



# Wahpe Woyaka pi

( Talking Leaf )

South Dakota Council Teachers of Mathematics Newsletter

## Presidential Ponderings

Last summer, I attended the NCTM Leadership Conference in Denver. The conference was attended by presidents and board members from many of the NCTM affiliates from across the country. One of the sessions dealt with challenges facing the state affiliates. The number one challenge for most, if not all, of the affiliates is declining membership. We discussed possible reasons for the decline as well as possible solutions.

Throughout the discussion, I kept asking myself the following questions: Why should a person join SDCTM? Other than a discount at the annual conference, what are the benefits of membership? The purpose statement of SDCTM states “The purpose of the South Dakota Council of Teachers of Mathematics is to encourage and maintain an active interest in and an appreciation of mathematics, promote professional growth of mathematics educators, to provide a forum for the exchange of views regarding the teaching of mathematics, to develop a cohesive link between and to promote the cooperative study of mathematics education at all levels, to integrate the study of mathematics into other areas of school curriculum, and to relate the study of mathematics to situations in life.” The annual conference is definitely the obvious way that we attempt to fulfill our vision. In addition to the conference, we sponsor a summer symposium and publish quarterly newsletters. Many of our members serve on committees at the state and national level that also help to fulfill our mission.

I would like your input concerning this topic. Why are you a member of SDCTM? What activities could we or should we be pursuing to improve mathematics education in South Dakota? If you are a member that is only active the years you attend the conference, why? What can we do to retain you as a member even if you don't attend the annual conference? I would also solicit ideas for recruiting new members.

The second challenge discussed at the Leadership Conference was how to get “new blood” actively involved in the leadership of the organization. We will be holding elections at the 2013 annual conference in Huron. If you would like to nominate yourself for an elected or appointed position, please let me know. Also, if you know someone that would be possible candidate for a position, please let me know.

I am very proud of our organization and the quality mathematics teachers that we have in South Dakota. Based on comments that I heard at the leadership conference, we have a very top notch annual conference. I visited with many individuals representing many organizations. We were the only affiliate that held a joint conference with the science teachers. The quality of our conference sessions and the professional atmosphere at the conference is second to none. We do a lot of things right, but there is always room for improvement. I WELCOME YOUR INPUT!

Jay Berglund  
SDCTM President

[jay.berglund@k12.sd.us](mailto:jay.berglund@k12.sd.us)



SPRING 2012

## Wahpe Woyaka pi

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### Calendar Notes:

- *SDCTM Summer Symposium — Registration deadline has been extended to May 15, 2012*
- *SDCTM/SDSTA Speaker Forms Due October 15, 2012*
- *SDCTM/SDSTA Conference February 7-9, 2013*



*Kristi Lutgen,  
Deubrook Area  
Schools*

## PAESMT State Finalists

Kristi Lutgen teaches at Deubrook Area Schools. She has taught 17 years, the last 11 years being at Deubrook Area Schools where she teaches Basic Math, Pre-Algebra, Geometry, Algebra II and Pre-Calculus.

Kristi graduated from Bemidji State University in 1991 with a BS in Mathematics Education. She has attended numerous workshops to continue her education including GPS/GIS for the Classroom, Classroom Connection Training, Math Counts, and TI-Nspire to mention a few.

She has presented workshops to various schools in her area on Integrating the Promethean Board in the Classroom, and Integrating Graphing Calculators in the classroom as well as at the annual SDCTM/SDSTA Conference. One of her innovative classroom techniques is that she videos all of her lectures and posts them on her web pages for her students to watch before they come to class, in the classroom they work on the assignment and get questions answered.

She is a member of SDCTM, NCTM, NEA, SDEA, DAEA of which she is the Treasurer and Cohort Group for 21<sup>st</sup> Century Skills. She coordinates a math contest for her school and area schools.

Kristi was a 2007 state finalist for the Presidential Award.

*Amy Boutchee,  
Riggs High  
School, Pierre*

Amy Boutchee teaches at Riggs High School in Pierre. She has taught for 9 years, the last 8 at Riggs High School where she teaches Pre-Calculus, AP Calculus, and a tutor study hall. She has taught Consumer Math, Pre-Algebra, Algebra, Functions, Statistics and Trigonometry.

Amy earned her BA in Mathematics from the University of Minnesota, Morris in 2001 and her Masters of Education from SDSU in 2008. She has continued her education through workshops including AP Calculus, Technology in Education, Boystown training, and Aspiring School Leaders Program.

She has volunteered for the Native American Parent/Teacher Group and a College Search Committee and now volunteers as a radio announcer for the volleyball games. She has coached volleyball in New Zealand, Iowa, Eagle Butte, and Pierre.

Her awards are Native American Resiliency Camp in Washington DC and Salt Springs Cultural Involvement Award.

Deborah Snook teaches at Phillip High School. She has taught 15 years, the last 10 at Phillip High School where she teaches Geometry, Algebra 2, Trigonometry, Pre-Calculus, Calculus, and Physics. She has also taught at Kadoka High School and Midland High School.



Deb earned her BS in Mathematics from Black Hills State University in 1995. She is pursuing a MS in Education from Southwest Minnesota State University. She continues her education by taking workshops such as TIE, AstroMath, Science on the Move, Teacher Leadership Conference to name a few.

