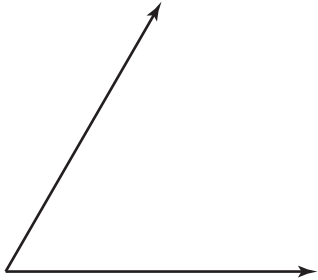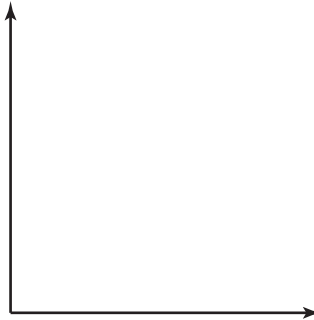**Chapter 7** **Fair Game Review**

Use a protractor to find the measure of the angle. Then classify the angle as *acute*, *obtuse*, *right*, or *straight*.

1.
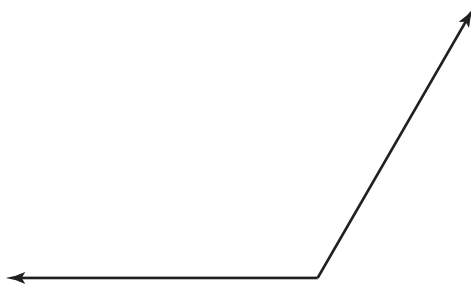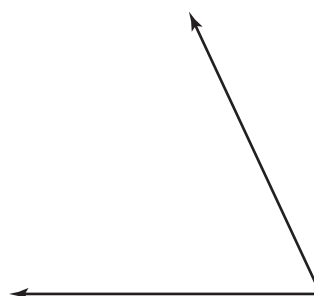
2.

3.

4.

5.

6.

Name _____ Date _____

Fair Game Review (continued)

Use a protractor to draw an angle with the given measure.

7. 80°

8. 35°

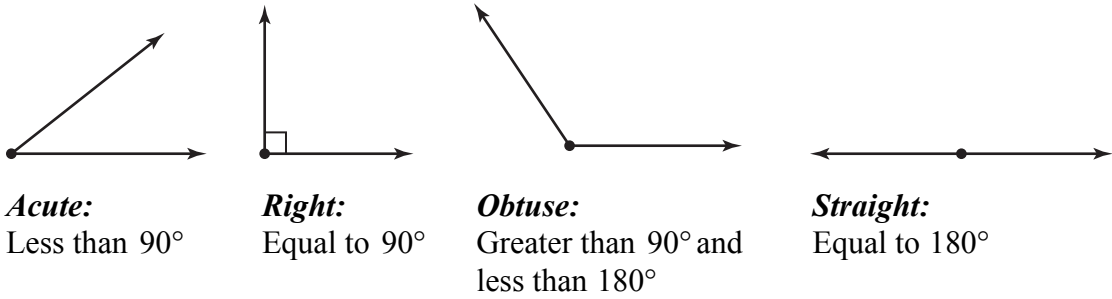**9.** 100°

10. 175°

11. 57°

12. 122°

7.1 Adjacent and Vertical Angles
For use with Activity 7.1

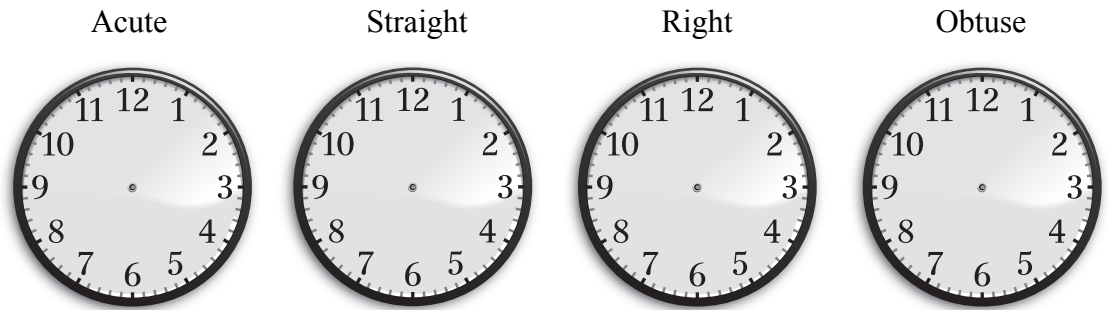**Essential Question** What can you conclude about the angles formed by two intersecting lines?

