



# Wahpe Woyaka pi

( Talking Leaf )

South Dakota Council Teachers of Mathematics Newsletter

## (Past) Presidential Ponderings

Thoughts as I let the door close behind me.

We are fast approaching the Smarter Balanced season. Hopefully the test finds your students smarter and well-balanced. Once again, my students will not get through all the Standards but we gave it the old middle school try and we will finish those we still have left after they take the test. Do you suppose there has ever been a teacher who taught all the standards well before the standardized tests? One year I taught volume in a day. I don't think I did it well.

Sounds like you'll get the test scores back shortly after your students finish. With the prediction that the scores will be quite low, is there really any hurry for them? Should we hope for a massive power outage? When I was in Texas working on cut scores (OK blame me) we weren't allowed to use the words Basic, Proficient...is was all just level 1, 2, 3, or 4. Ever the optimist I predict either a substantial surge in student achievement with average scores in the 3.5 range or we will set a nice low baseline from which we can only improve. Either way, we will be OK.

While in Texas I ate lunch with Joe Willhoft, at the time the Executive Director of The Smarter Balanced Assessment Consortium. I asked him if the test was constructed to be used to evaluate a teacher's effectiveness in the classroom. His answer was no, as was the answer of every member of his staff sitting at the dining table with me. Nothing has ever been done to determine whether that test is either reliable or valid as a teacher evaluation tool. Yet we continue to use it for that purpose. Puzzling.

Which gets me thinking about my SLO, another tool to evaluate a teacher's effectiveness. I think I will reach my goal, it will be close, however I will fall within whatever the "fudge your score" range is. My principal has been pretty Johnny on the Spot with the SLO. He met with us in the fall to see what we had chosen, how we had built our evaluation tool and gave suggestions. Not everyone's initial proposal was approved. He met with us in the middle of our SLO and we will have a final meeting. This man takes educational leadership pretty seriously. And what has your principal done? Some people have never met re the SLO, some had one meeting, and some were given a cursory glance. What kind of evaluation tool is that? Was it a useful undertaking for you or just another hoop you jumped through? Did you learn anything? Did your teaching improve? Did you have a meaningful conversation with anyone about your goals for your students or just curse silently (or maybe not so silently) and find the easiest way to get through this one more thing? Whether you think it is a good thing or a bad thing, you need to let DOE know your opinion.

Finally, I have been cleaning out years of educational materials as I prepare to leave the classroom. Boy did I have some great lessons...that I haven't used in 20 years! But you know, if you throw it out... Some things have never gone out of style – PI day, singing the slope song, or winding the Jack in the Box to memorize the quadratic equation.



WINTER 2014-2015

## Wahpe Woyaka pi

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### Calendar Notes:

- *SDCTM Summer Symposium June 16., 2015*
- *SDCTM/SDSTA Conference February 4-6, 2016*
- *PAEMST Nominations Due April 1, 2016*
- *PAEMST Applications Due May 1, 2016*

*continued*



## **(Past) Presidential Ponderings, *continued***

Last year a new teacher asked if he could get rid of the overhead projector stored in the science closet. Heavens no, the only way my students can do the distance match with my Ranger is with the overhead projector and my old overhead calculator.

It has been a great run, this math teaching. Thanks to all of you who keep SDCTM running. And to all the members, keep up the good work. You have already shown your commitment to improving math education in South Dakota by joining SDCTM. Continue that involvement, encourage your coworkers to join you, take leadership positions so you can make a difference. Speak up about both what is good and what could be improved in education. Your students need you, today more than ever. Much like the Math Curse, I tell my students “Everything in the world is Math.” In 28 years, just as they have never been able to find a triangle whose interior angles do not sum to 180 degrees, they haven’t been able to find anything in which I can’t find some math. Enjoy every minute of the rest of the school year and have a great summer.

Ellie Cooch  
SDCTM Past President

*“Everything in the work is Math.”*

## **PAEMST Nominations**

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) program is the highest honor bestowed on teachers by the U.S. Government. Nominating PAEMST candidates is an integral component to a successful candidate pool. With your help, we hope to recognize and honor South Dakota’s best math teachers.

