

Wahpe Woyaka pi (Talking Leaf)

South Dakota Council Teachers of Mathematics Newsletter

Presidential Ponderings

Welcome back to another school year! The 2019-2020 year is already two months in! Where does the time go?

I know with it only being October, it seems too early to talk about our 28th Annual STEM ED conference, but the deadline for speaker proposals is quickly approaching. Please think about and apply to speak at our conference. One of the best aspects of the conference is learning from one another! Presenting at the conference is a great way to connect with other teachers and you will not find a better audience than South Dakota teachers. You may have a favorite lesson that you would like to share or a teaching technique that really engages your students. Why not share these great ideas? Please visit the SDCTM website to submit your proposal by October 31st!

I would also encourage you to ask your teacher friends to come to Huron with you this year. I especially charge you with the idea of bringing your elementary friends. Elementary teachers are a wealth of knowledge in both the mathematics and science content areas. They would really enjoy the conference, so encourage them to attend! The early bird online registration is open from now until December 15. Get registered now to save money!

I am happy to announce that we have some wonderful featured speakers coming to Huron to speak at our 28th annual STEM ED conference. Annie Fetter is going to be our elementary speaker. She is known for bringing the “Notice and Wonder” movement to the math teaching world. Sean Nank is going to be our secondary featured speaker. He is an author, Presidential Award of Excellence in Mathematics Awardee, and a leader in the NCTM organization. I am excited to hear from both wonderful speakers!

Finally, I have been approached many times about my “Long Live Math” shirt and where one can get one. Last year, we had some at the conference, but unfortunately, we ran out. Luckily, I have a connection to someone who likes to make t-shirts. Therefore, she can make more! So... now SDCTM has an online t-shirt shop through Etsy. Money from the sales of these math shirts goes to SDCTM. The link to the SDCTM shirts is: https://www.etsy.com/shop/blackhillsprintwear/?section_id=26958602. Not only is there the “Long Live Math” shirt, there are other math shirts, SDCTM baseball shirts, and polos. Check it out!

That is all for now. I hope you had a wonderful start to your school year! Don’t forget to submit a speaker proposal and get registered to attend our 28th Annual STEM Ed conference, today!

Crystal McMachen
SDCTM President
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FALL 2019-2020

Wahpe Woyaka pi

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Calendar Notes:

- SD STEM Ed Breakout Session Proposals Due October 31, 2019
- SD STEM Ed Early Bird Registration Deadline December 15, 2019
- SD STEM Ed Pre-Registration ends January 24, 2020
- 2020 SD STEM Ed Conference February 6-8, 2020



Musings from Sheila

Each year I am plagued with questions regarding extra credit. Students ask about it as soon as the hand in a test (which never bodes well for their grade), parents ask about it at conferences (especially if their child's grade is a borderline grade) and other teachers ask whether I offer extra credit and, if so, how do I handle it.

Extra credit has had many different forms over the years that I've been in the classroom. I have had components that I liked and struggled with for each different type. If I've learned one thing it is that what works for one group/teacher/year/age doesn't work for all. I hope some of what is below will give you a new outlook or something you can pull out of your back pocket when approached by a student/parent.

First and foremost, my philosophy on extra credit is that it should never *save* a student. It should provide the points that you want to award a student for extra effort and learning that in turn helps their grade. It is the extra effort and work i.e. the learning that saves the student. A student once asked if they could just write up a report about a mathematician like they did in History class. They totally missed the point, unfortunately so did I because I allowed it. In History, when they would write a paper about someone or an event from History, they were in fact learning the History that was a part of the curriculum. They were helping/saving themselves because they were learning information that had been taught. However, writing a paper about a mathematician doesn't help them learn the Properties of Equality or the Order of Operations or whatever mathematical concept they hadn't mastered.

My first round of mathematical extra credit opportunities came as bonus questions on tests. Although these bonuses provided an opportunity to improve a student's test grade, it became tedious because kids shared the questions, spent time working on the bonus rather than the test, or didn't have time to give the bonus the time needed. The later was especially true for my students who process information a bit more slowly.

The next phase of extra credit was a page of problems related to the concept taught during the chapter but not directly covered/taught. The students would receive the page after handing in their test and it was due the next day. Students often wouldn't even complete it or hand it in—so the following year, it was required that they try it. I then received page after page of identical work. Everyone was taking the same approach to each problem — looking it up on the internet or copying from someone who had it done.

More recently, my colleague and I have written a extra credit worksheet for each semester. The problems are challenging but doable with the concepts taught and mastered in class. They are given one class day and are allowed to work with a partner to finish as many problems as they can. It must be handed in at the end of class. This one is challenging in that it takes one day each semester from class and it can be a challenge to give students who are absent a fair opportunity to complete it.

