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

South Dakota Council Teachers of Mathematics Newsletter

WINTER 2018-2019

Presidential Ponderings

Greetings All!

Anticipation for me grows each year around this time due to the upcoming annual SD STEM Ed conference (same conference with a new name). Professionally, there is no better destination to gather new ideas, meet new people, renew friendships, and grow your individual teaching practice. The upcoming 27th annual conference promises to be another outstanding event. Make plans to be in Huron February 7-9, 2019 for a fantastic professional development experience. The conference will begin with two “Potluck” sharing sessions on Thursday night: one for math, and one for science. The round table discussions are facilitated by leaders from each organization, but your participation is critical for a successful event. Crystal McMachen and I will host the math sharing session, which starts at 7:00 p.m. on Thursday night. If you are not quite sure what a “Potluck” sharing session is, imagine Show and Tell for math teachers of all grade levels. Share your favorite activities and lessons along with your great teaching strategies. Bring your favorite idea or classroom activity (25 copies) to share with others. Once again, come hungry as there will be Pizza for the people who attend the sharing session.



This year’s conference will kick off at 8:00 am on Friday with a Keynote address by Dr. Kristopher Childs entitled “Reimagining the STEM Experience”. It is guaranteed to be an interesting talk and great way to kick off the conference. Please plan ahead and complete your conference registration tasks in time to attend.

We are excited to host our featured speakers at this year’s conference.

Sara Van Der Werf will be our middle school/high school Featured Speaker. Sara is a nationally board-certified teacher who taught secondary mathematics for Minneapolis Public Schools for more than 25 years. She frequently speaks at the state and national levels, including keynoting conferences and leading professional development on a variety of topics. Sara is active in the national mathematics community via twitter, @saravdwerf, and her blog, saravanderwerf.com. She is passionate about encouraging and connecting mathematics teachers. In addition, Sara is on a mission to empower PreK-12 grade students to embrace positive mathematical identities. Her sessions include: Engaging Students in Seeing Mathematical Structure, The 'H' word, Minimizing the ‘Matthew Effect’, Making Student Thinking Visible, and Teaching Mathematical Ideas vs Tricks.

Mollie Gabrielson, Mike Busch, and Lucinda Mccarty are our elementary Featured Speakers. The trio of presenters come to us from the US Math Recovery Council. They strive to put mathematical research into both practice and implementation of effective mathematics instruction. They actively work as members of the US Math Recovery Council® to empower other educators and deepen their understanding of the mathematical practices they use in advancing their students’ mathematical thinking. Their sessions will include: Student Understanding: What Do We Really Know?, Differentiation Without Going Crazy, Building Bridges – Not Walls, From Gaps to Growth, and Fractions: The Struggle Is Real, and Professional Development in Mathematics.

In addition, with over 100 sessions by South Dakota’s outstanding educators to choose from there will be something for everyone to attend. Just a few of the intriguing topics include Scrap Paper Geometry, Visible Algebra, Making Math Fun With Gamification, Study Team and Teaching Strategies Getting Teams To Work Effectively In Class, Concrete to Abstract-Making Connections From Grades 6-12, and Desmos Card Sorts and Polygraph-Awesome Digital Tools For Any Classroom. Check the website www.sdctm.org for the official program and registration information online.

continued

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Calendar Notes:

- SD STEM Ed Conference February 7-9, 2019
- PAEMST Nominations Due April 1, 2019
- PAEMST Applications Due May 1, 2019



Presidential Ponderings, *continued*

Once again, we will be partnering with Dakota Wesleyan to offer 1 graduate credit for attending conference sessions. The syllabus can be found at <https://bit.ly/2ryH4wD> along with contact information for Dr. Ashley Digmann and a link for registration. The course is not set up online yet, but should be in the very near future.

Also, plan to attend our organizational business meeting during the conference. This year is an election year for SDCTM and your vote counts! We will be electing new officers and discussing professional development opportunities such as the SDCTM Symposium. We will also be voting on two proposed bylaws revisions (see page 9).

As always, annual awards will be presented at Friday night's banquet as both SDCTM and SDSTA will recognize leaders in mathematics and science education. State Level Finalists for the Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) will be honored. The recipients of the Outstanding Math Teacher Award, Friend of Mathematics, and Distinguished Service to Mathematics Award will also be announced during Friday night's banquet. Come celebrate accomplished teaching along with us!!

As my Presidential term nears its end, I want to thank all of SDCTM's elected officers and appointed liaisons for their time and dedication to our organization and mathematics and science education in South Dakota.

Allen Hogie
SDCTM President
Allen.Hogie@k12.sd.us

SDCTM/SDSTA Registration Options

This year, there will be two options for advance registration for the 2019 SD STEM Ed Conference hosted by SDCTM & SDSTA. On-site registration will still be available, but at an increased cost.

