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MATHEMATICS  
COUNCIL, INC.

<http://www.nctm.org/resources/>

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NCTM Mathematics  
Education Trust

Supporting Teachers...  
Reaching Students...  
Building Futures

## Teaching K-8 Mathematics Resources and Organizations



## Shapes

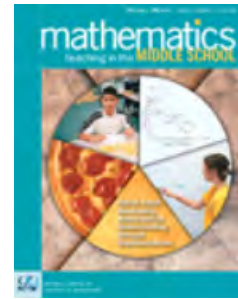
A **square** was sitting quietly  
Outside his rectangular shack  
When a **triangle** came down – keerpunk!  
“I must go to the hospital,”  
Cried the wounded square,  
So a passing rolling **circle**  
Picked him up and took him there.



Shel Silverstein

# Mathematics Teaching in the Middle School

National Council of Teachers of Mathematics Journal

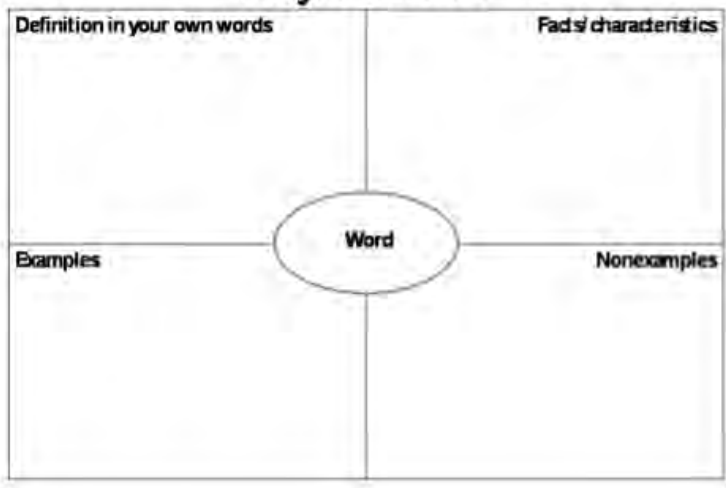


ZITS by Jerry Scott and Jim Borgman

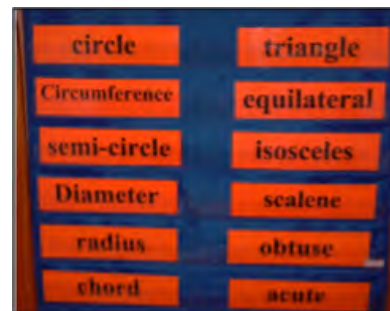


Do 3,500 text messages per month work out to be 116 a day. Show why or why not. What assumptions are you making?

## Frayer Model



## Word Walls





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

## Benefits

The organization strives to help its members improve their professional effectiveness and their mathematical skills through a variety of programs and publications.

- **Professional Development - Annual Conference**
- **Publications - The Wisconsin Teacher of Mathematics**
- **Recognition**
- **Student Activities - Scholarships and Free Conferences**
- **Networking**
- **Resume Builder**

**All this for \$10 a year!**  
**Conference only \$20!!**

## Linking Activities to Standards and Curriculum



HIGHER STANDARDS for OUR STUDENTS  
...HIGHER STANDARDS for OURSELVES

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

The mathematical understanding, knowledge, and skills that students should acquire from Pre-K through grade 12.



Curriculum Focal Points are the most important math topics for lasting learning at each grade level Pre-K-8.



<http://dpi.state.wi.us>

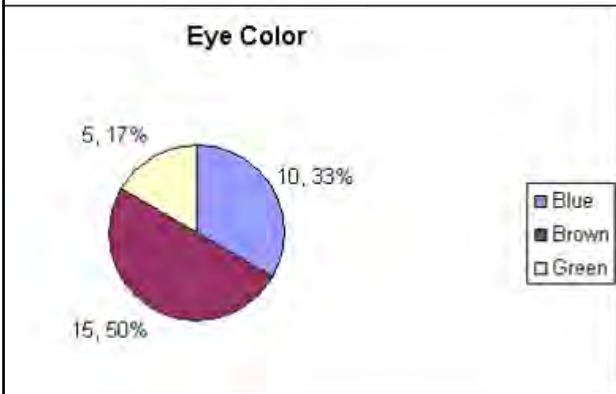
### Kindergarten Curriculum Focal Points

**Geometry: Describing shapes and space** - Children interpret the physical world with geometric ideas (e.g., shape, orientation, spatial relations) and describe it with corresponding vocabulary. They identify, name, and describe a variety of shapes, such as squares, triangles, circles, rectangles, (regular) hexagons, and (isosceles) trapezoids.

