

# Information Night for Parents





# Goals for the Evening:

- To provide an overview of the curriculum materials;
- To provide hands-on experience with a selection of mathematics investigations;
- To offer suggestions for how to support your son or daughter at home.

# MathScape Overview



# Who Produced This Curriculum?

Funder

National Science Foundation



Core  
Developers

Education Development Center, Inc.  
Creative Publications



Contributors

Shell Ctr. for Mathematical Educ., England  
EdMath Curriculum Services, Australia  
Classroom Teachers

Publisher

Glencoe/McGraw-Hill



*National Science Foundation  
funded developers to create K-12  
materials to address:*

- NCTM Standards
- State and local frameworks



# What is Standards-Based Math?

- emphasizes aspects of NCTM's *Principles and Standards for School Mathematics*
- aims to promote deep mathematical understanding
- is based on common core beliefs



# Core Beliefs

- Mathematical literacy is essential to becoming an informed and competent citizen.
- Students develop mathematical literacy by actively doing mathematics.
- All students can become mathematically literate.
- Literacy involves understanding mathematical principles, developing mathematical ways of thinking, and developing fluency with number, geometry, and data.

A standards-based approach to mathematics attempts to open up students' mathematical thinking

### Closed Form

*What does*  
 $6 + 5 = ?$

$$\begin{array}{r} 6 \\ + 5 \\ \hline \end{array}$$



A standards-based approach to mathematics attempts to open up students' mathematical thinking

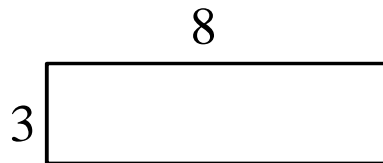
Closed Form	Open Ended
<p data-bbox="471 839 716 943"><i>What does <math>6 + 5 = ?</math></i></p> $\begin{array}{r} 6 \\ + 5 \\ \hline \square \end{array}$	<p data-bbox="861 815 1271 1043"><i>What combinations of numbers will add up to 11?</i></p> $\square + \square = 11$

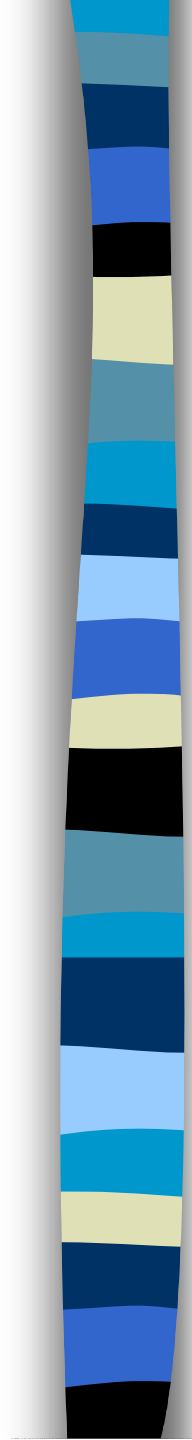
A standards-based approach to mathematics attempts to open up students' mathematical thinking



<b>Closed Form</b>	<b>Open Ended</b>	<b>Higher-Level Thinking</b>
<p><i>What does</i> <math>6 + 5 = ?</math></p> $\begin{array}{r} 6 \\ + 5 \\ \hline \square \end{array}$	<p><i>What combinations of numbers will add up to 11?</i></p> $\square + \square = 11$	<p><i>How do you know you have found them all?</i></p>