Nominations for mathematics and science teachers of grades **K-6** will open in Fall of 2015 . To submit a nomination for an exceptional teacher, complete the nomination form available on the [PAEMST website](#), and submit the teacher’s name, email address and school contact information. If you know more than one teacher deserving of this award, you may submit multiple nominations. The 2015-2016 **nomination deadline is April 1, 2016**, and the **application deadline is May 1, 2016**. Teachers may also apply directly at [www.paemst.org](http://www.paemst.org).

*Plan to nominate a deserving teacher early next fall.*



## K-5 Corner

Hello fellow SDCTM members!! Many of you have seen me around in the past, but in case you have not seen me around I figure I had better introduce myself to the members officially now that I am the SDCTM liaison for elementary. This will be a fun position that I will be happy and proud to hold.

My name is William Kliche. The past two years I have been teaching special education in Rapid City. I find it tremendously rewarding and of course, my favorite thing to teach is math. Before teaching special education I was the mathematics leader for the South Dakota Department of Education. I loved that position and I still keep in good contact with many people there. There are some times I regret leaving, but I am happy teaching special education. Prior to DOE I taught upper elementary for 10 years in Rapid City.

I will do my best to share my thoughts on mathematics education with you folks in my time with this organization. I take a lot of pride in my teaching and what my beliefs are in good math education. Math has changed a lot in the way we teach and what our priorities are for our students. I hope that I can help other teachers see these priorities in math now and adjust their ways of teaching. I am never afraid to help others out. If anyone has a question or concern or may want advice on certain content or lessons feel free to contact me at [William.kliche@k12.sd.us](mailto:William.kliche@k12.sd.us). I am looking forward to my part in SDCTM.

Thanks,  
William Kliche



*Welcome William!*

## Share the Classroom Treasures ... Spring Cleaning

“Share the Classroom Treasures” has been a huge success at recent conferences. It is amazing the number of items that change hands! What a wonderful way to support one another. As you sort and put things away for the summer, don't toss things that may be of use to a fellow teacher. You can bring your “Treasures” that are no longer of use to yourself...to the conference next February.





## 9-12 Spotlight

The end of the school 2014-2015 school is fast approaching. I don't know about you but I know my school year has just flown by quicker than usual. It feels like just once I really get to know my students and their learning styles and they get to know me and my teaching methods and classroom routine we only have one quarter of school left.

As this article is going to print, Lori Keleher and myself will be heading to Boston, MS for the 2015 NCTM Annual Meeting and Exposition. We are not only going take in all the stellar workshops, renown speakers, and exhibits but we have been selected as presenters. In our presentation **Reaching and Teaching English Language Learners**, we are sharing some of the SIOP (Sheltered Instruction Observation Protocol) activities and strategies that we use in our classrooms. We are grateful for the Huron School District for funding this amazing opportunity. I am so excited to attend this amazing conference while bringing back to my school and South Dakota all the wonderful things I will learn, so stay tuned to the next SDCTM newsletter.

Make sure to mark your calendars for the Summer Symposium – Tuesday, June 16th.

Lindsey Brewer  
SDCTM HS Liaison  
[Lindsey.Brewer@k12.sd.us](mailto:Lindsey.Brewer@k12.sd.us)

## NCTM – THE BENEFITS OF MEMBERSHIP

If you are not already enjoying the benefits of membership in the National Council of Teachers of Mathematics (NCTM), we invite you to learn more about membership and join today!

Some of the benefits of membership include:

- Print and online access to award-winning journals written specifically to your grade level: Teaching Children Mathematics (PK-6), Mathematics Teaching in the Middle School (5-9), Mathematics Teacher (9-12), Journal for Research in Mathematics Education, and Mathematics Teacher Educator
- Classroom-ready activities and materials with online teaching resources, plus a searchable database of challenge problems
- Discounts on hundreds of books, posters, and teaching materials
- Discounts on professional development opportunities: Annual Conferences, Regional Conferences, Interactive Institutes, and online seminars
- Grant opportunities exclusively for members: annual Mathematics Education Trust (MET) grants from \$1200 to \$24,000 are given to fund member project proposals  
Support of a network of 80,000 mathematics educators from around the country and the world

Pre-service student members have several additional benefits including:

- Additional discounts on e-membership and add-on journals
- FREE registration to NCTM Regional Conferences
- MET Grant opportunities exclusively for student members

Visit [www.nctm.org/membership](http://www.nctm.org/membership) for more information on all of the benefits of NCTM membership.



