

Wahpe Woyaka pi

(TALKING LEAF)

SDCTM WINTER 2003 NEWSLETTER

Editor's Notes

As you may have noticed, the SDCTM newsletter has a new name. Consultation with Jerome Kills Small, Lakota instructor at USD, yielded insight into the title of our newsletter. To be more accurate, a change seemed to be in order. If I understood correctly (sometimes a challenge for this editor), our current title of *Wahpe Woglake*, while indicating the talking leaf concept, is terminology more appropriately used to express war deeds or other persons accomplishments. The current title also includes the expectation of gift-giving to have the honor to have individuals use their time to listen to the teller. Since SDCTM does not intend to give gifts to everyone who reads the newsletter (other than the gift of the articles), a slight change in the title seems to be in order. Changing the "g" to a "y" and the "e" to an "a" in effect changes the title to convey the concept of telling news and the "pi" at the end gives a plural to the news telling, which is what we wish to do in our newsletter: to give you news (plural in nature) in the mathematics community.

More Editor's Notes

Scholarship opportunities for students who have an aptitude for and interest in mathematics and the technical fields of computer science, mathematics, and engineering have been greatly enhanced in South Dakota by awards from the National Science Foundation. In this newsletter, you will notice the announcement of Computer Science, Engineering, and Mathematics Scholarship (CSEMS) awards from the NSF to SDSU and DSU. The \$400,000 awards (\$100,000 per year for four years) received by SDSU and DSU, join

a similar award at USD a year earlier. Thus, a total of nearly \$300,000 in scholarships per year is available in these three awards. I encourage all mathematics teachers to inform your mathematically talented students about these great scholarship opportunities. Details on eligibility and the application process can be obtained by contacting each institution. Contact information for SDSU and DSU is included in the respective articles. For information on the CSEMS program at USD, visit the web site at <http://www.usd.edu/csems>.

Message from the President

Jean Gomer

Greetings from the depths of winter(?) in South Dakota. I can't believe that it is late January and I am looking out my window at less than an inch of snow cover. And it is the most snow we have had all winter.

As you read this, the 11th annual Joint Conference of SDCTM and SDSTA will be history. I project that it will be a rousing success. This prediction is based on the data gathered while working on the program. We have given our attendees that problem of choosing between good sessions in each time slot. We started out trying to put the elementary/secondary things in non-conflicting places, but we have so much good "stuff" that something had to double up. And as at every conference, there are time slots where nothing appeals to some people. Hopefully, these people took advantage of the time to visit our vendors. We tried a new location for the vendors and hope you will let us know how you liked it (or didn't).

The school year is rapidly slipping away, and one of the things that has been on my mind a lot this fall is **No Child Left Behind**. Since

Christmas I have had a couple of inquiries about what this really means for math teachers. I don't have any answers, but I am doing some research and trying to think of ways that SDCTM can respond to this need of our membership. I see this as addressing the problem of **No Teacher Left Behind**. It is very difficult for us to really know what the ramifications of NCLB are when we live every day doing our best to see that **Every Child Moves Forward**. My dilemma is that I do not feel that good teachers ever intentionally leave any child behind.

With that, I will leave you behind as I move on to tackle a "to do" list that never ends, students who make my life worth living, and the challenge of living a balanced life while tackling the other two.

Presidential Awards Undergo Changes

Diana McCann

The Presidential Awards Program has undergone many changes in the last year. The award will be given in alternating years to Secondary and Elementary teachers. This year (2003) will be Secondary teachers. Elementary teachers will do applications in 2004 and the award will then alternate years.

The awardees must be nominated by someone in order to apply for the award. The nomination form must be sent with the application. The applications are due to the state coordinator by May 1, 2003. The award is now \$10,000 which is awarded directly to the teacher. It does not go to your school. This money is to be spent to improve mathematics education in your school. The awardees must, however, now pay taxes on the award.

The application, as in the past, must include a video of the awardees teaching the lesson to their students. The rest of the application is an explanation of the lesson and answering questions on the lesson.

The application and the nomination form can be downloaded through a link from the SDCTM website at www.sdctm.org or by going directly to www.nsf.gov/pa.