In the midst of this, I created a teacher account at Quizlet.com. I have created vocabulary sets for each chapter. I rewarded a student 1-2 bonus points for completing two activities before the day of the test (the point value depends on the number of flashcards). This is one form of extra credit I still use. My favorite type of "extra credit" is allowing students to retake quizzes and rework or "retake" worksheets (anything graded for accuracy). This takes more effort and time on my part but I feel it accomplishes my goal of helping students to recover the knowledge as well as their grade.

Sheila McQuade
SDCTM President-Elect
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"...it accomplishes my goal of helping students to recover the knowledge as well as their grade..."



K-5 Corner

Welcome back! I hope you all enjoyed your summer and spent time caring for yourself. We have adopted a new reading series this year, and I have ten more students than I had last year. I already feel like I am in survival mode. I thought I would highlight a few of the websites I use for math resources. These sites offer free materials and tasks.

www.Achievethecore.org – offers free ready to use classroom resources that support standard aligned instruction for all students.

www.openmiddle.com – offers problems that start with the same initial problem, end with the same answer, but have multiple ways to approach and ultimately solve the problem, hence “open middle”. Great problems to get your students thinking. Kindergarten – high school problems.

www.wodb.ca – which one doesn’t belong – this was shared at the conference by Mark a few years ago – offers great thinking problems. Nice to use when you have a lull in your day or for a number talk.

www.therecoveringtraditionalist.com – free trainings and blog posts to encourage the love of math in teachers and students.

www.youcubed.org – showcases Jo Bolar’s research on mindset and mathematics. Lots of lessons for all ages as well and videos about math mindset.

www.gfletchy.com – Graham Fletcher offers great progression videos and 3 act tasks for the classroom.

I wish you all the best this school year. Enjoy the journey.

Lindsey Tellinghuisen
SDCTM Elementary Liaison
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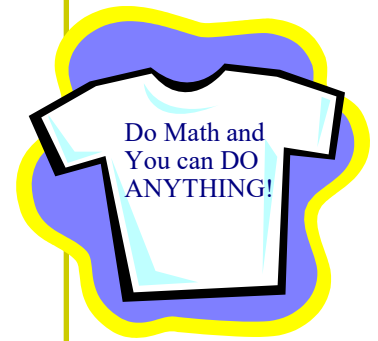


Classy T-Shirt Day

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!



“I already feel like I am in survival mode.”





K-5 Corner - Extended

Have you been looking for a collection of high-quality assessment resources you can use with your students? Look no further! The Smarter Balanced Assessment Consortium is more than a summative assessment for students in grades 3-8 and 11 in ELA and Mathematics. The SBAC Digital Library features nearly 3,000 assessment resources that can be used in K-12 classrooms. All resources have been created and approved by teachers. Resources go through a review process to make sure they meet quality criteria and align to the formative assessment process. You can filter and search for resources that align with a selected subject, standard, resource type, grade level, etc. You can download resources or mark them as “Favorites.” The Digital Library also includes professional learning resources and Connections Playlists, which are built based on student performance on Interim Assessment Blocks. They help answer the question, “Now what?” after giving students an Interim Assessment.

By now you’re thinking, “Sign me up! How do I get access to all these great resources?” South Dakota K-12 educators can register for a free Digital Library account by visiting www.sbdigitallibrary.org.

Kim is a member of the State Network of Educators and has extensive experience contributing and reviewing resources for the Digital Library.

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“The SBAC Digital Library features nearly 3,000 assessment resources that can be used in K-12 classrooms.”

Classroom Treasures

Did the spring cleaning bug bite you this year? I have been purging and tossing/giving away excess in my classroom as well as in my home for the past 6 months. 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. Plan to 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.)

“Bring your excess, good, working equipment or resource materials ...”



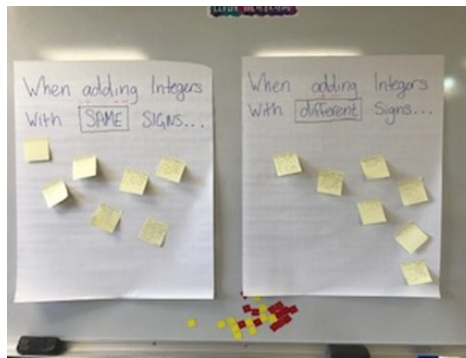
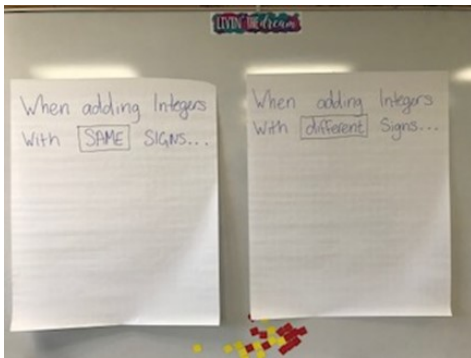


