

Presidential Ponderings

While changing my calendar to 2011, I paused to reflect on the events of 2010. This year included a spectacular Metric Day (10-10-10), and yet another Pi Day (3-14) has come and gone. The 18th annual SDCTM/SDSTA Professional Development Conference in Huron was a success in spite of adverse weather. The year just past provided the usual quota of triumphs and frustrations in my classroom, as I'm sure it did in yours.



In November 2010, the South Dakota Board of Education unanimously adopted the Common Core Standards for School Mathematics (CCSSM) as proposed by the Council of Chief State School Officers and National Governor's Association. These new standards represent a significant increase in rigor which may present obstacles for our lower-performing students. There is great concern among math educators that some students may have difficulty meeting the requirements of these more rigorous standards. How will we support them in their efforts? Adoption is only the beginning of a successful change in standards. To facilitate a successful transition, educators will need support. Teachers will need training in how to best support our students, especially those who struggle.

Ongoing professional development at all levels will be critical for successful implementation of these new, more rigorous requirements. As the organization of math educators in South Dakota, SDCTM hopes to work closely with the Department of Education during the planning and implementation stages of CCSSM. The members and executive board of SDCTM represent a wealth of experience and our input is important for success. Watch for a session about the new CCSSM at the upcoming 19th annual SDCTM/SDSTA conference. The session will be led by SDCTM President-Elect Jay Berglund. More information about the CCSSM can be found at http://www.corestandards.org.

And speaking of the upcoming conference, I hope you are planning to be in Huron February 3-5 for the state's best math/science professional development event! Over 100 sessions are planned by and for South Dakota's finest math and science educators. Here are just a few of the intriguing session titles:

- Math on the Move--Multisensory Math
- Mush On!
- Fold it, Act it, Say it
- Cosmic Math: Angle Bows to Measure Stars and Cars
- Are You a Greedy Pig?

WINTER 2010-2011

Presidential

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Calendar Notes:

- SDCTM/SDSTA Joint Conference February 3-5, 2011
- PAEMST Applications due May 1, 2011



My personal favorite is "Why is it always Eleven Below in Huron in February?"

Presidential Ponderings, continued

My personal favorite is "Why is it always Eleven Below in Huron in February?" I know that it's true, now maybe I can find out why! If you are fortunate enough to have an interactive whiteboard in your classroom, you might want to attend one of the six sessions on Promethean and/or SmartBoards in the classroom.

Math featured speakers include Julie-Nurnberger-Haag from Michigan State University for grades 6-12, and Mariann Dolnick from Cobb County School District in Kennesaw GA for grades K-8. Friday night's banquet speaker is our own Paul Kuhlman. His topic: "Don't Wait for Superman: Developing Your Own Superpowers in the Classroom!"

As always, the conference begins with a Thursday night sharing session hosted by yours truly. Bring 30 copies of your favorite math activity to share with your colleagues. Or just come! Either way, it is always a fun and inspiring session. I love hearing what others are doing in their classrooms, and I always come home with great ideas!

"Sharing the Classroom Treasures" makes its third appearance on the conference program this year. Bring your excess, good, working equipment and resource materials. We will again be providing a room for you to drop off and give away your surplus materials so that other South Dakota teachers can benefit. Although it may feel like yours, make sure that it is. If it's marked "School Property," please leave it in school. As always: no textbooks, or broken/nonworking equipment.

Conference program and registration information are available online at http://www.sdctm.org and http://www.sdsta.org. The registration form can also be found elsewhere in this newsletter. Note to all first-year teachers: Please take advantage of the Goehring-Vietz Scholarship (form online) for a free conference registration.

Best wishes for a restful winter break and a Happy New Year! See you in Huron!

Cindy Kroon SDCTM President



Coming to the conference? If you are a Promethean or Smart Board user, bring a lesson on a USB flash drive to share. You will then be able to get copies of all lessons shared during the Promethean and Smart Board Sharing sessions that take place on Friday.