Deb has presented at the SDCTM/SDSTA Annual Conference and served on NCA Peer Review Team. She volunteers her time as a Civil Air Patrol member and serves as the Cadet Commander of the Pierre Squadron.

Her awards include being selected as a 2009 State Finalist for the Presidential Award, SD School of Mines and Technology Outstanding Teacher, Who's Who Among America's Teachers, National Honor Roll for Outstanding American Teachers and Enhancing Education Through Technology Awards.



SDCTM President Jay Berglund, Presidential Award Math Finalists Amy Boutchee, Kristi Lutgen, Deb Snook, Diana McCann, SD Math PAEMST Math Coordinator

## Nominations for 2013 PAEMST

**Know a Great 9-12 Math Teacher? Nominate him or her to receive the Presidential Teaching Award!**

We're looking for outstanding 9-12 math teachers for the 2013 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.

Nominations for 9-12 teachers will be opening soon 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, 2013. For more information, including nomination and application forms, please visit <https://www.paemst.org/> or [www.sdctm.org](http://www.sdctm.org) and click on the awards link.

*Deborah Snook,  
Phillip High School*



*Diana McCann  
SD PAEMST Math  
Coordinator*

*diana@thecoganhouse.com*



## K-5 Corner

Greetings!

My name is Lori Stverak and I'm your new Elementary Liaison! This is my 13<sup>th</sup> year teaching; I taught first grade for 9 years, and am in my 4<sup>th</sup> year of teaching 4<sup>th</sup> grade in the Sioux Falls Public School System. I attended the SDCTM Conference in Huron for the first time this year and truly see the need for elementary involvement at that conference. What a rich experience it was for me, and I'm going to do my best to get more teachers to join the masses next year!



*“If students have that basic knowledge, they can more easily apply it to everyday problems and situations.”*

In fourth grade, we're getting ready to delve into the DStep test. This is such a stressful time of year for so many teachers. My philosophy is “slow is fast”. I work hard in my classroom to build the basic understandings of number sense and problem solving from the very first day of school. If students have that basic knowledge, they can more easily apply it to everyday problems and situations. That said, we do problem solving on a daily basis in my classroom, using the principles of Cognitively Guided Instruction (CGI). CGI increases teachers' understanding of the knowledge that students bring to the math learning process. It incorporates the use of questioning to get students to explain their thinking and reason through problems. Ask “why” or “explain” questions in all instances, whether the child is right or “wrong”! Usually if their thinking is incorrect, they'll catch their mistakes while trying to defend their answer! It's far more effective than me telling him/her their answer is incorrect/correct, and much more empowering for the student!

Oftentimes, scoring problem-solving isn't as easy as comparing student answers to an answer key. Below, you'll find a student problem solving self-evaluation, as well as some outcomes of problem solving. Please feel free to contact me with any questions, concerns, or suggestions! Have a Happy Spring!

Lori Stverak  
4th Grade Teacher  
Robert Frost Elementary  
[lori.stverak@k12.sd.us](mailto:lori.stverak@k12.sd.us)



## **K-5 Corner *continued***

### **Holistic Rubric for Scoring Problem Solving**

#### **Expected Student Outcomes:**

Students will be able to:

1. select and use an appropriate strategy
2. calculate a correct answer
3. explain their strategy for solving the problem

#### **Problem-Solving Rubric:**

- 4 – arrived at a correct answer; used an appropriate strategy; adequately explained answer
- 3 – used an appropriate strategy; calculated a correct answer but could not explain the strategy; or adequately explained the strategy but did not calculate a correct answer
- 2 – used an appropriate strategy; did not find a correct answer; could not explain the strategy
- 1 – attempted to solve the problem, but completely incorrect in attempt
- 0 – no attempt/blank

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## **Daktronics Outstanding Math Teacher Award**



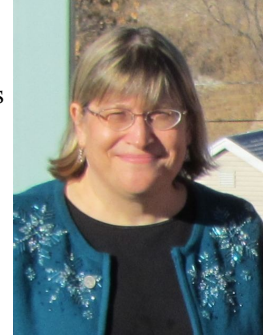
Paul Kuhlman presented Kristi Lutgen with the 2012 Outstanding Math Teacher Award at Friday night's banquet





## 6-8 Highlights

A website that has lots of resources for math teachers and parents is the Quantile Framework for Mathematics website at [www.quantiles.com](http://www.quantiles.com). “The Quantile Framework for Mathematics is a scientific approach to measurement that locates a student’s ability to think “mathematically” in a taxonomy of math skills, concepts, and applications. The Quantile Framework measures a student’s mathematical achievement and concept/application solvability on the same scale, enabling educators to use Quantile measures to monitor a student’s development in math and forecast performance on end-of-year tests.”



*“Even if you don’t have a test to measure student’s quantile level, you can use the resources on the website.”*

Even if you don’t have a test to measure student’s quantile level, you can use the resources on the website. For example, you can pick a specific South Dakota standard and they’ll list the quantile number as well as downloadable and web resources. Or you can choose a topic like fractions to get a list of Q-Taxons (specific skill). Some math textbooks are aligned to quantiles measurement system so that you can choose your textbook and lesson and the Q-Taxons will be listed. Once you choose a Q-Taxon, you get the following information:

- Knowledge Cluster – Prerequisite and supplemental Q-Taxons
- Related math terms
- State Standard
- Resources – downloadable and web
- Textbook lessons

There is a Math at Home section where parents can enter information about their student and receive lists of resources – books and print resources, web sites, and downloadable resources.