Classification of Angles

Acute:
Less than 90°

Right:
Equal to 90°

Obtuse:
Greater than 90° and less than 180°

Straight:
Equal to 180°

1 ACTIVITY: Drawing Angles

Work with a partner.

   a. Draw the hands of the clock to represent the given type of angle.

Acute	Straight	Right	Obtuse

   b. What is the measure of the angle formed by the hands of the clock at the given time?

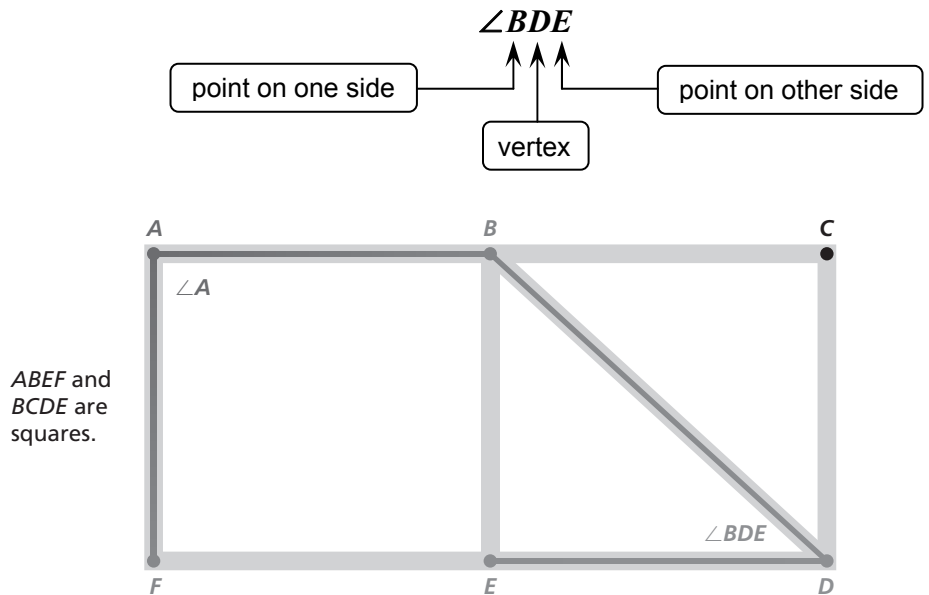   9:00   6:00   12:00

7.1 Adjacent and Vertical Angles (continued)

2 ACTIVITY: Naming Angles

Work with a partner. Some angles, such as ∠A, can be named by a single letter. When this does not clearly identify an angle, you should use three letters, as shown.

∠*BDE*

point on one side   point on other side

vertex

A   B   C

∠A

ABEF and
BCDE are
squares.

                                    ∠BDE

F   E   D

a. Name all of the right angles, acute angles, and obtuse angles.
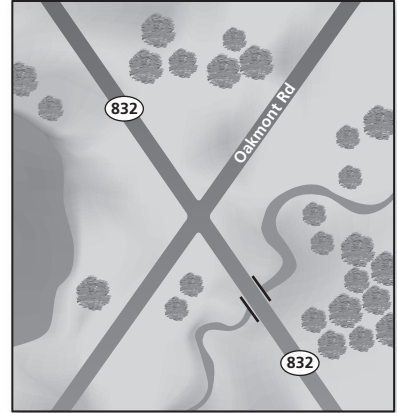
b. Which pairs of angles do you think are *adjacent*? Explain.

7.1 **Adjacent and Vertical Angles** (continued)

3 **ACTIVITY:** Measuring Angles

Work with a partner.

a. How many angles are formed by the intersecting roads? Number the angles.

b. **CHOOSE TOOLS** Measure each angle formed by the intersecting roads. What do you notice?

What Is Your Answer?

4. **IN YOUR OWN WORDS** What can you conclude about the angles formed by two intersecting lines?
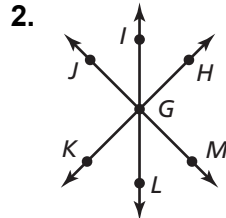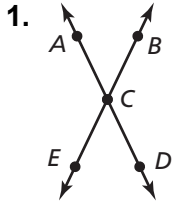
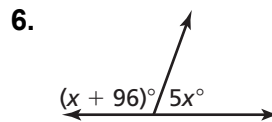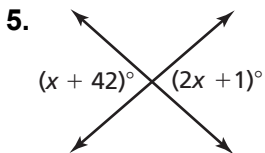**5.** Draw two acute angles that are adjacent.