Advance Registration Option 1: You may print the conference registration form found online at: <http://www.sdctm.org/documents/2019conference/2019reg.final.pdf> and mail it with your payment to Sheila McQuade. Checks must be made payable to **SDCTM/SDSTA JPDC**. Advanced registration must be postmarked by January 20, 2019. SD STEM Ed does NOT accept purchase orders. In order to use a credit card as a form of payment, you must register and pay online (option 2).

Advance Registration Option 2: You may register on-line with a google form found on the SDCTM and SDSTA websites or by using this link: <https://goo.gl/forms/Uz0UzwMnNjwTkdv2>. You will receive an invoice via PayPal within 24 hours of your online registration. You may pay through PayPal, by credit card or by mailing a check. Please note, **online registration closes January 20, 2019** - all online registrations must be paid by **January 22, 2019** or they will be canceled.

On-site registration will continue to be an option but will be charged a \$35 late registration fee. A limited number of banquet tickets will be available — there is not a guarantee of available banquet tickets with on-site registrations.

“This year is an election year for SDCTM and your vote counts!”

Registration Deadlines:

- * *Advanced, mail-in registrations—postmarked by 1/20/19*
- * *Advanced, on-line registrations—paid through PayPal or credit card by 1/22/19*
- * *Late, on-site registrations—paid onsite & incur a \$35 late fee*



Musings from Crystal

Happy New Year!!!

I am hoping you have enjoyed your winter break and are ready to tackle the spring semester! Lately, I have been busy working on recruiting wonderful math teachers to be your liaisons. I would like to welcome Lindsey Tellinghuisen as Elementary Liaison, Molly Ring as Middle School Liaison, and Jennifer Haar as the Secondary Liaison. All three ladies bring a wealth of knowledge and expertise that will benefit SDCTM. Please reach out to them if you have questions or would like to just say hi.

Since January is already here, that means our annual conference is just around the corner. The 27th annual conference will be held, February 7-9, in Huron. If you have not already done so, please get registered! While spending your time in Huron this year, please think about attending the SDCTM Business Meeting. This meeting will be held in room Dakota E at 4:30 pm on Friday. All SDCTM members are invited to this meeting and it is a great way to learn about your organization. This year is also an election year and at the business meeting we will hold the election for our four elected positions on the SDCTM executive board: President Elect, Vice President, Secretary, and Treasurer.

Currently, I am seeking nominations for these positions. You can nominate yourself or someone you think would be a good candidate to help run our organization. These positions are volunteer positions, so there are no monetary incentives, but the friendships and professional development you engage in is so worthwhile. I have learned and gained so much by volunteering and I highly recommend getting involved in your professional organizations. If this is something that would interest you, please feel free to look over job descriptions located on our website: <http://www.sdctm.org/officers.htm>. If you would like your name added to the ballot, please email me at crystal.mcmachen@k12.sd.us by January 15th. I am really looking forward to hearing from you!

Crystal McMachen
SDCTM President-Elect
Crystal.McMachen@k12.sd.us

Classroom Treasures

Is your closet full of stuff that you no longer use, but it's too good to throw away? A big success every year, "Share the Classroom Treasures" returns. Bring your excess, good, working equipment or resource materials to the conference. We will be providing a room for you to drop off and give away your things so that other South Dakota teachers with a need can take them to use.

(Although it may feel like yours, make sure that it is. If it's marked "School Property", please leave it in school.)



"This year is also an election year and at the business meeting we will hold the election for our four elected positions on the SDCTM executive board: President Elect, Vice President, Secretary, and Treasurer."

"Bring your excess, good, working equipment or resource materials ..."



K-5 Corner

Greetings! I am Lindsey Tellinghuisen, the new SDCTM Elementary Liaison. I am currently in my eleventh year of teaching, all of which have been in the fourth grade. I spent three years in Montrose, and the past 8 in Willow Lake. I am most familiar with a small school setting, but hope to give you all something you can use in your classroom.

I thought I would start the new year with a challenge for you. No, this is not the SDCTM edition of the “Biggest Loser”. I challenge you to find out how much your students know about the meaning of the equal sign. (continued on p. 14)

Lindsey Tellinghuisen
SDCTM Elementary Liaison
Lindsey.Tellinghuisen@k12.sd.us



Lindsey Tellinghuisen

Wine Raffle to Benefit the McCann Scholarship

A scholarship in memory of long time SDCTM member and officer Diana McCann has been established for the benefit of college students preparing to become a math teacher. Rising seniors studying math education at any post secondary institution in South Dakota are eligible. The scholarship is awarded at the annual SD STEM Ed Conference.



We will once again be selling chances (3 tickets for \$5) to help fund this scholarship during the conference.

All other donations to the McCann Scholarship can be sent to:
Security State Bank
1600 Main Street
Tyndal SD 57066

One hundred percent of all donations will be used to fund the scholarship.