Nominations for 2011 PAEMST

Know a Great Secondary Math Teacher? Nominate him or her to receive the Presidential Teaching Award!

We're looking for outstanding 7-12 math teachers for the 2011 Presidential Awards for Excellence in Mathematics and Science Teaching. The awards are sponsored by the White House and administered by the National Science Foundation.

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 program is now accepting nominations of 7-12 teachers for the nation's highest honor for mathematics and science teachers. Anyone can nominate a teacher. Teachers should submit completed application materials by May 1, 2011.

For more information, including nomination and application forms, please visit www.nsf.gov/pa or www.sdctm.org and click on the awards link.

Diana McCann SD Math Coordinator PAEMST diana@thecoganhouse.com



Share the Classroom Treasures

"Sharing" the treasures was so popular last year, that it will be back for this year's conference. As you sort through your treasures and "unpack" for the school year....don't forget about the conference. Start a "save it for the conference" box and plan to bring all your "extras" to the *Share the Classroom Treasures*, scene 2.

PLEASE - No Textbooks or broken/non-working equipment. Although it may feel like yours, make sure it is. If it's marked "School Property", please leave it in school.

Nominate an outstanding secondary teacher for the 2011 PAEMST.



Congratulations to Brenda Danielson and Constance Ahrens!

State Finalists for 2010 Presidential Awards Announced

The finalists for the 2010 Elementary Presidential Award for Excellence in Mathematics Teaching are Brenda Danielson of Scotland, and Constance Ahrens of Rapid City.

Brenda Danielson has taught 1st grade at Scotland School for the last 6 years. Prior to that time she has taught 4th, 2nd, and 6th grades at Duebrook Area Schools. She has taught in Eyota and Owatonna, Mn and the Grant-Duel School Systems. She has been active in her community and professional organizations. She has presented at SDEA and the annual SDCTM/SDSTA conferences. She has been awarded the 2000 Outstanding Educator Award from DSU and the 2002 Teacher to Remember Award given by SDEA.

Constance Ahrens has taught for 15 years, the last 7 years she has been a math specialist teaching in grades 2 through 5 at Knollwood Heights Elementary in Rapid City. Prior to this she taught 2nd grade in the Rapid City School System. She has also taught at Todd County and St. Francis School Districts.



The National Science Foundation administers PAEMST on behalf of the White House Office of Science and Technology Policy nsf.gov | ostp.gov

SDCTM Members Share

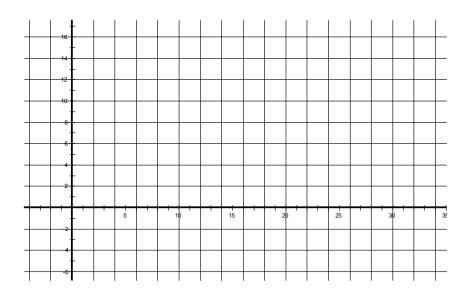
"I often come up with an extra credit opportunity that combines the geometry ...with some algebra skills."

If you are like me, I don't like wasted class time. I don't ever give my kids a "day off" from mathematics. It may be a day off from using their textbooks, it may even be a game day, but it's never a day off from learning/ using math! Usually these game days concentrate on skills/vocabulary/ formulas that pertain to the current unit. But every now and then, the natural end to a chapter/unit leaves one day before a long break and I don't have a game/activity that "fits" what we've been doing. I often come up with an extra credit opportunity that combines the geometry from the lesson with some algebra skills that they "should" know from last year. One such worksheet is included in this newsletter. Does anyone have any other ideas/activities that a teacher could use for a "filler" on a full class day?

Bisectors, Medians & Altitudes Extra Credit

Plot the followings points and draw the triangle determined by the three points. Write all equations in standard form and all points in proper coordinate notation.

A 0,0; B 12,6; C 18,0



1a. Find equations of the lines that contain the three medians of the triangle.

(Hint: A median passes through the vertex and the midpoint of the opposite side. Use these coordinates and the point slope equation of a line.)