Name _____ Date _____

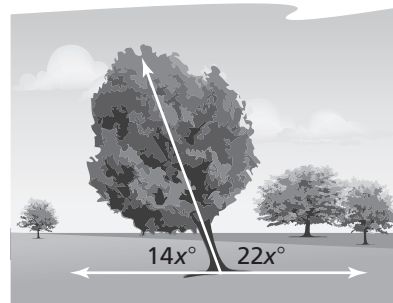**Name two pairs of adjacent angles and two pairs of vertical angles in the figure.**

1.

2.

Tell whether the angles are *adjacent* or *vertical*. Then find the value of *x*.

3.

$41°$
$x°$

4.

$x°$
$109°$

5.

$(x + 42)°$ $(2x + 1)°$

6.

$(x + 96)°$ $5x°$
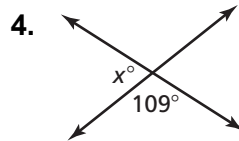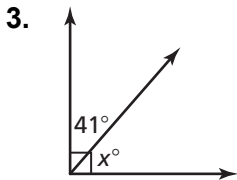
7. A tree is leaning toward the ground. How many degrees does the tree have to fall before hitting the ground?

$14x°$ $22x°$

Name_____ Date _____

7.2 Complementary and Supplementary Angles
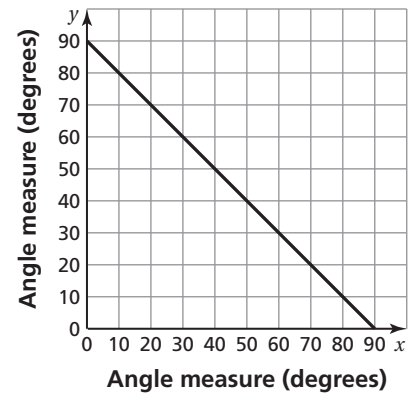**For use with Activity 7.2**

Essential Question How can you classify two angles as complementary or supplementary?

1 ACTIVITY: Complementary and Supplementary Angles

Work with a partner.

a. The graph represents the measures of *complementary angles*. Use the graph to complete the table.

x		20°		30°	45°		75°
y	80°		65°	60°		40°	

b. How do you know when two angles are complementary? Explain.

Angle measure (degrees) (y-axis, 0 to 90)
Angle measure (degrees) (x-axis, 0 to 90)

c. The graph represents the measures of *supplementary angles*. Use the graph to complete the table.

x	20°		60°	90°		140°	
y		150°		90°	50°		30°
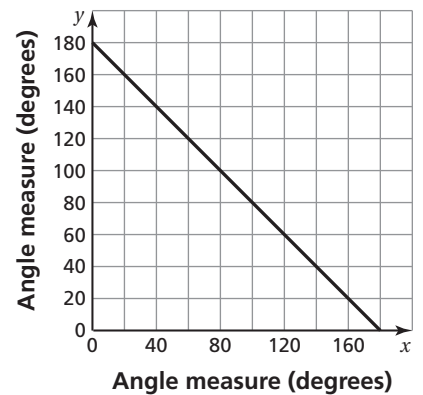
d. How do you know when two angles are supplementary? Explain.

Angle measure (degrees) (y-axis, 0 to 180)
Angle measure (degrees) (x-axis, 0 to 160)

7.2 **Complementary and Supplementary Angles** (continued)

2 **ACTIVITY:** Exploring Rules About Angles

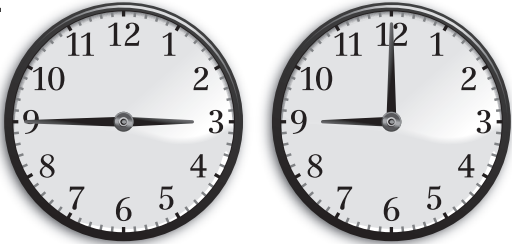**Work with a partner. Complete each sentence with *always*, *sometimes*, or *never*.**

   a. If x and y are complementary angles, then both x and y are _____ acute.

   b. If x and y are supplementary angles, then x is _____ acute.

   c. If x is a right angle, then x is _____ acute.

   d. If x and y are complementary angles, then x and y are _____ adjacent.

   e. If x and y are supplementary angles, then x and y are _____ vertical.

3 **ACTIVITY:** Classifying Pairs of Angles

Work with a partner. Tell whether the two angles shown on the clocks are *complementary*, *supplementary*, or *neither*. Explain your reasoning.

a.

b.

c.

d.