Share the Wealth

South Dakota Teachers are some of the most creative, dedicated professionals. Whenever I have the opportunity to visit with our teachers, I always hear of a project or lesson idea that I could use in my classroom. I invite you to share your wealth of ideas with our membership. Please consider submitting a favorite idea, lesson, activity... for publication in our newsletter.

Send submissions to:

Sheila McQuade, SDCTM Newsletter editor (smcquade2@sfcss.org).





6-8 Highlights

Hello Everyone!

I am Molly Ring and your new Middle School Liaison. I was approached about this position after doing a yearlong Leadership experience with Crystal McMachen and Al Hogie. I am a true believer in life long learning, and I try to take every opportunity to stretch my mind and grow as a teacher. Agreeing to WRITE articles although my love and passion is math, seemed like a stretch, but one that was well worth it. Although my writing may not be a “literary masterpiece” I promise to speak from my heart and personal experiences. My goal is to write the truth of a lesson and include some of the “ugly” humorous things that inevitably happen in the middle school class room.

I grew up outside of Portland Oregon and received my undergraduate and my master’s degree from Augustana College. I went to BHSU to receive my math specialist endorsement and have been teaching at Brandon Valley Middle School Middle for 13 years. In that time, I have taught 6th, 7th and 8th grade math. Middle school life is crazy, but luckily, I am just as crazy!

Percent Activity: Amazon to the rescue (finding percent discount and mark-ups, percent estimation)

I am a mother of two small boys, so the thought of taking them to the store always scares me, and the idea of waiting to go the store after they have gone to bed sounds even worse! So, because of this, Amazon has always been my “knight in shining armor” reminding me of when my subscribe and save shipment is coming, and alerting me to any lightening deal that matches what is in my cart. You can’t believe my surprise when I essentially realized I could teach an entire chapter using my Amazon wish list!

If you have ever shopped with Amazon before you know they always show the before price and the new list price as well as what percent you are saving. With a simple copy and paste into a word document you can white out the piece you want missing and ask them to figure it out. Middle schoolers who don’t care about math will care about how much those new Bose headphones are on sale for.

Did you also know that if you have items in your cart, they will update you with how much the price has increased or decreased? Some change daily during the holiday season as items become unavailable! Simply put a few “crowd” favorites in your cart and have kids find the percent of change. You could also watch the same item for an entire month and graph the data and guess what day would be the best to buy based on past trends.

To reinforce the skill of estimation, which for some reason my students hate, I like to put up an item and then quickly shout out it is now 10% off and only one left whoever finds the new price gets it! One student is tasked to find the price using estimation and be within a dollar, while the other MUST type everything into the calculator, the winner gets item in a percent shopping war. (Students eventually want to estimate because they learn it can be faster and with certain discounts close enough to know if they can afford the item)

Math is not always a middle schoolers favorite subject, but if you pull up Amazon and start adding their Christmas list to a cart and start finding deals, they are much more willing to get involved. Who knew that my laziness of leaving my house could also help my math class!

Mollie Ring
SDCTM Middle School Liaison
Mollie.Ring@k12.sd.us



“...I could teach an entire chapter using my Amazon wish list!”



“Middle school life is crazy, but luckily, I am just as crazy!”



9-12 Spotlight

Hi. I am Jennifer Haar. I have been teaching math at Stevens High School in Rapid City for the past 6 years. I teach Math 1 which is a freshman-level course and Precalculus with Trigonometry. Before I was a math teacher, I graduated from Colorado School of Mines with a degree in Chemical Engineering. I worked as an engineer for Dupont for almost 10 years before staying home with my kids. While I wrangled my young ones and followed my husband's career around the world, I finished my master's in education online through Drexel University. We seem to be permanently settled now here in the Black Hills, and I am enjoying continuing to learn to be a better math teacher.

My favorite math activity is called Four Fours. For the past couple of years, I have used the activity on my first day of class.

Four Fours: Use exactly four fours and any mathematical operation to write a statement equivalent to each whole number.

This challenge has been around for much longer than any of us have been teaching math, so maybe you have heard of it or used it in your classroom. I love the activity because it is a “low floor, high ceiling” activity. Every high school student can start to engage with this problem. I usually start by giving a very simple example such as $0 = 4+4-4-4 = 4 \times 4 - 4 \times 4$. This helps students to see that they don't need to use fancy math and that there are multiple paths to success. On that first day, I write the numbers 1-20 on the board. I ask students to work at their desks to find four-fours expressions for each number. When they have been successful finding an expression for a number, I ask them to test it with their group. If their group agrees that it works, I ask them to write their expression next to the number on the board. Sharing expressions on the board allows successful students to share strategies with others, allows for group critique of work, displays multiple solutions, and builds anticipation as the class works together to complete all the expressions. I encourage students not to work sequentially, but to find success by playing with fours. On this first day of class, this activity gets everyone involved and feeling some level of success. It also ignites student-generated math conversations on topics like order of operations, radicals, and factorials.

