

SREB

Southern
Regional
Education
Board

**We Have Literacy: Now Can
We Have A Math Across The
Curriculum Focus?**

Scott Warren

SREB

Essential Questions

- Why focus on math (and science)?
- What are the types of math learners?
- How can we link math to other content areas?
- What are math process standards?
- How can all content areas address these standards?

Packets

- Numeracy Definition
- Current Status
- Numeracy Goals
- Surveys – Teacher, Leader, Student
- Best Practices
- Math Learner Types

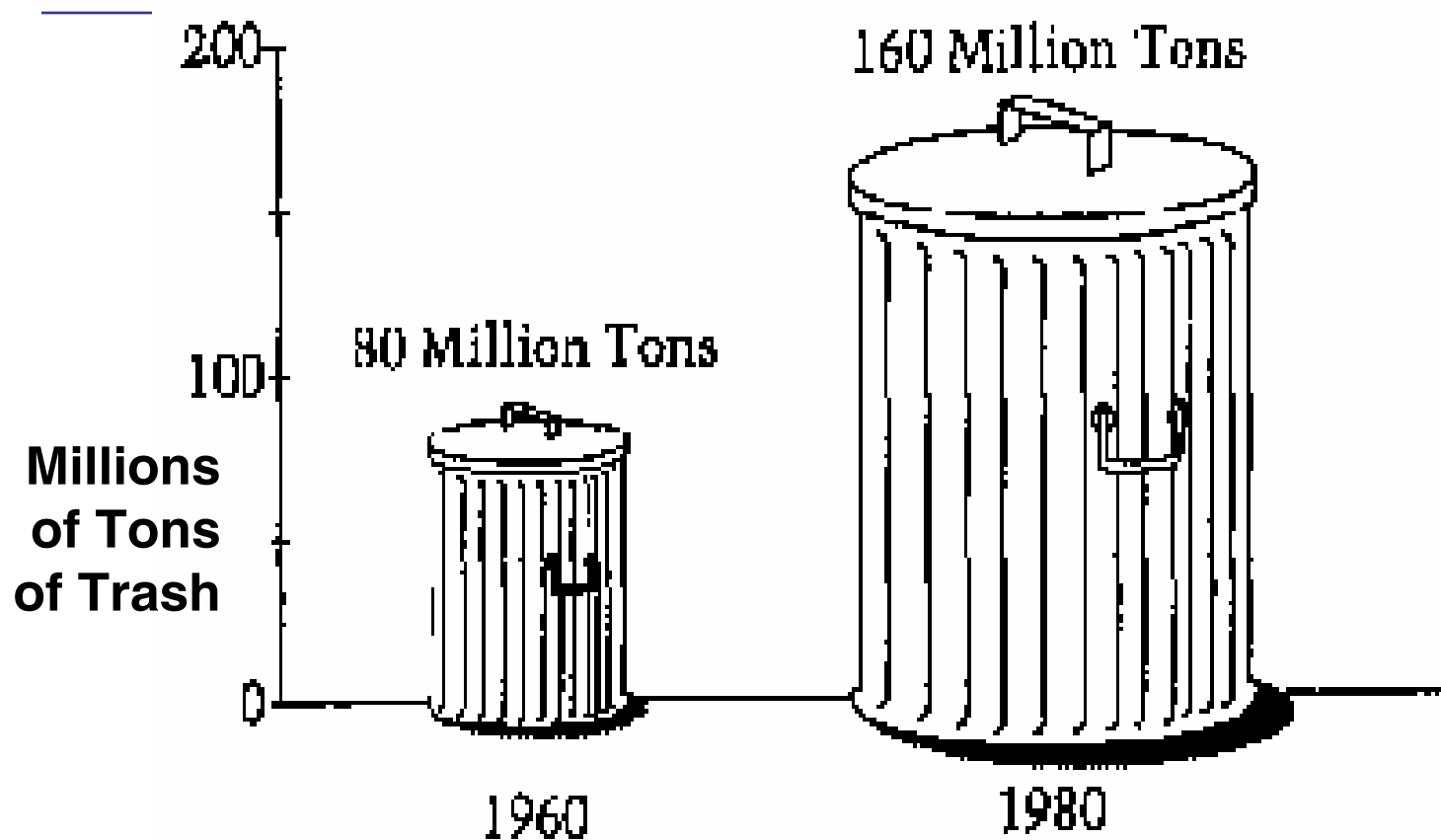
First....

