

## Review What You Know!

### Vocabulary

Choose the best term from the box.

- algebraic expression
- equation
- variable

1.  $3x = 15$  is a(n) ?.
2.  $3x$  is a(n) ?.
3. In  $3x$ ,  $x$  is the ?.

### Rules and Tables

Write the rule using words, and then with a variable.

4. 

<i>in</i>	<i>out</i>
36	6
42	7
48	8
5. 

<i>in</i>	<i>out</i>
5	12
10	17
15	22

### Fractions

Write the fraction. Simplify if necessary.

6. If 2 out of 4 bananas are green, what fraction names the green bananas?
7. If  $\frac{5}{6}$  of a loaf of bread is eaten, what part of the loaf is NOT eaten?

### Multiplying Factors

**Writing to Explain** Write an answer to the question.

8. Clint bought 3 T-shirts at \$9 each and 2 pairs of shorts at \$12 each. Explain how to find the total Clint spent.



3

What shape do these wasps create when they build their hive? You will find out in Lesson 8-3.

4

What kinds of angles are formed by the handles of the world's largest basket? You will find out in Lesson 8-2.





**MG 2.1** Measure, identify, and draw angles, perpendicular and parallel lines, rectangles, and triangles by using appropriate tools (e.g., straightedge, ruler, compass, protractor, drawing software).

# Basic Geometric Ideas

How can you describe locations and parts of space?

Points, lines, and planes are basic geometric concepts. Engineers and architects use these concepts in designing streets, buildings, and structures.



## Other Examples

### What You Draw

### What You Say

### What You Write

A **line segment** is part of a line and has 2 endpoints.



Line segment  $RS$

$\overline{RS}$

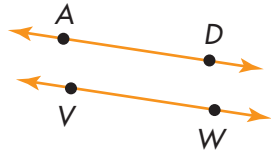
A **ray** is part of a line. It has only one endpoint and extends forever in one direction.



Ray  $JK$

$\overrightarrow{JK}$

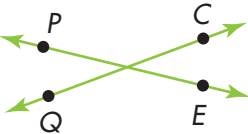
**Parallel lines** never cross and stay the same distance apart.



Line  $AD$  is parallel to line  $VW$ .

$\overleftrightarrow{AD} \parallel \overleftrightarrow{VW}$

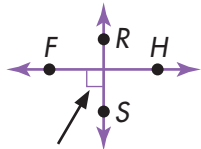
**Intersecting lines** pass through the same point.



Line  $PE$  intersects line  $QC$ .

$\overleftrightarrow{PE}$  intersects  $\overleftrightarrow{QC}$

**Perpendicular lines** are intersecting lines that form square corners.



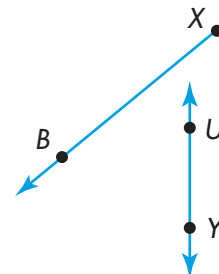
This symbol means square corner or right angle.

Line  $RS$  is perpendicular to line  $FH$ .

$\overleftrightarrow{RS} \perp \overleftrightarrow{FH}$

### Explain It

1. Are  $\overleftrightarrow{XB}$  and  $\overleftrightarrow{YU}$  parallel or intersecting? Explain how you know.
2. Are all perpendicular lines intersecting?  
Are all intersecting lines perpendicular?



A **point** is an exact location in space.

What you draw: • C

What you say: Point C

What you write: C

A **line** is a straight path of points that goes on forever in two directions.

What you draw:

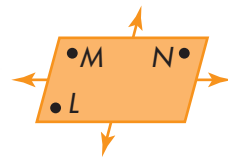


What you say: Line BC

What you write:  $\overleftrightarrow{BC}$

A **plane** is an endless flat surface.

What you draw:



What you say: Plane LMN

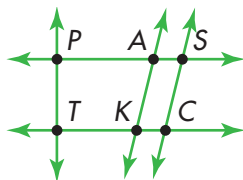
What you write:  $\square$  LMN

## Guided Practice\*

### Do you know HOW?

In 1 through 4, use the diagram at the right.

1. Name 4 points.
2. Name 3 line segments.
3. Name 2 intersecting lines
4. Name 2 parallel lines.



### Do you UNDERSTAND?

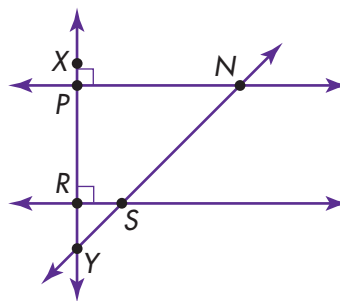
In 5 through 7 use the diagram at the left.