The activity builds in a “high ceiling” by encouraging students to find multiple expressions and to work on larger numbers, but I was really amazed at how high the ceiling could go when a student last year brought forward Paul Dirac's solution to this problem. Paul Dirac was a Nobel Prize winning physicist from England and a lover of math puzzles. He found a single expression format that can be used to represent all whole numbers using four 4's (Expression shown to the left). The solution requires the use of logs but should be accessible to students in Algebra 2 and beyond. I use it as an enrichment opportunity with my Precalculus students, and I certainly enjoyed exploring it myself.

$$\begin{aligned} \log_{\sqrt{4}} [\log_4 4] &= 0 \\ \log_{\sqrt{4}} [\log_4 \sqrt{4}] &= 1 \\ \log_{\sqrt{4}} [\log_4 \sqrt{\sqrt{4}}] &= 2 \\ \log_{\sqrt{4}} [\log_4 \sqrt{\sqrt{\sqrt{4}}}] &= 3 \end{aligned}$$

Numberphile is a fabulous math website created by video journalist Brady Haran. It has hundreds of short videos featuring mathematicians explaining interesting math concepts in zany ways. If you haven't checked it out, I would definitely recommend it. The link here is to the Numberphile video explaining the four 4's problem and Paul Dirac's solution.

<https://www.youtube.com/watch?v=Noo4lN-vSvw>



“...encouraging students to find multiple expressions and to work on larger numbers.”



Higher Ed Viewpoint

I send you greetings from a winter wonderland. I am afraid our last snowfall we had 2 weeks ago of 8 inches will be here until spring. As I write this newsletter, we are very near the end of the semester and everyone is in finals mode on our campuses. I trust that in the high schools you are wrapping up a successful semester as well.

Currently the Math Discipline Council is going through our common courses to make sure our campuses have the same pre-requisites. You would think that this should be a no-brainer and would have been required when we did the common course numbering process many years ago. However, at that time campuses could have their own pre-requisites to represent our various missions. However, it is going rather smoothly since we work with a very collegial group among our math departments in the 6 BOR institutions. I am very thankful for that so things of this nature go rather smoothly. Dr. Cogswell of SDSU is the serving president this year and guides the process very efficiently. The end-result will be that your students will have the ability to take and transfer courses at any of the 6 BOR institutions seamlessly. Another topic of discussion at our meeting this fall was to look at our placement exam once again. It was decided that since the system is currently doing a major software upgrade, we would hold off on any changes to this process until next year. The end-result is that the current math placement process will be used for our fall 2019 students. Their math placement will be determined by their math index score, which is a weighted average of the GPA and math sub-score on the ACT. However, the caveat is that this fall, students will no longer be required to take developmental math courses if they choose not to. They will have the option to take a co-requisite course, where they get supplemental instruction each week, to bring them up to speed with the rest of the class. This may be advantageous for some students that just miss a placement mark by a little bit, but there are some concerns and beliefs that some students will still benefit from that developmental course which will still be an option should they choose.

Given all the snow outside, it always gets me in the mode to looking forward to our trip to Huron coming up in February. I hope to see you there for our joint conference with our science friends. As always, please feel free to ask any questions you may have about the math in your state universities.

Sincerely,

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

Kelly Lane Earth and Space Science Grant (\$5,000)

For SD science and math teachers only - Science and math teachers at public, private, or tribal schools in South Dakota may now apply for the 13th annual (2019) “**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** of U.S. citizenship in South Dakota. The award seeks to improve science, technology, engineering, and mathematics (STEM) education in the state through the support of innovative programs in pre-college education. The application announcement for the 2019 grant is available at the following website. Preference will be given to applications focusing on topics pertaining to space science, earth science, and/or the use of geospatial technology, and to applicants who have not won this award in the past 12 years. Applications must be received by **January 10, 2019**.

<http://sdspacegrant.sdsmt.edu/KellyLaneTeacherGrant.htm>



“Currently the Math Discipline Council is going through our common courses to make sure our campuses have the same pre-requisites.”

Thomas V. Durkin, CPG
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Website: <http://sd.spacegrant.org>

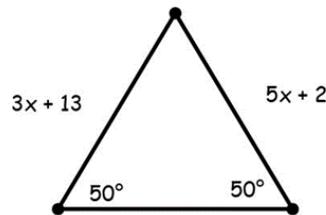


Mark's Thoughts

In Dan Meyer's 2010 Ted Talk "[Math Class Needs a Makeover](#)", Dan suggests that the types of problems typically found in textbooks don't require students to think critically due to the amount of information given to students in the context of the problem. Far too often students are given exactly the information needed to solve a problem. Consequently, students come to believe that all pieces of given information must be used as part of the solution-finding process.

The following example was part of a set of practice problems for a lesson on isosceles triangles found in a certain textbook.

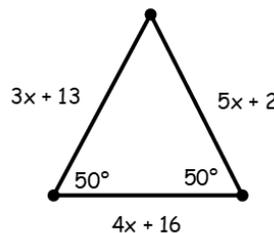
Students were asked to "find the value of x ".