6-8 Highlights

“Anchor” the big concepts with their own words

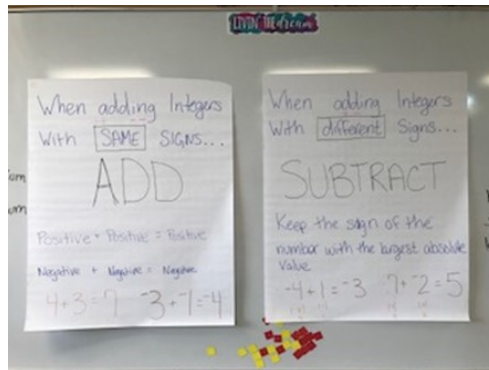
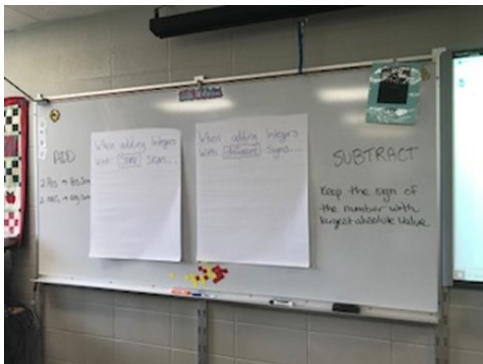
Fall is a beautiful time of year, a time where our students are finally getting into a routine and we start the “big concepts” in math. In 7th grade, integer operations is the first BIG learning that we do, and revert back to all year. This fall I decided to use student made anchor charts to help remind them of the rules. This way I am not telling them, they are telling themselves! Here is how I do it.

Step 1 – After spending two- or three-days modeling integer addition with the charge model and the number line I ask them to be “mathematicians” and notice the pattern with they add integers with the same signs, and integers with different signs. Each pod then looks at past examples and describes the pattern on a sticky note (each pod gets one sticky note).



“...I am not telling them, they are telling themselves!”

Step 2 – I read all of them aloud and the class decides on the pieces that they like or want to keep in their definition. Over the course of 20 min they eventually come up with a rule that works all the time, (I make them prove it) and we write it on the board.



Step 3 – They decide what examples will be helpful for them, and what words I should write BIG so students can see it all over the room.

Step 4 – Leave it up all year and when students need help remembering how to add integers with different signs, they know exactly where to look!

It was great to see how much ownership the students took in making their own anchor chart, and it is so much more meaningful than a store-bought poster!

Molly Ring
SDCTM Middle School Liaison
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9-12 Spotlight

High Five Friday

You don't have to be involved in education very long to know that developing a relationship with your students in critical to engaging them with classroom material. That makes the beginning of the year especially challenging because you have not had a chance to develop that relationship. This year, I have implemented a new relationship building activity – High Five Friday. On Friday's, I have committed to stand at my door and greet each student with a high five as a celebration of a week completed. It is a small gesture, but it has given me a fun, easy way to connect with students. Students are enjoying the high fives and look forward to them on Friday.

Exploring Functions

I have found that understanding the big themes that connect our daily math lessons is very powerful both for me and for students. In my classroom, I have a "theme wall" – a wall that has posters describing the big themes we will be addressing during the year. We all refer to that wall throughout the year to remind ourselves how the math at hand is related to our big themes. In Math 1 or Algebra 1, a big theme is understanding four basic functions: linear, exponential, quadratic, and inverse variation. Throughout the year we dive deep into each type of function, but it is important to be aware of the similarities and differences between the types of functions.

To kick off the theme wall, we spend the first week of school exploring the four basic types of functions. Students are very familiar with linear and generally unfamiliar with quadratic, but we build on what we know to develop a basic description of equation, table, and graph for each function type. Each day I give students a set of four equations. They work together with their group to create a table and graph for each of the four equations. Of the four equations on the sheet, three are the same type of function, and the fourth is something different. The students work together to identify the odd function and then to quantify the similarities in the remaining three functions. They go through this activity for four days – one day for each function type. Along the way we have some great discussions! "Which come first, x or y" "What does the E mean in my calculator?" "When I square a negative number in my calculator, why is it still negative?" "Why do I get an error when I divide by zero?" "What does a negative exponent do?" All of this gets the math flowing again while encouraging that ever important group discussion. At the end of the activity, students summarize their learning in their notebooks and complete an assessment to check their understanding. (The basic premise of this lesson comes from CorePlus Mathematics, Course 1, Common Core Edition, 2015 published by McGraw Hill.)



"...it has given me a fun, easy way to connect with students."