7.2 **Complementary and Supplementary Angles** (continued)

4 **ACTIVITY:** Identifying Angles

Work with a partner. Use a protractor and the figure shown.

a. Name four pairs of complementary angles
and four pairs of supplementary angles.
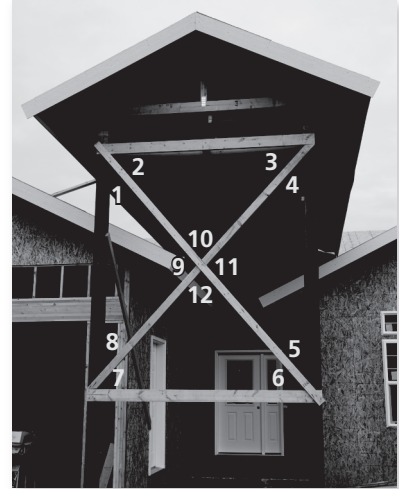
b. Name two pairs of vertical angles.

What Is Your Answer?

5. IN YOUR OWN WORDS How can you classify two angles as
complementary or supplementary? Give examples of each type.

Name _____ Date _____

7.2 Practice
For use after Lesson 7.2

Tell whether the angles are *complementary*, *supplementary*, or *neither*.

1.

43°
47°

2.

48°
27°

3.

52°   128°

Tell whether the angles are *complementary* or *supplementary*. Then find the value of *x*.

4.

10$x°$
30°

5.

$(4x + 40)°$ $3x°$

6. Find the value of x needed to hit the ball in the hole.

$x°$
79°
$x°$

Name_____ Date_____

Essential Question   How can you construct triangles?

1 **ACTIVITY:** Constructing Triangles Using Side Lengths

Work with a partner. Cut different-colored straws to the lengths shown. Then construct a triangle with the specified straws, if possible. Compare your results with those of others in your class.

2 cm
red ●━━━━━●

4 cm
blue ●━━━━━━━━●

6 cm
green ●━━━━━━━━━━━●

7 cm
purple ●━━━━━━━━━━━━━●
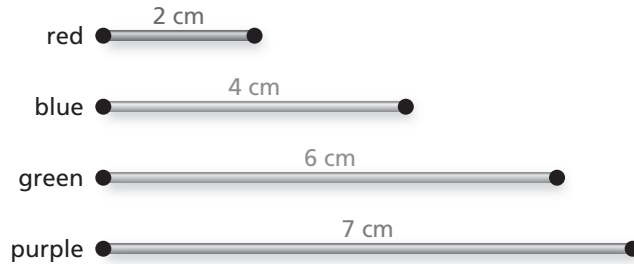
a. blue, green, purple

b. red, green, purple

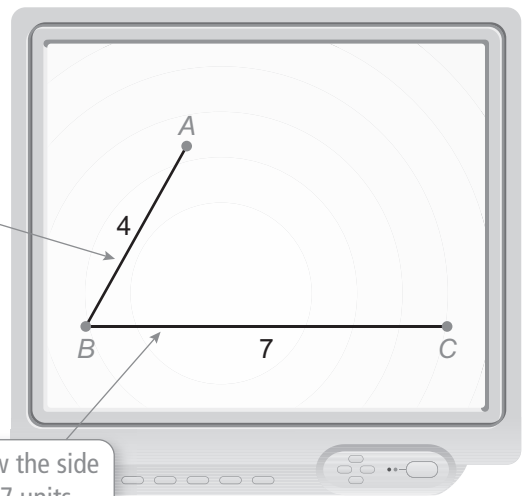**c.** red, blue, purple

d. red, blue, green

2 **ACTIVITY:** Using Technology to Draw Triangles (Side Lengths)

Work with a partner. Use geometry software to draw a triangle with the two given side lengths. What is the length of the third side of your triangle? Compare your results with those of others in your class.

a. 4 units, 7 units

Begin by drawing the side length of 4 units.

A

4

B   7   *C*

Then draw the side length of 7 units.