For those of you who remember the converse of the base angles theorem for isosceles triangles, you can see the problem gives students exactly enough information to solve. {Set the two expressions equal to one another and solve the resulting two step linear equation.} One might claim that a student could correctly solve this problem by simply guessing the two expressions are equal to each other without actually understanding the theorem.

I'm not here to say that we should overload students with oodles of useless information in a given problem. However, by adding one or two additional pieces of information to this same problem, we can deepen the level of thought that needs to be applied by students to solve the problem.

Here is the same problem as above, only I added one piece of given information.



I invite you to think about the different misconceptions that this new problem could identify versus the previous problem. {To be clear, the problem is still solved by setting $3x + 13 = 5x + 2$.} Two mistakes that my students made because of the change:

- 1 - Set the wrong two expressions equal to each other. {Ex: $3x + 13 = 2x + 35$ }
- 2 - Set the sum of the three expressions equal to 180.

$$\{3x + 13 + 5x + 2 + 4x + 16 = 180\}$$

Additionally, I had a number of students solve the problem correctly but ask "what are we supposed to do with the $4x + 16$ ". By giving students information that is irrelevant to the problem, we can raise the level of thinking done by students.

[Side note: Dan offers a strategy to help students become better at deciding what information is and is not important for a given problem. I invite you to dig into his [3-ACT tasks](#) for more information.]



"By giving students information that is irrelevant to the problem, we can raise the level of thinking done by students."



Proposed Changes to the SDCTM By-laws

At the SDCTM Business Meeting held during the SD STEM Ed Conference, we will also be voting on two proposed bylaws revisions.

One proposed revision represents the change in Joint Professional Development Conference leadership. The change is noted with a strike-out in the second sentence and is due to the fact that the registrar is now appointed by the JPDC.

Article I Section II. Vice-President The Vice-President shall perform the duties of the President in his/her absence. ~~The Vice President shall also act as registrar and conference co-chair on the program committee for the annual spring conference.~~

The other proposed revision clarifies the membership term after payment of dues.

Article III—Membership

Any person interested in mathematics education shall be eligible for membership and may become a member by paying the required dues.

(Proposal) The SDCTM membership term will be from February 1 to January 31 of the following year. Annual dues are payable at the time of registration for the SD STEM Ed conference. Renewal of annual membership is required in order to register for the SD STEM Ed conference at member rates.

All SDCTM memberships will expire on January 31. Dues are NOT prorated from date of membership. EXCEPTION: If dues accompany a Summer Symposium registration, membership will be extended (18 months) to include the next membership term. *For example: If a member pays dues and submits a registration for the SDCTM Summer Symposium for the summer of 2019, their membership will expire January 31st, 2021.*

Daniel Swets Robotics Materials Award (\$6,000) - NASA South Dakota Space Grant

For SD science and math teachers and informal educators - The NASA South Dakota Space Grant Consortium invites applications for the **2019 “Daniel Swets Robotics Materials Award”**. We anticipate providing **\$9,000** in award funding under this call-for-applications. This funding is open to South Dakota teachers and informal educators of U.S. citizenship who either have: A) taken robotics training or plan to take robotics training and want to begin new robotics programs and teams, or B) have sustained robotics programs/curriculum in their classrooms or at their schools that are in need of additional support due to growth in the number of student participants or aging robotics materials. Preference will be given to: 1) applications that would start new robotics programs and teams (e.g., at a school that didn’t have one before), as opposed to augmenting existing robotics programs, 2) robotics programs at the Middle School level, and 3) applications from teachers/educators who have not won any prior robotics or other teacher awards provided by SD Space Grant in the past 13 years. The 2019 Application and Instructions are downloadable at the following website. Applications must be received by **January 10, 2019**.

<http://sdspacegrant.sdsmt.edu/DanSwetsRoboticsAward.html>

The proposed changes to the SDCTM By-laws will be discussed and voted on at the annual SDCTM Business meeting in Huron on February 8, 2019. All members are welcome to attend.

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Website: <http://sd.spacegrant.org>



Presidential Awards Nominations

Know a Great 7-12 Mathematics or Science Teacher? Nominate him or her to receive the Presidential Teaching Award!

The PAEMST program was established in 1983 by the White House and is sponsored by the National Science Foundation. The award is the nation's highest honor for math and science (including computer science) teachers. The program identifies outstanding math and science teachers in all 50 states and four US jurisdictions.

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.

This year's cycle will recognize outstanding **secondary teachers in grades 7 - 12**. The application deadline will be **May 1, 2019**. Nominations will be accepted until March 1, 2019. You can nominate a deserving teacher by visiting www.paemst.org.

Other than this, **WHY** would someone want to complete the application process?

