the South Dakota Mathematics Standards. Thank you, Anne. We look forward to the times when our paths will again cross in this most noble endeavor called mathematics education.

Please visit our website at sdctm.org for speaker forms and other information. Contact anyone of us on the Executive Board if you have a question, suggestion, or concern. We are here to serve. This is an election year for SDCTM, so contact Bill Gripenotrog, if you are interested in getting involved.

Have a super year, keep up the great work, and I will see you in Huron on February 2-4, 2006, when it will be warm and cozy!

Chuck Holmstrom
President SDCTM

Fall 2005

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Calendar Notes:

- October 25, 2005 - SDCTM/SDSTA 2005 Speaker Forms Due

- February 2-4, 2006 SDCTM/SDSTA Joint Conference in Huron



“Excellent teachers perform miracles every day with little or no recognition. The Presidential Awards demonstrate the value and appreciation the nation has for the teaching profession.”

“My motivation comes from the students.”

NSF Honors Dawn Wirth as a PAEMST Awardee

Saint Patrick's Day has never meant more than wearing green for me until 2005! That was the day that I was paged to take a call. The National Science Foundation was calling to tell me that my name was being forwarded to the White House for approval by the President of the United States for the Presidential Award of Excellence for Math and Science Teachers in the math discipline.

A friend and former co-worker nominated me for this award during the previous year. I remember her jokingly saying it would be a free trip to Washington and \$10,000. Even with that temptation, I was hesitant because a big part of the application was a portfolio. Preparing that project would stretch my valuable time thin. I am always up for a challenge and I knew the rewards could be great even if I were only a South Dakota state finalist. I never imagined how great they would be.

The Presidential Awards for Excellence in Mathematics and Science Teaching is the nation's highest honor for teachers of mathematics and science in elementary and secondary education. The Awards recognize two exemplary K-12 teachers (science and math) from each state for their contributions in the classroom and to their profession. Excellent teachers perform miracles every day with little or no recognition. The Presidential Awards demonstrate the value and appreciation the nation has for the teaching profession. (<http://www.paemst.org/>)

The application process included a videotaped lesson and written responses to questions about the teacher's instructional practice. The nomination and application go to a state committee for evaluation. At this time three finalists are chosen. These recommendations are forwarded to the White House. The President of the United States announces the recipients of the Presidential Awards during a weeklong celebration in Washington, DC. Of course, as guests there, my husband and I were treated like royalty. We enjoyed great food and company while staying two blocks from the White House.

At the Smithsonian Institution National Museum of Natural History we saw the IMAX film “Forces of Nature”, which was followed by a reception. There were receptions in our honor at the U.S. State Department and the National Academy of Sciences. The last evening consisted of a cruise on the Potomac River. One of the many highlights was a picture and handshake from President Bush! During the day sessions we were surprised when we received gifts of software, curriculum, an IPOD and A TRIP TO DISNEYWORLD! We were told to expect other gifts from companies throughout the year. So far an overhead projector from 3M has arrived at my house. In addition to all of the above, I received \$10,000. The money is intended to encourage and support great work in the teaching world.

My motivation comes from the students. We all know that our students need encouragement and support in their education but few of us remember that teachers do too. The inspiration and encouragement that I received as the recipient of this award have made me a more conscientious teacher in all areas. Isn't that what our students deserve! This is the year for elementary teachers to apply. The contributions made to your classroom just by the application process are worth your time and effort.



State Finalists for 2005 Presidential Awards Announced

Robert Schuh and Jay Bergland are state finalists for the 2005 Secondary Presidential Award for Excellence in Mathematics Teaching.

- ☞ Robert Schuh teaches at McIntosh High School. He has been teaching for 21 years. He teaches Algebra II, Algebra III, Advanced Mathematics, and Calculus. His lesson focused on solving trigonometric functions.
- ☞ Jay Bergland teaches at Gettysburg High School. He teaches 7th Math, 8th Pre Algebra, Algebra II, Pre Calculus, and Calculus. His lesson focused on how the values of a , h , and, k values in the vertex form of the quadratic equation affect the graph of .

The Presidential Awards for Excellence in Mathematics Teaching Program was established in 1983 by the White House and is sponsored by the National Science Foundation. The program identifies outstanding mathematics and science teacher for Kindergarten through 12th grade, in the 50 states and four U.S. jurisdictions. The teachers serve as models for their colleagues and as leaders in the improvement of science and mathematics education.

These teachers are national role models for educators to emulate; for students to admire; and for parents, administrators, and communities to nurture. PAEMST Awardees 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.

