



Association of Mathematics Teachers of the Rochester Area

Newsletter Winter 2006

“Imagine a classroom, a school, or a school district where all students have access to high-quality, engaging mathematics instruction.”

-NCTM from Principles and Standards for School Mathematics

The Association of Mathematics Teachers of the Rochester Area (AMTRA) is a local organization of mathematics educators that operate under the state group, the Association of Mathematics Teachers of New York State (AMTNYS). In order to enhance the professional development of mathematics educators, AMTRA members volunteer their time and talents to organize mini-workshops, newsletters, and the annual spring conference. In striving towards NCTM's vision of “high-quality, engaging mathematics instruction,” local mathematics teachers, elementary school through college, are able to network, share ideas, and model best practices through AMTRA events.

Technology Mini-Conference:

"Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning." (NCTM, Principles and Standards for School Mathematics) Come join us, and bring a colleague, at this conference highlighting the use of technology in the mathematics classroom. The focus of the workshops is intended for grades 7-12. The conference will be held **Saturday April 1, 2006 at St. John Fisher**

College. Melody DeRosa of Texas Instruments will be coordinating with her network of local mathematics teachers that are also TI presenters. There will be several sessions with different options. So come out, support your colleagues, and learn a few new things. There is a registration form at the end of the newsletter.

Calculator Tip for TI-8#:

Students often misuse the ZoomFit feature of the graphing calculator. Here is a great chance to re-enforce the concept of the domain of a function. By choosing a specified interval of the domain, go to the Window and set Xmin to the lower bound and Xmax to the upper bound. Then choose ZoomFit from the Zoom menu and the calculator will recalculate the minimum and maximum Y values of the function in that selected domain and will graph the function, essentially filling the LCD from top to bottom.

SAVE THE DATES:

Sat. April 1, 2006 Technology
Conference

Thurs. May 11, 2006 Spring Conference

Marco Polo: On-Line

Teacher Resource:

By Heather Bonadonna

Teacher Center

Brighton Central Schools

Marco Polo is an on-line educational resource providing standards-based internet content for the classroom with over 30,000 lessons available. It is sponsored by the MCI Foundation and offers educational opportunities to increase student achievement. These are free and available to anyone with an internet connection. The MCI Foundation has partnered with seven organizations to create this resource: the John F. Kennedy Center for the Performing Arts, the National Council on Economic Education, the National Endowment for the Humanities, the National Council of Teachers of Mathematics, the International Reading Association, the National Council of Teachers of English, the American Association for the Advancement of Science, and the National Geographic Society.

The Marco Polo Consortium is a state network to facilitate professional development and alignment of Marco Polo lessons to state curriculum standards. Marco Polo New York has been tracking the quality and progress of Marco Polo and has aligned Marco Polo content with New York State Learning Standards. Over 6,800 New York State teachers have been trained and over 1,500 lessons have been aligned to New York State Learning Standards. Before the lessons are put on Marco Polo, they go through a heavy screening process. Each lesson, activity, and web link is reviewed by the seven partner sites, by teachers, and by administrators. Marco Polo New York then

has additional filters and is also reviewed by NYIT and NYSED.

For mathematics, the Illuminations site is designed by NCTM to bring Principles and Standards for School Mathematics to life through engaging interactive student applets, comprehensive Internet-based lesson plans, and teacher resources such as "Reflections on Teaching."

To get to Marco Polo New York, go to:
<http://www.nyiteez.org/MarcoPoloNY/>

To get to the national site, go to:
<http://www.marcopolo-education.org/>

Literature in the Mathematics Classroom:

Remember, technology is a wonderful tool in investigating mathematics; but it is not the only tool. Teaching mathematics well is a complex undertaking and there is no one right way to teach. Effective teaching and learning of mathematics requires teachers to choose and use various methods of presentation and activities to motivate and engage students in thinking about and doing mathematics. Bringing literature into the mathematics classroom provides another way for students to see mathematics.

April is National Mathematics Month and it is also National Poetry Month. So an easy way to introduce literature into your class without disrupting too much of what you already do is to read a math poem in your class each day. Take a look at:

"Euclid" by Vachel Lindsay
"Euclid Alone Has Looked on Beauty
Bare" by Edna St. Vincent Millay
"Threes" by John Atherton
"There Once Was a Breathy Baboon"
by Sir Arthur Eddington
"Mathematical Love" by Andrew

Marvell
"Arithmetic" by Carl Sandburg
"There Was a Young Man from Trinity"
-Anonymous
"There Was an Old Man Who Said
"Do"" -Anonymous
"Relativity" -Anonymous
"M.C. Escher's Circle Limit III"
by Michael L. Johnson
"Zeno's Paradox" by Jonathan Holden
"The Fall of Pythagoras" by Jonathan
Holden
"Ramanujan" by Jonathan Holden

Math and Literature Go Hand and Hand (Primary/Elementary Focus):

By Karen Morris
Rochester City School District

With the ever increasing demands of the elementary curriculums, time has been a critical constraint in the everyday planning of instruction. Integration of subject areas becomes an efficient and effective way to meet the demands of the new ELA and math state standards. Connecting math and literature helps students see that learning does not occur as isolated skills but integrated in everyday life situations. Below are some examples of literature selections that can be connected with math content strands. The five process strands are addressed with the use of open ended problem solving situations.