Three CEU's from the South Dakota Department of Education can also be earned toward certificate renewal by completing the application process. To be eligible, a PAEMST candidate must complete all components of the application process and submit a scorable application that can be sent on to the state selection committee. All applicants submitting a scorable application will earn credit, not just the state finalists whose materials will be sent on to a national selection panel.

The PAEMST application consists of three components: Administrative, Narrative, and Video. The components allow the applicant to provide evidence of deep content knowledge and exemplary pedagogical skills that result in improved student learning. After eligibility is confirmed and technical specifications are met, each application will be evaluated using the following five Dimensions of Outstanding Teaching:

- Mastery of mathematics or science content appropriate for the grade level taught.
- Use of instructional methods and strategies that are appropriate for students in the class and that support student learning.
- Effective use of student assessments to evaluate, monitor, and improve student learning.
- Reflective practice and life-long learning to improve teaching and student learning.

Leadership in education outside the classroom.

If you are attending the conference and would like to know more about the program, attend the **"Showcase Your Teaching Practice and Win Money"** session which will be held during the 8:00 time slot in Prairie A on Saturday. I hope to see you there!

If you have any questions, please contact:

Allen Hogue
SD PAEMST Mathematics Coordinator
Allen.Hogue@k12.sd.us
605.553.8095





A Word from Stephanie

Greetings, I started as the State Math Specialist for the Department of Education in October 2018. Prior to joining the DOE team, I taught high school math and was a curriculum specialist for the Rapid City School District, and before that, taught both middle school and high school math in Kalamazoo, Michigan. I am excited about this new adventure and look forward to working with, learning from and supporting educators in implementing effective mathematics practices statewide.

During the summer of 2018, grade level teacher teams committed 6 days to unpacking the newly adopted math standards. Teachers had rich conversation around the clusters of standards, analyzed each standard, and ensured they created documents that would best help teachers better understand and teach the math standards. Teachers collaborated to determine the aspect of rigor for each standard, discussing whether the expectation of each standard was to develop conceptual understanding and/or, procedural fluency, and if there are opportunities for application. Teachers discussed the Mathematical Practice Standards that closely aligned to the cluster, and the student actions to display proficiency within these standards. Teachers also reviewed the assessment claims expected for students at the cluster level (for grades 3-12) and included examples of tasks teachers could use in their own lessons to meet both the expected level of rigor and the assessment claim. In addition to determining standards that connected within their own grade level, teachers also worked with teacher teams in other grade levels to write vertical learning progressions, making connections to learning in previous and future grade levels. Having been a member of the Algebra II team, I know, firsthand, the dedication that went into the creation of these documents. I feel so fortunate, as I think about the other opportunities that will emerge in the future, allowing me to work with the talented teachers we have throughout the state.

In the past few months, I have had the absolute pleasure to collaborate with colleagues to revamp the Department of Education Content Standards and Math Standards website to include the unpacked documents. It has been so rewarding to see the work from the summer come to fruition. I would encourage you to visit the Math Standards website and take time to study the unpacked documents. In the future there will be a link on the website asking for feedback. Please take some time to communicate changes you would like to see with these documents.

I will be presenting the elements of the unpacked documents at the South Dakota STEM ED conference in February. I hope to see you there.

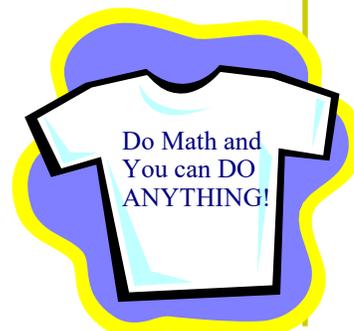
Stephanie Higdon
Math Specialist
Division of Learning & Instruction
South Dakota Department of Education (DOE)
Stephanie.Higdon@state.sd.us

Classy T-Shirt Day

When you pack for the conference, don't forget your favorite ~~Nerdy~~ Classy T-shirt! Again this year, we will all be sporting them on Saturday as we embrace our Math and Science Nerdiness!



“It has been so rewarding to see the work from the summer come to fruition.”





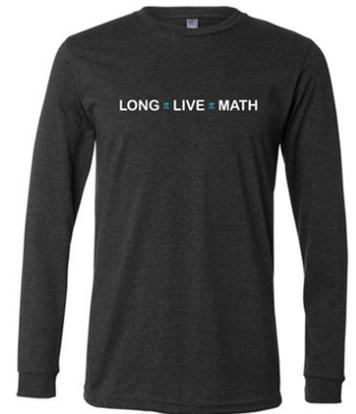
SDCTM T-shirts for sale

When you come to the conference this year pick up your very own SDCTM t-shirt. The shirts are a Dark Gray Heather Bella tee of a unisex design and are very soft and comfortable. Curl up this winter in your cozy chair reading your favorite book wearing this comfortable t-shirt or wear it on dress down days to school.

The shirts are available for \$20 each and would make a great gift. We have a limited number of shirts available in sizes S, M, L, XL, and XXL. If there is enough interest, we may order more.