7.3 **Triangles** (continued)

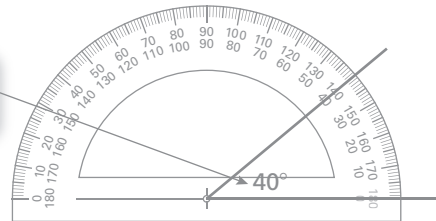**b.** 3 units, 5 units   **c.** 2 units, 8 units   **d.** 1 unit, 1 unit

3 **ACTIVITY:** Constructing Triangles Using Angle Measures

Work with a partner. Two angle measures of a triangle are given. Draw the triangle. What is the measure of the third angle? Compare your results with those of others in your class.

     a. 40°, 70°

Begin by drawing the angle measure of 40°.
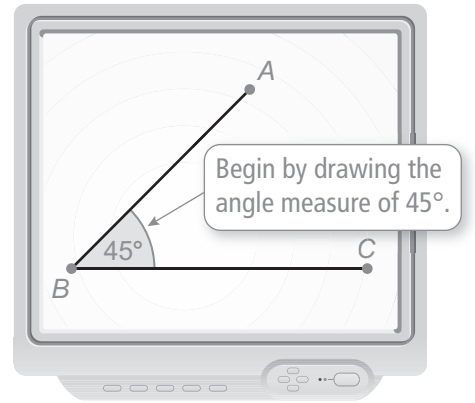
40°

     b. 60°, 75°   **c.** 90°, 30°   **d.** 100°, 40°

Name_____ Date _____

7.3 **Triangles** (continued)

4 **ACTIVITY:** Using Technology to Draw Triangles (Angle Measures)

Work with a partner. Use geometry software to draw a triangle with the two given angle measures. What is the measure of the third angle? Compare your results with those of others in your class.

a. 45°, 55°

b. 50°, 40°

c. 110°, 35°

What Is Your Answer?

5. IN YOUR OWN WORDS How can you construct triangles?

6. REASONING Complete the table below for each set of side lengths in Activity 2. Write a rule that compares the sum of any two side lengths to the third side length.

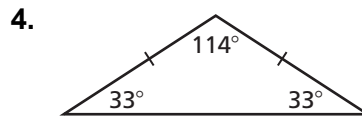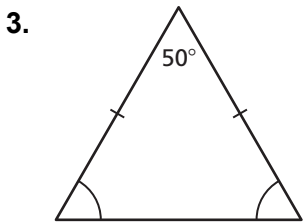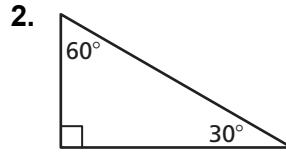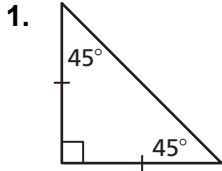| Side Length			
Sum of Other Two Side Lengths			

7. REASONING Use a table to organize the angle measures of each triangle you formed in Activity 3. Include the sum of the angle measures. Then describe the pattern in the table and write a conclusion based on the pattern.

	$\angle 1$	$\angle 2$	$\angle 3$	$\angle 1 + \angle 2 + \angle 3$
a.				
b.				
c.				
d.				

Name _____ Date _____

Classify the triangle.

1.

2.

3.

4.

Draw a triangle with the given angle measures.
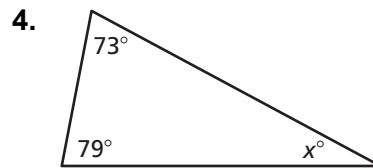
5. 28°, 42°, 110°

6. 67°, 98°, 15°

7. 31°, 59°, 90°

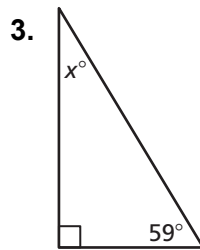**8.** What type of triangle must the hanger be to hang clothes evenly?

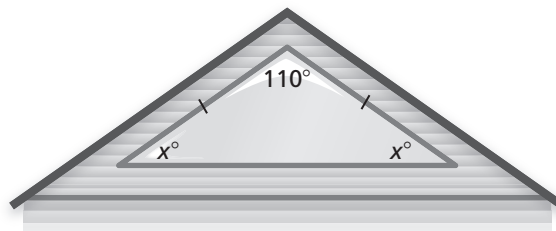Name_____ Date_____
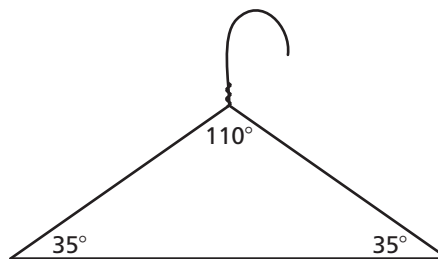
Extension 7.3 **Practice**
For use after Extension 7.3

Find the value of *x*. Then classify the triangle.

