



# Wahpe Woyaka pi

( Talking Leaf )

South Dakota Council Teachers of Mathematics Newsletter

SUMMER 2019-2020

## Presidential Ponderings

Happy Summer!

Wow! This year has been a roller coaster of a ride and it is not even over! Luckily, summer eventually came, and that roller coaster slowed down a bit. I do not know about you, but I have been enjoying some downtime this summer. I have taken my kids to the lake, enjoyed a little too much Netflix, and have a respectable tan. Within the next few weeks, our lives are going to take another turn and we are going to be back in front of students. For some, it will be in a classroom. For others it will be remotely through a computer screen. Whether in person or virtually, we have a momentous task in front of us.



Our students are counting on us to provide the best mathematical education we can in these uncertain times. I do not want to belabor this point too much, but instead pass on some advice I heard during a seminar I attended a couple of weeks ago. The presenters were from San Francisco and their presentation was called Detracking: Believing in the Brilliance of All Students. Although they were talking about detracking, it was a momentous task that they had to overcome. They started by figuring out their guiding principles. For them it was:

1. All students can and should develop a belief that mathematics is sensible, worthwhile, and doable.
2. All students are capable of making sense of mathematics in ways that are creative, interactive, and relevant.
3. All students can and should engage in rigorous mathematics through rich, challenging tasks.
4. Students' academic success in mathematics must not be predictable on the basis of race, ethnicity, gender, socioeconomic status, language, religion, sexual orientation, cultural affiliation, or special needs.

I loved these and it got me thinking. This year will be different. It will be challenging. It will be historic. There is no doubt about that! For me and many others, the most unnerving thing is having no control over how this year will go. Maybe instead of worrying about the things I cannot control, maybe I should find/revise my own guiding principles. This will help me focus my efforts this year so I can do the best I can for my students. No matter what, I can control my guiding principles and make decisions based on those.

On a lighter note, I also have some SDCTM news to share. First of all, we ARE planning on holding our Annual STEM ED conference in February. As of now, we are proceeding as normal. Be looking for emails and watching the website for times to register or to submit a proposal to present. YOU make the conference and we want it to be the best one yet. However, the board realizes that the COVID situation may upset our plans. We will be deciding this Fall and will make announcements if we need to cancel. If you register, and we cancel, you will be refunded.

The second piece of news is that this is an election year. Our elected members are the President-Elect, Vice President, Secretary, Treasurer, and NCTM representative. Job descriptions can be found on our website. If you have ever wanted to get more involved, now is the time! Becoming a SDCTM board member has been a wonderful experience for me. It has given me the chance to meet math educators from across this country. I have made new friends and it is always great to talk math with adults! If interested, please let me or Sheila McQuade know. If you have a friend that would be great in one of those roles, talk them into it.

I really hope you can enjoy the last little bit of summer! This school year is going to be another roller coaster ride. Deep breaths! WE got this!

Crystal McMachen  
SDCTM President  
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## Wahpe Woyaka pi

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### Calendar Notes:

- 2020 PAEMST Applications Due October 26, 2020
- 2021 PAEMST Nominations will open this fall.



## Musings from Sheila

As I write this, we are all preparing to return to teaching. For some, it will be face to face and for others it will be online or a mixture of the two. Either way, it will be much different than any other fall most of us have experienced. However, the basics remain the same—we show up to continue to teach, inspire, and love on our students. Thankfully we aren't reading essays, am I right? ;)

I think it's safe to say that we all agree that online teaching is much less effective and much less enjoyable than teaching face-to-face. We miss out on the personal interactions with our students and fellow staff. We miss out on the use of our fun math toys and experiments that we have done for so many years. But, a few things remain the same. We still are privileged to teach the same great concepts. We still get to help students discover their full math potential because there is no such thing as "being bad at math"—simply a lack of confidence. We still have those students that will continue to be little stinkers and not get their work done, which continues to present us with an opportunity to love on them all the more.

While online, half-online, all in person, etc. whatever it may be, will look different this fall, it will be an opportunity to find new ways to teach. I'm sure we all experienced this in some way this spring, but it only continues in the fall. I know that I have my favorite hands-on activities that I do each year, and I will miss them greatly, if the opportunity to do them is passed up. But, I enjoyed helping my students find different ways to use math in their everyday lives. For my Informal Geometry class, their spring extra credit was to get outside and take pictures of items that used the shapes we'd been studying. They could also take pictures of things in nature in which they could see one of those shapes. I then asked them to upload the pictures to an assignment tab in Google Classroom. It didn't require the level of mathematical calculation that is generally a part of an extra credit assignment...but with all of the screen time my students were experiencing, I wanted them to get OUTSIDE!