If you would like to reserve a shirt for yourself and pick it up when you attend the conference, please contact me, Allen.Hogie@k12.sd.us, and I will put one aside for you. If you would like to have one before the conference, please send a check for \$23 made out to **SDCTM** to

Allen Hogie
416 S. Country Club Ave
Brandon, SD 57005
Allen.Hogie@k12.sd.us



Ladybug Dice

Family Math (Grade 2)

Need another way to get your students to practice addition? Try this fun game to practice addition up to 100. Setup is minimal, and your students will play their way to addition fluency.

Math.2.OA.A.1 Use addition and subtraction within 100
Math.2.OA.B.2 Fluently add and subtract within 20



Ladybug Dice

2-4 players
2 dice

Everyone needs a piece of paper and a pencil.

The ones on the dice are called the ladybugs.

1. Player 1 rolls two dice. Add the numbers together (*unless one or more of the numbers rolled is a one = ladybug*). Write down the answer for your score.
2. If you roll a one (ladybug) you don't write down anything. Trade papers with the person who has the highest score. You have to trade. Sometimes this is good and sometimes not so good.
3. If you roll 2 ladybugs (doubles), you must cross off your score, put down a zero and start over.
4. Player 2 rolls the dice, and play continues. You keep taking turns and keep adding your score, trading papers as required (ladybugs).
5. The winner is the first person to reach 100 points.

Cindy Kroon
Montrose High School
Cindy.Kroon@k12.sd.us





Why First Year Teachers Need to Attend the SD STEM Ed Conference

As I entered my fourth year of teaching this year, I realized that my senior students would be the first class of students that I had taught during all four years of their high school experience. They have grown up so much and it is an incredible gift that I have been able to influence their education and watch them mature into young adults. However, if you had asked me about them during my first year of teaching, I probably would've cried.

My first year of teaching was HARD. I was juggling five preps, I was struggling with classroom management, and as the main science teacher at a small school, I didn't have a mentor or co-teacher to ask for help or share ideas with. I did not have a network of support or encouragement, and I desperately needed one.

Thankfully, later that year, a friend from college asked if I had heard of the SDSTA/SDCTM Joint Professional Development Conference. I had not, but when I looked at the registration form, I realized that first-year teachers can attend for free, thanks to the Goehring/Veitz Leadership Scholarship. All that I had to do was register for the conference, check that I was a first-year teacher, and have my principle verify my teaching status. This year, the same great conference has been re-named the SD STEM Ed Conference, and I encourage all first-year teachers to attend if you can. Meeting wonderful math and science teachers from all around South Dakota has allowed me to become active in SDSTA and to become part of a bigger network of passionate, hard-working educators that are always willing to offer their insight and share ideas. Surrounding myself with such great teachers pushes me to be a better teacher, and I cannot wait to see what they share at this year's conference!

Ally Bowers
SDSTA Science Liaison
Hanson School District
Alison.Bowers@k12.sd.us

*Reprinted from the SDSTA December Newsletter with permission.

Dress “Code” at the Conference

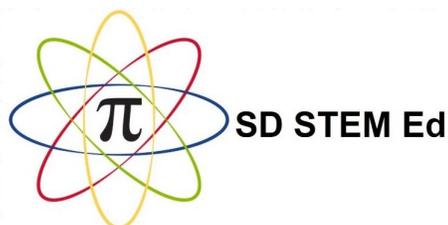
There is no real dress code for attending the conference. You may wear whatever you like during the day. Some teachers dress in professional wear for the daytime sessions, others choose to wear jeans and still others sport their school logo/mascot for the day.

Saturday is definitely a bit more casual as the majority of attendees travel home on Saturday afternoon. The SD STEM Ed Conference has dubbed Saturday, “Classy T-shirt Day”. Many choose to wear their favorite Math or Science themed shirt with jeans.

Many dress up for the Friday evening banquet. Several have stated that they wished that it was advertised as a dressy occasion. Rest assured, there is not a dress code and you will not be turned away, even if you are in jeans, but many do wear dresses/suits.



“Surrounding myself with such great teachers pushes me to be a better teacher...”



After coming back from break, I challenge you to give your students this problem:

$$8 + 4 = \blacksquare + 5$$

This problem may seem trivial, but I really do challenge you to give it to your students. No matter what age. No prompting, no questioning, just tell them to solve the problem, and collect the results. I was very surprised with my results. All but one of my students put 12 in the box? What does this mean? My students have a limited understanding of equality and the equal sign. It doesn't mean though, they haven't been learning about equality in the previous years. Every year we need to make a determined effort to establish appropriate ideas of equality.

Next steps: I like to tackle this misconception with true and false number sentences. We start with a discussion about what the equal sign means. In fourth grade, we say the equal sign means "the same as" and we try to use that language often. Next, throughout the year, we take maybe 5 minutes at the most of a math class, to practice the true and false number sentences. I display a number sentence, such as, $7 = 3 + 4$, or $8 + 2 = 10 + 4$. Students then write true or false on their whiteboards. If needed, we have a discussion about reasoning, and model with unifix cubes as needed, always using the language of "the same as" instead of saying equals.