M1 1.1.3.3 Exploration 1

<p>a. $y = 2x - 4$</p> <table border="1"> <tr><td>x</td><td>-5</td><td>-4</td><td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>y</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	x	-5	-4	-3	-2	-1	0	1	2	3	4	5	y												<p>b. $y = -0.5x + 2$</p> <table border="1"> <tr><td>x</td><td>-5</td><td>-4</td><td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>y</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	x	-5	-4	-3	-2	-1	0	1	2	3	4	5	y											
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Common Rule Name:
 Common rules look like:
 Common graphs look like:
 Common tables look like:

Math 1 - Unit 1, Lesson 3, Investigation 3 CYU p. 58 (Objective 1.3.5)

Each item here gives three algebraic rules – one of which will have quite different table and graph patterns than the other two. In each case, circle the rule that does not match the other two and explain how and why its graph and/or table pattern will look different from the other two.

<p>1. Type of Rule</p> <p>$y = \frac{10}{x}$ _____</p> <p>$y = 10x$ _____</p> <p>$y = x + 10$ _____</p> <p>Circle the rule that doesn't match.</p> <p>How and why will its graph and/or table pattern be different?</p>	<p>2. Type of Rule</p> <p>$y = x^2 + 1$ _____</p> <p>$y = x + 1$ _____</p> <p>$y = 1 - x^2$ _____</p> <p>Circle the rule that doesn't match.</p> <p>How and why will its graph and/or table pattern be different?</p>
<p>3. Type of Rule</p> <p>$y = 1.5x - 4$ _____</p> <p>$y = (1.5^x) - 4$ _____</p> <p>$y = 2^x$ _____</p> <p>Circle the rule that doesn't match.</p> <p>How and why will its graph and/or table pattern be different?</p>	<p>4. Type of Rule</p> <p>$y = 1.5x - 4$ _____</p> <p>$y = 0.5x - 4$ _____</p> <p>$y = -1.5x - 4$ _____</p> <p>Circle the rule that doesn't match.</p> <p>How and why will its graph and/or table pattern be different?</p>



9-12 Spotlight *continued*

Math 1 Overview Toolkit

Linear Function		Exponential Function	
Equation	Table	Equation	Table
Graph	Real Life Situation	Graph	Real Life Situation



Higher Ed Viewpoint

Greetings from the BOR institutions! I trust you now have all your students back into the school routine after breaking them from their summer routine. That can be a challenge the first few weeks. However, I trust that you are all off to a great new semester.

On our campuses we are busy implementing the Math Pathway initiatives in trying to help our students be successful in their introductory math courses. At the end of the semester we should have a better idea as to what new initiatives worked well and which ones need further development. The Math Discipline Council does not meet until later this fall and we have not received our agenda from the Board office so at this time, it is hard to predict what will be on the horizon. I will update you when I know more on those events.

For now, I would like to keep reinforcing the same message on dual credit. If you have students that are science bound and will need Calculus I, then they should be taking a pre-calculus dual credit course or a pre-calculus course at your school. Many students take the college algebra route but then still need to take a trig course to get into Calculus I, which delays their progress. Let me know if there are any questions on that.

It is hard to believe that February will be here before you know it. I look forward to seeing you all in Huron at the annual math and science conference.

Sincerely,

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

PAEMST

Congratulations to the following middle school and high school mathematics State-Level finalists for the 2019 Presidential Award for Excellence in Mathematics and Science Teaching:

- Carla Diede, Harrisburg South Middle School
- Molly Ring, Brandon Valley Middle School
- Mark Kreie, Brookings High School

As state-level finalists, they are automatically candidates for the National Presidential Award. The teacher selected as South Dakota's Presidential Awardee will be notified officially by the White House. 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.

SDCTM will celebrate the achievements of each of the state-level finalists on Friday, February 7, 2020 in Huron, SD during the evening Banquet at the SD STEM Ed Conference. Each state-level finalist will receive a paid two-day conference registration, Friday night's hotel accommodation, a paid one-year membership to SDCTM, a plaque to commemorate the achievement, a free Banquet ticket (plus 1), a free breakfast Saturday morning, and 3 CEU's toward certificate renewal.

Beginning this fall, SDCTM is looking for outstanding K-6th grade mathematics and science teachers for the 2020 Presidential Awards for Excellence in Mathematics and Science Teaching. Do you know a GREAT K-6th grade mathematics or science teacher? Nominate him or her to receive the Presidential Award! Nominations for the 2020 cycle opened this fall.

For more information, including nomination and application forms as they become available, please visit www.sdctm.org and click on the Presidential Awards link.

Allen Hogie
SD PAEMST Mathematics Coordinator
Allen.Hogie@k12.sd.us



“It was great to see how much ownership the students took in making their own...”



“...SDCTM is looking for outstanding K-6 grade mathematics and science teachers...”



Division by 0

Here is an oldie but a goodie that I always have fun with my students in calculus class and am amazed that often times, nobody in the class has seen it before (or ok, don't remember it). Have some fun with it, talking up each step just like a magician.

Start off by asking if anyone in the room has \$2. Pull out a \$1 and tell them that if you can prove that $2=1$, you will trade with them and we will both be happy because, after all, I just proved they were equal.