1b. Use the equations from #1a to find the centroid of the triangle.

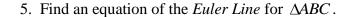
(Remember the centroid is the only point that is on all three medians. Use the system of equations to find this point.)

2a.	Find equations of the lines that contain the three altitudes of the triangle. (Hint: An altitude passes through a vertex and is perpendicular to the opposite side. Use coordinates of the opposite side to help in finding the slope and then use the point slope equation of a line.)
2b.	Use the equations in #2a to find the orthocenter of the triangle. (Remember, the orthocenter is the only point that is on all three altitudes. Use the system of equations to find this point.)
3a.	Find equations of the lines that contain the three perpendicular bisectors of the triangle. (Hint: A perpendicular bisector passes through the midpoint of a side. Use the coordinates of this point and the slope of the line perpendicular to the side with the point slope equation of a line.)
3b.	Use the equations found in #3a to find the circumcenter of the triangle. (Remember, the circumcenter is the only point that is on all three perpendicular bisectors. Use the system of equations to find this point.)

Leonhard Euler, an 18th century mathematician, was a man of great faith. He held daily prayer and worship in his home, sometimes preaching himself. He wrote apologetics that defended Christianity even though he was ridiculed by others. His house burned, he lost sight in one eye and then the other. After a successful surgery to restore sight in one eye, he developed an infection that caused him to be permanently blind in both eyes. He later said that only his faith in God enabled him to bear those days of torment. Undeterred, he continued to solve complex problems in his head having friends and family take dictation for him. (*from Scientists of Faith by Dan Graves pp 84-86*)

Euler's contributions to math are numerous. One contribution relates to the bisectors, medians, & altitudes of a triangle. He proved that the centroid, the orthocenter and the circumcenter are all collinear. The line containing these points is known as the *Euler Line*. He also proved that the centroid is one third the distance from the circumcenter to the orthocenter.

4. Verify that the cer	entroia, the orth	ocenter and the	e circumcenter to	or AABC	are collinear.
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6. Use the distance formula and the coordinates of the centroid, circumcenter and the orthocenter to verify the distance from the circumcenter to the centroid is one third the distance from the circumcenter to the orthocenter.

(Find the ratio of the distances...it should be $\frac{1}{3}$.)

Student behaviors and the need for math remediation: a request for dialogue and action

The financial, personal, and societal costs imposed by the need for math remediation in South Dakota universities are huge. Teachers, teacher training programs, teacher unions, education policies, and other parts of our education system all get a fair amount of bad press as being causes of this problem, some of it justified, some not. All should be and are being addressed. However, there is one factor that I rarely hear discussed in public or the press, but which anyone in my position would identify as a major contributing factor: student behaviors. The SDSU Math/Stat Department gathers remedial course data regarding student behaviors such as attending class, spending sufficient time on a course outside of class, doing homework, meeting with instructors to discuss course material, and using other available learning resources. Unsurprisingly, the typical student who is failing such a course is exhibiting counterproductive behavior in many or all of these areas.

More surprising is that many of these failing students appear to genuinely not understand what sort of behaviors lead to success in math courses. When the department's expectations regarding these behaviors are explicitly and repeatedly explained to these students, many disbelieve and ignore the information in spite of abundant evidence that the approach they bring with them to the course is not working. They have a strong and persistent belief that they will pass in spite of investing limited effort and failing to achieve a usable level of mastery of course material.

This is a much bigger and more fundamental problem than arriving at university not understanding K12 math. With extremely rare exceptions, a university student who is willing to work can learn K12 math. Hundreds of students do exactly that every semester at SDSU. However, there's very little SDSU or anyone else can do for the student who simply refuses to follow basic recommendations regarding level of effort and how best to invest that effort. This attitude is very costly to the students who hold it and those who try to help them. I'm out of patience with simply tolerating this attitude and dealing with its consequences, and so am asking for your help in trying to change it.