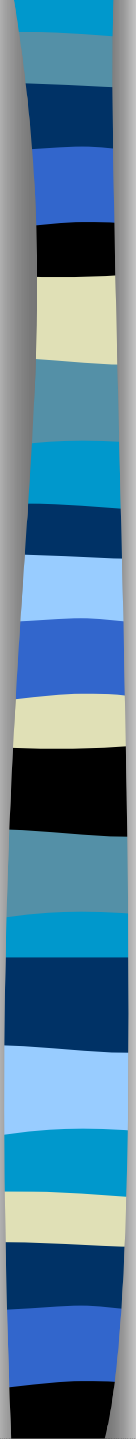
## Closed Form


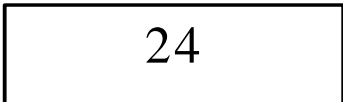
*What is the area?*





<b>Closed Form</b>	<b>Open Ended</b>
<p data-bbox="369 639 784 686"><i>What is the area?</i></p> <p data-bbox="556 739 587 782">8</p> <p data-bbox="378 836 407 879">3</p> <div data-bbox="413 796 759 899"></div>	<p data-bbox="857 522 1242 765"><i>What might the dimensions of this rectangle be?</i></p> <div data-bbox="880 799 1226 899"></div>



<b>Closed Form</b>	<b>Open Ended</b>	<b>Extension</b>
<p data-bbox="369 639 784 682"><i>What is the area?</i></p> <p data-bbox="556 739 585 782">8</p> <p data-bbox="378 839 407 882">3</p> 	<p data-bbox="857 522 1244 765"><i>What might the dimensions of this rectangle be?</i></p> 	<p data-bbox="1344 522 1707 743"><i>How many possible dimensions are there?</i></p> <p data-bbox="1311 822 1734 986"><i>How do you know you have them all?</i></p>



# NCTM Geometry Standard

- Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships



## In middle school:

- Understand relationships among the angles, side lengths, perimeters, areas, and volumes of similar objects



# How Students Learn Mathematics

*“Students are active individuals who construct, modify, and integrate ideas by interacting with materials, the world around them and their peers.”*