Becky Umenthum  
District Secondary Math Coach  
North Middle School Annex  
(605) 394-6966  
[Becky.Umenthum@k12.sd.us](mailto:Becky.Umenthum@k12.sd.us)

## Moving on?

If you are making a change this summer...we’d like to know how to reach you!  
Please send corrected e-mail and physical addresses to

- \* Diana McCann at [diana@thecoganhouse.com](mailto:diana@thecoganhouse.com) and
- \* Sheila McQuade at [smcquade2@sfcss.org](mailto:smcquade2@sfcss.org).

This is especially important if you are not currently or will no longer be on the state e-mail system.





## Friends of Mathematics Award



Ashley Digmann, Mike Farney, Mike Catalano, Rocky Von Eye, Joan Lubben

SDCTM named Dakota Wesleyan University the “Friend of Mathematics” for 2012 in recognition of their long standing support of Mathematics and Science Teachers and SDCTM. They once hosted the SDCTM conference in the days before the joint conference, they have worked with SDCTM and SDSTA to offer college credit to participants, and they graciously host the summer symposium at no additional cost to SDCTM.

THANK YOU to DWU for your support of SD Math and Science Teachers!

Dakota Wesleyan University  
1200 W. University Ave  
Mitchell, SD 57301

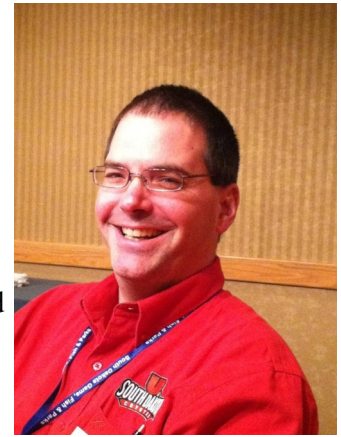




*“...I have a dream that one day students will be actually playing these games with scratch paper in hand to calculate the trajectories of their space ships or the aliens they are trying to shoot at.”*

## Higher Ed Viewpoint

Spring break is upon us and that means the end of another semester is just around the corner. Where does the time fly? I finally have a chance to catch my breath so I will try to write this letter for our SDCTM newsletter. I will start by saying it was good to see many of you at the conference in Huron again. As to topics to write about, I think I will avoid the controversy of the legislative session we just came through and stick with some encouraging words to strengthen our students in their logical skills. I know with the common core coming out and all the emphasis that is being placed on testing these days, you really do not want to hear me adding things to your curriculum. However, if you have a math club, or some students that always seem to get done with their assignments early, you may want to consider some of these sites and puzzles to develop some solid critical thinking skills that often get neglected these days. I know that our students already spend a lot of time in front of video games but I feel many of these do little more than develop their eye-hand coordination skills and do little to engage the brain. I may be crazy but I have a dream that one day students will be actually playing these games with scratch paper in hand to calculate the trajectories of their space ships or the aliens they are trying to shoot at. Only time will tell if my dream reaches the success that Martin Luther's dream did, but in the meanwhile, here are some suggestions to engage the brain of your students.



The ever popular Sudoku puzzles. A couple of these are great but the strategy remains the same and may not captivate their attention if overused. Puzzles like the student that has a fox, chicken, and sack of corn to get across the river in a boat and he can only take one item along with himself each time. He can't leave the fox with the chicken or the chicken with the corn at any one time. How can he get them all across the river safely and how many trips will it take? These types of problems are great at developing a thinking process from the beginning to the end.

A fun frog jumping lily pads that gets students thinking about the travelling salesman problem and linking computers together in a network can be located here. <http://www.agame.com/game/clever-frog.html>

How about the tower of Hanoi to bring back those baby days of having rings on a spindle? There is a nice web application of the game located here. <http://www.dynamicdrive.com/dynamicindex12/towerhanoi.htm>

See if the student can come up with the formula for the least number of moves to be  $2^n - 1$  where  $n$  is the number of disks used. For the really bright student, see if they can come up with a proof of why this is the least number of moves needed. The proof is a nice application of induction. To close, here is a list of some upcoming math contests at the state universities.





## Higher Ed Viewpoint *continued*

- \* The West River Math Contest is Monday, May 7 on SDSMT campus. This contest has exams in Algebra – Advanced Math and is open to students in middle school – high school. To register they should contact [Julie.Dahl@sdsmt.edu](mailto:Julie.Dahl@sdsmt.edu)
- \* The NSU 59th Annual Math Contest was held at the NSU Barnett Center on Wednesday, April 18th.
- \* The 57<sup>th</sup> annual Merten Hasse High School Math Competition at USD was held Saturday, April 21, 2012. For registration information please visit <http://www.usd.edu/arts-and-sciences/math/merten-hasse-competition.cfm>

Best wishes on the remainder of your semester. I do appreciate all you do to help prepare your students for coming to us in the universities. I know it is not an easy task and parents can sometimes be a large road barrier to your ability to invoke change. Keep up the good work and thanks again.

Dan Van Peurseem

SDCTM Liaison to Higher Education  
Associate Professor and Dept. Chair  
The University of South Dakota

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## Distinguished Service to Mathematics Award



Paul Kuhlman and Jay Berglund, SDCTM President

SDCTM recognized Paul Kuhlman with the Distinguished Service Award at the Conference Banquet in February. Paul has worked tirelessly to promote Mathematics and Science Education, including seeking funding for a SD Outstanding Math Teacher award.