Now, this is not something that can be done alone, as we've all discovered. It was a great time of 'distance collaboration' and continues to be. I love an opportunity to share and to learn from my fellow math teachers. I look forward to continuing to share and welcome the many creative ideas our membership contributes. So while this may be a continuing challenging fall, it will also be a great opportunity for collaboration because as the saying goes, "it takes a village". We are our students' village, and we are each others' village as well. It takes all of us.

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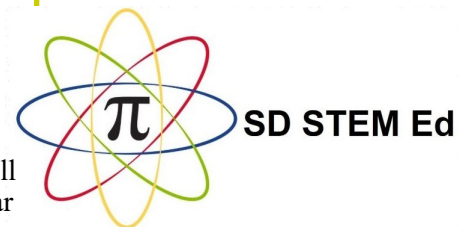
## 2021 SD STEM Ed Conference

As Crystal stated on page one, we ARE planning the 2021 conference. Registration will open in November. We will, once again, have tiered registration pricing. New this year ... team pricing! Teams of teachers teaching in the same district, on the same invoice and paid by the same district check will be eligible for a team discount! Look for more details in the Fall SDCTM and SDSTA newsletters.

Cindy Kroon, JPDC Conference Chair  
Sheila McQuade, JPDC Registrar/Treasurer



*"I even miss the ones that pushed my buttons each day."*





## K-5 Corner

Summer greetings!

I hope you all are well and enjoying the sunshine. I thought I would share with you a tool my students make for learning fractions every year, a few games we play, and the conversation and discovery that can come from these games.

I like to use student made fraction kits to reinforce what fractions are, and how they relate to a whole. This can definitely be used with students younger than 4<sup>th</sup> grade. This idea is borrowed from Teaching Arithmetic: Lessons for Introducing Fractions by Marilyn Burns, Math Solutions Publications.

Students should create their own kits since there are basic concepts about fractions to be learned from the process of creating the kit. Cut 12-by-18-inch construction paper lengthwise into 3-by-18-inch strips. For the fractions 1,  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ , and  $\frac{1}{16}$ , you will need 5 different colors. To include  $\frac{1}{3}$ ,  $\frac{1}{6}$ , and  $\frac{1}{12}$  you will need an additional 3 colors (for a total of 8 colors.)

- Ask students to take a strip of a particular color (that you choose), fold it in half, and cut it into two pieces. Have them label each piece  $\frac{1}{2}$  (and possibly also with the name ‘one half’) and discuss why this label is appropriate (because the pieces are the same size, each is one of the two pieces).
- Choose a color for a second strip and have the students fold and cut it into four equal pieces. Instruct students to label each piece  $\frac{1}{4}$  (and possibly with the name ‘one fourth’). Have students explain why the label is appropriate.
- Have students fold, cut, and label a third strip in eighths and a fourth strip in sixteenths. (For the sixteenths, students may need to fold a strip in half, cut it, and then fold each half into eighths.)
- Students leave one of the strips whole and label it 1 or  $\frac{1}{1}$  - ask students first what they should label it.
- For creating thirds, students would probably be inaccurate in folding. One strategy is to measure the strip, divide the length into three equal segments, and then measure and cut and label. For sixths, they can cut thirds and then fold the thirds in half. (The issue of why this works would be a good topic for class discussion.) Use a similar process for twelfths.

Lindsey Tellinghuisen  
SDCTM Elementary Liaison  
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*“...you can have your students dance to their favorite tunes by following cues for feet position in terms of angle pair relationships.”*

*See next page for games played with fraction kits.*



## K-5 Corner — *continued*

### Games to play with the fraction kits:

Borrowed from Textteacher

First: You can make a fraction cube using a die and colored dots. Write  $\frac{1}{2}$  on a yellow dot,  $\frac{1}{4}$  on a red dot,  $\frac{1}{8}$  on two blue dots, and  $\frac{1}{16}$  on two green dots. Stick the dots to the die to make your fraction die. You will need one die for each group. All games can be played with partners or small (4-5 students) groups.

#### *Cover Up*

This game can be played with two or more players. The object of the game is to be the first one to cover your entire whole ( $\frac{1}{1}$ ) strip.

