

13. 48.3°  
 12. Yes  
 11. No  
 10. 2 cm  
 9. 3.2 cm  
 8.  $\frac{5}{2}$  m  
 7. 8.75 or  $8\frac{3}{4}$  sq in  
 6. 8.37 sq mm  
 5. 11 cm  
 4. 15 sq m  
 17. 6"  
 3. 20 sq ft  
 16. No  
 2. 68.89 sq m  
 15. 72  
 14.  $76\frac{8}{3}$ °

# BASIC MATH

## The Complete Course Lesson Nineteen

### Geometry 1

KA8419

### Teaching Guide & Worksheet

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#### HOW TO USE THE VIDEO AND TEACHING GUIDE

1. The "STOP TO THINK" signal means pause to think.
2. The "STOP TO WORK" signal means work the problem(s).
3. Rewind the tape and watch the lesson again if the concept is not clear.
4. Use "Learning Strategies" section of the Teachers Guide as memory aids and topics for classroom discussion.
5. Students should complete the exercises on the worksheet to confirm their understanding of this lesson.

Instructors may duplicate the worksheets as needed

# LEARNING STRATEGIES

## GEOMETRY

- A. The derivation of the word: "measure the earth"
  - B. Geometry is visual and specific
  - C. Geometry can be used to represent abstract concepts
  - D. Geometry is used in modeling, measuring, and scale drawing
- 

## Basic geometric shapes

- A. Point
    - 1. No dimensions
    - 2. Location
  - B. Line
    - 1. One dimension
    - 2. Distance
  - C. Plane
    - 1. Two dimensions
    - 2. Area
  - D. Space
    - 1. Three dimensions
    - 2. Volume
  - E. Line segment: finite distance, has endpoints
  - F. Ray: one endpoint, infinite in length
  - G. Angle: two rays joined at their endpoints (vertex)
  - H. Polygon: closed figure
    - 1. Sides are line segments
    - 2. Sides joined at endpoints to form vertices
- 

## ANGLES

- A. Why is a circle 360 degrees?
  - B. Defining types of angles
    - 1. Acute: less than 90 degrees
    - 2. Right: 90 degrees
    - 3. Obtuse: between 90 and 180 degrees
    - 4. Straight: 180 degrees
  - C. Measuring angles using a protractor
  - D. Complementary angles: angles whose sum is 90 degrees
  - E. Supplementary angles: angles whose sum is 180 degrees
- 

## TYPES OF QUADRILATERALS

- A. Quadrilateral: four-sided polygon
- B. Square
  - 1. An equilateral quadrilateral
  - 2. All four angles are 90 degrees
- C. Rhombus
  - 1. An equilateral quadrilateral
  - 2. All angles are not equal
- D. Parallelogram: a quadrilateral with opposite sides parallel
- E. Rectangle: a parallelogram with four right angles
  - 1. Are all squares rectangles?
  - 2. Are all rectangles squares?
- F. Trapezoid: a quadrilateral with one pair of parallel sides

## AREA

- A. Definition: the amount of surface within a two-dimensional shape
  - B. The area of a square: how many unit squares fit inside the square
  - C. Determine visually that the area of a square is the product of side times side, or side "squared"
  - D. The area of a rectangle: determine visually that the area is the product of length times width
  - E. The area of a parallelogram: demonstrate that the area is the product of base times height
  - F. Apply formulas using numerical examples
- 

## VOLUME

- A. Definition: space, how many cubes fit in the three-dimensional shape?
- B. Determine visually that the volume of a cube is side times side times side, or side "cubed"
- C. Determine that the volume of a rectangular prism (box) is the length times the width times the height

# WORKSHEET STRATEGIES

- 1. The complement of  $40^\circ$  is  $50^\circ$  and the supplement of  $40^\circ$  is  $140^\circ$ . What is the supplement of the complement of  $12^\circ$ ?
- 2. A square has a side of 8.3 m. Find the area.
- 3. A rectangle has a length of  $4\frac{4}{5}$  feet and a width of  $4\frac{1}{6}$  feet. Find the area.
- 4. A parallelogram has a base of  $4\frac{2}{7}$  meters and a height of 3.5 meters. Find the area.
- 5. A cube has a volume of 1331 cubic centimeters. Find the length of the cube's side.
- 6. Is a rhombus a square?
- 7. Is a square a rhombus?
- 8. The complement of  $41.7^\circ$  is \_\_\_\_\_.
- 9. The supplement of  $103\frac{5}{8}^\circ$  is \_\_\_\_\_.
- 10. An angle equal to one fifth of a circle measures \_\_\_\_\_ $^\circ$ .
- 11. Can a trapezoid be equilateral?
- 12. A box has dimensions of 9" by 8" by 3". What is the side of a cube with the same volume?

Fill in the blank for each rectangle.

	L	W	A
6.	2.7 m.	3.1 m.	
7.	$4\frac{3}{8}$ in.	2 in.	
8.	12 m.		8 sq. ft.
9.	2.5 m.		8 sq. cm.
10.	3.2 m.		640 sq. cm.