## To Huron, or Not to Huron. . . That Is the Question!

*“Why is the conference always in Huron?”*

Every year, someone asks the question, “Why is the conference always in Huron?” That someone is obviously not on the Joint Conference Board as they all know what I am going to respond. There are several reasons including it is easier, it is cheaper, and Huron is so accommodating.

First of all, for the past 20 years, the Huron Chamber of Commerce, the Crossroads Hotel, and now the Huron Events Center has gone out of their way to accommodate the needs of an ever changing conference. SDCTM had its conference in Huron for a few years before the consolidation with SDSTA for the purpose of putting on a better conference. In those first years, when our attendance went from 200 to over 700 in one year, the HCC/Crossroads found us 14 extra meeting rooms within walking distance of the Crossroads at no extra cost to the Conference Committee. This included a long standing agreement with the Presbyterian Church that ended only when the new Events Center was completed. They also helped us scale back when the NSF money disappeared and we struggled to make ends meet and still keep a quality conference. Our liaisons with the Crossroads, especially Brenda and Millie, have helped us do what it takes to meet the needs of our organizations.



*“We pay nothing for meeting rooms, get reasonable rates on our meals, provide all available sleeping rooms at the Crossroads to our participants at the same rate, and we get complimentary suites to use as office space.”*

Another reason we stay in Huron is that it is just plain easier. SDSTA and SDCTM are organizations that are run by volunteers. We all know that doing something the second time is easier than figuring out how to do it the first time. Imagine trying to allocate space for sessions in a strange facility, or coordinating meals with someone you don't know, or straightening out the room situation when you discover that a featured speaker doesn't have a room with the third desk clerk you have talked to in two days. These are all things that the Joint Conference Committee does not have to deal with. One phone call or email usually takes care of any “crisis.”

Finally, the bottom line usually ends up being money, and this is not an exception. About every three years, Sioux Falls, Aberdeen, Pierre and Rapid City contacts us trying to lure us away from Huron. What I do is send them a list of the things that Huron provides and ask them what incentive they can offer to make us consider changing our venue. Sometimes they don't even respond. Most of the time, they send me a polite note, suggesting that I am exaggerating what we get from the Crossroads/Huron Events Center. Trust me I am not. We pay nothing for meeting rooms, get reasonable rates on our meals, provide all available sleeping rooms at the Crossroads to our participants at the same rate, and we get



complimentary suites to use as office space. Until the last couple of years when we had so many requests for LCD projectors, they also provided all AV equipment free. Even now, thanks to TIE and the HEC we still do not pay for AV equipment. Many national conferences now pass that cost on to presenters at anywhere from \$25-50/hour for the use of an LCD projector. These things add up to big dollars in the overall budget. Since we need this conference to be self-supporting, money has to be a factor in our decision making process. That is why we stay in Huron. I realize that this is more information that some of you really need or want, but I think that it is important to address a question that doesn't seem to go away. I think you also need to go out of your way to thank any SDCTM or SDSTA Board member that you see for the time and energy that they put into making this Joint Conference such a great event. We, in South Dakota, are unique in having an annual Joint Conference, especially one that is coordinated by volunteers. What is even more important is the quality of that conference. See you there in February of 2013.

*“We, in South Dakota, are unique in having an annual Joint Conference, especially one that is coordinated by volunteers.”*

Jean Gomer, Conference Coordinator  
A revision of the 2009 version



## Share the Classroom Treasures

“Share the Classroom Treasures” has been a huge success at recent conferences. It is amazing the number of items that change hands! What a wonderful way to support one another.

As you are cleaning up and packing up for the summer, don't forget to put aside items for next year's conference. Keep a small (or large) box in a closet and add items that you no longer need/use.





## CCSS News from SD DOE



William Kliche,  
SDDOE

*“The Department of Education does recommend educators to implement Common Core State Standards as much as possible in the coming years as we move closer to the new assessment to be implemented in the 2014-15 school year.”*

This past year has brought forth some significant changes in education for South Dakota and numerous other states with the adoption of the Common Core State standards. Many educators across South Dakota were wondering how these will be implemented and what changes they will need to make in their rooms to promote these new standards. Some have caught on and are really rolling with these and others are still finding them frustrating and trying to make some changes. In mathematics there seems to be two main areas of concern. The lower grade levels are concerned about the shift in content. Many skills that were taught at higher grades have been moved down to lower grades. This is making many teachers in the K-7 Settings really look at what they will be accountable for in their instruction. The upper grades are seeing the shift in the Common Core calling for deeper understanding of many mathematical concepts. 8-12 teachers are looking at how to structure their time to help promote the deep understanding that Common Core demands.

One part of the Common Core that helps to organize the deeper understanding and how students are expected to be learning is in the 8 Standards for Mathematical Practice. These Practice Standards have become to be known as some important concepts in delivering the Common Core. The DOE hosted several workshops promoting these Practice Standards in January and South Dakota teachers really seemed to enjoy them. The DOE hopes to give educators who missed out on the workshops another shot at the material in June. More info on that will be brought forth soon after budget approval. The DOE also hopes to put another phase of the 8 Standards for Mathematical Practice together this summer and into next school year. This next phase will move towards finding lessons that foster the Practice Standards as well as lesson development and alignment. More information on that will also soon be coming after budget approval. This will be accompanied with other Professional Development opportunities being developed to facilitate teachers moving towards Common Core implementation.