Rules:

1. Students start with the whole ( $\frac{1}{1}$ ) strip in front of them.
2. Student rolls the fraction cube.
3. The fraction on the cube tells them what piece to place on their whole.
4. No overlapping pieces are allowed. If the fraction you roll won't fit on your strip, you lose that turn.
5. You have to fill your strip exactly. If you only have  $\frac{1}{16}$  left,  $\frac{1}{2}$  won't do.

#### *Uncover*

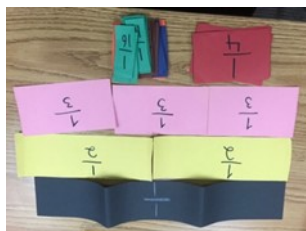
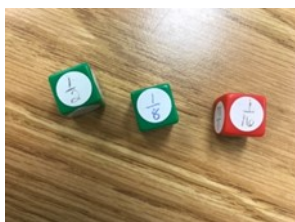
This game is a good game to introduce equivalent fractions.

Rules:

1. Students start with the whole ( $\frac{1}{1}$ ) strip in front of them. They cover their whole strip with the two  $\frac{1}{2}$  pieces.
2. Student rolls the fraction cube.
3. A student has three options on each turn. They may remove a piece from the whole (only if they have the exact piece they rolled), they may exchange a piece (for example, they can take off a  $\frac{1}{2}$  and replace with one  $\frac{1}{4}$  and two  $\frac{1}{8}$ ), or they may skip their turn.
4. If the student chooses to exchange on a turn, they cannot remove any pieces from the whole, they can only exchange equivalent pieces.

As students become fluent with their playing, you can start to have them write equations to match their thinking after the cover the whole. I only play these games with the half, fourth, eighth, and sixteenth pieces.

Lindsey Tellinghuisen  
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*“...you can start to have them write equations to match their thinking after the cover the whole.”*

Editor's note:

Lindsey had submitted this for the Spring edition of the newsletter, but in the craziness that was the spring semester, I “misplaced it” and did not publish it. My apologies to Lindsey and to all who would have benefited from this wonderful activity!





## 9-12 Spotlight

### Card Sorts in the Age of Covid-19

Card sorts are a great way to get your students working together to see patterns and make connections. For several years I have been using Conic Cards to teach conic sections to my Precalculus students. (See Conic Card Diary at [Mathequalslove.blogspot.com](http://Mathequalslove.blogspot.com).) Students love the interaction, and they learn so much about conic sections without my having to tell them a thing. There are lots of card sorts available on the Internet. This year I will work to integrate card sorts into my Algebra 1 class to teach linear functions (See Christa Lemily's Linear Equation Card Match on BetterLesson.) and AP Calculus (See Approximating Limit Values from Graphs in AP Classroom.).

But what to do if you are not actually in the classroom? How can we leverage technology to make card sorts work virtually? I certainly don't have all the answers, but I have been thinking it through. There are a couple of options. Desmos has several Card Sorts built in as classroom activities. A quick search showed card sorts on functions, linear, functions, parabolas, exponentials, transformations, and many others. These allow students to move cards on their screen to make and justify matches.

To allow students to interact with each other and with you, you might want to pair a Desmos card sort activity with a Zoom meeting using breakout rooms. You could start with a whole class introduction to the topic and then move students into breakout rooms in groups of 3 or 4. In the breakout room, one student might login to Desmos and share their screen with the group. The group could then work together to make and justify the matches on the card sort. At various times, you could collect the class back as a whole to check progress and summarize thinking.

Another option would be to use Google Docs. It would require a little cutting and pasting, but you could create a Google Doc with each of the "cards." Then students in a Zoom breakout room could work together on a common Google Doc to match the cards. The advantage here would be that each student could move the cards rather than just watching.

I think what I am acknowledging after a few months of practice and a summer full of training is this – If I want students to participate in online learning, I have to find ways to allow students to interact with each other, the material, and me in meaningful ways. Virtual card sorts supported by Zoom breakout rooms are just one of a long list of things to try this year. Best of luck to you all and stay safe.

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*"...I want students to participate in online learning, I have to find ways to allow students to interact with each other, the material, and me in meaningful ways."*



## Higher Ed Viewpoint

Greetings from the Board of Regents (BOR) institutions! I trust you all had a well-deserved relaxing summer break to recharge your batteries. Below is just a glimpse into what is transpiring on our campuses as we prepare for the fall semester before us.