*“Make sure to mark your calendars for the Summer Symposium – Tuesday, June 16th”*



## Higher Ed Viewpoint

Recent discussions on our front have focused on how to fill the critical shortages we face in many mathematics classrooms in SD. There have been discussions about the PRAXIS cut score being placed at the level as one of the highest in the nation. Maybe we can come up with an alternate way to demonstrate proficiency at the level to teach the Algebra I and Geometry courses and our teacher education candidates would not have to get the full certification via the PRAXIS. Of course these are all discussions at this point but hopefully the BOR and DOE can collaborate to develop alternatives that can help positively impact the shortage of math teachers we currently have in the K-12 system.

I also truly hope that the Blue Ribbon Task Force on Teachers and Students will come to the legislature next year with some solutions for K-12. It seems that the legislature found a solution this year for roads and bridges but when it comes to earmarking funds for education, they have a harder time coming up with a solution. Only time will tell I guess.

The weather is turning nice and the horses smell the barn. For those of you not accustomed to riding horses, this is a saying that reflects when one is on the return trip to the barn, the horses all of a sudden get a lot of energy and want to go faster. So here's to my best of wishes keeping a rein on your students until the final school bells ring. I wish you all a very restful and deserving summer break. Hopefully you may also have a chance to attend some professional development conferences or workshops over the summer. Now get out there and enjoy some summer. If you have any questions, please feel free to inquire. Best wishes on a safe and enjoyable summer.

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



*“...hopefully the BOR and DOE can collaborate to develop alternatives that can help positively impact the shortage of math teachers.”*

## Scrap Paper Geometry

Scrap Paper Geometry is what I call the activities my students do to discover the hypothesis to a theorem or property. My district's print shop supplies my classroom with an abundance of waste paper that generally has one clean side. I have adult scissors, compasses, rulers, protractors, and "patty" paper for use by the students. Generally, I have the students draw figures given by the hypothesis of the theorem and by measuring, cutting, comparing, and discussing, they arrive at the correct conclusion. Below is a basic scrap paper activity.