5. If  $\overleftrightarrow{PS}$  and  $\overleftrightarrow{TC}$  are parallel and  $\overleftrightarrow{PS}$  is perpendicular to  $\overleftrightarrow{PT}$ , is  $\overleftrightarrow{TC}$  also perpendicular to  $\overleftrightarrow{PT}$ ?
6. Do  $\overleftrightarrow{PS}$  and  $\overleftrightarrow{SP}$  name the same line?
7. Do  $\overrightarrow{PS}$  and  $\overrightarrow{SP}$  name the same ray? Explain.

## Independent Practice

In 8 through 13, use the diagram at the right.

8. Name two parallel lines.
9. Name two perpendicular lines.
10. Name two intersecting but not perpendicular lines.
11. Name three line segments.
12. Name a plane.
13. Name three rays.

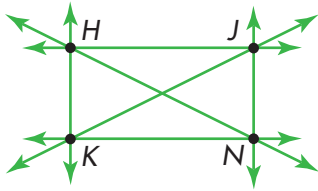


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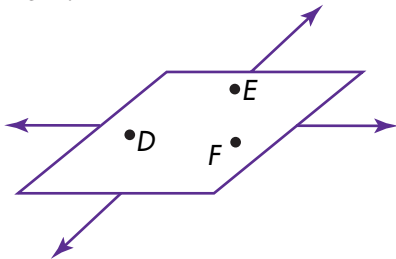
\*For another example, see Set A on page 190.

## Problem Solving

14. Use the diagram below to name each of the following.



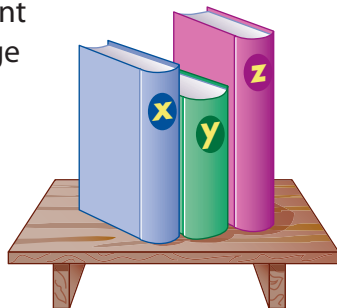
- a 2 sets of parallel lines  
b 2 sets of perpendicular lines
16. **Reasoning** Points  $D$ ,  $E$ , and  $F$  lie in plane  $DEF$ . How many lines in plane  $DEF$  can you draw that contain both points  $D$  and  $E$ ?



18. Rover weighs 5 pounds more than the neighbor's dog. Rover is 7 years old, and the neighbor's dog is 9 years old. Together they weigh 75 pounds. How much does Rover weigh?

20. **Writing to Explain** How are perpendicular lines like intersecting lines? What is the difference between perpendicular and intersecting lines?

22. In how many different ways can you arrange the books shown at the right on a shelf? Make a list of the possible ways.



15. **Think About the Process** Minh bought 2 pounds of apples for \$0.50 a pound, and a gallon of milk for \$2. Which operations would you use to find Minh's total cost for the apples and milk?

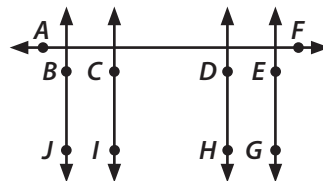
- A Multiply and divide  
B Add and add  
C Multiply and subtract  
D Multiply and add

17. **Think About the Process** Joshua bought a basketball for \$22 and 3 T-shirts for \$9 each. Which expression shows how to find how much Joshua spent?

- A  $\$22 + (3 \times \$9)$   
B  $3 \times (\$22 + \$9)$   
C  $(3 \times \$22) + (3 \times \$9)$   
D  $(3 + \$22) \times (3 + \$9)$

19. An airplane is carrying 148 passengers. There are 110 adults and 38 children. If half of the passengers get off the plane at Houston, how many passengers are left on the plane?

For 21, use the diagram below.



21. a Name a pair of parallel lines.  
b What kind of lines are  $\overleftrightarrow{AF}$  and  $\overleftrightarrow{DH}$ ?





Find the product. Estimate to check if the answer is reasonable.

1. 
$$\begin{array}{r} 19.38 \\ \times 7 \\ \hline \end{array}$$

2. 
$$\begin{array}{r} 4.25 \\ \times 9 \\ \hline \end{array}$$

3. 
$$\begin{array}{r} 9.345 \\ \times 12 \\ \hline \end{array}$$

4. 
$$\begin{array}{r} 7.43 \\ \times 10 \\ \hline \end{array}$$

5. 
$$\begin{array}{r} 0.076 \\ \times 9 \\ \hline \end{array}$$

6. 
$$\begin{array}{r} 0.0089 \\ \times 100 \\ \hline \end{array}$$

7. 
$$\begin{array}{r} 23.89 \\ \times 6 \\ \hline \end{array}$$

8. 
$$\begin{array}{r} 12.0005 \\ \times 1,000 \\ \hline \end{array}$$

Find the quotient. Estimate to check if the answer is reasonable.

