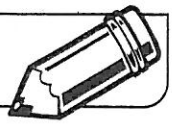
Name Date Time

LESSON 3•2

Solving Place-Value Puzzles



Hundred (100) Billions	Ten (10) Billions	One (1) Billions	Hundred (100) Millions	Ten (10) Millions	One (1) Millions	Hundred (100) Thousands	Ten (10) Thousands	One (1) Thousands	Hundred (100) Units	Ten (10) Units	One (1) Units
BILLIONS			MILLIONS			THOUSANDS			UNITS		
4	2	3	9	8	5	1	0	3	2	6	7

1. Color each section label with a different color.
2. For each puzzle below:
   - Read the clues to write the digits in the chart.
   - Write each number in **number-and-word notation** and **standard notation.**

Puzzle 1

- Write 4s in the 100-billions and 100-millions place.
- Write 5s in the 100s place and 100-thousands place.
- Write 6 in the 1-millions place and half of 6 in the 10-millions place.
- Write 0s where you need them to complete the number.

Number-and-word notation:

Standard notation:

Puzzle 2

- Write 3 in the 10-thousands place and double it in the 10-millions place.
- Write 8 in the 100-millions place and half of 8 in the 10s place.
- Write 9 in the 1-thousands place.
- Write 2s where you need them to complete the number.

Number-and-word notation:

Standard notation:

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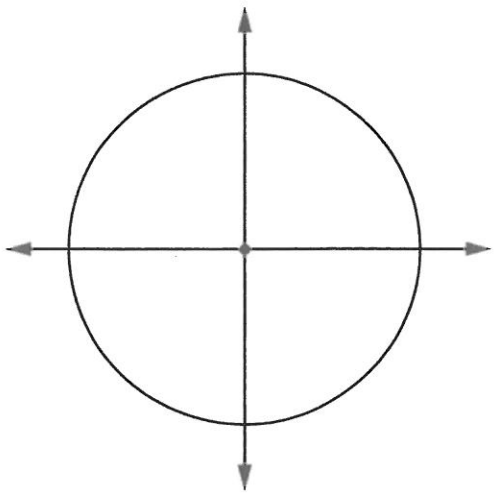
LESSON 3•3

Measuring the Parts

Use the figure at the right to help you think about the total number of degrees in a circle.



Then use what you know about angles and the total number of degrees in a circle to answer the following questions.

1. How many degrees are in a circle? _____

2. What is the degree measure for each of the 4 angles in the circle above? _____

3. If a circle is divided into 8 equal parts, what is the degree measure for each of the 8 angles formed? _____

4. If a circle is divided into 12 equal parts, what is the degree measure for each of the 12 angles formed? _____

5. If a circle is divided into 6 equal parts, what is the degree measure of each of the 6 angles formed? _____

6. If a circle is divided into equal parts so that the angles have a degree measure of 120°, how many angles would be formed? _____

7. If a circle is divided into 360 equal parts, what is the degree measure of each of the 360 angles? _____

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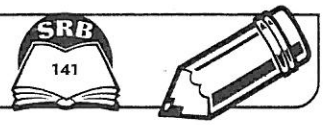
LESSON 3•4

Points, Lines, and Angles



Identify the terms and objects in the riddles below. Use the words and phrases from the Word Bank to complete the table.

Word Bank

point	line segment	ray	line
angle	parallel lines	parallel line segments	intersecting lines
vertices	perpendicular lines	perpendicular line segments	vertex

	Clues	What Am I?
1	I am a location in space. It takes only one letter to name me.	
2	My length cannot be measured, but I am named by two of my points.	
3	I do not curve. I have only one end point.	
4	I am measured in degrees. I have a vertex. My sides are two rays.	
5	We have endpoints. When two of us meet, we form one or more right angles.	
6	There are always at least two of us. We have endpoints. We always stay the same distance apart.	
7	I am the point where two rays meet to form an angle.	
8	Two of us meet.	
9	Our lengths cannot be measured. When two of us meet, we form right angles.	
10	I am the endpoint where two sides of a polygon meet.	
11	My length can be measured. I have two endpoints.	
12	Our lengths cannot be measured. There are always at least two of us. We always stay the same distance apart.	