Teams have been put together across the state to finish the disaggregation process of the CCSS. These teams will be working on a variety of different grade levels. The goal of this will be to have the Common Core State Standards disaggregated for South Dakota teachers to have as a resource. This will give our teachers these resources to use this summer and next school year as they work with common core. The goal is to have the standards complete using the “Know-Understand-Do” process this spring and the documents finalized in June. To those of you participating in this process- Thank You!!

The Department of Education does recommend educators to implement Common Core State Standards as much as possible in the coming years as we move closer to the new assessment to be implemented in the 2014-15 school year. There will be some items aligned at the content level imbedded into the DSTEP these next couple years. They will not make the test longer due to the fact they will be replacing “Field Test” items. They will also not be for accountability. They will only be for the purpose of educators to see the results and get a picture of how students are performing with Common Core. Being Part of the Smarter Balanced Assessment Consortium South Dakota will be looking at and utilizing their



assessment resources in the future. One main shift to keep in mind is that South Dakota is moving away from Bloom's Taxonomy and towards Webb Leveling. This is primarily due to the fact that future assessment will be using this taxonomy. Best Wishes,

William Kliche  
Office of Learning and Instruction  
SD DOE Mathematics  
800 Governors Drive  
Pierre, SD 57501  
(605) 773-8196 Office

*“One main shift to keep in mind is that South Dakota is moving away from Bloom's Taxonomy and towards Webb Leveling.”*

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## TI-Nspire Workshop

Hello, Everyone--

We're offering a couple of TI-Nspire workshops at Roosevelt High School in Sioux Falls this summer--in early June. We're doing two Introductory courses--one for HS Math and the other is Connecting Science and Math. The link below gives the information needed.

The registration fee covers the instruction, workshop materials, a TI-Nspire CX, and Teacher Software Package.

Lunches will be provided and one college credit will be available for an additional cost.

Please note that for every 5 people you bring from your district/school, you get another spot in the workshop for free.

Please let me know if you have questions.  
Hope to see you at one of the workshops!

Jeff Lukens  
Roosevelt High School  
Sioux Falls

<http://education.ti.com/calculators/pd/US/In-Your-Area/Summer-Workshops#navigation-tab-contents=navigation-element-tab-contents-0>







## Rosenthal Prize for Innovation in Math Teaching

The Museum of Mathematics (MoMath) is pleased to announce the inaugural Rosenthal Prize for Innovation in Math Teaching. Designed to recognize and promote hands-on math teaching in the upper elementary and middle school classroom, the Rosenthal Prize carries a cash award of \$25,000.

MoMath is looking for the highest caliber applicants in the country. Math teachers affiliated with the South Dakota Council of Teachers of Mathematics are invited to apply now. Please feel free to share this information with any interested parties.

4<sup>th</sup> through 12<sup>th</sup> grade math teachers at schools in the United States are eligible for the Rosenthal Prize. Preliminary applications are due Friday, May 11, 2012. Visit [rosenthalprize.momath.org](http://rosenthalprize.momath.org) for more information.

Cindy Lawrence, Associate Director  
Museum of Mathematics  
Opening Manhattan 2012 \* Support MoMath at [momath.org/contribute](http://momath.org/contribute)  
momath.org  
212-542-0566  
134 West 29th Street  
Suite 709/710  
New York, NY 10001  
United States

## End the School Year with a Bang!

Enroll your students in the Lure of the Labyrinth Challenge now through June 15!

The Education Arcade at the Massachusetts Institute of Technology (MIT) is pleased to announce the Lure of the Labyrinth Challenge—a free online math challenge for grades 6-8. While playing Lure of the Labyrinth, students use mathematical thinking skills to progress through a compelling graphic-novel story.

Funded by a Next Generation Learning Challenges Grant, the Challenge invites groups of 4-6 students to collaborate in a safe, teacher-moderated environment to strategize and problem-solve with others. Students and educators have many chances to win regional prizes such as Lenovo ThinkPad Tablets, books, and technology tools like subscriptions to BrainPop just for playing. Ultimately, the Challenge will help us all learn more about the role of gaming in the instructional process.

There is no cost involved to participate in the challenge, which runs through June 15.

Since the game is web-based, students can play at home or at school, in the classroom, computer lab, library, or after-school program. Teachers have the option of integrating corresponding lessons into their classroom activities but it is not required.

Visit <http://lureofthelabyrinth.net> to register today!





## (SETI)<sup>2</sup>

### Professional Development Opportunity for SD Teachers

STEM Enhancement Teacher Institute: Sustained, Effective Teacher Interaction or (SETI)<sup>2</sup> brings the “scientists to the teachers” model to address concerns in Core Ideas that teachers in the North Central region of South Dakota have identified as being of urgent need. These Core Ideas are from the Framework for K-12 Science Education and are the basis of the new Next Generation Science Standards. The four targeted ideas center around instrumentation, nuclear processes, biogeology, and patterns caused by Earth’s motion. The scientists (professors of Biology, Chemistry and Physics with joint appointments in education) have identified cross-cutting concepts for each of the four Core Ideas and will develop content and pedagogical knowledge in a one-week, immersive workshop. The workshop will be held in the North Central region of South Dakota to be near our partners—Takini, Tiospa Zina –and interested collaborators, such as Bison – Faith, SD is one possible site. As part of this workshop, teachers will gain Project WILD certification and training on how to use Radiation Kits provided by the Health Physics Society (North Central Chapter). Three electronic follow-up sessions throughout the 2012/2013 school year will provide support for participant teachers. In May 2013, the three scientists will visit participant schools to provide additional support and science demonstration programs if requested. Graduate credit (up to three units) is available.

