

# Wahpe Woyaka pi

( Talking Leaf )

South Dakota Council Teachers of Mathematics Newsletter

## Presidential Ponderings

Greetings to All

The summer proved to be informative, productive, and relaxing. Spending time with family and friends is always a favorite activity of mine but it would not be complete without having the opportunity to grow professionally while participating in a couple of math projects. In June, over 45 math educators and other stakeholders met in Pierre to review comments received from educators regarding the Mathematics Content Standards for South Dakota for each grade level and made revisions if necessary. Participants exhibited a passion for their craft that is beyond compare and their professionalism and dedication will no doubt impact mathematics education in South Dakota for years to come. Throughout the whole process the guiding question was “What is best for South Dakota students”? The next step in the process is for the Department of Education to receive public comment during the 2017-2018 school year. The revised standards will be presented to the SD Board of Education in Spring 2018 for consideration. The goal is to begin “capacity building” (implementation of the new standards) in 2018 with full implementation of the revised mathematics standards in the school year 2020-2021. The new assessment instrument is planned for use in Spring 2021 with grades 3-8, and 11. You can access the proposed timeline online at <https://doe.sd.gov/contentstandards/documents/Strd-Timl.pdf>.



In April, Smarter Balanced and Measurement Incorporated held an item writing workshop in Chicago. The intent was to help prospective item writers become more aware of the different claims, targets, and item specifications aligned to Common Core State Standards. South Dakota was represented by five classroom teachers. The high school group facilitator claimed she was impressed with the hard work and dedication exhibited by two of our state’s teachers because they submitted more than 150 items for review. In July, Smarter Balanced and Measurement Incorporated held an item review workshop in St. Louis. In grade-level groups we discussed more than 125 items. We were charged with making sure each item was clear, concise, correct and aligned before it entered the pool of field test items. This process was time consuming but I left with a greater knowledge of the Smarter Balanced Mathematics Quality Criteria such as claims, targets, item specifications, standards, depth of knowledge, average quintile, and accessibility. If you have not been involved in item writing, item review, data review, or setting cut scores and you would like to “dip” your toes into the water so to speak, contact the South Dakota Department of Education. I know that Smarter Balanced likes to recruit a certain percentage of people for its projects that are new to the process. In Chicago and St. Louis, they had a nice mix of beginners and veterans of the item writing/review processes. The Smarter Balanced Digital Library is also going through a major clean-up making it more accessible and usable for teachers. This work is to be continued in August, October, and November.

In July, more than 26 teachers attended SDCTM’s Summer Symposium. This summer’s topic was “Collaborative Classrooms In Action.” Participants learned how they could modify their teaching practices to promote classroom collaboration through the use of activities and games. Chris Mikles provided a wealth of information, ideas, and an appropriate amount of time to explore during the day-long symposium held at Dakota Wesleyan University.

*continued*

FALL 2017-2018

## Wahpe Woyaka pi

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### Calendar Notes:

- *SDCTM/SDSTA Conference February 8-10, 2018*
- *PAEMST Nominations Due April 1, 2018*
- *PAEMST Applications Due May 1, 2018*



## Presidential Ponderings, *continued*

Is there a specific topic that would entice you to join us at next year's SDCTM Symposium? Is there a specific presenter you have enjoyed and would like to hear again? What would you like to see for next year's SDCTM Symposium? I have received a request to host a future symposium West River. Would there be enough interest in having a two-day Symposium, one day held East River and one day held West River? What do you think? Please send your ideas and suggestions to me ([Allen.Hogie@k12.sd.us](mailto:Allen.Hogie@k12.sd.us)) and symposium chairman Steve Caron ([steve.caron@k12.sd.us](mailto:steve.caron@k12.sd.us)).

Speaking of ideas, please consider presenting a session for February's 26th Annual SDCTM/ SDSTA Professional Development Conference to be held February 8-10, 2018. Think about some of your great classroom ideas and put together a session to share with teachers at your grade level. If you feel a little intimidated, just know that at our conference you can always count on a friendly and supportive audience. A successful conference depends on quality sessions! Speaker proposal forms are available online at [www.sdctm.org](http://www.sdctm.org). Proposals are due November 1, 2017 (late proposals will not be considered), and can be submitted electronically. A link to the proposal form is at the top of the SDCTM homepage or you can go to the "Annual Conference" page at [www.sdctm.org](http://www.sdctm.org) for more information and links to submit your proposal(s).

## SDCTM/SDSTA Registration Options

This year, there will be two options for advance registration for the 2018 SDCTM/SDSTA Joint Professional Development Conference (JPDC). 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 or on page 20 of this newsletter and mail it with your payment to Steve Caron.