We have many deserving teachers in South Dakota. Take the time to complete the application. The teachers in South Dakota do not get many "pats" on the back. This is one way to get the well deserved recognition that many teachers in South Dakota deserve. And at the same time you will be able to help the students of your school. It is great to be able to purchase the items you have always wanted to use in your classroom. Now is the time to apply for the opportunity to enhance the mathematics education in your school.

Celebrate Pi Day—March 14

(taken from NCTM News Bulletin,
January/February 2003)

Pi Day begins at precisely 1:59 p.m. on March 14 (3/14/1:59...) to celebrate the special number and to foster creativity and enjoyment of mathematics by students. (Coincidentally, the date is also Albert Einstein's birthday.)

Pi (π)—the mathematical constant—is the ratio of any circle's circumference to the length of its diameter. Starting with 3.14159265358979323846, the decimal digits of pi continue indefinitely without ever repeating a fixed sequence of digits. Mathematicians have been fascinated by pi for ages. They are still trying to find the answer to a question that the Greeks were asking 2,500 years ago, "Do the numbers following 3.141592 occur randomly?"

Visit the following Web sites for ideas to help kick off a Pi Day celebration at your school:

- **Pi Day/Math Awareness Day Contest**— This contest encourages students (grades 4-12) to create mathematics projects for display in the Goudreau Museum of Mathematics in Art and Science in New Hyde Park, N.Y. The deadline for entries is March 21. mathmuseum.org/piday.htm
- **Pi Day on the "Math with Mr. Herte" Web site**—mathwithmrherte.com/pi_day.htm
- **Pi Pages on the Internet**—joyofpi.com/pilinks.htm
- **Pi Day from the Exploratorium**—mathforum.com/t2t/faq.pi.html

Combinatorics and Systematic Listing Project

Cindy Kroon, Montrose High School

As part of a discrete mathematics program, my trigonometry class (mostly juniors and a few seniors) created flip-books illustrating systematic listing and counting. The topic appears in my high school curriculum when students study combinations and permutations. This project supports and augments student understanding of combinatorics, as well as assesses student learning at the end of the unit.

After initial discussion of the fundamental counting principle, I read students the flip-book "A Cheese and Tomato Spider" by Nick Sharrat. The book has ten pages, each of which is cut horizontally into two sections. How many ways can the book be read?

10 choices for top of page x 10 choices for bottom of page = 100 ways

The book is available through the SD inter-library loan program. Students were challenged to use any medium to create their own flip-book according to a rubric provided. (See attached page.)

Many original and charming projects were created. Some students chose to cut pictures out of magazines, while others found them on the internet, or drew their own. In one of the most memorable projects, students used their own school pictures (eyes-nose-mouth.) Another excellent project used candid pictures of classmates, taken with a digital camera (head-body-legs.) A PG-rated project used pictures of models in swimming suits, clipped from an on-line clothing catalog.

Students found that using digital images, or using a scanner to convert pictures to digital files had significant advantages. The chief advantage was the ability to easily re-size pictures so that all were uniformly proportioned. This made the process of sectioning the pages much easier.

This was a very successful project. Students were enthusiastic participants, and seemed to understand the mathematical concepts quite easily. I received many positive comments from students about what a fun way this was to

practice and reinforce combinatorics in project form. This will become an annual project in my high school math curriculum.

To view the original projects, attend the math sharing session scheduled for Thursday evening (Feb. 6) at the SDCTM/SDSTA annual conference.

Combinatorics and Systematic Listing "A Cheese and Tomato Spider" by Nick Sharrat

With a partner, design and create a flip-book illustrating the properties of systematic listing and counting.

1. Choose a creative title.
2. Use any medium to create and color the illustrations.
3. Write descriptive text to accompany the illustrations.
4. On the last page of the book, discuss the relevant mathematics. Include a calculation of the different combinations of pages. (Show your work.)
5. Create an appropriate cover and bind the book.