In order to change the attitude, we have to understand how it originates and becomes so firmly entrenched. Does this attitude work for these students in high school? More specifically, how common is it that a student I see in a remedial SDSU math class was able to graduate from high school by investing only limited effort in math classes and failing to achieve a usable level of mastery of the material in those classes? If it's uncommon, then presumably knowledge retention is where efforts need to be focused. If it's common, then what keeps schools or teachers from requiring reasonable effort and usable mastery in order to earn passing final math grades leading to eventual graduation? Lack of administrative, parental, or community support? Lack of a well-defined performance standard? Other?

I hope the answers to these questions will guide the formulation of joint high school/university efforts to reduce the need for math remediation. Here are three of many conceivable alternatives to consider:

- If knowledge retention is a problem, would students participate in an online, self-paced review-and-retain program offered either during the summer or the academic year? If this is not the right approach, what is?
- If an inability to impose meaningful performance standards for college bound students is a problem, what if there was an AP-Calculus-type model established in South Dakota high schools for College Algebra and/or Precalculus? The burden of setting and defending a uniformly high performance standard would be transferred to universities; allowing high schools to focus on helping students achieve that standard. If this is not the right approach, what is?
- If lack of parental or community support is a problem, would a public education program help? If not, what would?

If you have opinions or ideas to share on any of the issues raised here, please send them to kurt.cogswell@sdstate.edu. If there's enough interest, I'll start a blog to facilitate discussion. In addition, if you will be in Huron for SDCTM next February, please attend the Friday roundtable discussion on reducing the need for university level math remediation. I hope this letter starts a dialogue that will help formulate an agenda for that discussion, and that I'll see you there.

Kurt Cogswell
Professor and Head
SDSU Math/Stat Department



SDCTM President addresses SD BOE on adoption of the Common Core Standards

The South Dakota Council of Teachers of Mathematics supports high expectations and achievement for all. If adopted, the common core standards (CCSSM) represent a significant increase in rigor for all students. As you consider the adoption of the CCSSM, also consider the manner in which they will be implemented. To have a successful transition, educators at all grade levels will need training and ongoing support. Adoption is only the beginning of a successful change in standards. Teachers will need training in how to best support our students, especially those who struggle.

These new standards represent a significant increase in difficulty which may present obstacles for our lower-performing students. There is great concern among math educators that struggling students will have difficulty meeting the requirements of more rigorous standards. How will we support them in their efforts?

Ongoing teacher education at all levels will be critical for successful implementation of these new requirements. As the organization of math educators in South Dakota, SDCTM would like to be involved in the planning and implementation stages of CCSSM. The executive board of SDCTM would be a good source of ideas and assistance. We are ready and willing to be involved in the planning and implementation of the new standards.

Cindy Kroon, President

"If adopted, the common core standards represent a significant increase in rigor for all students."

Teachers: Looking for classroom-tested ideas for math and science?



- National Speakers
- Grade-level Sessions in Math
- Grade-level Sessions in Science
- Demonstrations
- Regional and SD Speakers
- Sharing Sessions
- Vendor Exhibits
- Graduate Credit Available

19th Annual SDCTM/SDSTA Joint Professional Development Conference

February 3-5, 2011



All indoors at the newly remodeled Huron Events Center in Huron. SD

Visit **www.sdctm.org** or **www.sdsta.org** for complete program and hotel information. Speaker Proposal and Advance Registration forms are also available on the websites.

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Return this coupon with your advance registration form to be eligible for a special drawing!



"This \$5000 grant is awarded annually to a select science or math teacher in *SD....* "

Submission deadline is 4:00 pm on February 1, 2011.