Start with $a = b$.

This is perfectly legal here as maybe $a=3$ and $b=5-2$ or any such equality.

Now we know from algebra that if 2 things are equal we can multiply both sides by the same thing and they will stay equal so multiply both sides by a .

$$a^2 = ab$$

We also know from algebra that if we subtract the same thing from both sides that the equality will remain equal. So let's subtract b^2 from both sides.

$$a^2 - b^2 = ab - b^2$$

Now we recall how to factor each side.

$$(a+b)(a-b) = b(a-b)$$

Now we know that if two things are equal, we can divide both sides by the same thing so let's divide both sides by $(a-b)$ and we will get:

$$(a+b) = b$$

Now our original statement was $a=b$ so I can replace a with b and the equation will be the same. Perfectly legal here, nothing fancy going on. No cards up my sleeve or anything.

$$b + b = b$$

which gives us

$$2b = b$$

Again we can divide both sides of an equation by the same thing and it remains equal so let's divide both sides by b and we get

$$2 = 1.$$

After they struggle with it for a while, I show them where they divided by 0 and now they understand why we can't do that. I also tell them that I get 10% of all the money they make in the dorm that evening.

Sincerely,

SDCTM Vice President & Liaison to Higher Education

Professor and Dept. Chair

The University of South Dakota



“Have some fun with it, talking up each step just like a magician.”

SD STEM Ed ... What to wear?

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.





A Word from Stephanie

Greetings,

I hope you all have had a wonderful start to your school year! I really do love all the seasons equally, however, I always look forward to a change in season. As summer comes to an end, I get excited when the weather cools a bit and the leaves in the Black Hills begin to change. After a very busy summer, I hope fall brings a little slower pace, and more time to spend with friends and family. I already have plans for this October to run a half marathon in my home state of Michigan with my sister! I look forward to spending that weekend with my parents and am hopeful to hearing lots of cheers at the finish line from additional family members!

One of the best parts about my summer was meeting so many math educators from across the state. As I mentioned in past newsletters, the Department of Education facilitated two teacher, and one administrator workshop focused on the unpacked documents. I truly appreciated the enthusiasm and discussion around mathematics instruction and ideas for implementing the unpacked documents to develop rigorous lesson plans. The components of the documents highlighted in the workshops were the clusters' focus in each grade level or course, the math practice standards, and the aspects of rigor. Teacher feedback indicated the time to have conversations with colleagues from across the state, in addition to the time to plan lessons using the documents was appreciated. If you have not done so already, please take some time to study these documents and determine how they can support your teaching practice. I would also encourage you to take some time to look through the Unpacked Document training materials toolkit. This folder houses PowerPoints the summer workshops were modeled from, a facilitation guide to facilitate workshops, and the handouts used in the summer workshops. Both the unpacked documents and the toolkit can be found on the Mathematics Content Standards site: <https://doe.sd.gov/contentstandards/math.aspx>.

As a follow up to these workshops, I would like to begin a webinar series this fall. For now, this project is only in the planning phase. However, I hope to have one meeting a month, in which teachers can come together virtually to learn and share ways they are using the unpacked documents to plan rigorous lessons, teach the standards to the intended depth and tasks students are engaging in to learn the standards at this depth. Stay tuned for updates on the DOE Math Listserv. If you are not yet a member of the DOE Math Listserv, please email me at stephanie.higdon@state.sd.us so that I can add you to the group.

As always, please contact me if you have any questions or needs,

Stephanie Higdon
Math Specialist
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Stephanie.Higdon@state.sd.us

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 (SMcQuade@OGKnights.org).



“I truly appreciated the enthusiasm and discussion around mathematics instruction and ideas for implementing the unpacked documents to develop rigorous lesson plans.”





Mark's Thoughts

Illustrative Mathematics

I am always on the lookout for rich mathematical tasks and supplemental resources to fold into my curriculum. This summer, I was excited to see that Illustrative Mathematics released their high school curriculum (Alg. 1 / Geom / Alg 2) and supporting resources.

Illustrative Mathematics (<https://www.illustrativemathematics.org/>) is a free, online curriculum that is aligned to the Common Core standards. The materials are available as open educational resources (OER) and free to access by anyone. Prior to this summer, Illustrative Mathematics had released a middle school (grades 6-8) curriculum that earned high scores in areas of focus and coherence, rigor and mathematical practices, and usability according to Edreports.org (<https://www.edreports.org/reports/overview/learnzillion-illustrative-mathematics-6-8-math-2018>). The high school curriculum has not yet been rated by Edreports.org. A K-5 curriculum is set to be released by fall of 2021.

Lessons and activities are free directly through the Illustrative Mathematics link above. In order to access assessments and some of the supplementary materials, you must gain access through one of three Illustrative Mathematics Partners: LearnZillion, McGraw Hill, or Kendall Hunt. You can create a free account with any of the three partners and gain full access to all materials.