### WMAS Mathematics, Standard C: Geometry - Grade 4

C.4.1 Describe two- and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres) by naming them, comparing, sorting, and classifying them, drawing and constructing physical models to specifications, identifying their properties, ...

Lots of Classroom Activities  
Technology Tips  
Mathematics Resources



**Grade 7 Curriculum Focal Points**

**Data Analysis:** Students use proportions to make estimates relating to a population on the basis of a sample. They apply percentages to make and interpret histograms and circle graphs.

# Wisconsin Teacher of Mathematics

Featured in this issue:

- Data in the Primary Classroom
- Supposing the 2004 Presidential Election Had Gone to the House
- TinkerPlots, Grades 4-8
- Using the Baldrige Criteria for Performance Excellence
- College Tuition Functions
- Linear Regression: What Should an Algebra Teacher Know?

**WISCONSIN MATHEMATICS COUNCIL, INC.**

Volume 59  
Number 1  
Fall 2008

IF YOU  
HOPPED  
LIKE A  
FROG

By David M. Schwartz

**WMAS: Mathematics, Standard B: Number Operations And Relationships**

Performance Standards - Grade 8

By the end of grade eight, students will: Apply proportional thinking in a variety of problem situations.



# If you hopped like a frog...

Frogs are champion jumpers. A 3-inch frog can hop 60 inches. The can live up to 15 years. If you could “hop like a frog”, how far could you jump?



<b>K</b>	<b>N</b>	<b>W</b>	<b>S</b>
What facts do I know from the information in the problem?	What information do I not need?	What does the problem ask me to find?	What strategy will I use to solve the problem?

Adapted from Reading in Mathematics  
WMC Journal by Rosann Hollinger  
Math Teaching Specialist, Milwaukee

If you grew as fast in your first nine months as you did in the nine months before you were born...



**NCTM Pre-K-2 Measurement Expectations:**

- recognize the attributes of length, volume, weight, area, and time;
- understand how to measure using nonstandard and standard units;
- select an appropriate unit and tool for the attribute being measured.

## Teaching Children Mathematics

National Council of Teachers of Mathematics Journal



MATH BY THE MONTH

PROBLEM SOLVERS



Lorenzo and Maya are trying to solve a problem involving money and height. They are trying to decide which would be greater - the value of the quarters arranged on a flat surface in rows or columns to represent their height or the value in nickles stacked vertically to represent their height.



EARLY CHILDHOOD CORNER

## Problem



Lorenzo and Maya are trying to solve a problem involving money and height. They are trying to decide which would be greater—the value of quarters arranged on a flat surface in rows or columns to represent their height (height value) or the value in nickels stacked vertically (on top of one another) to represent their height (height value).

*Lorenzo:* I think my height value in quarters would be greater because quarters are worth more than nickels.

*Maya:* I think my height value in nickels might be greater because the quarters are placed side by side and the nickels are stacked. Hmm, I wonder how we can figure this out?

Work with your partner or group to investigate the following questions. Be sure to record your strategies and findings.

1. Which would be greater—your height value in quarters when arranged on a flat surface in rows or columns or your height value in nickels when stacked?
2. What is your height value when using quarters? When using nickels?

### Variation

For younger students, recast the problem in nickels and pennies. Have the students represent their height by arranging the nickels side by side and stacking the pennies and then determine their height value.

### Extensions

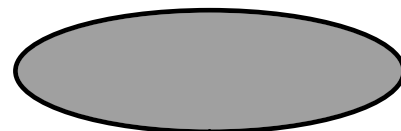
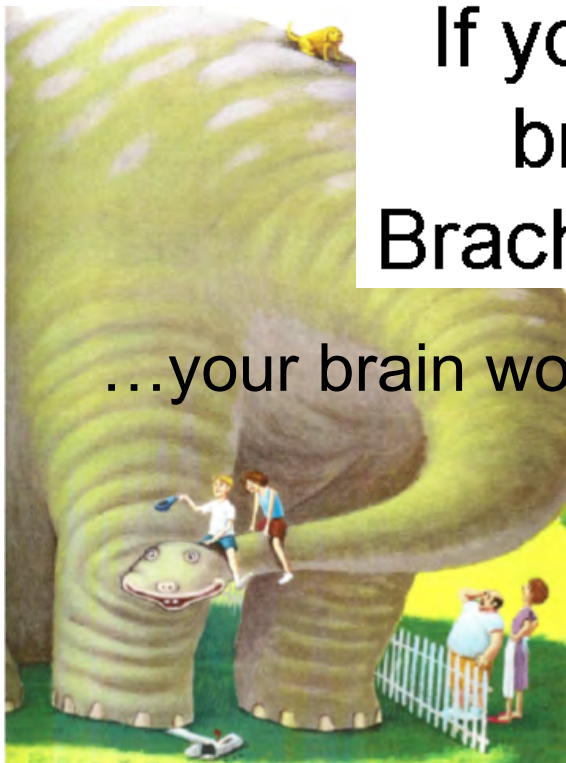
Ask students to figure out who is taller—Maxine, whose height value in quarters is \$12.75, or Daniel, whose height value in nickels is \$25.40. Some students might begin to explore a scale factor that relates nickels to quarters with respect to height.