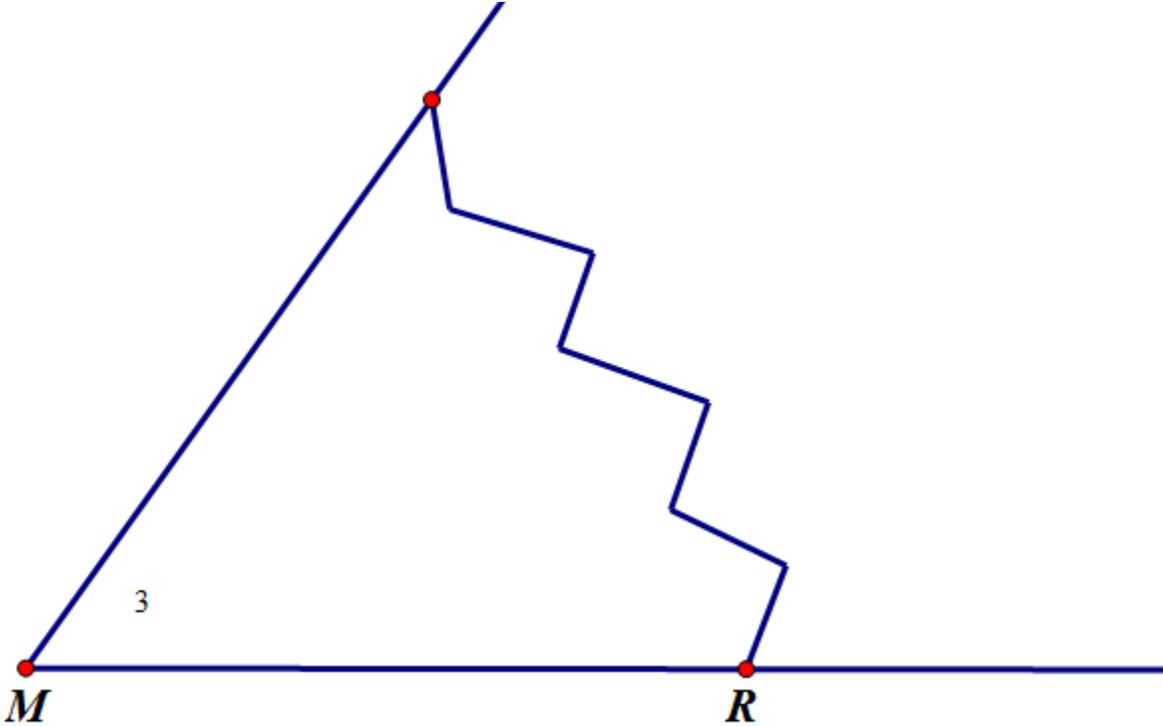
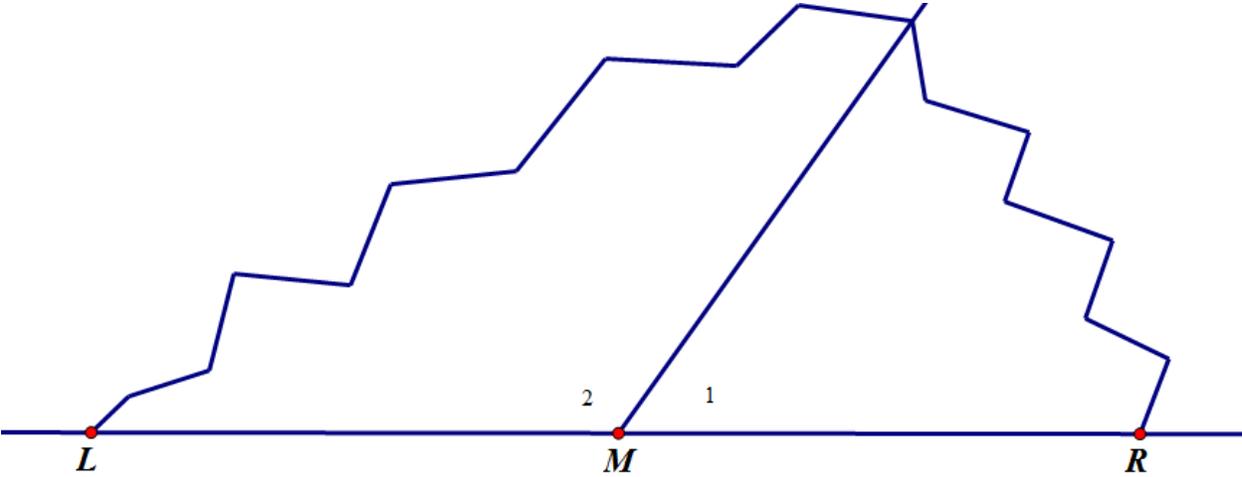
Theorem: If two angles are supplementary to the same angle, then the 2 angles are congruent.

Supplies: 2 pieces of 8.5 x 11 scrap paper, ruler, scissors

- Directions:
1. Arrange the paper on your desk in landscape fashion.
  2. Using a straightedge, a.k.a. ruler, draw a straight angle along the bottom.
  3. Label the points L, M, and R.
  4. Draw a ray with endpoint M that is not perpendicular line LM.
  5. Draw dragon teeth on the sides opposite point M. This helps the students see the pieces as angles.
  6. Cut out the two angles. Label the acute angle 1 and the obtuse angle 2.
  7. What's true about the two angles? ( They are supplementary. ) How can you visually show this? ( Align the angles along the straightedge. )
  8. Place the acute angle out-of-sight
  9. Scribble on the second piece of scrap paper.
  10. Have the students "fashion" an angle that will be supplementary to angle 2.
  11. Label this new supplementary angle "3"
  12. Draw dragon teeth on this angle, and cut it out.
  13. What's true about these two angles? ( These angles are also supplementary. ) How can you visually show this? ( Align the angles along the straightedge. )
  13. Have the students retrieve the out-of-sight angle and compare the three angles.
  14. What appears to be true? ( The two angles are congruent. )
  15. Have the students' recall, what information or facts they started with. ( Two angles supplementary to the same angle )

16. Write the theorem on the obtuse angle. ( If two angles are supplementary to the same angle then the two angles are congruent . )

Although, this theorem is easy to understand, it lets allows the teacher to establish some guidelines and experience for the students in cutting, dragon teeth, discussing, and forming conjectures.