I have found myself browsing through this curriculum every time I'm looking for lesson ideas, homework and test questions, or for guidance how I sequence my lessons. I believe it is a great resource to remember and best of all – it's free for all! To give you an example of the type of questions you might find, this problem comes from the algebra 1 unit 4 assessment on functions (found on page 12).

Mark Kreie
NCTM Representative
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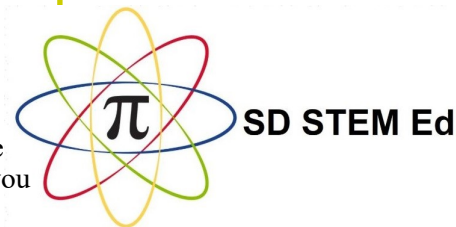
"...browsing through this curriculum every time I'm looking for lesson ideas, homework and test questions, or for guidance...."



2020 SD STEM Ed Conference Breakout Session Proposals

The 2020 SD STEM Education Conference, hosted by SDSTA and SDCTM, will be held at the Crossroads Event Center, Huron, South Dakota (1-800-876-5858) on February 6-8, 2020. We invite all teachers interested in presenting at the conference. If interested, please fill out the session proposal form at: <https://sites.google.com/k12.sd.us/sdsta/sd-stem-ed-conference>.

The main presenter will receive an email confirming your submission. The Conference committee will meet in early November 2019 to schedule and approve proposals and you will receive confirmation of tentative acceptance by December 1, 2019.





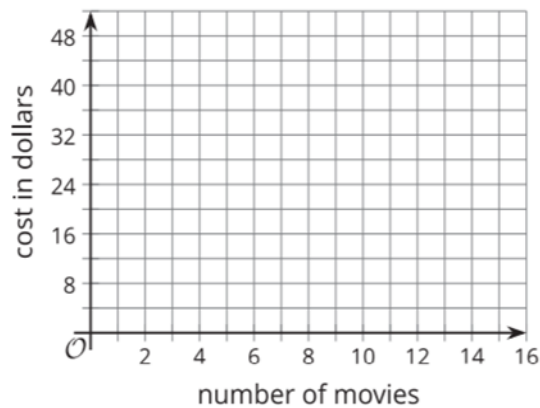
7. A movie theater is offering a special summer pass. Passholders pay \$8 per movie for the first 5 movies and watch additional movies for free, up to a maximum of 15 movies. The function C gives the total cost, in dollars, for a passholder to watch n movies.

a. Is function C a piecewise function? Explain your reasoning.

b. Draw a graph to represent C .

c. Describe, as completely as possible, the domain of C .

d. Describe, as completely as possible, the range of C .



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.





2019 Vikings' Scores: Mean, Median, and Mode in Context

Do your students love football? Do they walk into your classroom on Monday morning discussing yesterday's game? They are already interested in the data. Maybe we can harness their enthusiasm, re-direct the discussion, and promote better understanding of central tendency.

After each game, students record [Minnesota Vikings](#) final score.

As the season progresses, each week another score is added to the data set. Students calculate the new mean, median, and mode after including the most recent results. This provides practice with the vocabulary, conceptual meaning, and calculation for each.

After each re-calculation, notice the impact of the new score on the three measures of central tendency.

Does a high scoring game have a larger impact on the mean or median? Why?

What about a very low score?

Does the median have to be one of the actual scores? Why?

Can there be more than one mode?

What degree of rounding would be appropriate in this context?

Which measure (mean, median, mode) would be the best choice to describe the data?

What sort of information might be relevant to add in the "comments" box?

Instead of students walking into the classroom on Monday morning chatting about the game, they will now walk in saying, "Wow did you see the Vikings score last night? I wonder what **that** will do to my mean!?" (True story)

For advanced students, this activity could be extended to also include measures of variability (mean deviation, standard deviation) and normal distribution (standard error and probability).

Does the data appear to be normally distributed?

*How likely is it that the next score will be between **a** and **b**?*

SD Mathematics standards:

6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be describe by its center, spread, and overall shape.

6.SP.5c Give quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

S.ID.3 Interpret differences in shape center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

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





2019 Vikings Football Scores

Game/Date	Score	Mean	Median	Mode	Comments
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					



2020 SD STEM Ed Conference Registration Information

We would love to see you at the 2020 SD STEM Ed Conference. The conference will be February 6, 7, and 8, 2020. We will once again be in Huron, SD because the Crossroads and Huron Event Center are so very good to us and help us to keep our costs affordable with several “perks” for which we do not have to pay such as meeting rooms, suites with work space, and conference rooms to name just a few. That being said, food costs have increased and it is necessary for us to raise our rates to cover our increases. It is very helpful to us to have our paid registrations completed two weeks before the conference. The following 3-tier fee structure reflects the cost increase and our efforts to reward early registration.