For an extension into data analysis, have students calculate the average height of their classmates and then investigate the average height value by using quarters and nickels.



If you had the  
brain of a  
Brachiosaurus...

...your brain would be smaller than a



...your brain would be smaller than a

**WHOPPER**



3 feet

50 feet

Large dinosaurs had tiny brains. Brachiosaurus weighed about 80,000 kg, but its brain weighed only about 200 grams (~4 whoppers).



**Introduction:** Science tells us that it was probably a giant meteor impact that killed off the dinosaurs.

**KWL**

**Conjecture:**

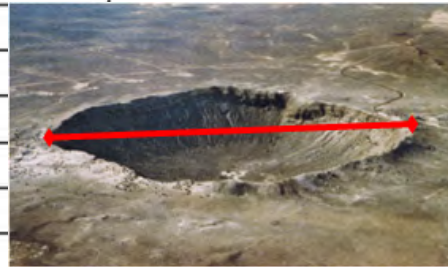


**NCTM Data Analysis and Probability Grades 3-5 Expectations:**

- design investigations to address a question and consider how data-collection methods affect the nature of the data set;
- collect data using observations, surveys, and experiments;
- represent data using tables and graphs such as line plots, bar graphs, and line graphs;
- recognize the differences in representing categorical and numerical data.

Drop your meteor from various heights (30 cm increments), and carefully measure the width of the craters formed (use string to help). Be sure to smooth out the sugar after each attempt!

Height (cm)	Crater width (mm)
30	
60	
90	
120	
150	
180	
210	
240	
270	
300	



2009.02.25 - MeteorData.xls

Predict how large a crater would be made if a Whopper was dropped three stories (about 15 meters, or about 50 feet) into a tray of sugar.

Predicted Crater Diameter: \_\_\_\_\_ mm



*"PI in the Sky:  
Dream Big, Do Math!"*

Wisconsin Mathematics Council  
41st Annual  
Green Lake Conference  
May 7 & 8, 2009

**Figure This!**  
Math Challenges for Families

<http://www.figurethis.org>


<http://illuminations.nctm.org>

**ILLUMINATIONS**  
Resources for Teaching Math

Activities Lessons Standards Web Links


*illuminating NCTM's Vision for School Mathematics*

If you high-jumped like a **FLEA**...



## Could you land on Liberty's Torch?

A flea just 3 mm high can spring more than 200 mm into the air.



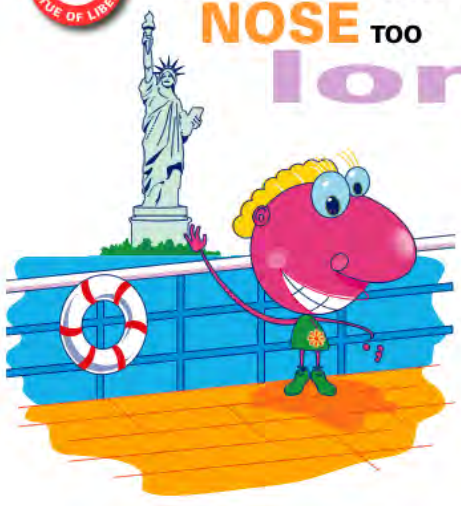
**#61**  
STATUE OF LIBERTY

IS THE STATUE OF LIBERTY'S

# NOSE TOO

# long???

**Figure This!**  
Math Challenges for Families



The arm of Ms. Liberty is 42 feet long.  
How tall is Ms. Liberty?

## Hint?

Similarity and scaling underlie design and model building. Architects, clothing designers, toy makers, and civil engineers all use scaling in their work.



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

**Sign up today...**  
**WMC: \$10 a year!**  
**Conference only \$20!!**



### **Benefits of NCTM Student Membership**

**FREE Online Subscription to One of the Following Award-winning Journals, plus complete access to the full online archives for your journal. Student Members can also download up to 25 journal articles per membership year from any non-subscribed journal.**

**For \$39 a year, Student Members receive a subscription to one of the following school journals:**

- *Teaching Children Mathematics* (Pre-K-6)
- *Mathematics Teaching in the Middle School* (5-9) .
- *Mathematics Teacher* (8-14)



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