**Advance Registration Option 2:** You may register on-line with a google form (available soon) on the SDCTM and SDSTA websites. This year, payment through PayPal, will be **required** at the time of **registration**. There will be a \$4 processing fee added to on-line registrations to cover PayPal transaction fees. *The JPDC Executive Board strives to keep costs at a minimum for the conference and thus will need to pass additional fees incurred along to you.*

**On-site registration** will continue to be an option, but will be charged a higher rate. Due to changes at the Huron Events Center, meal counts **must** be turned in one week prior to the conference. The registration committee must estimate (and pay for) lunches prior to processing on-site registrations. Consequently, on-site registration will be charged a \$25 late registration fee. *In the past, lunch counts could be turned in as late as 10:00 am each day, and the deadline for banquet meals was Friday at 1:00 pm. New management timelines for meal counts are much more strict.*

*"Think about some of your great classroom ideas and put together a session"*

*Register for the conference by printing the form, on-line (\$4 fee) or on-site (\$25 late fee)*



## K-5 Corner

Welcome back to another new year! Summer just flew by, and we are now getting settled back into our classrooms and building a classroom community that will foster learning this year. With that, we are also jumping back into our curriculum to support our students in math. Each year as we begin, we determine the strengths and weaknesses for each of our students and determine our next steps in order to support all levels of learning in our classroom. For some that may mean interventions to help them gain a stronger understanding of a concept, and for others that may mean extension and enrichment opportunities to help them go deeper.

One of my new favorite lessons for the beginning of the school year is a simple “apple” activity that allows students to work with numbers, and allows me the opportunity to determine where my students are at. In small groups or one on one each student gets a paper print out of a tree and two sided counters (red and yellow). Students put a specific number of “apples” in a cup and shake them up before dumping them onto their tree. They then determine how many yellow apples they have and how many red apples they have. This seems like a simple activity, but the insight gained was very helpful.

I was able to see if students had one to one correspondence and understood the counting sequence. I was also able to see if students could sort their apples into two groups without support or prompting. For some students they were able to see that both groups could be added together to get the total number of apples. For some, they were even able to write an equation that would support the work they were doing.

In a quick ten minute activity I learned a lot about each of my students. Sometimes we try and make activities so cumbersome and time consuming that we miss prime opportunities to learn about our students. The best part about this activity is that it appeared to be the same for every student, but the outcome was very different depending on their level of knowledge. They had fun playing, and I had an opportunity to listen to each of them describe what they were doing. This year I want to create more opportunities such as this to allow myself to have a quick check of where students are at, in order to determine where we need to go.

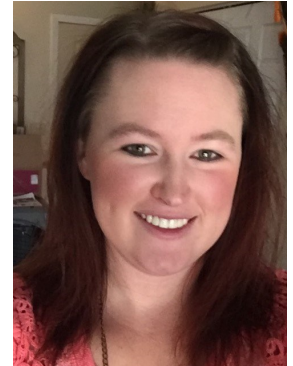
I hope everyone is off to a great start. I am looking forward to another great year!

Merideth Wilkes  
SDCTM Elementary Liaison

## 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 will be awarded at the annual SDCTM/SDSTA Conference.

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.



*“I strive to provide several different hands on opportunities each day while students explore the world of mathematics.”*



## Higher Ed Viewpoint

I send you greetings from our universities and trust that your year is now off to a solid start. Hopefully, by now, students have settled into a consistent routine of school and study in the classrooms for you.

I must sound like a stuck record and do apologize for that. I dream of a day when we can focus on our majors instead of the developmental and entry level math courses. And to be honest, our campuses do revise curriculum for those students as well. However, mathematics continues to be the cited culprit as the one subject prohibiting our students from graduating and achieving their dreams. This is absolutely true as the data will provide. To that end, I believe the Math Discipline Council, which is a committee of 2 faculty from the math departments at each institution, will likely be focusing on this topic again in the upcoming year. Math pathways and co-requisite models will be absorbing much of our time in the upcoming year for this committee. Math pathways is structured around finding a general education sequence of math courses that is suited for the various majors our students declare, and the co-requisite model is designed around putting students in the college credit bearing math courses with an emphasis of teaching the developmental skills they need, “just in time” or in extra sessions. The math pathways concept is centered on students having a vested interest in the math courses they are required to take for their degree and doing better because of it. The co-requisite concept is that students will do better in the college bearing course instead of the developmental course due to it “counting” on their transcript and also as a way to reduce costs. Obviously there is a limit as to what students can move up to the co-requisite model as they must have some background to be successful in the next math course. All of these intricacies will be looked at in the upcoming year.

Hopefully we can meet again in Huron at our annual joint conferences and touch base once again. I look forward to hearing your comments and concerns as we take the baton you pass us in the last leg of teaching math to our young adults.

Best wishes,

*Dan Van Pelt*

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

## 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).



*“Math pathways is structured around finding a general education sequence of math courses that is suited for the various majors our students declare...”*





## A Word from Nicol

Fall is here! One of my favorite things to do as I travel is to watch the trees turn beautiful colors all along the roads and highways, and the colors are amazing again this year. This fall brings lots of travel as events happen across the state. In September and October, I will have visited Aberdeen, Pierre, Rapid City, Mitchell, Madison, Brookings, Chamberlain, and Sioux Falls. It is so great to be able to visit lots of towns, schools, and teachers!