1.

60°

x°   *x*°

2.

120°

x°   *x*°

3.

x°

59°

4.

73°

79°   *x*°
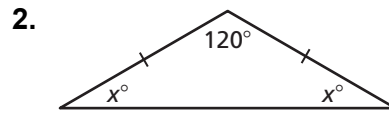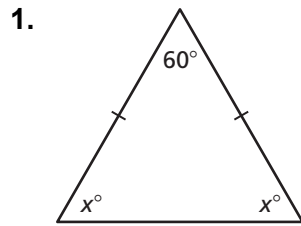
5. Find the value of *x*.

110°

x°   *x*°

Extension 7.3 **Practice** (continued)

Tell whether a triangle can have the given angle measures. If not, change the first angle measure so that the angle measures form a triangle.

6. 25°, 64°, 91°

7. 55.5°, 94°, 31.5°

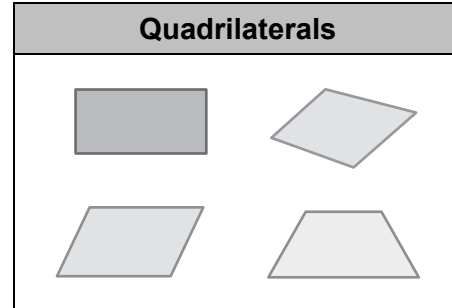**8.** 85°, 64°, 30°

9. 33°, 140°, 12°

10. 99°, 53°, 28°

11. 79°, 54°, 47°

7.4 Quadrilaterals
For use with Activity 7.4

Essential Question   How can you classify quadrilaterals?

Quad means *four* and *lateral* means *side*. So, quadrilateral means a polygon with *four sides*.

Quadrilaterals

1 **ACTIVITY:** Using Descriptions to Form Quadrilaterals

Work with a partner. Use a geoboard to form a quadrilateral that fits the given description. Record your results on geoboard dot paper.

   a. Form a quadrilateral with exactly one pair of parallel sides.

   b. Form a quadrilateral with four congruent sides and four right angles.

   c. Form a quadrilateral with four right angles that is *not* a square.

   d. Form a quadrilateral with four congruent sides that is *not* a square.

   e. Form a quadrilateral with two pairs of congruent adjacent sides and whose opposite sides are *not* congruent.

   f. Form a quadrilateral with congruent and parallel opposite sides that is *not* a rectangle.

7.4 **Quadrilaterals** (continued)

2 **ACTIVITY:** Naming Quadrilaterals

Work with a partner. Match the names *square*, *rectangle*, *rhombus*, *parallelogram*, *trapezoid*, and *kite* with your 6 drawings in Activity 1.
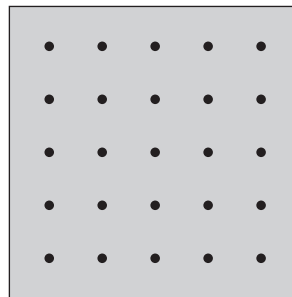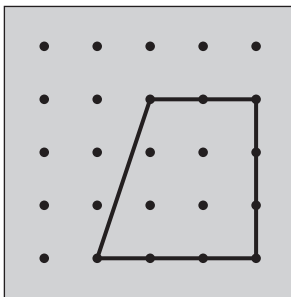
3 **ACTIVITY:** Forming Quadrilaterals

Work with a partner. Form each quadrilateral on your geoboard. Then move *only one* vertex to create the new type of quadrilateral. Record your results below.
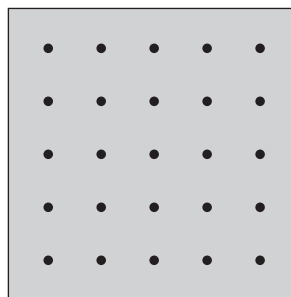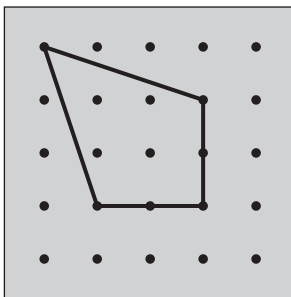
a. Trapezoid   ⟹   Kite

**b.** Kite   ⟹   Rhombus (*not* a square)

7.4 **Quadrilaterals** (continued)

4 **ACTIVITY:** Using Technology to Draw Quadrilaterals

Work with a partner. Use geometry software to draw a quadrilateral that fits the given description.