- **What is numeracy? Much more than arithmetic!**
 - **Sometimes called mathematical literacy**
 - **Interpret and understand numeric symbols and relationships**
 - **Communicate and represent math concepts**
 - **Look at the world in terms of math**
 - **An appreciation of math**

Why do we need to focus on numeracy?

- **The impact of technology on the workplace**
- **The need to be a knowledgeable consumer**
- **Advancements in scientific research**
- **The increased number of technology-based jobs**

THE UNITED STATES IS PRODUCING MORE TRASH



The pictograph shown above is misleading. Explain why.

How often are middle grades students using math skills to solve problems in exploratory classes?

	Percentage	Mean Math Score
Never Required	24	144
Once/twice monthly	25	154

Math Goal: 170

How often do high school students use math to solve real-world problems with more than one possible answer?

	Percentage	Mean Math Score
At most once/yr	22	291
Once/twice monthly	27	305

Math Goal: 297

How often do middle grades students solve math problems other than from textbooks?

	Percentage	Mean Math Score
At most twice/yr	14	138
Once/twice monthly	14	155

Math Goal: 170

SREB

Southern
Regional
Education
Board

How often do high school students solve math problems other than from textbooks?

	Percentage	Mean Math Score
At most once/yr	26	294
Once/twice monthly	22	304

Math goal: 297

WARNING: For applications to skin areas there is a 15 percent chance of developing a rash. If a rash develops, consult your physician.

Which of the following is the best interpretation of this warning?

- Don't use the medication on your skin--there's a good chance of developing a rash.
- For application to the skin, apply only 15 percent of the recommended dose.
- If a rash develops, it will probably only involve 15 percent of the skin.
- About 15 of 100 people who use this medication develop a rash.
- There is hardly a chance of getting a rash using this medication.

Numeracy Across the Curriculum: Key Indicators

SREB

- All students take four years of mathematics
- All seniors take mathematics
- Teachers create units of study requiring students to **apply mathematical concepts**.
- Graphing calculators and manipulatives are used to make abstract concepts concrete
- **All classrooms** expect students to use these skills:
 - Problem Solving
 - Reading and Communicating
 - Estimating and Verifying Answers
 - Logical Reasoning
 - Using Technology