9.  $5 \overline{)7.75}$

10.  $4.35 \div 5$

11.  $3 \overline{)10.53}$

12.  $9.24 \div 6$

13.  $8 \overline{)8.24}$

14.  $0.08 \div 4$

15.  $3 \overline{)12.48}$

16.  $28.56 \div 2$

17.  $1.28 \div 8$

18.  $2 \overline{)15.42}$

19.  $60.06 \div 6$

20.  $9 \overline{)28.8}$

**Error Search** Find each answer that is not correct. Write it correctly and explain the error.

21. 
$$\begin{array}{r} 182 \\ 3 \overline{)547} \\ \hline \end{array}$$

22. 
$$\begin{array}{r} 4,879 \\ + 236 \\ \hline 4,643 \end{array}$$

23. 
$$\begin{array}{r} 3,193 \\ - 3,094 \\ \hline 101 \end{array}$$

24. 
$$\begin{array}{r} 52.03 \\ + 21.67 \\ \hline 73.70 \end{array}$$

25. 
$$\begin{array}{r} 56.7 \\ \times 2.1 \\ \hline 11.907 \end{array}$$

## Number Sense

**Estimating and Reasoning** Write whether each statement is true or false. Explain your reasoning.

26. The product of  $50 \times 8.58$  is between 400 and 450.

27. The sum of 45.69 and 10.92 is 0.08 less than 56.69.

28. The expression  $18 - 6 + 5 \times 2$  equals 34.

29. The quotient of  $3,216 \div 8$  is 2 more than 400.

30. The expression  $\frac{10k}{5}$  equals 12 when  $k = 6$ .

31. The quotient  $15.89 \div 2$  is greater than 8.



**MG 2.1** Measure, identify, and draw angles, perpendicular and parallel lines, rectangles, and triangles by using appropriate tools (e.g., straightedge, ruler, compass, protractor, drawing software).

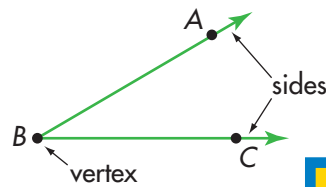
# Measuring and Classifying Angles

**Hands-On**  
protractor



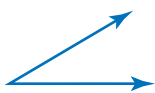
## How can you measure an angle?

An **angle** is formed by two rays that have the same endpoint. The common endpoint is called the **vertex** (plural: vertices.)

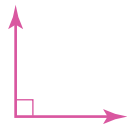


Angle  $ABC$  is shown above to the right. We write this as  $\angle ABC$ . It can also be named  $\angle CBA$  or just  $\angle B$ .

## Another Example How can you classify angles?



An **acute angle** has a measure between  $0^\circ$  and  $90^\circ$ .



A **right angle** has a measure of  $90^\circ$ .



An **obtuse angle** has a measure between  $90^\circ$  and  $180^\circ$ .

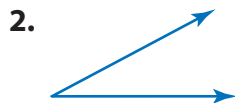
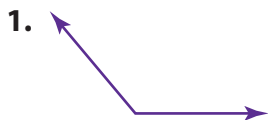


A **straight angle** has a measure of  $180^\circ$ .

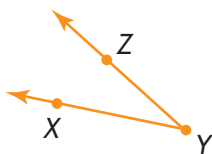
## Guided Practice\*

### Do you know HOW?

In 1 and 2, measure and classify each angle.

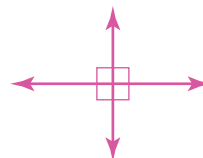


3. **Reasoning** Give three different names for this angle. Identify the vertex and sides.



### Do you UNDERSTAND?

4. In the figure below, how many angles are formed? What are their measures? Are the angles acute, right, or obtuse?



5. Draw an obtuse angle. Label it with 3 points and the angle measure.

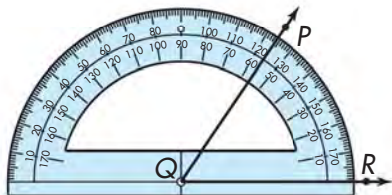


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### To measure an angle

You use a **protractor** to measure and draw angles. Angles are measured in **degrees**. It takes  $90^\circ$  to fill a square corner.