The Proposed State Mathematics Standards made their first debut at the public hearing held during the South Dakota Board of Education Standards meeting in Aberdeen on September 18th. The standards were presented and two Aberdeen educators, Sandy Ullrich and Dena Sievers, graciously took professional time from their buildings to come and testify as proponents of the standards. The Proposed South Dakota State Mathematics Standards will be presented again at the next public hearing during the SD Board of Education Standards meeting on Monday, November 20th in Sioux Falls. If you would like to use professional time to attend the meeting and testify, please email me, and I can answer any questions you have and give you information about how the process works. If you are unable to attend the SD Board of Education Standards meeting, I still encourage you to give feedback through the public comment link here: <https://www.surveymonkey.com/r/MathPublicFeedback>. There will be two more public hearings, one in Pierre in January and the last one in Rapid City in March, where the Proposed State Mathematics Standards will be up for adoption. Your voice and expertise are so important in this process, and providing your own experience with the standards and the impact they have on your work as an educator is helpful to inform the SD Board of Education Standards and the public who attend the meetings. Thank you for all you do to make the South Dakota Mathematics Standards come alive for students in the classroom!

The Smarter Balanced Summative Assessment is many months away, but now is the time to think about how you prepare your students to demonstrate their understanding of mathematics. Smarter Balanced is actually an assessment system, which not only includes the summative assessment in the spring, but also optional (and free) interim assessments and a digital library full of resources. This system of assessments offers ways to formatively assess your students throughout the year to inform instruction and also offers teacher validated resources linked to our mathematics standards. If you are not using the interim assessments and would like to know more, start here: <http://doe.sd.gov/octe/Interim.aspx>. The interim assessments allow you to check student progress throughout the year with questions that are in the same format as the summative assessment that students will see in the spring. The interim assessments also allow students to become more familiar with testing using technology and with the rigor required on the summative assessment. As you progress throughout the year and notice a need for resources, check out the Digital Library. The resources in the Digital Library are continuously updated with new additions, and all have been teacher validated. You can find more information about the Digital Library and register yourself (for free) to use it here: <http://doe.sd.gov/assessment/DigitalLibrary.aspx>. If you would like more information about the Smarter Balanced Assessments or the Digital Library, please feel free to email me at [Nicol.Reiner@state.sd.us](mailto:Nicol.Reiner@state.sd.us).

Desmos and the Smarter Balanced Assessments have partnered together to provide calculator support to students during assessments. This year students who are taking the interim assessments or the summative assessment in the spring will be using the Desmos calculator embedded into the assessment.



*“I would like to share some things that I have learned in 2016, along with a challenge to tackle.”*

*continued*



## A Word From Nicol *continued*

It would be a great idea to get your students used to using this great resource throughout the year so that they are familiar with the features of the Desmos online calculators when it is time to assess their learning. You can find the Desmos four function calculator, scientific calculator, and graphing calculator here: <https://www.desmos.com/>. If you haven't had a chance to check out all that Desmos offers for teachers, I also encourage you to check out the Desmos Classroom Activities webpage, filled with so many ready to use activities on mathematics topics and standards. You can find the Desmos Classroom Activities webpage here: <https://teacher.desmos.com/>.

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

Nicol Reiner  
SD State Math Specialist



## SDCTM Business Meeting

Make plans to attend the annual SDCTM business meeting to be held in conjunction with the SDCTM/SDSTA Joint Conference in Huron. The meeting will be held on Friday Feb. 9, 2018. There will be several items of business to conduct including plans for the 2018 summer symposium. Please contact SDCTM President Allen Hogue ([allen.hogie@k12.sd.us](mailto:allen.hogie@k12.sd.us)) if you have items that you would like added to the agenda. All members are encouraged to attend and make their opinions known.



## Share the Classroom Treasures

"Sharing" the treasures has been quite popular at the SDCTM/SDSTA Conference. Don't forget to start a box of classroom treasures for the 2018 conference.

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



*"...a great idea to get your students used to using ... the Desmos online calculators..."*



## Mark's Thoughts

Graphing equations is a skill that high school students are expected to develop year after year. Algebra 1 students dive deeply into graphing linear and quadratic equations. Geometry students extend their linear equation knowledge when learning about slopes of parallel and perpendicular lines. Algebra 2 students revisit quadratic equations and begin to focus on graphing exponential, logarithmic, and root equations. Students in classes beyond Algebra 2 learn about graphing rational equations, conic sections, and trigonometric equations.

### Desmos Marbleslides + Teacher Pacing = School-Wide Challenge

Desmos Marbleslides is “a delightful way for students to explore connections between the graphs and equations” (<http://learn.desmos.com/marbleslides>). If you have never experienced Marbleslides before, I invite you to visit <https://teacher.desmos.com/marbleslides-lines> to learn more. The Desmos teacher site (<https://teacher.desmos.com>) has Marbleslides activities that focus specifically on one type of equation – linear, quadratic, etc.

I have used the Marbleslides activities in my classes for the past three years. Many students love the activities and some have asked if they could do more. So this year, I am offering a school-wide Marbleslides Challenge. Any of the 900+ students at Brookings HS are invited to join. The Challenge will begin around the 10<sup>th</sup> of October and will run through the end of April.

The Challenge works like this: The first week, I will launch the activity and the first three challenges. Each week thereafter, I will unlock another challenge using Desmos teacher pacing (see image below). At the end of each week, I will look to see who has completed the weekly challenge. Assuming multiple students have completed the challenge with different solution methods, I will judge the submissions and pick one or two to feature on my classroom wall.