Begin by drawing two sides that form a right angle.

a. a square with a side length of 3 units

b. a rectangle with a width of 2 units and a length of 5 units

c. a parallelogram with side lengths of 6 units and 1 unit

d. a rhombus with a side length of 4 units
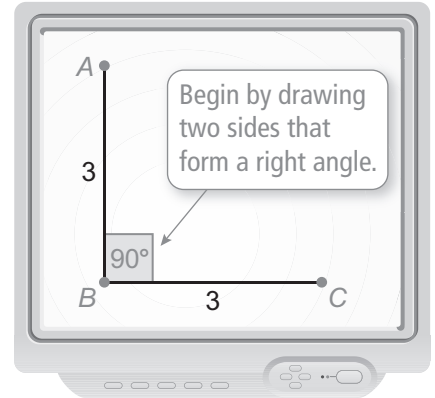
What Is Your Answer?

5. REASONING Measure the angles of each quadrilateral you formed in Activity 1. Record your results in a table. Include the sum of the angle measures. Then describe the pattern in the table and write a conclusion based on the pattern.
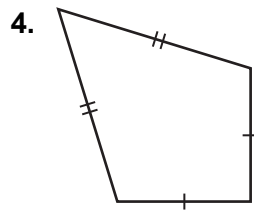
	∠1	∠2	∠3	∠4	∠1 + ∠2 + ∠3 + ∠4
a.					
b.					
c.					
d.					
e.					
f.					

6. IN YOUR OWN WORDS How can you classify quadrilaterals? Explain using properties of sides and angles.

Name _____ Date _____

Classify the quadrilateral.

1.

2.

3.

4.

Find the value of *x*.

5.
57°   123°

x°   57°
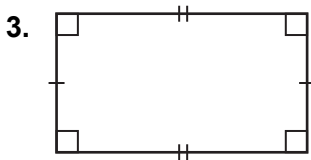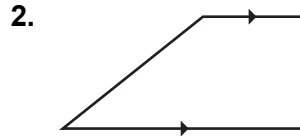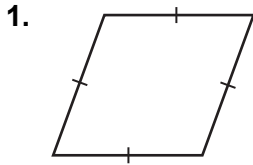
6.
109°
65°
136°   *x*°
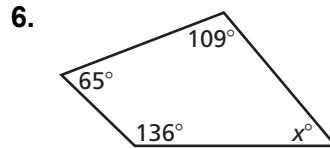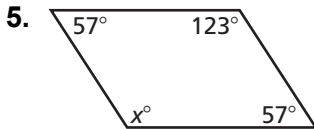
7. For a science fair, you are displaying your project
on a trapezoidal piece of poster board. What is the
measure of the missing angle

132°

48°   48°

Name_____ Date_____

<table>
<tr><td>**7.5**</td><td>**Scale Drawings**
For use with Activity 7.5</td></tr>
</table>

Essential Question   How can you enlarge or reduce a drawing proportionally?

1 **ACTIVITY:** Comparing Measurements

Work with a partner. The diagram shows a food court at a shopping mall. Each centimeter in the diagram represents 40 meters.

a. Find the length and the width of the drawing of the food court.
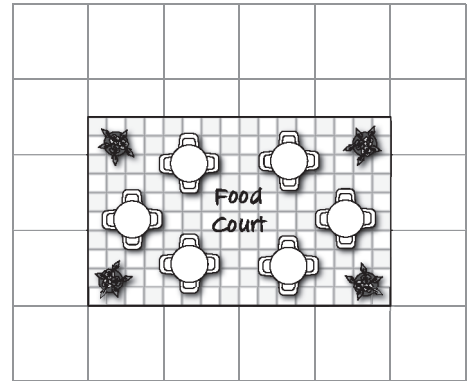
length: _____ cm   width: _____ cm