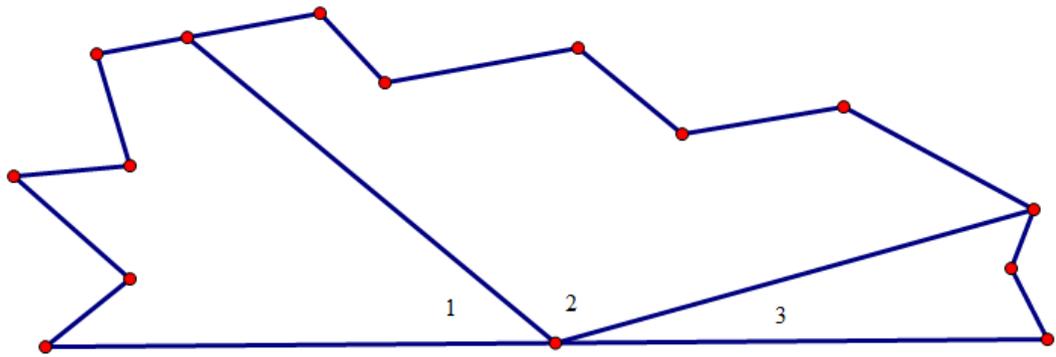
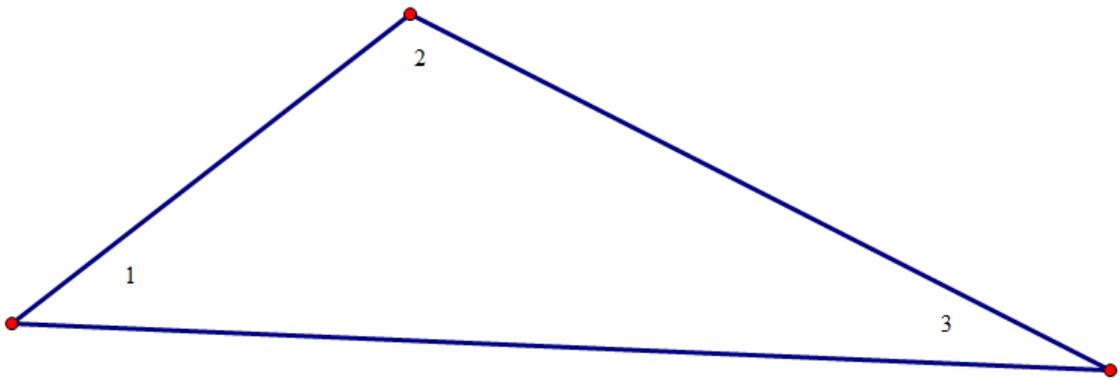
## Scrap Paper Geometry

Scrap Paper Geometry is what I call the activities my students do to discover the hypothesis to a theorem or property. My district's print shop supplies my classroom with an abundance of waste paper that generally has one clean side. I have adult scissors, compasses, rulers, protractors, and "patty" paper for use by the students. Generally, I have the students draw figures given by the hypothesis of the theorem and by measuring, cutting, comparing, and discussing, they arrive at the correct conclusion. Below is a basic scrap paper activity.

Theorem: If a polygon is a triangle, then the sum of the interior angles = 180 degrees.

Supplies: 1 piece of 8.5 x 11 scrap paper, ruler, and scissors

- Directions:
1. Arrange the paper on your desk in landscape fashion.
  2. Draw your favorite triangle, naming the angles 1 , 2 and 3.
  3. What is the name of your triangle? ( Ask the students to name their triangle and justify their name. )
  4. Draw dragon teeth inside the triangle opposite each vertex. This helps the students see the pieces as angles.
  6. Cut out the angles of the triangle.
  7. What appears to be true? ( The angles can be aligned to form a straight angle.) How can you visually represent this? ( Align the angles along the straightedge. ) What does this say about their sum. (The sum of the angles is 180 degrees. )
  9. Have the students' recall, what information or facts they started with. (The three angles of a triangle. ) What did they discover? ( The angles add to a sum of 180 degrees. )
  10. Write the theorem on one of the angles. ( If a polygon is a triangle, then the sum of the angles is 180 degrees. )