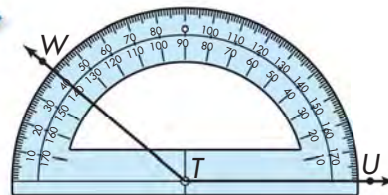
Place the protractor's center on the angle's vertex. Place the  $0^\circ$  mark on one side of the angle. Read the measure where the other side of the angle crosses the protractor.



The measure of  $\angle PQR$  is  $56^\circ$ .

### To draw an angle of $140^\circ$

Draw  $\overrightarrow{TU}$ . Be sure to label the endpoint  $T$ . Place the protractor's center on  $T$ . Line up  $\overrightarrow{TU}$  with the  $0^\circ$  mark. Place a point at  $140^\circ$ . Label it  $W$ . Draw  $\overrightarrow{TW}$ .



The measure of  $\angle WTU$  is  $140^\circ$ .

## Independent Practice

In **6** through **8**, classify each angle as acute, right, obtuse, or straight. Then measure each angle.

6.



7.



8.



In **9** through **12**, draw the angles with a protractor. Classify the angles as acute, right, or obtuse.

9.  $35^\circ$

10.  $110^\circ$

11.  $90^\circ$

12.  $76^\circ$

### Problem Solving

13. **Reasoning** If  $\overrightarrow{CB}$  is perpendicular to  $\overrightarrow{CD}$ , then  $\angle BCD$  is

- A** an acute angle.    **C** an obtuse angle.  
**B** a right angle.    **D** a straight angle.

15. Angles can be found on the world's largest basket. What kind of angle is  $\angle ADC$ ?  
 $\angle CBD$ ?  
 $\angle ADB$ ?



14. For his birthday, John received the same amount of money from each of his 10 friends, plus \$20 from his brother. If John received a total of \$120, how much did each friend give him?

16. **Writing to Explain** Carlos says that two times the measure of an acute angle will always equal the measure of an obtuse angle. Is he right? Give examples to explain your answer.



**MG 2.0** Identify, describe, and classify the properties of, and the relationships between, plane and solid geometric figures.

# Polygons

## How do you name a polygon?

A **polygon** is a closed plane figure made up of line segments.

A **regular polygon** has sides of equal length and angles of equal measure.



## Guided Practice\*

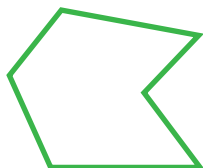
### Do you know HOW?

Name the polygon and classify it as regular or irregular.

1.



2.



### Do you UNDERSTAND?

- How many sides and how many vertices does a pentagon have? A hexagon?
- What type of polygon does each road sign in the example at the top appear to be? Which one is a regular polygon?

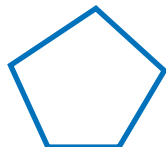
## Independent Practice

In 5 through 8, name each polygon. Then write yes or no to tell if it is regular.

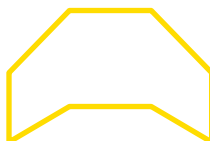
5.



6.



7.

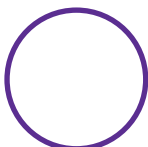


8.

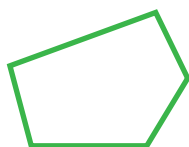


Which figures are polygons? If not, explain why.

9.



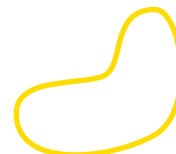
10.



11.

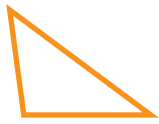


12.





## Polygons



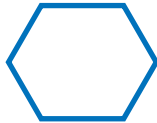
**Triangle**  
(3 sides)



**Quadrilateral**  
(4 sides)



**Pentagon**  
(5 sides)



**Hexagon**  
(6 sides)



**Octagon**  
(8 sides)

## Not Polygons



Not a closed figure



Not made of line segments

### Problem Solving

For 13, use the picture below.

13. What kinds of polygons can you find in the architecture of the Palace of Fine Arts in San Francisco, California?



15. After a party, there was one pizza left. It was divided into 8 pieces. Kip shared it equally among 4 friends. Which shows how many pieces each friend got?

A 8                      C 4  
B 6                      D 2

18. **Think About the Process** Juanita's car gets 28 miles per gallon. Which expression shows how many gallons it will take to drive 720 miles?