Since this is my first year doing this sort of thing, I don't know how many students will participate. I will be asking the other teachers in my department to invite their students to participate. My hope is that I have students from all different classes (algebra 1, pre-calculus, etc) participating and students in the upper level classes are being creative and using non-linear equations as part of their solutions. That way, I will be able to feature graphs that include many different types of equations.

If you would like to try the challenges for yourself, follow this link:  
<http://bit.ly/SDCTM-Marbleslides>.

If you would like to host your own Marbleslides Challenge, you can access the teacher activity here: <http://bit.ly/Desmos-MarbleslidesChallenge>.

If you have any questions about the tools discussed in this article, please feel free to reach me at [mark.kreie@k12.sd.us](mailto:mark.kreie@k12.sd.us). I would be more than happy to help you out.

Mark Kreie  
NCTM Representative

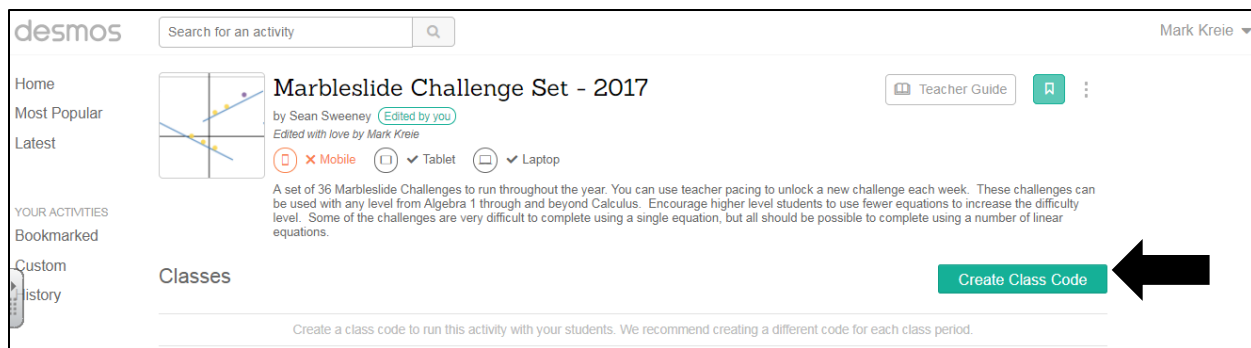
\*\* Screen shot graphics with captions are on page 8 & 9.



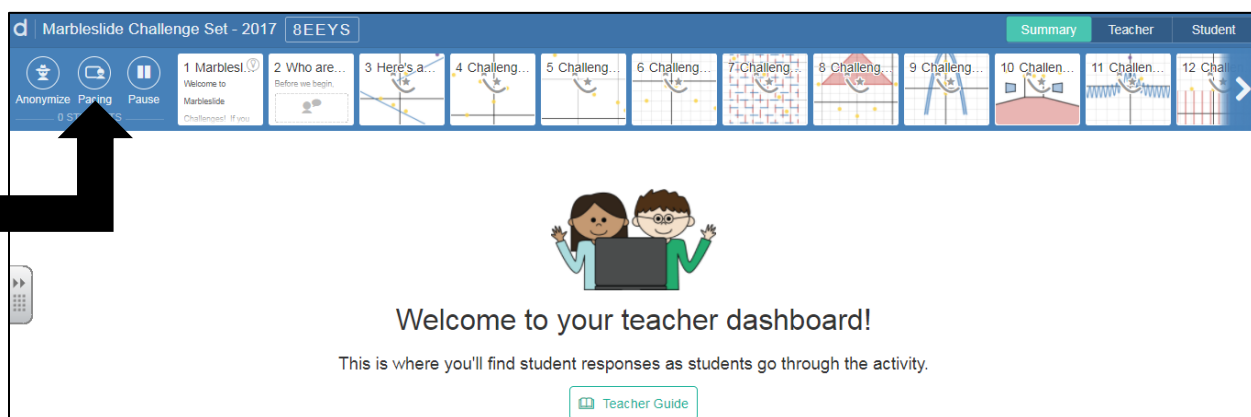
*“I will be able to feature graphs that include many different types of equations...”*



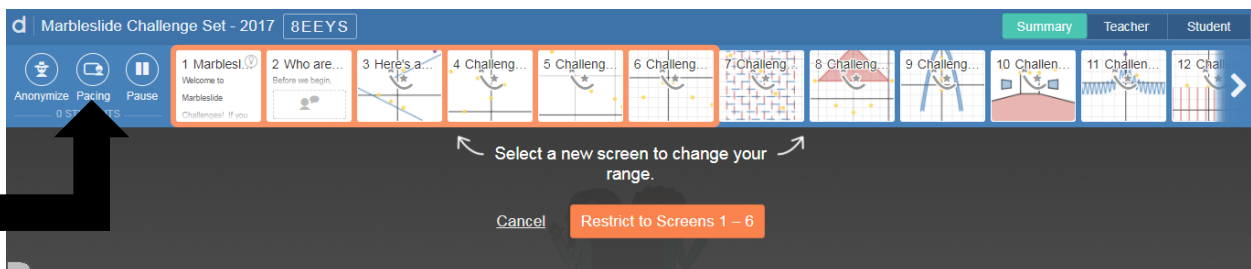
desmos



**Figure 1:** To set up your own challenge, the link above will take you here. You will need to create a class code for your students.