Principal Investigator(s):

Dr. Larry M Browning, Dr. Matthew Miller, Dr. Madhav Nepal  
 Contact: [Larry.Browning@sdstate.edu](mailto:Larry.Browning@sdstate.edu) voice: (605) 688-4548

Dates and location of summer 2012 workshop:

Aug. 8 through Aug. 11 at Tiospa Zina School (near Sisseton, SD)

Other items of interest for participants:

- \* Stipend for participants (\$90/day or \$360 for the four day, intensive workshop)
- \* Housing will be provided
- \* A meal allowance is also provided (subject to state rates -- \$26/day)
- \* Graduate credits will be available at a special rate to be set at a future Board of Regents meeting which is expected to be about \$50/credit hour
- \* Equipment to implement classroom activities will be provided as the budget allows.

Apply at: <http://SETI2Application.questionpro.com>

*“...brings the “scientists to the teachers” model to address concerns in Core Ideas that teachers in the North Central region of South Dakota have identified as being of urgent need...”*



*“...is designed to use astronomy to introduce students to Cross-Cutting Concepts...”*

## **Cosmic Connections 2012**

### **Professional Development Opportunity for SD Teachers**

The project, Cosmic Connections 2012, is designed to use astronomy to introduce students to Cross-Cutting Concepts as defined by the Framework for K-12 Science Education and to help them develop Standard Mathematical Practices as described in the new South Dakota Common Core State Standards for Mathematics. Teachers will learn active learning ways to teach geometry, algebra, trigonometry, earth, and physical science concepts during a week-long summer institute. Vertical and lateral teams of teachers will develop skills with technology assisted interactive classroom techniques. Teachers will be involved in inquiry-based activities focused on building models, collecting and analyzing data, finding patterns, and sharing lesson plans for implementation. Teams will consist of physical science and mathematics teachers at both the Middle and High School level. Teachers will develop and share unit plans targeting these new standards in math and science. Up to 3 hours of graduate credit is available in math or physics.

Principal Investigator(s):

Dr. Larry M Browning, Ms. Judy Vondruska, Dr. Christine Larson

Contact: [Larry.Browning@sdstate.edu](mailto:Larry.Browning@sdstate.edu) voice: (605) 688-4548

Dates and location of summer 2012 workshop:

July 9 through 13, 2012, in Brookings, SD (at SDSU)

Other items of interest for participants:

- \* Stipend for participants (\$90/day or \$450 for the week workshop)
- \* Housing will be provided if requested (a block of rooms have been reserved)
- \* A meal allowance is also provided (subject to state rates -- \$26/day)
- \* Graduate credits will be available at a special rate to be set at a future Board of Regents meeting which is expected to be about \$50/credit hour
- \* Equipment to implement classroom activities will be provided as the budget allows.

Please apply at: <http://CosmicConnectionsApplication.questionpro.com>



## **$y = mx + b$ -ingo!**

*An activity for Pre-algebra or Algebra 1 class*

Materials:        One bingo card per student (fig. 1)  
                      One set of linear equations (fig. 2)  
                      Spinner or coin to flip  
                      Bingo markers  
                      Scratch paper for students

Provide students with a blank Bingo card. (fig. 1) Instruct them to fill the spaces with integers from -10 to 10. Some numbers may be used more than once. This is OK.

Divide a spinner into two equal portions. Label one portion “slope” and the other “y-intercept.”

Display an equation on the board or overhead. (fig. 2)

Spin the spinner to designate either slope or y-intercept. Alternatively, flip a coin, heads = slope, tails = y-intercept.

Students mark on their cards either the slope or y-intercept of the given equation, depending on the spinner result. Only one number may be marked per turn. If a number appears on the bingo card multiple times, it cannot be marked again until called on a separate turn.

The first student to call a correct Bingo is the winner!  
(But when we learn, we are all winners!)

Cindy Kroon  
Montrose High School  
[cindy.kroon@k12.sd.us](mailto:cindy.kroon@k12.sd.us)



*“But when we learn, we are all winners!”*

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**SDCTM Summer Symposium...June 13, 2012**  
**Registration has been extended to May 15, 2012**

**For more information, see the flyer on page 23 of the newsletter.**

Figure 1  **$y = mx + b$ -ingo!**

B	I	N	G	O
		FREE		

Fill in the spaces with integers from -10 to 10.