A  $720 \times 28$                       C  $720 + 28$   
B  $720 \div 28$                       D  $720 - 28$

14. While driving, Shania saw a No Passing Zone sign and an Interstate Highway sign. Are these polygons? If so, are they regular?



16. If each side of a regular pentagon equals 4 feet, what is its perimeter?
17. Divide a square in half by connecting two vertices. What type polygons are formed? Are they regular or irregular?

19. Each cell from a wasps' hive has 6 sides. What is the name of this polygon?





**MG 2.0** Identify, describe, and classify the properties of, and the relationships between, plane and solid geometric figures.

Also **MG 2.2**

# Triangles

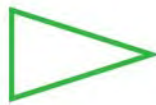
## How can you classify triangles?

Triangles can be classified by the length of their sides.



**Equilateral triangle**

All sides are the same length.



**Isosceles triangle**

Two sides are the same length.



**Scalene triangle**

No sides are the same length.

## Another Example How can you find a missing angle measure in a triangle?

The sum of the measures of the angles of a triangle is  $180^\circ$ .  
What is the measure of the third angle?

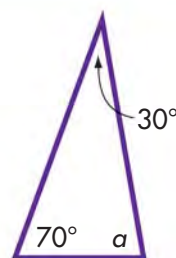
**Step 1** Add the two measures you know.  $70^\circ + 30^\circ = 100^\circ$

**Step 2** Subtract the sum from  $180^\circ$  to find the measure of the third angle.  $180^\circ - 100^\circ = 80^\circ$

So, the third angle measures  $80^\circ$ .

### Explain It

- If two angles of a triangle measure  $35^\circ$  and  $45^\circ$ , how would you find the measure of the third angle?



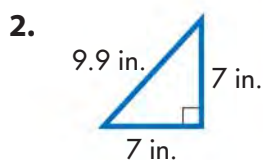
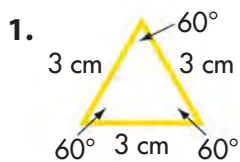
Think



## Guided Practice\*

### Do you know HOW?

Classify each triangle by its sides and then by its angles.



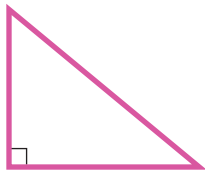
### Do you UNDERSTAND?

- Can a right triangle have an obtuse angle in it? Why or why not?
- Can an equilateral triangle have only two sides of equal length? Why or why not?



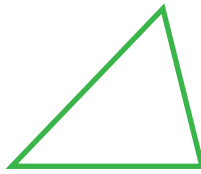
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Triangles can also be classified by the measures of their angles.



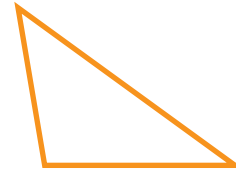
**Right triangle**

One angle is a right angle.



**Acute triangle**

All three angles are acute angles.

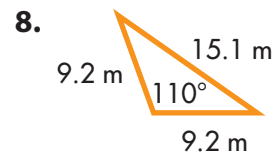
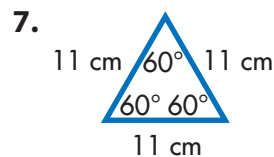
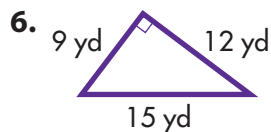
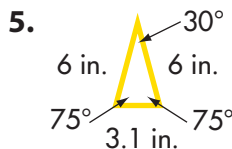


**Obtuse triangle**

One angle is an obtuse angle.

## Independent Practice

Classify each triangle by its sides and then by its angles.



Two angle measures of a triangle are given. Find the measure of the third angle.

9.  $48^\circ, 63^\circ$

10.  $90^\circ, 40^\circ$

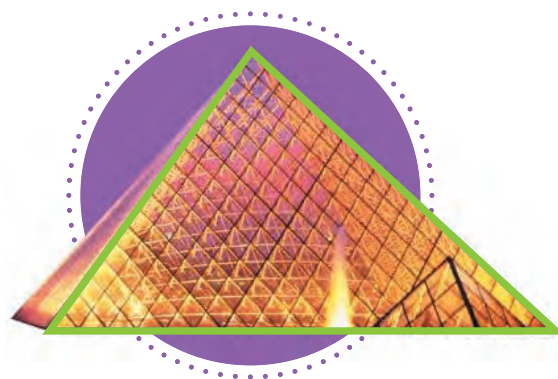
11.  $65^\circ, 50^\circ$

12.  $130^\circ, 24^\circ$

### Problem Solving

For **13**, use the picture at the right.