**Figure 2:** The teacher dashboard is where you can monitor student progress. As students enter the challenge, their names will appear. This is also where you can control the teacher pacing.



**Figure 3:** Teacher Pacing Tool -- Limit the students to specific screens.



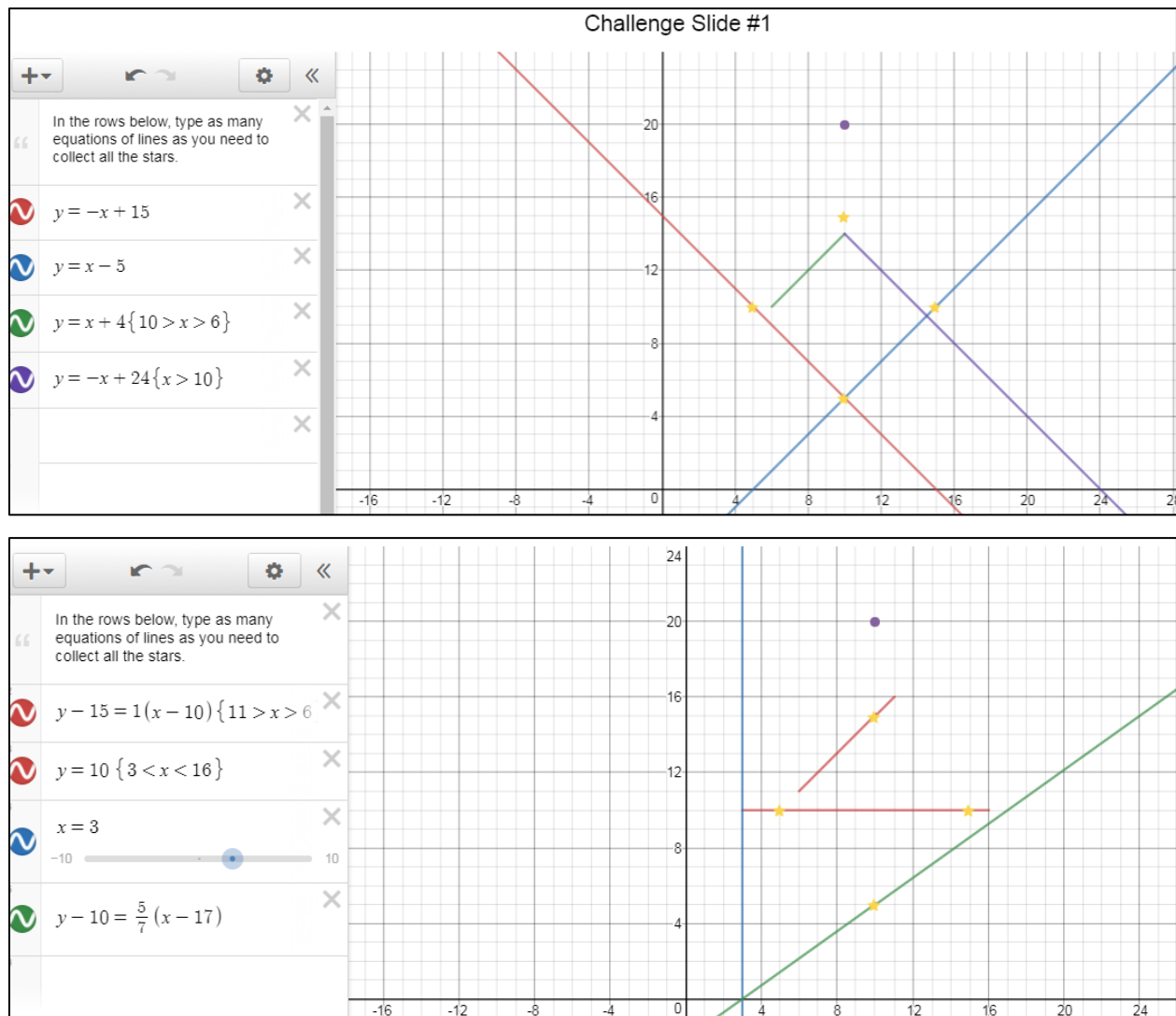


Figure 4: Examples of two student solutions to the same Marbleslide problem.



## Presidential Awards Nominations

### PAEMST Background:

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 elementary teachers in grades k-6. The application deadline will be May 1, 2018. Nominations will begin to be accepted in late October or early November. You can nominate a deserving teacher by visiting [www.paemst.org](http://www.paemst.org) once the portal opens this fall.

### 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.

**Do you know an outstanding mathematics or science teacher? Nominate them this fall.**

If you have any questions, please contact:  
 Allen Hogie  
 SD PAEMST Mathematics Coordinator  
[Allen.Hogie@k12.sd.us](mailto:Allen.Hogie@k12.sd.us)



*Rewarding & Inspiring*  
**Great Teaching**

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## Marian Fillbrandt Scholarship

As the 2018 South Dakota Science Teachers Association and South Dakota Council of Math Teachers Joint Professional Conference approaches, I am already gearing up for the opportunity to spend time learning from fellow teachers and sharing ideas with each other. This conference is a great place to find resources, network, and give yourself fresh ideas that we all need in February, and I look forward to it every year. If you are lucky enough for your district to cover costs for your PD, congratulations! You can feel free to skip the rest of this article. If you aren't so lucky and are concerned about costs for this conference, read on.