Figure 2

$$y = 5x + 10$$

$$y = -x - 3$$

$$y = 8x + 7$$

$$y = 4x - 9$$

$$y = x - 1$$

$$y = 3x - 2$$

$$3x + y = 2$$

$$-7x + y = -2$$

$$4x + y = -5$$

$$-5x + y = 0$$

$$x - y = 6$$

$$y = x - 8$$

$$3x - y = -7$$

$$7x + y = 8$$

$$3x + y = -7$$

$$y = -9x$$

$$6x + y = 0$$

$$2x + y = 5$$

$$9x - y = 5$$

$$-3x + y = -10$$

$$y = -10x + 2$$

$$8x + y = 5$$

$$y = 10x - 4$$

$$7x + y = 6$$

$$y = 4x + 6$$

$$y = -6$$



*“Google answered all my questions and was about to cure the dreaded concept of guessing and checking.”*

## “Slide and Divide”

Last year a family friend called in need of math help. The problem: factoring trinomials when  $a > 1$ . The past years I had always taken the approach of “guess and

check”. For example in the problem  $6x^2 + 19x - 20$  you could factor 6 to be 1 and 6 or 2 and 3 and then you face the fact of which order! My family friend mentioned that her teacher had taught the concept of “slide and divide”. Google answered all my questions and was about to cure the dreaded concept of guessing and checking. The process of “slide and divide” goes as follows:

Factor:

$$6x^2 + 19x - 20$$

Be sure to factor out the GCF or else the process will tweak the answer.

Slide a and multiply it with c.

$$(6) * (-20)$$

$$x^2 + 19x - 120$$

Factor the new trinomial

$$(x - 5)(x + 24)$$

Divide by the number that you slide.

$$\left(x - \frac{5}{6}\right)\left(x + \frac{24}{6}\right)$$

Reduce the fractions

$$\left(x - \frac{5}{6}\right)(x + 4)$$

Multiply by the denominators so you do not have any fractions in your factors

$$6\left(x - \frac{5}{6}\right) = (6x - 5)$$

Slide and divide is complete. You have a properly factored trinomial where  $a > 1$ .

$$(6x - 5)(x + 4)$$

I have shown this to students who are in higher level math and they have become upset as to why I kept this concept a secret. I promise them, just like I promise you, had I known earlier I would have shared sooner.

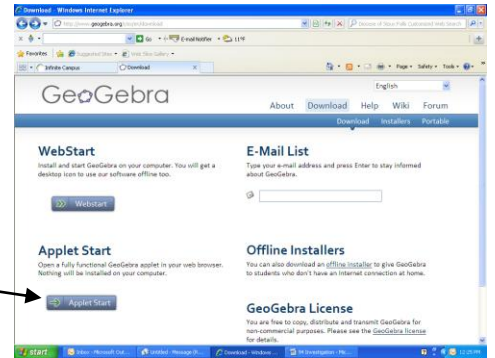
Kelsey Hoff  
Hamlin High School  
[kelsey.hoff@k12.sd.us](mailto:kelsey.hoff@k12.sd.us)

## The Unit Circle

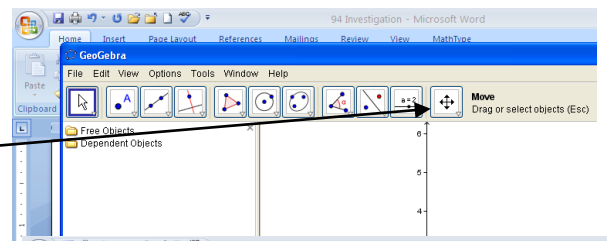
We'll be using GeoGebra to do some geometry investigations. GeoGebra is a web based software tool. The address is: <http://www.geogebra.org/cms/en/download>

The screen should look like the screen shot at the right.

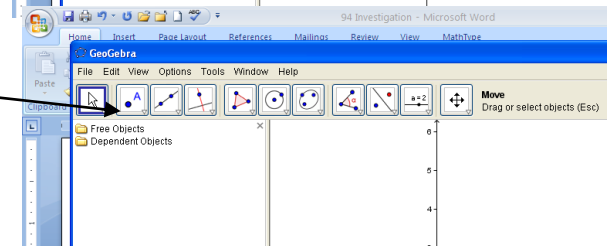
We will not be downloading the software, so click on the button for Applet Start in the lower left corner.



Use the tool at the far right to zoom in and to move the axes so that the origin is in the center of the right hand pane and the window is "set" so that you don't see much more than  $[-1, 1]$  and  $[-1, 1]$ .

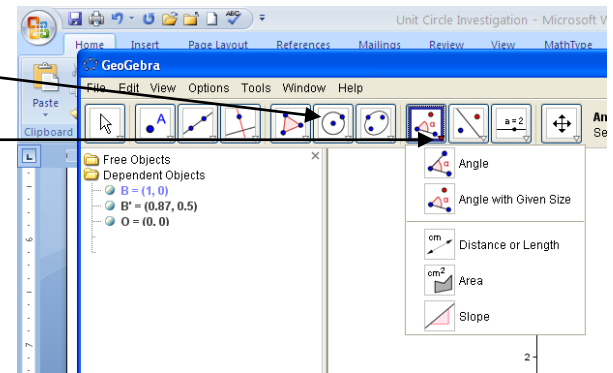


In the "Options" tab, use the point tool to place a point at the origin. You will also need to place a point at  $(1, 0)$ . The computer will automatically name these points. Right click on them to rename them. Name the point at the origin  $O$  and the second point  $A$ . Note: The left hand pane will display the names of the points and their coordinates. It will automatically update the names of the points as you make changes.



Use the circle tool to draw a circle with center at  $O$  passing through  $A$ .

Use the angle tool to draw an angle of determined size. You will need to click on the small triangle in the lower right hand corner of the angle tool to open the drop down box. You will be asked to select two points... $A$  and then  $O$  and then a dialogue box will open for you to state the size of the angle you wish to draw. You will need to key in the size of the angle in the first box (30) and then select the degree symbol from the list for the second box.