Examples:

- A face with different eyes-nose-mouth
- Uniforms with different hat-clothes-footwear
- Animals with different head-body-feet
- Vehicles with different top-body-tires
- A person with different head-body-legs
- Other (see instructor)

Grading (2 quiz grades) 50 points

- Appropriate number of sections (minimum 3) per page *3 points*
- Appropriate number of illustrations (minimum 6) *12 points*
- Creativity *5 points*
- Mathematical discussion (complete and accurate) *10 points*
- Grammar and language usage *5 points*
- Appropriate title *5 points*
- Neatness and overall appearance *10 points*

COMPASS/Show-Me National Curriculum Conference

The COMPASS and Show-Me Projects will co-host a National Curriculum Conference June 27-29, 2003 in Chicago, IL to showcase middle and high school standards-based, NSF-supported mathematics curricula. The conference is intended for teacher leaders, school district administrators, state education personnel, and teacher educators. Participation is limited to 300 people and registration is required by May 1, 2003. A registration form is available at: www.ithaca.edu/compass or showmecenter.missouri.edu/Showcase. Questions? (800) 688-1829.

SDSU Awarded Grant for Scholarships

In September of 2002, SDSU was awarded a \$400,000 grant by the National Science Foundation for their SDSU Computer Science, Engineering, and Mathematics Scholarships Program to be used from 2003-2007. The primary goal of the program is to increase the enrollment and retention of academically talented, but financially needy students in high technology fields, and to enable them to enter the workforce. Renewable scholarships of \$3030 per year will be awarded to undergraduates majoring in computer science, mathematics or engineering. The scholarship winners will be required to participate in activities designed to improve retention, increase their involvement in their field of study, and become more aware of career options. The Principal Investigator is Ross Abraham from the Department of Mathematics and Statistics, and Co-Principal Investigators are Ali Salehnia from Computer Science, Rich Reid from Engineering, and Jeff Maras director of the TRIO program.

DSU Announces the MACSTECH Scholars Program

The Mathematics and Computer Science Technology (MACSTECH) Scholarship Program provides scholarships for financially eligible, academically talented students majoring

in Computer Science and/or Mathematics for Information Systems at Dakota State University (DSU) in Madison, South Dakota. Funding for the program has been provided by the National Science Foundation through a Computer Science, Engineering, and Mathematics Scholarship Program (CSEMS) grant.

Scholarships up to \$2000 per year (depending on financial eligibility) will be awarded to successful applicants majoring in either Computer Science or Mathematics for Information Systems at DSU. Junior or Senior level students who are double majors in both disciplines and are making satisfactory progress toward the completion of both programs are eligible for scholarships up to \$3125 per year. Applications will be reviewed on a competitive basis and successful applicants will be admitted into the MACSTECH Scholars program at DSU. Based on performance, these scholarships may be renewed each semester by the institution through the duration of the grant (Fall Semester 2006).

High School students must submit application packets on or before March 1 to receive priority consideration for entry into the program the following fall semester. Applications received through May 15 will be considered as long as funding permits. Application materials and additional information about the MACSTECH Program may be found at the project web site: <http://courses.dsu.edu/macstech>.

SDSU Summer Workshops for Math Teachers

AP Calculus Institute, June 16 - 20, 2 graduate credits, for anyone teaching or planning to teach AB or BC calculus. Taught by AP consultant Mark Howell and Dr. Ross Abraham.

Fractals and Chaos, June 23 - 27, 2 graduate credits, taught by Dr. Kurt Cogswell.

Discrete Math, July 7 - 11, 2 graduate credits, taught by Dr. Ken Yocom

For information about these workshops, contact Ken Yocom at (605) 688-6196 or e-mail kenneth_yocom@sdstate.edu.

Math Contest Announcements

The 48th annual USD Merten Hasse Mathematics Contest will be held on April 26, 2003. For information, contact Dan Van Peurseem at (605) 677-5262 or e-mail dpeurseem@usd.edu.

SDSU High School Contest is set for November 1, 2003. For information, contact Don Struck at (605) 688-6196 or e-mail donald_struck@sdstate.edu.

SDCTM MEMBERSHIP REGISTRATION South Dakota Council of Teachers of Mathematics

Name _____ Date _____

Mailing Address _____

City _____ State _____ Zip _____

School _____

Subject(s) Taught _____

Telephone (Home) _____ (School) _____

Please check your teaching level, and enclose a check for the appropriate dues. Check should be made payable to SDCTM.

_____ K-6	\$ 5.00
_____ 7-12	10.00
_____ Departmentalized Middle School	10.00
_____ Post secondary	10.00
_____ Full-time student	3.00
_____ Retired	5.00

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