An additional change in registration for 2020 is that we will no longer accept paper registration forms. ALL registrations will be on-line. You will continue to have an option to mail in a check to complete your registration.

To register, complete the Google form at:
<https://forms.gle/xKeY5H551rnsvniX8>

Sheila McQuade
 SD STEM Ed Conference Registrar & Treasurer
 SMcQuade@OGKnights.org

In 2020 all registrations will be on-line. Mailing in a check for payment will still be an option.

2020 SD STEM Ed Registration rates		
Early Bird - June 1 - Dec 15		
	2 day registration	1 day registration
member	\$85.00	\$60.00
student	\$30.00	\$20.00
non-member	\$135.00	\$110.00
Pre-registration Dec 16 - Jan 24 (payment must be postmarked 1/20 or online payment COMPLETED by 1/24 or you will be "bumped" to the next tier)		
member	\$100.00	\$75.00
student	\$35.00**	\$25.00
non-member	\$150.00	\$125.00
On-site Registration		
member	\$120.00	\$95.00
student	\$65.00	\$55.00
non-member	\$170.00	\$145.00

Be sure to register and pay for your registration by December 15th in order to be eligible for the Early Bird rates !

** There is a smaller increase for students at this point because of their schedules.

Students interested in attending may not be in contact with the content area professors before the beginning of second semester.



“GOEHRING/VEITZ 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 attached form, have it signed by the building principal, and upload a pdf copy when you complete your conference registration online at: <https://forms.gle/nB5bxikUExzZHDvP7>

Contact Sheila at SMcQuade@OGKnights with any questions.

APPLICATION “GOEHRING/VEITZ 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

(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.”

Signed: _____, Building Principal



2020 Daktronics Outstanding Mathematics Teacher Award

Daktronics, in conjunction with the South Dakota Council of Teachers of Mathematics, is pleased to sponsor the Daktronics Outstanding Mathematics Teacher Award in the state of South Dakota. The recipient of this award receives a plaque and a \$1000 cash award to support the award winner's efforts to teach mathematics with equipment or perhaps help to attend a conference or workshop. Middle school and high school teachers, who spend at least 50 percent of their schedule teaching mathematics, are eligible for this award. Application information is available at <http://www.sdctm.org/>

AWARD SUBMISSION REQUIREMENTS

- 1.) A maximum two page, 12 font resume, which includes the following:
 - a. Personal information, including name, telephone numbers, email, addresses, etc.
 - b. Beginning with the most recent, list colleges and universities attended including post-graduate studies. Indicate degrees earned and dates of attendance.
 - c. Beginning with the most recent, list teaching employment history indicating time period, grade level and subject area.
 - d. Beginning with the most recent, list professional association memberships including information regarding offices held and other relevant activities.
 - e. Beginning with the most recent, list staff development leadership activities or other professional activities.
 - f. Beginning with the most recent, list awards and other recognition of your teaching.
- 2.) A maximum two page, 12 font, double spaced, personal essay that includes but is not limited to the following topics: 1.) Describe how you have inspired students in your mathematics class. 2.) Describe innovative teaching techniques involved in your classes 3.) Describe what types of technology are used in your class. 4.) Describe any professional development, as it pertains to mathematics, you have been involved in. 5.) Describe how you have helped students attend classes/workshops/contests/quiz bowls that pertain to mathematics or engineering or how you have helped students incorporate mathematics outside the classroom. (For example, MathCounts, math club, etc.)
- 3.) Provide 4 letters of recommendation one each from an administrator, parent, colleague, and student or former student. Recommendations must be dated and contain contact information for the writer. They are limited to one page, double spaced, one inch margins, and must be in 12 font. It is important that the information be as detailed as possible to adequately evaluate each application/nomination.
- 4.) The completed resume and recommendations need to be included in one file in either a word or PDF file in the order they are outlined above and emailed to Paul Kuhlman at paul.kuhlman@k12.sd.us.

The packet must be received by **December 1, 2019**

- 5.) The recipient for the 2020 Daktronics Outstanding Mathematics Teacher Award will be announced at the **2020 SD STEM Ed Conference in Huron SD (hosted by SDCTM and SDSTA)**.
- 6.) Completed applications will be kept on file for 3 years from the date of original submission.
After 3 years, applicants must complete and submit a new application to be considered.



2301 Research Park Way
Brookings, SD • 57006
605.688.6231
www.sdepscor.org

ABOUT US

The National Science Foundation (NSF) created the first Experimental Program to Stimulate Competitive Research (EPSCoR) program in 1980. Its success led congress to expand the program and since 1990 create EPSCoR-like programs in several federal agencies, including: USDA, NIH, DoD, DoE, NASA and EPA.