Madeline by Ludwig Bemelmans
(Standards 2N14, 3N16, 17) This is an excellent chance to introduce the concept of odd and even with girls in two straight lines.
Ex. 1: Two is an even number and 3 is an odd number. Is 12 an even or odd number?

Show your work and explain how you got your answer.

Ex. 2: Does an odd number plus an odd number equal an even or odd number? Include several examples to support your thinking.

Six Dinner Sid by Inga Moore
(Standards 3N21) This problem leads to a variety of responses that should be shared with the class such as arrays, drawing a picture, making a chart, or repeated addition.
Ex. 1: Sid lived in six houses so he could have six dinners each night. How many dinners will Sid eat in a week? Show your work.

Tikki Tikki Tembo retold by Arlene Mosel
Chrysanthemum by Kevin Henkes
(Standards 4S3) Have students survey the class to find out how many syllables are in each students' name. Students use this data to make a bar graph. Students should be sure to title the graph, label both axes, graph all data and provide a scale for the graph.

One Grain of Rice by Demi
A Grain of Rice by Pittman
(Standards 5A7, 8) You can receive \$10 for your allowance or a penny the first day, 2 pennies the second day, 4 pennies the third day and keep doubling the amount for 12 days. Which way do you want to receive the allowance? Explain your thinking.

Gator Pie by Louise Mathews
(Standards 4A2) Juanita thinks that $\frac{1}{8}$ is bigger than $\frac{1}{4}$ because 8 is bigger than 4. Do you agree with her thinking? Explain why or why not.

Twelve Snails to One Lizard by Susan Hightower - Problems adapted from Exemplars May 1992
(Standards 4M3) Marty was 33 inches tall on his first birthday. On his second birthday

his mother measured him and he grew 2 more inches. On his third birthday he had grown 3 inches. On his fourth birthday he grew 2 more inches. If this continues, how many feet tall will Marty be by his seventh birthday? Show your work.

Math and Literature

Activities

(Middle/Secondary Focus):

By Anne Marie Stockslader
Pittsford Mendon High School

Probability: Read John Allen Paulos' article "Some Birthday vs. a Particular Birthday" from his book Innumeracy. Make sure that the students can work through and understand how to compute the number of ways to choose any 5 dates from a year and the number of ways to choose 5 different dates. Then investigate the following questions:

1. In order to be certain that any 2 people in a large group have the exact same birthday (not year), what is the fewest number of people that be in the group? Why?
2. What if we only want to be 50% sure that any 2 people in a large group have the exact same birthday (not year), what is the fewest number of people that must be in the group?
3. Let's try the birthday question in our class. This means we are running an empirical probability study (don't get disappointed).
4. What if we only want to be 75% sure that any 2 people in a large group have the exact same birthday (not year), what is the fewest number of people that must be in the group?

Exponential and Logarithmic Functions:

In William Dunham's book The Mathematical Universe copy the chapter dealing with base e and the natural logarithm. The chapter is actually a short detective story about Eddie the Weasel and

his visionary girlfriend Clare Voyant (highlight the use of play on SAT vocabulary words). White-out William Dunham's computations through out the chapter. Pair your students into a team of detectives and have them work out the computations and turn the chapter back in as their detective report. Bring in doughnuts for a special treat and don't be surprised to see how specific your students get in trying to convert the time of death.

Do You and/or Your Students Sudoku?:

Sudoku is a number and logic puzzle with very simple directions that is gaining immense popularity across the United States. The Rochester Democrat and Chronicle carries a different puzzle everyday in the C: Living Section. A Sudoku puzzle is a grid of 81 squares that has nine rows, nine columns, and nine blocks of nine squares each. To solve the puzzle, one must use logic and deductive reasoning to complete the grid so that every row, column, and 3 by 3 box contains each digit 1 through 9 inclusive. The digits must appear once and only once in each row, column, and 3 by 3 block.

Of course, the puzzle can be modified to reach even the youngest of our students by condensing the puzzle to a 4 by 4 grid of 16 squares. The rules of this game are that each of the numbers 1,2,3, and 4 must appear once and only once in each row, column, and 2 by 2 block.

Need the solutions? Check out AMTRA's new website...

<http://home1.sjfc.edu/amtra/>