First-year teachers, if you are unsure of whether or not this conference is for you, this is the year to try it out! The Jim Goehring and Ann Veitz Future Leaders Scholarship is available to all first-year math and science teachers in South Dakota. The application is available on the SDSTA and SDCTM websites (and on pg ,18 of this newsletter) and simply requires your building principal to verify that you are indeed a first-year teacher. Attendees will still need to register themselves for the conference, pay a small dues to join SDSTA or SDCTM, and travel to Huron, but the conference registration fee is covered, as long as the registration deadline is met. Registration is due by January 15, 2018.

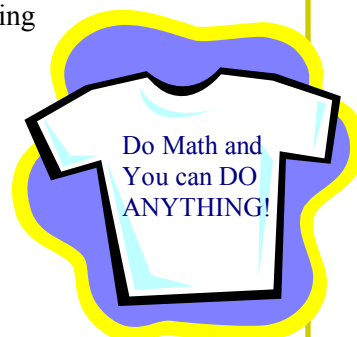
Second-year through fifth-year teachers are eligible to apply for the Marian Fillbrandt Scholarship. Fillbrandt graduated from SDSU with a mathematics degree and spent many years teaching math and science. She established the Fillbrandt endowment in order to help future math and science teachers. This scholarship provides a \$400 stipend to defray the costs of attending the conference, including registration, accommodations, and substitute teachers if districts will not provide one. This scholarship will be awarded to a number of recipients to allow teachers, particularly in rural areas, to spend time interacting with other teachers with similar interests. A link is available on the SDSTA and SDCTM websites to apply.

I hope that you will join your fellow math and science teachers at the annual conference for a weekend of valuable professional development. Visit the SDSTA and SDCTM websites for more information about the conference itself and funding opportunities.

Alison Bowers  
8+12 Science  
Hanson School District

## 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!



*“This conference is a great place to find resources, network, and give yourself fresh ideas...”*

## Pool Noodle Fraction Fun

How many times have you seen this classic student misconception?

$$\frac{1}{2} + \frac{1}{3} = \frac{2}{5}$$

It is a persistent error that indicates lack of conceptual understanding. Even though students begin their experience with fractions in grade three, culminating with rational expressions in high school\*, this error never seems to completely go away. Far too many students are simply missing the concept.

A simple and inexpensive conceptual model built from pool noodles might help student to overcome this misconception. Cut noodles into 12 inch lengths. One noodle is the whole. Use a kitchen knife to cut the others into appropriate equal parts and label accordingly.

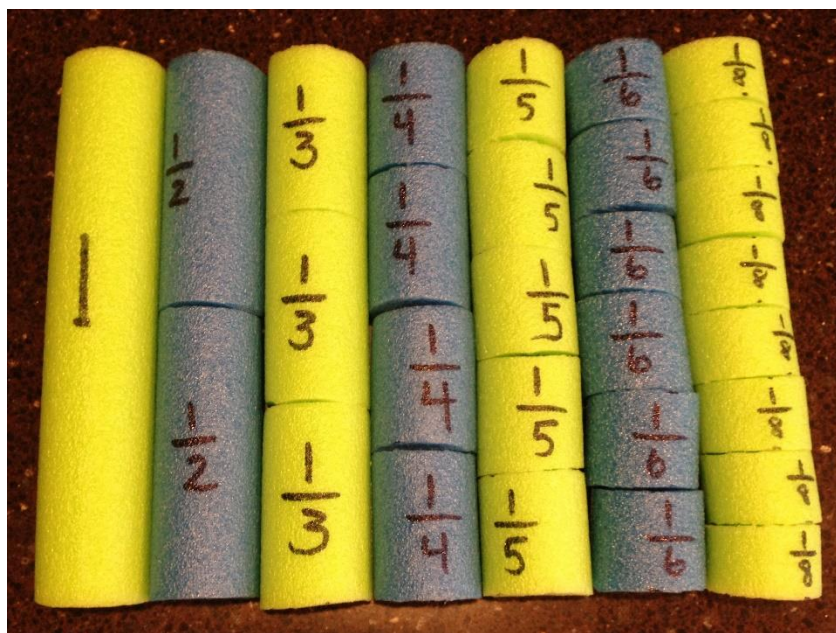


Figure 1: Pool noodles cut into fractional parts

Table 1: Cutting lengths

Unit	Length (inches)
One whole	12
1/2	6
1/3	4
1/4	3
1/5	2.4 **
1/6	2
1/8	1.5

Beginning with like denominators in grade three, student move gradually to unlike denominators by grade five. As students build conceptual understanding; they are no longer relying on “tricks” and memorized procedures. Using concrete representations will help students build conceptual understanding of the relationships between the whole, fractional parts, equivalent fractions, and denominators. When introduced to rational expressions in high school algebra, the same conceptual understandings apply. By building conceptual understandings early, students will be more successful with subsequent fraction work throughout their mathematical careers.