Similar to many of your schools, we are working through the issues of how we teach students in a safe environment that provides as much face to face delivery as possible while maintaining recommended guidelines of safe distancing. All classrooms were given new enrollment caps and our registrars have been working on the monumental task of trying to reassign classrooms for all the courses needed in the semester. All classes with enrollments over 100 were moved to online. Many classes will be conducted in a hybrid format where the students attend the class on a rotational basis face to face while the remainder of the class observes via zoom. I am sure we will all remember this period of our lives for many years to come.

As to outside events on campus, we are still going through the planning process to hold events. However, these events will look different than past years with guidelines of social distancing and new caps on the number of participants in the rooms assigned for the events. Of course many of our events will likely be determined on the decisions your local school districts make on attending outside events. As with all things COVID this year, it may likely change.

I would like to remind folks that are looking to take graduate math courses for certification to teach dual credit courses to consider this semester as an ideal time. Some extra courses were moved online this semester so access may be more plentiful this semester than the typical year. I would encourage you to contact the mathematics chairs at the institutions you were considering to take a course from to see what they have to offer.

In closing, I do wish you all a very successful and healthy year.

Sincerely,

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. Especially now, that we are all facing this new normal, I invite you to share your wealth of ideas with our membership. Please consider submitting something that has “worked”. YOU are the expert...you are the ones that have tested that idea, lesson, activity... in a new virtual way. Please consider sharing something for publication in our newsletter.

Send submissions to:

Sheila McQuade, SDCTM Newsletter editor (SMcQuade@OGKnights.org).



*“...I would like to remind folks that are looking to take graduate math courses ... to consider this semester as an ideal time. Some extra courses were moved online this semester ...”*





## Mark's Thoughts

### NCTM's 100 Days of Professional Learning

As we gear up to return to teaching (in some way, shape, and form) this fall, I invite you to dive into NCTM's 100 Days of Professional Learning. Following the cancellation of the NCTM Annual Conference (which was set to take place back in April), the NCTM Board of Directors developed a plan to help support teachers in this time of our global pandemic. Since the conference was schedule to be a celebration of 100 years of NCTM, the Board decided to offer 100 Days of Professional Learning sprinkled from April 1 to October 15. Select speakers who were set to present at the annual conference have agreed to offer their sessions remotely. Great news – there are still three months of scheduled events taking place remotely on a screen near you!

This is an opportunity to learn from some of the best and most influential mathematics educators from across the country. NCTM members can access the events at <https://www.nctm.org/100/>. For teachers who do not currently have a membership, NCTM is offering a free one-month trial. Visit <https://www.nctm.org/freeresources/> for more information.

With sessions spanning all grade bands (K-2, 3-5, 6-8, & 9-12), I'm certain you'll be able to find something that interests you. Lastly, if you happen to have missed a session, recordings of all sessions (along with supporting resources) are available.

Mark Kreie  
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*“Great news – there are still three months of scheduled events taking place remotely on a screen near you!”*



## 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.

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.*



## SDCTM “Gear”

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](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!

Crystal McMachen  
SDCTM President







# Math Fail



Submitted by:  
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SDCTM Webmaster  
SD STEM Ed Conference Chair  
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Screen shot from KELO storm tracker June 30, 2020 3:27 pm.



## Presidential Awards for Excellence in Mathematics and Science

### PAEMST News: (no news yet on 2019 awardees)

PAEMST has modified its timeline in response to COVID-19 and disruptions in the school calendar for teachers who are currently applying for the 2020 PAEMST award and has shared this information with all applicants. More information regarding an adjusted timeline will be announced by PAEMST and distributed to nominees and applicants in the near future.

### 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 to Washington, DC to attend a week-long series of networking opportunities and recognition events, and a special citation signed by the President of the United States.

The next cycle will recognize outstanding secondary teachers in grades 7-12. The application deadline will be May 1, 2021. Nominations will begin to be accepted in early November. Please be thinking of a deserving teacher you would like to nominate. When the window for nominations opens, you can nominate a teacher by visiting [www.paemst.org](http://www.paemst.org).

### Other than this, why would someone want to complete the application process?

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

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

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

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

If you have any questions, please contact:

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Jennifer Fowler,  
Science Coordinator

*“The award is the nation’s highest honor for math and science (including computer science) teachers.”*



Allen Hogie,  
Math Coordinator



# TOTALLY AWESOME SCIENCE



## Contact Us

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research.sanfordhealth.  
org/academic-programs





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

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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>*





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