Every year up to 108 National Awardees each receive a \$10,000 award, a paid trip for two to Washington, DC to attend a week-long series of networking opportunities and recognition events, and a special citation signed by the President of the United States. The national award will be announced by the President of the United States sometime before the national award week which is in March 2005.

Recognize an Outstanding Colleague

Washington, DC – The White House, in conjunction with the National Science Foundation, is now accepting nominations of qualified candidates for the 2004 Presidential Awards for Excellence in Mathematics and Science Teaching, the nation's highest honor for mathematics and science teachers. Educators can recognize an outstanding colleague with a nomination for the prestigious presidential awards.

To nominate a K-6 mathematics or science teacher, or to learn more about the presidential awards program, please visit www.nsf.gov/pa and click on the [Applications Packets](#) link.

Presidential award-winning teachers serve as models for their colleagues and leaders in the improvement of mathematics and science education. The application process provides a rare opportunity for concentrated self-reflection, and all 2004 awardees will have the opportunity to network with each other and exchange effective teaching strategies and innovative methods during a week-long trip to Washington, DC for an awards ceremony and a variety of special recognition events. Additionally, each awardee will receive a citation from the President of the United States and a \$10,000 award from the National Science Foundation.

Congratulations to Robert Schuh and Jay Bergland .

Nominate a K-6 Math or Science Teacher to Receive the 2006 Presidential Teach-



TI, in association with NCTM, Partners with “NUMB3RS,” the Paramount Network Television Series for CBS, to Launch an Innovative Math Education Program

-Texas Instruments and National Council of Teachers of Mathematics to Engage Students Using Math Concepts from Hit TV Series-

Dallas and Los Angeles, September XX, 2005 – Texas Instruments (TI) will lead a math education initiative based on the hit series "NUMB3RS." In partnership with CBS, and working in association with the National Council of Teachers of Mathematics (NCTM), TI has created an educational outreach program promoting the many uses of mathematics and supporting math teaching. The program begins with the first episode of the season, premiering Friday, September 23 at 10:00–11:00 PM, ET/PT and 9:00 PM CT on CBS.

The program includes TI and NCTM-developed math education activities for teachers and students based on the “NUMB3RS” TV show. The activities will be based on the mathematics presented in each episode, and will be available at cbs.com/numb3rs.

Math teachers began using “NUMB3RS” content informally during the show’s first season as a supplemental teaching tool to encourage their students to get more interested in math with positive results. This year the effort is being made official with financial and operational support from TI, in association with NCTM, so that the nation’s math teachers in grades 9–12 will receive high quality, engaging activities that have been developed by classroom teachers and leading mathematicians for students at grade-appropriate levels.

Teachers can find additional program information and order a classroom start-up kit at cbs.com/numb3rs.

NCTM, the nation’s largest and most respected association of mathematics teachers, will work with TI and “NUMB3RS” to create special classroom activities corresponding with the math used in each episode of “NUMB3RS.” Students will have the chance to more deeply explore the math derived directly from the concepts highlighted in each week’s episode.

“We’re proud to be working in association with TI and ‘NUMB3RS’ to implement this exciting educational outreach program,” said Cathy Seeley, NCTM president. “By emphasizing the real world applications of math, we hope to motivate students to go further and learn more challenging mathematics while raising their awareness of how ‘we all use math every day.’”

Links to the complete press release, Cathy Seeley’s letter and classroom activities can be found at NCTM’s web site. www.nctm.org

TI will also be conducting sweepstakes, commencing in 2006 that will incorporate math questions in an “Open Book Quiz.” Two students and one teacher will each win a trip for four to Hollywood to meet cast members of the show. The two winning students will also receive scholarships. The winning teacher will also win a walk-on part on “NUMB3RS.” Teachers can find additional program information and order a classroom start-up kit at cbs.com/numb3rs.

Papa Bear, Momma Bear, & Baby Bear
The altitude to the hypotenuse of a right triangle



Material: scratch paper, colored pencils, scissors.

This is an instructor-led large group activity. Q means a sample question for the student.

Bold statements are instructions given to students.

1. Construct a large scalene right triangle, preferably non-isosceles. The more unequal the legs are, the easier it is to visualize the theorem.

Q: Did everybody construct congruent triangles? How do you know?

Q: Did everybody construct similar triangles? How do you know?

Q: How do you know the triangle you constructed is right? How could you convince me that it's right?

Q: Where is the hypotenuse? What are the other two sides called?

2. Cut out your triangle and label the sides a , b , & c . Let c be the hypotenuse and a be the shorter leg. Label on both sides of the paper.

3. Color the acute angles in two different colors. Don't color the right angle!

Q: What's the sum of the acute angles? How do you know?