Math Instruction: Fact-based vs Thought Based

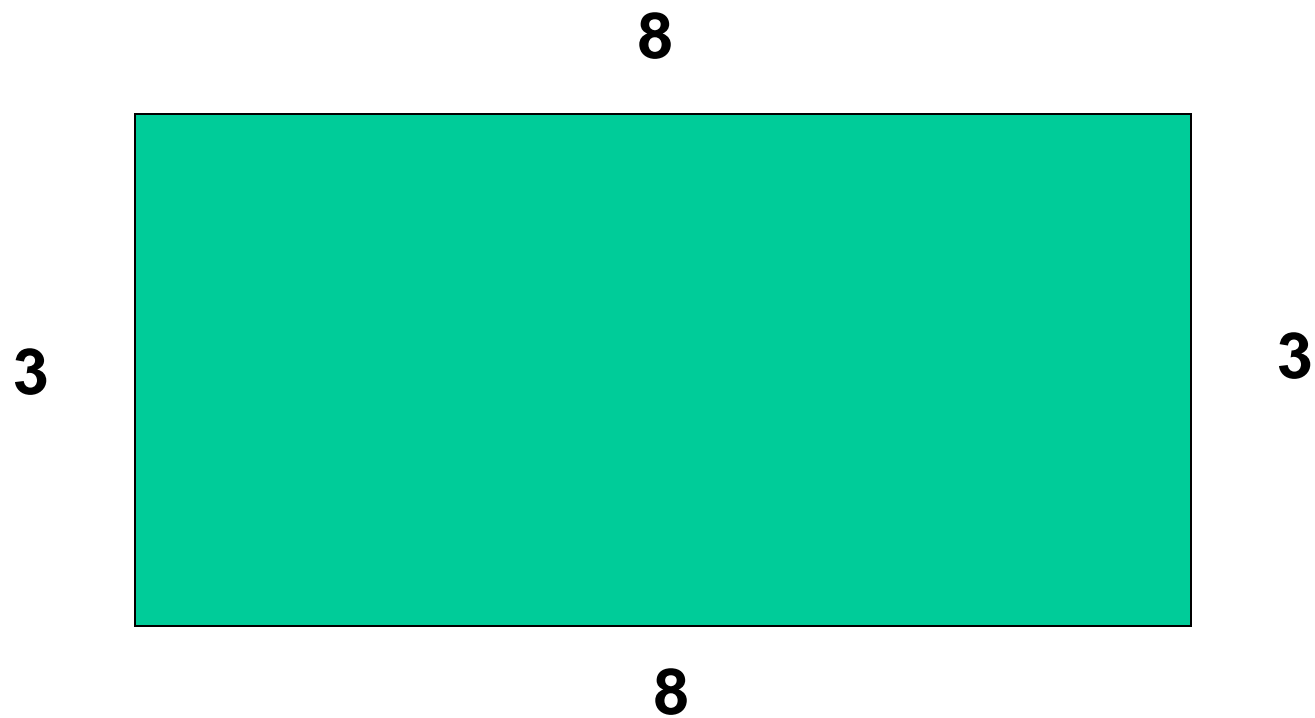
- Find the area of the rectangle below



SREB

Southern
Regional
Education
Board

Find the area of the rectangle below.



SREB

**The problem: 83% versus 37%
for 8th graders**

Southern
Regional
Education
Board

Traditional:

We are investing \$1,000.00 at 5% for 5 years compounded semi-annually. How much money would you make?

Revised:

We are investing \$1,000.00 for 5 years

- a) 5% compounded semi-annually
- b) 4.9% compounded quarterly
- c) 4.75% compounded continuously
- Which would you choose if you were doing the investing?
- Explain your answer

Traditional:

- What is the probability of drawing a blue marble from a bag containing 3 green, 5, yellow, 6 blue and 10 yellow marbles?

Revised:

- How many blue marbles would you need to add to the original bag of marbles to make the probability of drawing a blue marble 0.5?

Traditional:

- Find the circumference and area of a circle with a diameter of 15 feet.

Revised:

- You are VERY hungry. Given a choice between a 12" round pizza or a 12" square pizza that would cost the same, which would you choose? Defend your choice.

SREB

Southern
Regional
Education
Board

Math Learning Styles

- **Mastery**
- **Understanding**
- **Interpersonal**
- **Self Expressive**

What style are you?

- See pages 14-16 for an example of the different types of learners.
- Discuss at your tables these questions (p. 17):
 1. What type of math learner was each student?
 2. What type of math learner are you?
 3. How would you teach the different types of math learners?
 4. Which one has the most trouble in our current set-up?

Numeracy Across the Curriculum

- **Math in science and career technical: using terminology and procedures in the same manner.**
- **Other content areas: using math process skills in all classes**
- **NOTE: MATHEMATICS, NOT ARITHMETIC**

NCTM Standards

- **Content Standards**
 - number and operations
 - algebra
 - geometry
 - measurement
 - data analysis and probability
- **Process Standards**
 - Problem Solving
 - Reading and Communicating
 - Estimating and Verifying Answers
 - Logical Reasoning
 - Using Technology

How can teachers in all content areas focus on math process standards?

- **Example: Logical Reasoning in English – Students write a letter to the editor of a local newspaper.**
- **Example: Reading and Communicating in Construction: The use of terms such as slope in math is communicated as what in construction?**
- **Brainstorm together to see if you can think of ways every teacher can emphasize these standards. (p. 18)**

Creating a Numeracy Focus

- 1. Enroll more students in higher level math**
- 2. Focus on application of math:
Change from math at school to math at work!**
- 3. Teach to all learning types**
- 4. Use common vocabulary across courses**
- 5. Emphasize math processes in all classes**

SREB

Southern
Regional
Education
Board

Questions

- Handout has multiple resources
- For a copy of the PowerPoint e-mail scott.warren@sreb.org
- Final thoughts??????