Kelly Lane Earth & Science Grant

Science and math teachers at public, private, or tribal schools in South Dakota may now apply for the 5th annual "Kelly Lane Earth and Space Science Grant" provided by the NASA South Dakota Space Grant Consortium. This \$5,000 grant is awarded annually to a select science or math teacher in South Dakota to recognize and support outstanding teachers and innovative educational programs at the pre-college level. The application announcement for the 2011 grant is posted at the website below. http://sdspacegrant.sdsmt.edu/KellyLaneTeacherGrant.htm

The submission deadline is 4:00 p.m., February 1, 2011. Applications must be submitted online by that time (online submission instructions are given in the application announcement). The winner will be announced at the science and math teacher's joint conference in Huron on February 4, 2011.

Please forward this announcement to any science or math teachers at a public, private or tribal school in South Dakota that you think may be interested. Thank you.

Sincerely,

Tom Durkin

Thomas V. Durkin **Deputy Director** South Dakota Space Grant Consortium SD School of Mines & Technology 501 E. Saint Joseph Street Rapid City, SD 57701

Phone: (605) 394-1975 Fax: (605) 394-5360

Email: Thomas.Durkin@sdsmt.edu Website: http://sd.spacegrant.org

SDCTM Website Info

The SDCTM website is running out of space! To make room for new items, some older items must be deleted. Please visit the site at http://www.sdctm.org and download pictures, documents, etc. that you would like to save. Items from 2004 and older will be deleted in February.

> As always, please contact me with your submissions and suggestions for the SDCTM website.

Cindy Kroon, Webmaster

www.sdctm.org



DOE Announces new Math Specialist

Hello All,

I just wanted to take a little time to introduce myself. I am William Kliche (Usually go by Bill or Billy) from Rapid City. I am really excited for my new job as the Mathematics Specialist for the DOE. I am currently teaching 5th grade in Rapid City and will finish off the year here. The DOE was really understanding in letting me finish off my school year. My official start date with the DOE will be June 9th.

A little about me. I have been teaching upper elementary in Rapid City for 10 years now. I have a strong background in mathematics as well a passion in teaching math. I am an advocate for the new Common Core standards coming forth and look forward to promoting them. I also am almost complete with my endorsement in special education. I have done a good amount of work with the DOE over the past four years with various DSTEP work groups (mostly math). This year I was a presenter for the Reading Up program in western SD. Over the past few years of working with the DOE I developed an interest in joining them. It eventually led me to applying for this job, so here I am.

I have a wife, Jennifer and a daughter, Alayna. Alayna is 4 and will start kindergarten next year. Jennifer currently works as a bankruptcy counselor and will likely keep her job and work remotely once we move to Pierre. We are excited to be moving to Pierre, we just hope it goes well selling the house and all.

I will be looking forward to working with all of you in the future. It looks like I will be able to attend the Math/Science conference in February so hopefully I can meet several of you there. Feel free to email me or call or anything. That is just fine. I will gladly answer any questions you may have about me or for me.

Thanks, William Kliche william.kliche@k12.sd.us (605) 484-9862



"I am currently teaching 5th grade in Rapid City"

"I have a strong background in mathematics as well as a passion in teaching math.."



"...summer camps are a great way for students to learn about science and engineering..."

SDSM&T's residential summer camps

Teachers, SDSM&T's residential summer camps are a great way for students to learn more about science and engineering, all while having fun! Check out our camps for Summer 2011!

Elementary School Day Camps (Grades 3-5 in Fall 2011)

- · Science Smorgasbord
- · Tapestry: Weaving Art & Science for Girls

Middle School Camps (Grades 6-8 in Fall 2011)

- · Youth Geology Field Camp
- · Socket to Me! Computer Camp
- · STEPS Engineering Camp for Boys
- · STEPS Engineering Camp for Girls
- · Super Science Camp
- · Space Adventures! Camp

High School Camps (Grades 9-12 in Fall 2011)

- · Socket to Me! Computer Camp
- · Youth Geology Field Camp
- · Chemical and Biological Engineering Institute
- · Forensics and Materials Engineering Institute
- Discover Engineering Academies in Pierre
- · STEPS Engineering Camp for Boys
- · STEPS Engineering Camp for Girls
- Mining & Explosives Engineering Camp
- · Space Adventures! Camp

If you would like PDF copies of any of these camp brochures, please e-mail jacqueline.schumacher@sdsmt.edu.