## XLIX A Super (Bowl) Data Analysis Activity!

Super Bowl XLIX is now history. For many fans, viewing the Super Bowl commercials is a time-honored component of the game-day experience. Some might even claim that the entertainment value of the commercials surpasses that of the championship game itself. Information regarding the cost of a Super Bowl ad is readily available online\*. A casual glance at the data will show that the price of a 30-second spot has generally increased throughout the years.

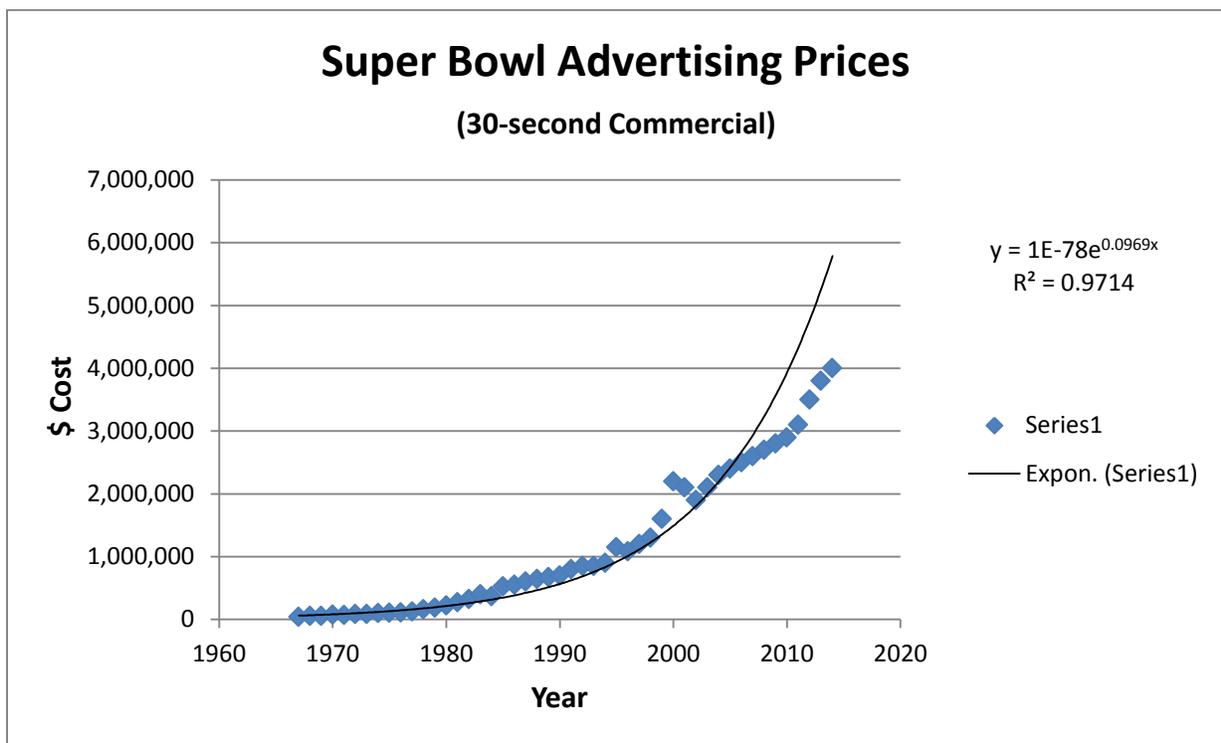
But in the immortal words of Clara Peller, “Where’s the beef?” Might there be a mathematical function that models this data? If a function can be determined, then it can be used to make predictions about future events. Students can graph and analyze the data using graphing calculator, spreadsheet, or other data analysis tools. Students may want to consider graphing costs “in thousands” and years “since 1967”. (*How will that affect their answers?*)