- 13.** The Louvre Museum is located in Paris, France. The Louvre Pyramid serves as an entrance to the museum. Classify the green triangle on the picture by the lengths of its sides and the measures of its angles.



- 14. Writing to Explain** The measures of two angles of a triangle are  $23^\circ$  and  $67^\circ$ . Is the triangle acute, right, or obtuse? Use geometric terms in your explanation.
- 15. Strategy Focus** During a sale at the bookstore, books sold for \$3 and magazines sold for \$2.50. Jan spent \$16 and bought a total of 6 books and magazines. How many of each did she buy? Use Try, Check, and Revise.



**MG 2.0** Identify, describe, and classify the properties of, and the relationships between, plane and solid geometric figures.

Also **MG 2.2**

# Quadrilaterals

## How can you classify quadrilaterals?

A quadrilateral is any polygon with 4 sides. Quadrilaterals can be classified by their angles or pairs of sides.



**Parallelogram**

both pairs of opposite sides parallel and equal in length



**Trapezoid**

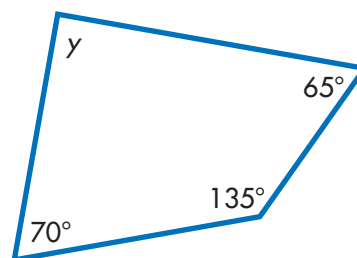
only one pair of parallel sides

## Another Example How can you find a missing angle measure in a quadrilateral?

The sum of the measures of the angles of a quadrilateral is  $360^\circ$ . What is the measure of the fourth angle?

**Step 1** Add the known measures.  $65^\circ + 135^\circ + 70^\circ = 270^\circ$

**Step 2** Subtract  $270^\circ$  from  $360^\circ$  to find the measure of the fourth angle.  $360^\circ - 270^\circ = 90^\circ$

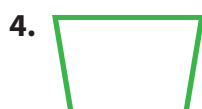


So, the fourth angle measures  $90^\circ$ .

## Guided Practice\*

### Do you know HOW?

In 1 through 4, classify each quadrilateral.



### Do you UNDERSTAND?

- A square and a rhombus both have four sides that are equal in length. How can you tell the difference between the two quadrilaterals?
- Writing to Explain** Why can a rectangle also be called a parallelogram?

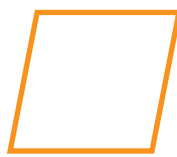


Animated Glossary  
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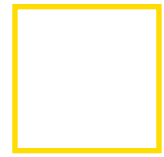




**Rectangle**  
a parallelogram with four right angles



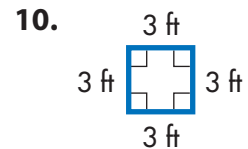
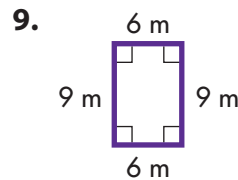
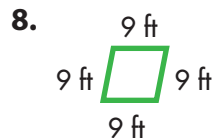
**Rhombus**  
a parallelogram with all sides the same length



**Square**  
a rectangle with all sides the same length  
A square can also be called a rhombus.

## Independent Practice

Classify each quadrilateral.



Three angle measures of a quadrilateral are given.  
Find the measure of the fourth angle.

11.  $54^\circ, 100^\circ, 120^\circ$

12.  $150^\circ, 30^\circ, 30^\circ$

13.  $90^\circ, 106^\circ, 117^\circ$

### Problem Solving

14. Which quadrilateral never has 4 equal sides?

- A Square                      C Rectangle  
B Trapezoid                  D Rhombus

15. Draw a quadrilateral that is not a parallelogram.

16. Draw rectangle  $ABCD$ . Then draw a diagonal line connecting points  $B$  and  $D$ . If triangle  $BCD$  is a right isosceles triangle, what do you know about rectangle  $ABCD$ ?

17. **Think About the Process** Hot dog buns come in packages of 12. Which of the following is NOT needed to find out how much you will spend on hot dog buns?

- A The cost of one pack of buns                      C The number of buns you need  
B The cost of the hot dogs                              D All of the information is necessary.



**MR 3.3** Develop generalizations of the results obtained and apply them in other circumstances.

Also **MR 2.4, 3.2, MG 2.0**

### Problem Solving

## Make and Test Generalizations

A **generalization** or general statement can be made about a rectangle.