For more information on each camp, as well as registration information, please visit our website at http://www.sdsmt.edu/learn/youth.

SDCTM/SDSTA JOINT SPRING CONFERENCE

Crossroads Events Center, Huron South Dakota February 3-5, 2011 1-800-876-5858 Conference information and program booklets will be available online at www.sdctm.org and www.sdsta.org

ADVANCE REGISTRATION --

Please print clearly. Postmark by January 20, 2011

Name	
Address	
City, State, Zip	
School/District	E-mail
Home phoneSc	hool Phone
Please check the appropriate categories for membe	ership, conference registration, and payment.
1. SDCTM/SDSTA MEMBERSHIP(s) and	DUES
Please check the appropriate categories. You may join one,	both, or neither organization.
Begin/renew SDCTM (math) for one year Begin/	
Elementary \$5	Elementary \$5
Middle School \$20	Middle School \$20 High School \$20
High School \$20 Post-Secondary \$20	Post-Secondary \$20
Student \$5	Student \$5
Student \$5 Retired \$5	Retired \$5
Other \$20	Other \$20
Please check the appropriate categories. Noon luncheon is in NOTE: The Friday night banquet is NOT included. Banque I will attend the conference on (check one): SDCTM or SDSTA Member One day \$50 Two days \$75 College credit will be available; information/regis	student Member \$100 Saturday Both days Student Member One day \$15
3. PAYMENT	4. SEND THIS FORM WITH PAYMENT
Make checks payable to SDCTM. Purchase orders will NOT be accepted.	Steve Caron 907 South 16 th Street School phone (605) 725-8208
Membership(s) total \$ Registration \$	Aberdeen, SD 57401 Home phone (605) 226-2292 Email: steve.caron@k12.sd.us
Friday Night Banquet (\$20 each) \$	Advance registration must be postmarked by January 20, 2011
TOTAL ENCLOSED \$	
Requests for refunds must be received by January 20, 2011	Please check here if you have also submitted a speaker proposal form for the 2011 Conference.

"Jim Goehring / Ann Veitz Scholarship for Future Leaders"

"The Jim Goehring / Ann Veitz Scholarship for Future Leaders" has been established to encourage new teachers of math and science to become professionally involved on the state level. The scholarship, which is good for a free one or two day registration at the Joint Conference of the South Dakota Council of Teachers of Mathematics and the South Dakota Science Teachers Association, is available to any teacher who meets each of the following criteria:

- ➤ Is a K-12 teacher of math or science who is in the first year of teaching in SD
- ➤ Belongs to SDCTM and/or SDSTA. Applicants must pay their own dues to the chosen organization.

The application process is simple. Fill out the form below, have it signed by the building principal, and mail it to Steve Caron along with the regular conference registration form which is available at www.sdctm.org or www.sdsta.org. **2010-2011 APPLICATION** "Jim Goehring / Ann Veitz Scholarship for Future Leaders" Name: **School District:** Teaching Assignment: Membership Information: I am already a member of SDCTM SDSTA (Circle one or both) I am joining SDCTM and/or SDSTA (Circle one or both) I am enclosing a check for: _____\$5.00 for Elementary Math and/or \$5.00 for Elementary Science \$20.00 for MS/HS Math and/or \$20.00 for MS/HS Science (Name)______ is in his/her first year of teaching in SD at School District during the 2010-2011 school

year and is thus eligible for 'The Jim Goehring / Ann Veitz Scholarship for Future Leaders."

Signed: , Building Principal



Print a copy of this form. Mail with check payable to SDCTM to:

Diana McCann 31133 Bon Homme Road Tabor, SD 57063

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 / Junior High \$20.00	
High School \$20.00 Post Secondary \$20.00	
Post Secondary \$20.00 Retired \$5.00	
Student \$5.00	
Other \$20.00	



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www.sdctm.org

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