### Super Bowl Advertising Costs by Year (\$ for 30-second TV Commercial)

Year	\$	Year	\$
1967	42,000	1991	800,000
1968	54,000	1992	850,000
1969	55,000	1993	850,000
1970	78,000	1994	900,000
1971	72,000	1995	1,150,000
1972	86,000	1996	1,085,000
1973	88,000	1997	1,200,000
1974	103,000	1998	1,300,000
1975	107,000	1999	1,600,000
1976	110,000	2000	2,200,000
1977	125,000	2001	2,100,000
1978	162,000	2002	1,900,000
1979	185,000	2003	2,100,000
1980	222,000	2004	2,300,000
1981	275,000	2005	2,400,000
1982	324,000	2006	2,500,000
1983	400,000	2007	2,600,000
1984	368,000	2008	2,700,000
1985	525,000	2009	2,800,000
1986	550,000	2010	2,900,000
1987	600,000	2011	3,100,000
1988	645,000	2012	3,500,000
1989	675,600	2013	3,800,000
1990	700,000	2014	4,000,000

### Some questions for students:

1. What family of functions best represents the data? Why?
2. Calculate the equation of the function that best models the data.
3. What is a reasonable domain for the function? Explain.
4. What correlation ( $r$  or  $r^2$ ) is obtained? Explain its significance.
5. According to your model, what would a 30-second ad cost during the 2015 Super Bowl? Compare your prediction to the actual cost\*\* of an ad in 2015.
6. Predict the price of a Super Bowl ad the year you turn 21.
7. When will the price of an ad first exceed \$10,000,000?



\*<http://www.forbes.com/sites/onmarketing/2014/01/29/yes-a-super-bowl-ad-really-is-worth-4-million/>

\*[http://www.huffingtonpost.com/2013/02/02/super-bowl-ad-cost-rates\\_n\\_2552083.html](http://www.huffingtonpost.com/2013/02/02/super-bowl-ad-cost-rates_n_2552083.html)

\*\*<http://sports.yahoo.com/blogs/nfl-shutdown-corner/2015-super-bowl-ads-will-cost--4-5-million-apiece-135554114.html>

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

# Continue your education as a Coyote!

## University of South Dakota School of Education



### Undergraduate Teaching Majors

- K-8 Elementary Education
- 7-12 Biology, Chemistry, Earth Science, English, History, Mathematics, Physics, Political Science, Speech Communication, Theatre
- K-12 Art, French, German, Music, Physical Education, Spanish, Special Education\*

\*Double Major: The Special Education major must be paired with Elementary Education or a 7-12/K-12 teaching major.

### Undergraduate Non-Teaching Majors

Kinesiology and Sport Science  
(Exercise Science or Sport Management Specialization)

<http://admissions.usd.edu>

### Curriculum and Instruction

- M.A. Elementary Education, Technology, Secondary Education, Special Education
- Ed.S., Ed.D. Curriculum and Instruction

### Counseling and Psychology in Education

- M.A., Ed.S, Ph.D. Human Development and Educational Psychology
- M.A., Ed.S, Ph.D. Counseling
- Ed.S., Ph.D. School Psychology

### Educational Administration

- M.A., Ed.S., Ed.D. PK-12 Principal, Director of Curriculum, School District Superintendent
- Ed.S, Ed.D. Director of Special Education
- M.A., Ed.D. Adult and High Education

### Kinesiology and Sport Science

- M.A. Kinesiology and Sport Science  
(Exercise Science or Sport Management Specialization)

[www.usd.edu/grad](http://www.usd.edu/grad)



**SDCTM 2015 Summer Symposium**

# That's Not the Half of It!

## Teaching Fractions for Understanding

**Tuesday,  
June 16, 2015**

**SDCTM Member  
Cost: \$50.00  
Nonmembers \$100**

Registration:  
8:00 am  
Session 8:30-4:00  
Lunch provided

**Registration  
deadline for the  
symposium is  
May 30th.**

You can elect to register for DWU grad credit (+\$70) when arriving on campus June 16th.

Fraction activities will be applicable for K-8 students.

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

Bring a flash drive to save your work!

**Instructors: Lori Stverak & William Kliche**, Rapid City School District  
One of the major shifts in Elementary Education curriculum with the implementation of Common Core is the teaching of fractions. Teachers in upper elementary classes need to have more than a basic understanding of fractions; rather, they need to know how to teach fractions for meaning, not just for answer-getting. This can invoke fear for many teachers who may have a limited understanding of fractions and their operations.