### Make a Generalization

*All rectangles can be cut in half diagonally to make two congruent triangles.*



## Guided Practice\*

### Do you know **HOW?**

Test the generalization and state whether it appears to be correct or incorrect. If incorrect, give an example to support why.

- All even numbers have more than 2 factors.
- Two congruent equilateral triangles can be joined to make a rhombus.

### Do you **UNDERSTAND?**

- In the exercise above, how was the conclusion reached?
- What is another generalization you can make and test about rectangles?
- Write a Problem** Write a real-world problem that can be solved by making and testing a generalization.

## Independent Practice

In **6** through **10**, test the generalization and state whether it appears to be correct or incorrect. If incorrect, give an example to support why.

- The sum of the angles of any triangle is  $180^\circ$ .
- Parallel lines never intersect.
- Trapezoids are parallelograms.
- All even numbers are composite.
- All cubes are three-dimensional.

### Stuck? Try this....

- What do I know?
- What am I asked to find?
- What diagram can I use to help understand the problem?
- Can I use addition, subtraction, multiplication, or division?
- Is all of my work correct?
- Did I answer the right question?
- Is my answer reasonable?

### Test Your Generalization

Draw a rectangle with the length at the base.



*I can cut this rectangle diagonally to make two congruent triangles.*



### Test Again if Possible

Draw a different rectangle.



*I can also cut this rectangle diagonally to make two congruent triangles.*



### Conclusion

To prove a generalization incorrect, you need an example of when the test shows the generalization being incorrect.

Based on the results of the tests, this generalization appears to be correct.

11. What is the same about all of these polygons?



12. One pint of blueberries contains about 80 berries. You have a fruit salad recipe that calls for 20 blueberries per serving. You have all of the other fruit necessary for the salad, but only 1 quart of blueberries. How many servings of the fruit salad can you prepare?

13. What is the best estimate of the shaded portion of the picture shown below?



14. Draw the next figure in the pattern shown below.



15. Mike weighs 24 more pounds than Marcus. Together, they weigh 250 pounds. How much do they each weigh?

16. Find the missing numbers in each table. Then, write the rule.

a

<i>Days</i>	1	2	4	7
<i>Dollars</i>	\$8	■	\$32	■

b

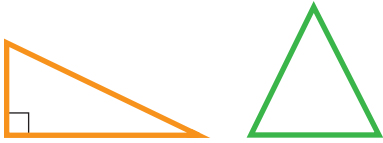
<i>Team</i>	1	2	4	9
<i>Players</i>	■	10	20	■

17. Marcia and Tim played Ping-Pong. Marcia won the game with a score of 21. She won by 7 points. Draw a picture and write an equation to find Tim's score.

18. How many whole numbers have exactly two digits? Hint: 99 is the greatest two-digit whole number.



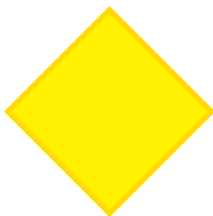
1. Which of the following correctly describes the triangles shown? (8-4)



- A Both triangles have a right angle.  
 B Only one triangle has an acute angle.  
 C Both triangles have at least two obtuse angles.  
 D Both triangles have at least two acute angles.
2. A right triangle has an angle whose measure is  $35^\circ$ . What is the measure of the other angle in the triangle? (8-4)

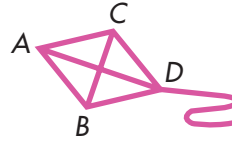
- A  $35^\circ$   
 B  $55^\circ$   
 C  $72.5^\circ$   
 D  $145^\circ$

3. Which of the following can be used to describe the shape below? (8-5)

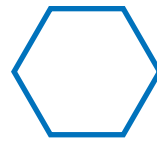


- A Opposite sides are perpendicular.  
 B All angles are obtuse.  
 C Adjacent sides are parallel.  
 D All sides are congruent.