From the example above: When students add fractions, they can use noodles to model the process. It is obvious from fig. 2 that  $\frac{1}{2} + \frac{1}{3} = \frac{2}{5}$  is false! Using the model, students can select equivalent fractions to determine that the correct answer is actually  $\frac{5}{6}$  (fig. 3).

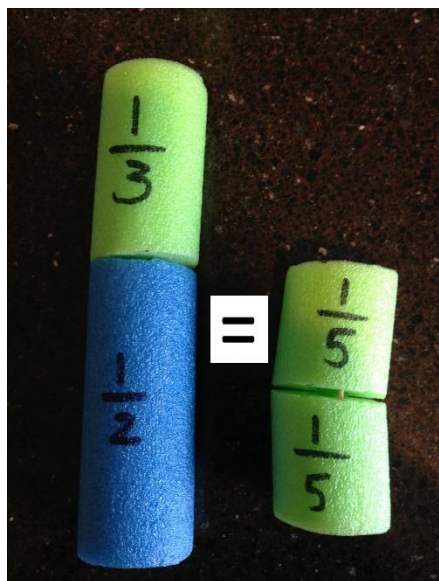


Figure 2: *Wrong!*

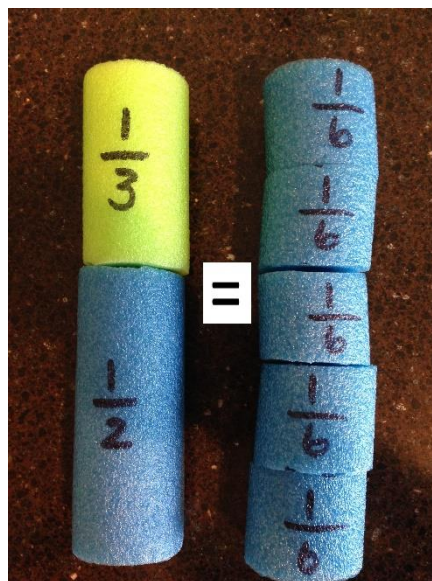


Figure 3: *Correct!*

Many retailers have put their pool supplies on clearance this time of year. For a dollar or two, each student or group of students would have hands-on access to a concrete conceptual fraction model. A small investment now could reap large dividends in conceptual understanding.

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

\*3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

4.NF.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as  $\frac{1}{2}$ . \*

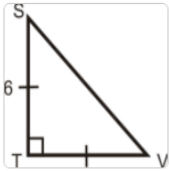
5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

5.NF.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem.

HS.A -APR.6 Rewrite simple rational expressions in different forms; write  $\frac{a(x)}{b(x)}$  in the form  $q(x) + \frac{r(x)}{b(x)}$ , where  $a(x)$ ,  $b(x)$ ,  $q(x)$ , and  $r(x)$  are polynomials with the degree of  $r(x)$  less than the degree of  $b(x)$ , using inspection, long division, or, for the more complicated examples, a computer algebra system.

\*\*2.4 inches is just a little more than  $2\frac{3}{8}$  inches.

The following activity was created in DESMOS for use as a pre-assessment in PreCalculus. This activity requires students to have a laptop and access to the internet. The nine problems were chosen based on learning objectives for the first chapter to be covered in PreCalculus. An extension of this activity may include having students take a diagram and write their own “Two Truths and 1 Lie”.



## 2017 PreCalc SLO Two Truths & One Lie

CLASS CODE

### Lie

This activity is intended to elicit evidence of prior knowledge as students enter a PreCalculus class.

### Activity Checklist

- Complete the activity using student preview.
- Identify your learning targets for the activity.
- Determine the screens where you'll bring the class together using Teacher Pacing and Pause Class. What will you discuss on those screens?
- Anticipate screens where students will struggle, then plan your response.
- Plan a challenge for students who finish the activity quickly and successfully.
- Make yourself available during the activity to students for individual help and questions when appropriate.
- Write out your summary of the activity's main ideas. How will you pull student work into that summary? Which parts of the activity can you skip to ensure that summary receives sufficient time?

### Two Truths & One Lie



Image Description:  
Describe this image for students who are visually impaired.

NOTE

There are three statements below about the right triangle.  
Two are true and one is a lie.  
Identify the lie.

MULTIPLE CHOICE

EXPLAIN SIMPLE MULTI-SELECT

$\sin A > \cos A$  ×

$\tan A > \cot A$  ×

$\sec A < \csc A$  ×

Show students their classmates' responses

## Two Truths &amp; One Lie



IMAGE

Image Description:  
Describe this image for students who are visually impaired.

NOTE

There are three statements below about the right triangle.  
Two are true and one is a lie.  
Identify the lie.

MULTIPLE CHOICE

EXPLAIN SIMPLE MULTI-SELECT

$\cos C < \cos T$

$\sin C > \cos T$

$\sec C > \cot T$

Show students their classmates' responses

## Two Truths &amp; One Lie



IMAGE

Image Description:  
Describe this image for students who are visually impaired.

NOTE

There are three statements below about the right triangle.  
Two are true and one is a lie.  
Identify the lie.