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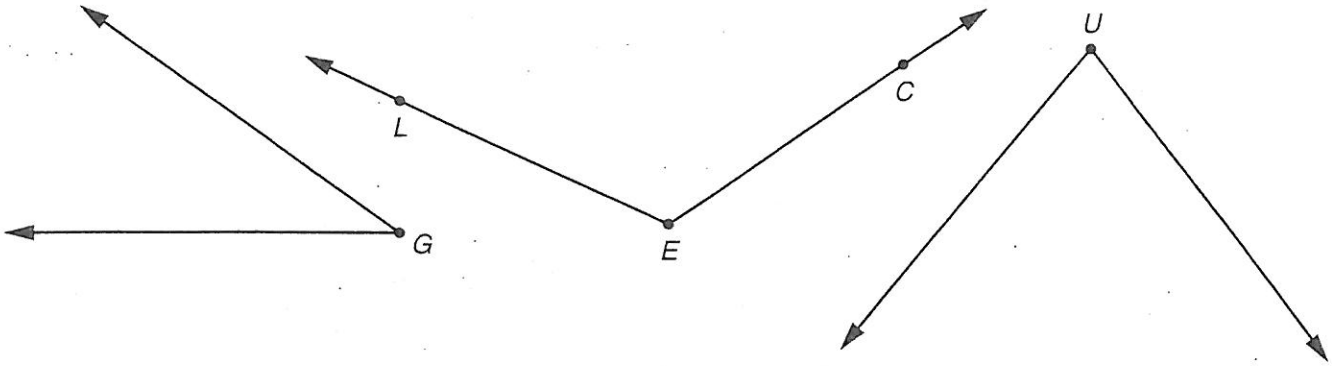
LESSON 3•4

Measuring and Drawing Angles *continued*

Use your full-circle protractor to measure each angle.



5. a. m∠*G* is about _____. **b.** m∠*LEC* is about _____. **c.** m∠*U* is about _____.

Draw and label the following angles. Use your half-circle protractor.

6. a. ∠*CAT:* 62° **b.** ∠*DOG:* 135°

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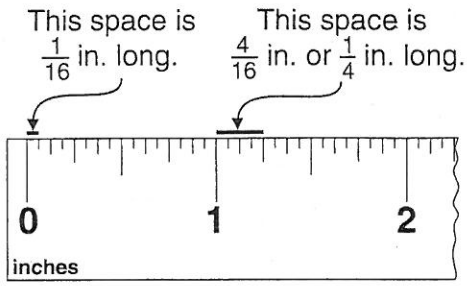
LESSON 3•5

Reading a Ruler

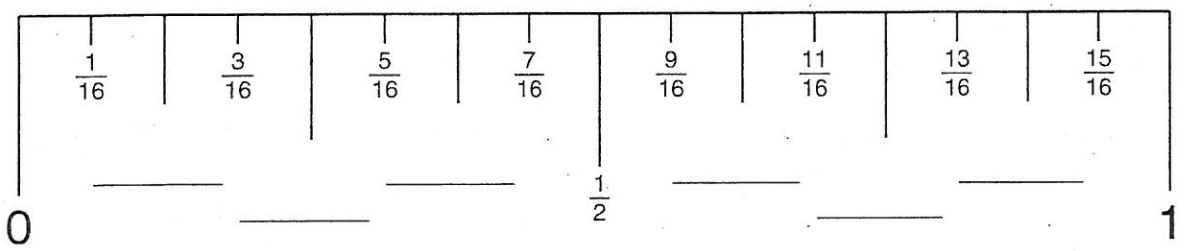
On rulers, inches are usually divided into halves, quarters, eighths, and sixteenths with marks that are different sizes. There are different ways to name a length. Look at the ruler to the right and give two other names for $\frac{1}{2}$ inch.

_____



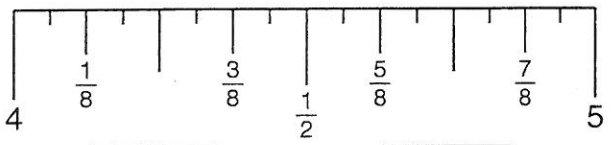
Fill in the blank spaces on each ruler. Identify these marks on your ruler.