4. Construct another triangle congruent to the first triangle. (Note: Don't tell students how to do this.)

Q: How do you know the triangle you constructed is congruent to the first triangle?

Q: Do you have to have all six parts of the triangle congruent to show that the triangles are congruent? If not, how many parts do you need? Q: Can you show the triangles are congruent by SSA in the case? Why or why not?

5. Label the sides and color the acute angles in the same manner that you did the first triangle.

6. Put the first triangle aside.

7. Construct the altitude to the hypotenuse. Label the hypotenuse segments x & y . Label the altitude h . (Note: Once again, don't tell students how to do this. Have them access their prior knowledge and figure it out.)

Q: How do you know that what you have constructed is the altitude?

Q: Is the altitude also a median? Why or why not?

Q: You have just constructed two smaller triangles. Are the triangles congruent? If yes, state the congruence statement. If not, explain why the triangles aren't congruent.

8. Color the other acute angle in the correct color.

Q: How did you know which color to use for which angle?

9. Cut the triangle along the altitude to form two smaller triangles.

Q: Show the triangles are or are not congruent.

10. Retrieve the original triangle and compare the large triangle with the two smaller triangles?

Q: Are any of the triangles congruent? How do you know?

Q: Are any of the triangles similar? Explain why or why not. How do you know? Write the similarity statement.

Q: List the congruent angles.

Q: List the ratios (proportion) of the sides.

11. Conclude with the students stating the theorem illustrated by the activity.

If an altitude is drawn to the hypotenuse of a right triangle, then:

a) all three triangles are similar,

b) the altitude to the hypotenuse is the geometric mean of the segments of the hypotenuse, and

c) either leg of the original right triangle is the geometric mean of the hypotenuse of the original right triangle and the segment of the hypotenuse adjacent to that leg.

Part "a" of the theorem is the most important part to remember because you can figure out the ratios given similar triangles. Also, the students will come to see that the segments that are the geometric mean all radiate from the vertex of the right angle of the original triangle.

**SPEAKER / PRESENTER FORM FOR THE JOINT CONFERENCE OF SOUTH DAKOTA
COUNCIL OF TEACHERS OF MATHEMATICS
and SOUTH DAKOTA SCIENCE TEACHERS ASSOCIATION
HURON, SOUTH DAKOTA FEBRUARY 2-4, 2006.**

OFFICE USE ONLY: Session No. _____ Day _____ Time _____ Location _____
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Submission of this form constitutes acceptance unless otherwise notified.

(First Name) (Middle initial) (Last Name)

(First Name) (Middle initial) (Last Name)

(Name of School/Affiliation)

(Name of School/Affiliation)

Preferred Address: (circle one) work home

(Address)

How should name(s) and affiliation(s) be listed on the conference program?

(City) (State) (Zip Code)

(Name)

(Work Phone) (Home Phone)

(Affiliation)

(Email)

(Name)

(Affiliation)

Title of presentation: _____

Brief description: _____

Circle appropriate levels: K 1 2 3 4 5 6 7 8 9 10 11 12 C

Length of presentation: _____ one hour _____ two hours _____ three hours

Day of presentation: _____ Friday _____ Saturday _____ either day _____ both days

One overhead projector and screen will be provided for each room

Additional A-V equipment needed (Speakers are expected to bring their own computer and software): _____

Please return this form by October 25, 2005 to:

Jean Gomer
Box 96
White, SD 57276

Or email to gomerj@deubrook.com
Fax (605)-629-3701

**Speakers are requested to provide handouts for 30 on a first come, first served basis.
All South Dakota speakers must register for the conference.**

I agree to comply with the guidelines in the "Minimum Safety Guidelines for NSTA Presenters and Workshop Leader:" during my presentation. NSTA Minimum Safety Guidelines are located online at http://www.nsta.org/coru/safety.html	
Signature _____	Date _____

Last Modified 5/17/04

Contact SDCTM with any special needs requests as defined by ADA by emailing Jean Gomer at gomerj@deubrook.com before October 15, 2005
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Membership Application Form

Mail with check payable to SDCTM to:

Diana McCann
41876 Apple Tree Road
Springfield, SD 57062

Name _____

School Name _____

Subjects or Grades Taught _____

Addresses

Home _____

School _____

Mailing Address: _____ Home _____ School

Home Phone _____

School Phone _____

Fax Number _____

E-mail _____

Membership categories (Check only one)

_____ Elementary School \$5.00

_____ Middle School \$10.00

_____ Junior High School \$10.00

_____ High School \$10.00

_____ Post Secondary \$10.00

_____ Retired \$5.00

_____ Student \$3.00



www.sdctm.org

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