Now named the Established Program to Stimulate Competitive Research, EPSCoR identifies develops, and uses a state's academic science and technology resources to support its economic growth and promote a more productive and fulfilling way of life for its citizens. EPSCoR acts on the premise that universities, their science and engineering faculty, and their students are valuable resources that can influence a state's development in the 21st century. To achieve this goal, NSF provides lasting improvements to the state's academic research infrastructure that increase its national research and development competitiveness.

Research

- EPSCoR recognizes that universities are valuable resources. Their science and engineering programs, as well as faculty and students, are major assets to the state. Currently, SD EPSCoR supports facilities, faculty, students, and equipment at South Dakota Universities.
 - EPSCoR/IDeA universities, their faculty, and students are leading the way in the 21st century. These researchers are needed for the nation to meet its most pressing priorities in health, cyberinfrastructure, and homeland security. A broad science and technology base is especially important in an era when different regions have unique issues involving resources, health, security, and the environment.
- Scientific and technological research cannot be limited to a few states if the nation is to maintain world leadership and reach its full potential. Along with stimulating competitive research and promoting excellence in education, EPSCoR/IDeA improves access to that high-quality education and cutting-edge research, expands economic opportunity, creates jobs, and improves the quality of life across the nation.

Economic Development

- To nurture economic development in South Dakota, SD EPSCoR partners with the SD Governor's Office of Economic Development, the SD Office of Commercialization, and the SD Board of Regents. Through these collaborations business/technology education programs are created.
- Global competition demands a highly skilled workforce, and the country's economic future depends on scientific and technological advances everywhere, not just in a few places. Through EPSCoR/IDeA, participating states and territories are building a high-quality, university-based research infrastructure, a backbone to their scientific and technological enterprises, and a strong and stable economic base into the next century.

Education

SD EPSCoR promotes and supports educators, research faculty, and programs in the areas of science, technology, engineering, and mathematics (STEM).

- Advances in science and engineering are essential for ensuring America's economic growth and national security. During the next decade, U.S. demand for scientists and engineers is expected to increase at four times the rate for all other occupations. Today's high school students overall are not performing well in math and science, and fewer of them are pursuing degrees in technical fields.
- Outreach and informal science education activities engage more than 35,000 SD residents per year.

Diversity

The SD EPSCoR diversity plan represents bold, catalytic, strategic and systemic approaches to recruiting and supporting citizens of all races, ethnicity, nationality, gender, age, economic status, and sexual orientation within STEM. With a small population, South Dakota must take advantage of all its human resources if it is to advance.

SD EPSCoR Diversity Goals and Strategies:

- Develop a mechanism for sharing successful diversity initiatives and discussing policies, progress and barriers statewide. The annual SD EPSCoR Diversity Summit will be a venue for sharing and linking promising, but currently disconnected diversity initiatives.
- Develop meaningful partnerships between state government, K-12, higher education and the private sector to strengthen STEM education for diverse audiences and to diversify STEM-related workforce. Utilizing statewide initiatives to improve instruction for underrepresented groups and those in remote regions as well as diversifying SD's STEM workforce.



THE SANFORD PROMISE

Inspiring the next generation of scientists.

2018-19 K-12 SCIENCE EXPERIENCES

The mission of the Sanford PROMISE is to increase the community's understanding of science and their awareness about the benefits of research to our society. Visit us online at: www.sanfordresearch.org/education, connect with us at 605.312.6417 or SanfordOutreach@sanfordhealth.org to learn more about these programs or to inspire us with your own ideas for connecting youth, educators, and scientists!

Visit the **Sanford PROMISE Community Lab** for a tailored, hands-on experience in the heart of Sanford's working research facility to learn what it takes to be a biomedical scientist through hands-on activities, tours, and interactions with Sanford scientists.

Middle Level Biomedical Exploration

In early March we set aside a week for large middle school groups to learn about how biomedical scientists work towards finding the *cure to cancer*.

Research Shadowing

Students age 16 and older explore a working research lab environment and learn about the qualities required for a career in biomedical research. Teachers are invited to shadow too!

PROMISE Scholars

Immersive research experience for rising high school seniors. Juniors apply in fall 2018 for summer 2019 experiences.

Science Discovery Days

In November 2018 and April 2019, we invite high school sophomores and juniors to connect with regional scientists and biomedical researchers through interactive career presentations and exhibits from area industries and universities.

Elementary Inquiries

K-6th grade students practice the research process with hands-on activities. *Science to make you sweat* (K-2 grade, October 2018); *Diabetes: Finding the Cure* (3-6 grade, December 2018); *Power-up Brain Science* (K-2 grade, January 2019); *Enabling Technologies* (3-6 grade, May 2019).

Check the website often for student and teacher workshops in summer 2019 and additional events and opportunities.

 Like Sanford Research on Facebook

 Follow @SanfordPROMISE on Twitter

SANFORD
RESEARCH



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
OGHS
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Sioux Falls, SD 57105

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