b. Find the actual length and width of the food court. Explain how you found your answers.
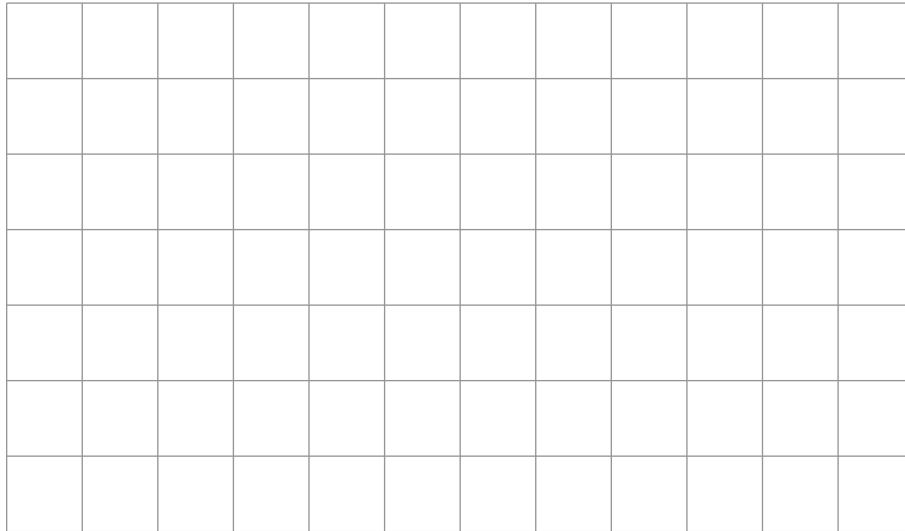
length: _____ m   width: _____ m

c. Find the ratios $\dfrac{\text{drawing length}}{\text{actual length}}$ and $\dfrac{\text{drawing width}}{\text{actual width}}$. What do you notice?

7.5 **Scale Drawings** (continued)

2 **ACTIVITY:** Recreating a Drawing

Work with a partner. Draw the food court in Activity 1 on the grid paper so that each centimeter represents 20 meters.

a. What happens to the size of the drawing?

b. Find the length and the width of your drawing. Compare these dimensions to the dimensions of the original drawing in Activity 1.

3 **ACTIVITY:** Comparing Measurements

Work with a partner. The diagram shows a sketch of a painting. Each unit in the sketch represents 8 inches.

a. Find the length and the width of the sketch.

length: _____ units   width: _____ units

b. Find the actual length and width of the painting. Explain how you found your answers.

length: _____ in.   width: _____ in.
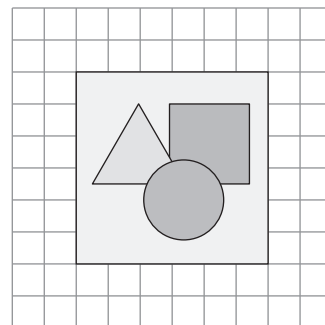
7.5 **Scale Drawings** (continued)

c. Find the ratios $\dfrac{\text{sketch length}}{\text{actual length}}$ and $\dfrac{\text{sketch width}}{\text{actual width}}$. What do you notice?

4 **ACTIVITY:** Recreating a Drawing

Work with a partner. Let each unit in the grid paper represent 2 feet. Now sketch the painting in Activity 3 onto the grid paper.
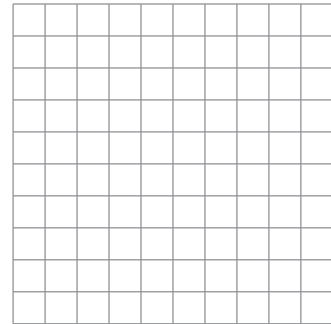
a. What happens to the size of the sketch?

b. Find the length and the width of your sketch. Compare these dimensions to the dimensions of the original sketch in Activity 3.

What Is Your Answer?

5. IN YOUR OWN WORDS How can you enlarge or reduce a drawing proportionally?

6. Complete the table for both the food court and the painting.

	Actual Object	Original Drawing	Your Drawing
Perimeter			
Area			

Compare the measurements in each table. What conclusions can you make?

7. RESEARCH Look at some maps in your school library or on the Internet. Make a list of the different scales used on the maps.

8. When you view a map on the Internet, how does the scale change when you zoom out? How does the scale change when you zoom in?

Name _____ Date _____

Find the missing dimension. Use the scale factor 1 : 8.

Item	Model	Actual
1. Statue	Height: 168 in.	Height _____ ft
2. Painting	Width: _____ cm	Width: 200 m
3. Alligator	Height: _____ in.	Height: 6.4 ft
4. Train	Length: 36.5 in.	Length: _____ ft

5. The diameter of the moon is 2160 miles. A model has a scale of
1 in. : 150 mi. What is the diameter of the model?

6. A map has a scale of 1 in. : 4 mi.

   a. You measure 3 inches between your house and the movie theater.
   How many miles is it from your house to the movie theater?

   b. It is 17 miles to the mall. How many inches is that on the map?