1.



Scale: 6 inches represents 1 inch

2.



Scale: 3 inches represents 1 inch

Use your ruler to measure the line segments. Give two names for each line segment.

3. _____ _____

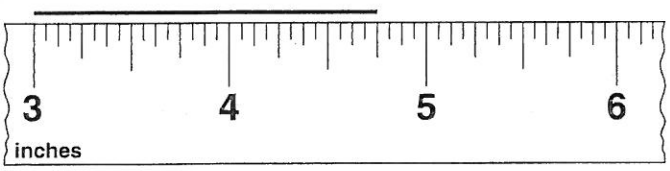
_____

4. _____ _____

_____

Use the ruler pictured to determine the length of the line segment. Give two names for the length of the line segment.

5. _____ _____



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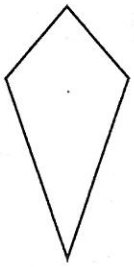
LESSON 3•7

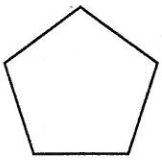
Vertex Connection

If you draw a line segment from one vertex of a polygon to any other vertex that does not share a common side, new shapes will be formed inside the polygon. Connect pairs of vertices in these polygons. Name the new shapes as they are formed.

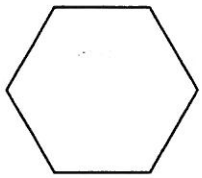
Write the name of each new polygon and as many true statements as you can about the polygons. Be sure to use what you know about the definitions of angles and lines.



kite



pentagon



hexagon

kite	
New Polygon	**Properties**

pentagon	
New Polygon	**Properties**

hexagon	
New Polygon	**Properties**

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LESSON 3•8

Naming Tessellations

Regular tessellations are named by giving the number of sides in each polygon around a vertex point. A vertex point of a tessellation is a point where vertices of the shapes meet.

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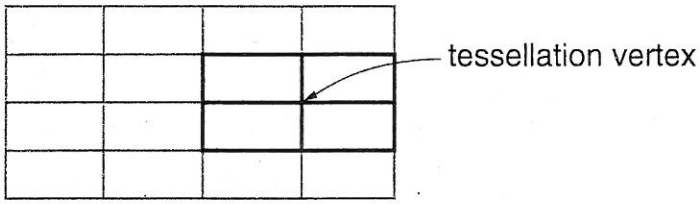
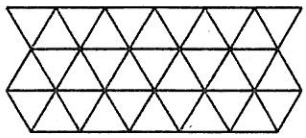


4.4.4.4

For example, the name of the rectangular tessellation above is 4.4.4.4. There are four numbers in the name, so there are four polygons around each vertex. Each of those numbers tells the number of sides in each of the polygons around a vertex point. The numbers are separated by periods. There are four 4-sided polygons around each vertex point.

Look at the tessellation below.

Choose a vertex.



1. How many shapes meet at the vertex point? _____

2. How many sides does each polygon have? _____

3. **a.** What is the name of this regular tessellation? _____

   b. Why? _____

   _____

4. Make a tessellation for each regular polygon on your geometry template. Use the back of this page if necessary. Name each regular tessellation.

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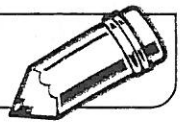
LESSON 3•9

Angle Measures in Polygons



The measure of the interior angles of a triangle is 180°. The number of triangles within a polygon is 2 less than the number of sides of the polygon.

1. Fill in the chart below using this pattern.

Polygons

Number of Sides	Number of Triangles	Sum of Angles
4	2	2 * 180° = 360°
5	3	3 * 180° = _____
6	4	4 * 180° = _____
7	5	___ * 180° = _____
13		___ * 180° = _____
26		___ * _____ = _____
51		___ * _____ = _____
63		___ * _____ = _____
85		___ * _____ = _____

2. Use expressions to complete the statement.

If *n* equals the number of sides in a polygon, _____ equals the number of triangles within the polygon, and _____ equals the sum of the angles in the polygon.