In this session, we go beyond "Don't ask why, just invert and multiply", to playing, discovering, hypothesizing, and manipulating fractions. We will work to develop an understanding of what a fraction is and how fractions work, starting in the early elementary years and working through to the upper grades. In addition, we will work through all the operations with fractions to build an understanding of how it all works, in order to teach for meaning, not just for answer-getting. This session will add many tools to teachers' toolboxes. Participants will walk away with ready-to-use lessons, activities, and ideas to implement in their K-8 classrooms.

**Participants should bring a flash drive to save their work.**

- Location: DWU Campus Mitchell, SD
- Registration: \$50 for SDCTM members or \$100 for nonmembers.
- DWU graduate credit will be available for an additional \$70 tuition.
- Questions about credit? Email Dr. Rocky Von Eye: rovoneye@dwu.edu.
- Questions about registration? Contact Steve Caron: steve.caron@k12.sd.us.
- Questions about content? Email Lori Stverak: lori.stverak@k12.sd.us.

**Don't delay! Registration is limited to a maximum of 25 participants (first come basis) for the session. Minimum 15 participants required.**

**Check [www.sdctm.org](http://www.sdctm.org) for symposium information and updates.  
Registration deadline: May 30, 2015**

Name \_\_\_\_\_

E-mail address \_\_\_\_\_

Home/Summer Address \_\_\_\_\_

Home phone \_\_\_\_\_

School \_\_\_\_\_

School phone \_\_\_\_\_

**To register for the symposium:**

- Complete registration form
  - Send with check payable to SDCTM
  - \$50 (member) or \$100 (nonmember)
- Send to: **Steve Caron 907 South 16th ST  
Aberdeen, SD 57401.**

**DWU Graduate credit will also be available.**

- Do not send payment for DWU credit with your registration. You will register and pay for credit (additional \$70) when you arrive on campus.



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

**Jay Berglund**  
**204 S. Exene Strert**  
**Gettysburg, SD**

Name \_\_\_\_\_

School Name \_\_\_\_\_

Subjects or Grades Taught \_\_\_\_\_

Addresses

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\_\_\_\_\_

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:*



SDCTM Newsletter  
C/o Sheila McQuade  
OGHS  
3201 S. Kiwanis Ave  
Sioux Falls, SD 57105

## 2015-2017 SDCTM Executive Board Members

SDCTM President  
Cindy Kroon  
Montrose High School  
(605) 363-5025  
cindy.kroon@k12.sd.us

SDCTM Past President  
Ellie Cooch  
Spearfish Middle School  
ecooch@spearfish.k12.sd.us

President-Elect  
Allen Hogie  
Brandon Valley High School  
(605) 582 - 3211  
allen.hogie@k12.sd.us

Vice-President  
Steve Caron  
Aberdeen Central High School  
(605) 725-8208  
steve.caron@k12.sd.us

Secretary  
Lori Stverak  
Rapid City Area Schools  
lori.stverak@k12.sd.us

Treasurer  
Jay Berglund  
Gettysburg High School  
(605) 765-2436  
jay.berglund@k12.sd.us

Conference Coordinator  
Jean Gomer  
(605) 629-1101  
jeanann@itctel.com

Elementary Liaison  
William Kliche  
Valley View Elementary School  
(605) 393-2812  
william.kliche@k12.sd.us

Middle School Liaison

Secondary Liaison  
Lindsey Brewer  
Huron High School  
(605) 458-2243  
lindsey.brewer@k12.sd.us

Post-secondary Liaison  
Dan VanPeurse  
USD  
dan.vanpeurse@usd.edu

NCTM Representative  
Samra Trask  
Wall School District  
(605) 279-2156  
samra.trask@k12.sd.us

Webmaster  
Cindy Kroon  
Montrose High School  
(605) 363 - 5025  
webmaster@sdctm.org

Newsletter Editor  
Sheila McQuade  
Sioux Falls O<sup>+</sup>Gorman High School  
(605) 336 - 3644  
smcquade2@sfcss.org



[www.sdctm.org](http://www.sdctm.org)