Select the new point ( $A'$ ) and right click on it to rename. Name it  $B$ .

Use the Selection tool (the arrow) to select the green sector. Make sure it is the only thing selected. Delete it using the delete key on the keyboard.

Construct a new angle. This one with a measure of  $45^\circ$ . Rename the new point  $C$ .

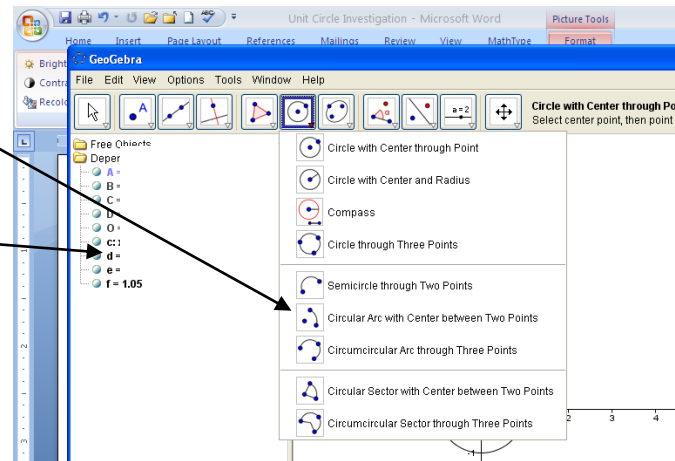
Again, select the green sector and delete it.

Construct a new angle. This one with a measure of  $60^\circ$ . Rename the new point D.

Again, select the green sector and delete it.

Use the Circular Arc tool to construct and measure the length of  $AB$ . You will need to select the center (point O) and then the endpoints of the arc (A and then B). The sketch doesn't appear to change, but the length of the arc shows up in the left-hand pane. It is labeled d.

Repeat the process to measure  $AC$  and  $AD$ .



Complete the charts below. The info for the first chart comes from memory or your notes. You will use information from the left-hand pane of your sketch to complete the second chart.

$\theta$	Angle measure in radians in terms of $\pi$	Angle measure in radians to the nearest hundredth	$\cos \theta$	$\cos \theta$ to the nearest hundredth	$\sin \theta$	$\sin \theta$ to the nearest hundredth	$\tan \theta$	$\tan \theta$ to the nearest hundredth
$30^\circ$								
$45^\circ$								
$60^\circ$								

$\theta$	Corresponding arc name from sketch	arclength	$x$ from the endpoint of the arc (found in the left-hand pane)	$y$ from the endpoint of the arc (found in the left-hand pane)	$\frac{y}{x}$
$30^\circ$					
$45^\circ$					
$60^\circ$					

Write a *paragraph* describing the relationships you see between the two charts. (10 pts)



2012 Summer Symposium

# A Day of Exploration and Planning for Interactive Whiteboards

(Separate Sessions for SmartBoard and Promethean Board)

**Wednesday,  
June 13, 2012**

**Cost: \$50.00**  
**Registration starts at 8:00 am**  
**Sessions 9:00-4:00**  
**Lunch will be provided**

**DWU graduate credit will be available for additional \$70.00. Enroll and pay for the credit when you arrive on campus June 13th.**

South Dakota Council of Teachers of Mathematics announces a Summer Symposium for Wednesday June 13, 2012. The symposium will be held in the Education Building, Room 108 on the campus of Dakota Wesleyan University in Mitchell, South Dakota.

Victoria Swanson, Mitchell Christian HS (SmartBoard) and Kristi Lutgen, Deubrook HS (Promethean) will be sharing their expertise on using interactive whiteboards in the classroom. Activities will be applicable for students in grades K-12. You will have time to explore and set up your own lessons on the whiteboards.

Registration cost for the symposium will be \$50. Dr. Rocky Von Eye will be offering DWU graduate credit for an additional \$70. (You will complete an after-symposium assignment for the credit.) Enroll and pay for the graduate credit when you arrive on campus June 13th. Questions about the credit may be directed to Rocky at [rovoneye@dwu.edu](mailto:rovoneye@dwu.edu).

To register for the symposium, complete the registration form below. Send registration form and \$50 (check payable to SDCTM) to:  
**Steve Caron 907 South Sixteenth Street Aberdeen, SD 57401.** Questions about registration may be directed to [steve.caron@k12.sd.us](mailto:steve.caron@k12.sd.us)

Don't delay! Registration is limited to 25 participants for the SmartBoard session, and 25 participants for the Promethean session. (Minimum number of participants is 15 per session.)

**Registration deadline: extended to May 15, 2012**

Activities applicable for students in grades K-12

SDCTM is an Affiliate of the National Council of Teachers of Mathematics.

Bring a flash / thumb drive to save your work!

Name \_\_\_\_\_  
E-mail address \_\_\_\_\_  
Home/Summer Address \_\_\_\_\_  
School \_\_\_\_\_  
Phone \_\_\_\_\_

**Please select one for each option:**  
\_\_\_ Promethean (or) \_\_\_ SmartBoard  
\_\_\_ Beginner (or) \_\_\_ Intermediate/Advanced  
**Bring a flash / thumb drive to save your work!**





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 \_\_\_\_\_

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\_\_\_\_\_

School \_\_\_\_\_

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- \_\_\_\_\_ Student \$5.00
- \_\_\_\_\_ Other \$20.00



SDCTM Newsletter  
C/o Sheila McQuade  
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