I challenge you to do this in January, then again in April or May. Are there changes in your students' misconceptions? This understanding will lay a firm foundation for later learning in algebra.

Note: If you are interested in true/false number sentences, I have a set of premade pages in an iBook file I would be happy to email you. Please contact me: lindsey.tellinghuisen@k12.sd.us and I will happily send you the file.

National Council of Teachers of Mathematics (NCTM) *Children's Understanding of Equality: A Foundation for Algebra*: 1999

“GOEHRING/VGKTZ LEADERSHIP SCHOLARSHIP”

“The Goehring/Veitz Leadership Scholarship” 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 SD STEM Ed Conference (hosted by SDCTM and SDSTA), 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
- Is a member of 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 Sheila McQuade along with the regular conference registration form which is available at www.sdctm.org.

APPLICATION
“GOEHRING/VGKTZ LEADERSHIP SCHOLARSHIP”

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

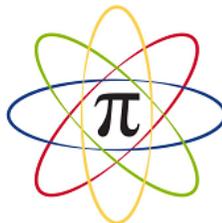
_____ \$5.00 for Elementary Math and/or \$5.00 for Elementary Science

_____ \$20.00 for MS/HS Math and/or \$20.00 for MS/HS Science

<p>(Name) _____ is in his/her first year of teaching in SD at _____ School District during the _____ school year and is thus eligible for ‘The Goehring/Veitz Leadership Scholarship.’</p> <p>Signed: _____, Building Principal</p>

2019 SD STEM Ed Conference

Hosted by SDCTM and SDSTA



Conference information and program booklets will be available online at www.sdctm.org and www.sdsta.org

ADVANCE REGISTRATION

Huron Event Center, Huron South Dakota
February 7-9, 2019 1-800-876-5858

Download and complete this form. Postmark by January 20, 2019. After this date, please register on-site (+\$35)

Name _____
 Permanent Address _____
 City _____ State _____ Zip _____
 School/District _____ E-mail _____
 Home phone _____ School Phone _____

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/renew SDSTA (science) for one year
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
Retired \$5	Retired \$5
Other \$20	Other \$20

NOTE: First year teachers are eligible for a scholarship providing a free registration. See www.sdctm.org for details.

2. CONFERENCE ADVANCE REGISTRATION (+ \$35 On-site/after Jan. 20)

Please select the appropriate categories. Noon luncheon is included for each day that you register.

NOTE: The Friday night banquet is NOT included. Banquet tickets may be purchased for \$25 each.

I will attend the conference on (check one):	Friday	Saturday	Both days
SDCTM or SDSTA Member	Non-Member	Retired / Student Member	
One day \$55	One day \$105	One day \$15	
Two days \$80	Two days \$130	Two days \$25	

College credit will be available; information/registration will be available at the conference registration table.

3. PAYMENT: By Check Only

Make checks payable to SDCTM/SDSTA JPDC.
 SD STEM Ed does NOT accept purchase orders.
 To use credit card, you **must** register and pay ONLINE:

Membership(s) total	\$ _____
Registration	\$ _____
Friday Night Banquet (\$25 each)	\$ _____
On-site Late Registration Fee (+\$35)	\$ _____

TOTAL ENCLOSED \$ _____

Requests for refunds must be received by January 20, 2019
 The conference does not issue refunds due to weather events.

4. SEND THIS FORM WITH PAYMENT

Sheila McQuade
 5423'UMly cplk'*****School phone (605) 336-3644
 Sioux Falls, SD 57107 Home phone (605) 373-1803
 If you j cxg"not receivef go krl'confirmation"qh'tgi kutcvkpp
 after one week, please contact:"uo es wcf g4B ureuQti 0

Advance registration must be postmarked by **January 20, 2019.**
 After this date, please register on-site (Additional \$35 fee).

Please check here if you have also submitted a speaker proposal form for the 2019 Conference.

Contact SD STEM Ed with any special needs requests as defined by ADA by emailing cindy.kroon@k12.sd.us by January 20, 2019.

Your contact information may be shared with Conference Exhibitors/Sponsors. Check here to opt out of sharing your contact information.



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

Jay Berglund
204 S. Exene Strert
Gettysburg, SD 57442

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
- _____ Retired \$5.00
- _____ Student \$5.00
- _____ Other \$20.00

We now offer the option to use PayPal to pay your dues for a minimal processing fee of \$1.00. The processing fee will cover the processing fees incurred by SDCTM and fees charged for having checks cut by PayPal.

*Instructions can be found online at:
<http://www.sdctm.org/joinsdctm.htm>*



SDCTM Newsletter
C/o Sheila McQuade
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Sioux Falls, SD 57105

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www.sdctm.org