MULTIPLE CHOICE

EXPLAIN SIMPLE MULTI-SELECT

$\cos C > \cos(\pi/2 - C)$

$\sec C < \csc(\pi/2 - C)$

$\cot C = \tan A$

Show students their classmates' responses

## Two Lies &amp; One Truth



IMAGE

Image Description:  
Describe this image for students who are visually impaired.

NOTE

There are three statements below about the right triangle.

Two are lies and one is true.

Identify the true statement.

MULTIPLE CHOICE

EXPLAIN SIMPLE MULTI-SELECT

If  $AC = 2$ , then  $BC = 4$

If  $BC = 5$ , then  $AB = 2.5$

If  $AB = 9$  and  $AC = 12$ , then  $BC = 15$

Show students their classmates' responses

## Two Truths &amp; One Lie



IMAGE

Image Description:  
Describe this image for students who are visually impaired.

NOTE

There are three statements below about the right triangle.

Two are true and one is a lie.

Identify the lie.

MULTIPLE CHOICE

EXPLAIN SIMPLE MULTI-SELECT

$m\angle S = 45^\circ$

$\sin S > \sin V$

The length of the hypotenuse is  $6\sqrt{2}$

Show students their classmates' responses





## Two Truths &amp; One Lie



NOTE

There are three statements below about the measures of the given special angles.

Two are true and one is a lie.

Identify the lie.

MULTIPLE CHOICE

EXPLAIN SIMPLE MULTI-SELECT

The sum of  $\pi/6$  and  $\pi/3$  radians is equivalent to 180 degrees.

$\pi/3$  radians is equivalent to 60 degrees

$\pi/6$  radians is equivalent to 30 degrees

Show students their classmates' responses

## Two Truths &amp; One Lie



NOTE

There are three statements below about the measures of the given special angles.

Two are true and one is a lie.

Identify the lie.

MULTIPLE CHOICE

EXPLAIN SIMPLE MULTI-SELECT

$\sin((5\pi)/6) = \sin(\pi/6)$

$\cos 45^\circ = -\cos 135^\circ$

$\sin 45^\circ = \cos 45^\circ$

Show students their classmates' responses



## Two Truths &amp; One Lie



NOTE

There are three statements below.

Two are true and one is a lie.

Identify the lie.

MULTIPLE CHOICE

EXPLAIN SIMPLE MULTI-SELECT

The sine function is increasing on the interval from 0 to 90 degrees.

The tangent function is increasing on the interval from 0 to 90 degrees.

The cosine function is increasing on the interval from 0 to 90 degrees.

Show students their classmates' responses

## Two Truths &amp; One Lie



NOTE

There are three statements below.

Two are true and one is a lie.

Identify the lie.

MULTIPLE CHOICE

EXPLAIN SIMPLE MULTI-SELECT

's ecxcosx = 1'

't anxcscx = csc x'

'sin^2 x + cos^2 x = 1'

Show students their classmates' responses

**“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 Joint Conference of the South Dakota Council of Teachers of Mathematics and the South Dakota Science Teachers Association, is available to any teacher who meets each of the following criteria:

- Is a K-12 teacher of math or science who is in the first year of teaching in SD
- 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 Steve Caron along with the regular conference registration form which is available at [www.sdctm.org](http://www.sdctm.org).

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**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>
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**2018 SDCTM/SDSTA JOINT CONFERENCE**

Conference information and program booklets will be available online at [www.sdctm.org](http://www.sdctm.org) and [www.sdsta.org](http://www.sdsta.org)

**ADVANCE REGISTRATION**

Crossroads Events Center, Huron South Dakota  
February 8-10, 2018 1-800-876-5858

*Download this form. Please print clearly. Postmark by January 15, 2018. After this date, please register on-site (+\$25).*

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

*Please check the appropriate categories for membership, conference registration, and payment.*

**1. SDCTM/SDSTA MEMBERSHIP(s) and DUES**

*Please check the appropriate categories. You may join one, both, or neither organization.*

<b>Begin/renew SDCTM (math) for one year</b>	<b>Begin/renew SDSTA (science) for one year</b>
_____ 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](http://www.sdctm.org) for details.*

**2. CONFERENCE ADVANCE REGISTRATION**

**On-site (late) registration will be available: additional \$25 cost.**

*Please check 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

<b>SDCTM or SDSTA Member</b>	<b>Non-Member</b>	<b>Student Member</b>
_____ One day \$50	_____ One day \$100	_____ One day \$15
_____ Two days \$75	_____ Two days \$125	_____ 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.*

*SDCTM 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 (+\$25)	\$ _____

**TOTAL ENCLOSED \$ \_\_\_\_\_**

*Requests for refunds must be received by January 20, 2018*

**4. SEND THIS FORM WITH PAYMENT**

**Steve Caron**  
907 South 16<sup>th</sup> Street School phone (605) 725-8208  
Aberdeen, SD 57401 Home phone (605) 226-2292

Email questions to: [steve.caron@k12.sd.us](mailto:steve.caron@k12.sd.us)

*Advance registration must be postmarked by **January 20, 2018.**  
After this date, please register on-site (Additional \$25 fee).*

Please check here if you have also submitted a speaker proposal form for the 2018 Conference.



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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