Source: New Hampshire K-12 Curriculum Framework

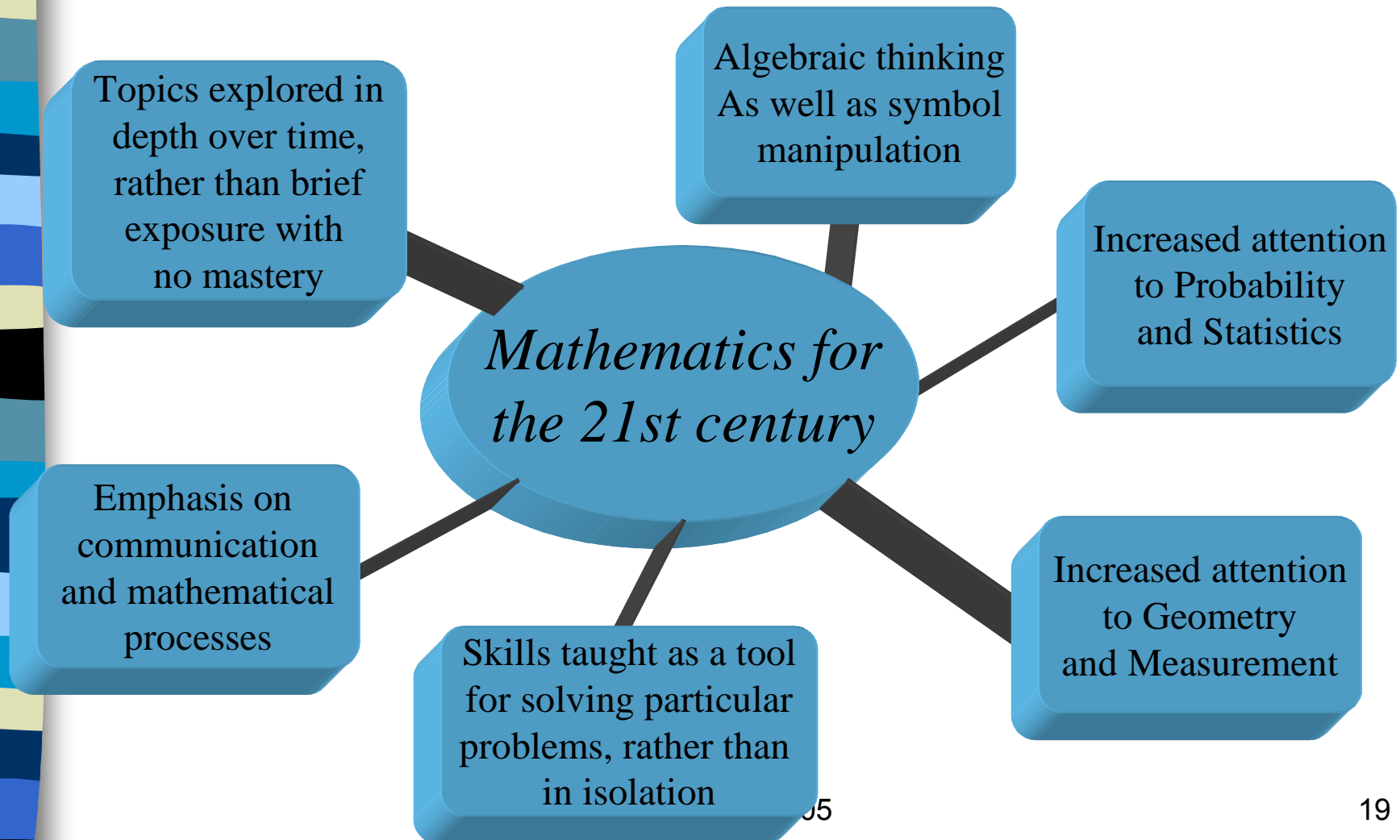
# Making Mathematics Meaningful

Thematic Challenge	Mathematical Investigation
Design ramps to improve handicapped access to a building.	Explore right triangles, similarity and the Pythagorean theorem.

# Making Mathematics Meaningful

Thematic Challenge	Mathematical Investigation
Predict the future population in different countries.	Explore the differential results of linear and geometric growth.

# What's the Mathematics?





# Lesson Design

- Accessible “Entry Point” for ALL
- Multiple “Exit Points” reflecting varying levels of sophistication
- Open-Ended: More than one approach or solution



# Tiling the Garden Beds

- Complete the investigation *Tiling the Garden Beds* on page 334 of the 6th grade text.
- Use the table that you created to write an expression that describes the number of tiles needed for a garden of any length.



# Tiling the Garden Beds

Possible Verbal Solutions:

- “Twice the length plus 6 for the sides”
- “Add three to the length and double it.”
- “Add two to the length, double this sum for the top and bottom, and then add 2 for the ends.”



# Tiling the Garden Beds

Possible Algebraic Expressions:

- $2l + 6$
- $2(l + 3)$
- $2(l + 2) + 2$



# Applying and Extending the Rule

- How would find the length of the garden if you knew only the number of tiles in the border?
- Can you figure out the number of tiles needed for gardens of any length and a width of 2?



# Classroom Experiences

## Students will engage in the following:

- Challenging mathematical investigations
- Collaborative pair and group work
- Individual work
- Culminating projects
- Class Discussions
- Written communication
- Oral presentations
- Various activities to assess understanding
- Use appropriate technology



# Investigations

- *Chance Encounters*  
Lesson 5: Mystery Spinners
- *Language of Algebra*  
Lesson 12, Part One: The Best Bus Deal

# Feedback from Teachers using *MathScape*

Impressed by students'  
Mathematical  
thinking

Surprised by  
some things  
students didn't  
know

High level  
of student  
involvement

Got to know their  
students more

Increased class  
participation

Particularly liked the  
depth of mathematics  
in the investigations



# MathScape Homework

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## APPLYING SKILLS-

Provides students a chance to practice skills that came up in the lesson



# MathScape Homework

- **EXTENDING CONCEPTS:**

problems in which students must apply ideas from the lesson to different situations



# MathScape Homework

- **MAKING CONNECTIONS**

connects the concepts to another subject area or context, offers extension problems, or asks students to write about their ideas or methods.



# Helping at Home

- Your son or daughter gets stuck on a homework problem:
  - Understand the teacher's expectations
  - 5 Minute Rule
- Projects
  - Time management/organization



# Helping at Home

When your child is stuck:

- Help your child determine the question(s) they need to ask the teacher in order to complete the problem.



# Resources

- *Quick Review Math Handbook*
- *Math Skills Maintenance Masters*