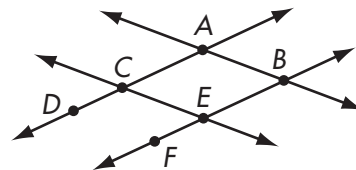
4. What is the relationship between segments  $AD$  and  $BC$ ? (8-1)



- A They are congruent.  
 B They are adjacent.  
 C They are perpendicular.  
 D They are parallel.
5. Sabra's glasses have lenses that are the shape shown in the picture below. Which of the following could NOT be used to describe the lenses? (8-3)



- A Quadrilateral  
 B Regular polygon  
 C Hexagon  
 D Opposite sides parallel
6. Which of the following appear to be parallel lines in the diagram shown? (8-1)



- A  $\vec{AB}$  and  $\vec{CE}$   
 B  $\vec{AB}$  and  $\vec{FB}$   
 C  $\vec{CE}$  and  $\vec{DA}$   
 D  $\vec{FB}$  and  $\vec{CE}$

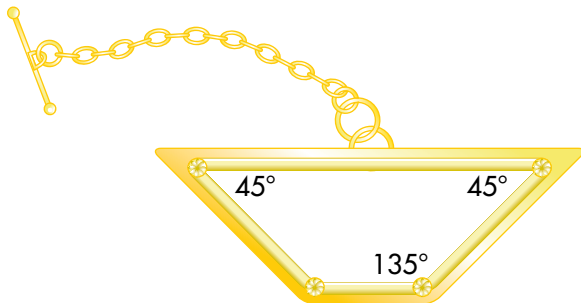


7. The figures below are rhombuses. Which generalization is incorrect, based on these figures? (8-6)



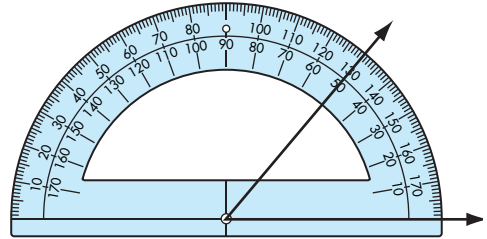
- A A square can be a rhombus.
  - B A rhombus can be a square.
  - C All rhombuses are squares.
  - D All squares are rhombuses.
8. A sail on a sailboat is a triangle with two sides perpendicular and no two sides congruent. What two terms could be used to describe the sail? (8-4)
- A Equilateral and right
  - B Right and isosceles
  - C Scalene and right
  - D Isosceles and acute

9. How many degrees is the measure of the fourth angle in the necklace charm shown? (8-5)

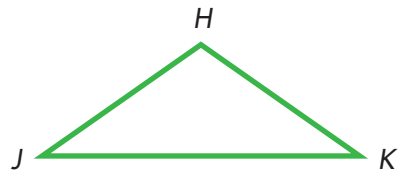


- A  $45^\circ$
- B  $135^\circ$
- C  $180^\circ$
- D  $360^\circ$

10. Which of the following is closest to the measure of the angle shown? (8-2)



- A  $40^\circ$
  - B  $50^\circ$
  - C  $130^\circ$
  - D  $140^\circ$
11. Triangle  $HJK$  is an isosceles triangle. The measures of angles  $J$  and  $K$  are equal. The measure of angle  $H$  is  $100^\circ$ . What is the measure of angle  $J$ ? (8-4)

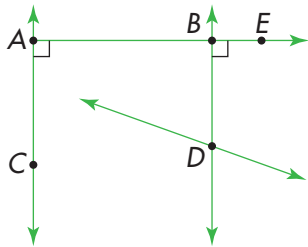


- A  $40^\circ$
  - B  $45^\circ$
  - C  $50^\circ$
  - D  $80^\circ$
12. Which of the following quadrilaterals must have all four sides of equal length? (8-5)
- A Rhombus
  - B Rectangle
  - C Trapezoid
  - D Parallelogram

# Reteaching

## Set A, pages 174–176

Geometric ideas are shown in the diagram below.



- Name a line segment on  $\overrightarrow{AE}$ .  $\overline{AB}$
- Name two perpendicular rays.  $\overrightarrow{AE}$  and  $\overrightarrow{BD}$
- Name two parallel lines.  $\overleftrightarrow{AC}$  and  $\overleftrightarrow{BD}$
- Name three points.  $C, B, A$

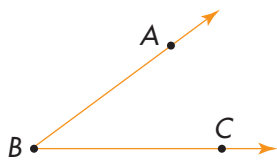
**Remember** that intersecting lines pass through the same point. If they form a right angle, they are perpendicular lines.

Use the figure at the left to name each of the following.

1. A ray that intersects two parallel line segments.
2. A vertical ray.
3. A horizontal ray.
4. A line segment that is perpendicular to two rays.

## Set B, pages 178–179

Measure the angle below with a protractor and classify it as acute, right, or obtuse.



An acute angle measures less than  $90^\circ$ . This angle measures  $38^\circ$ . So, this angle is acute.

**Remember** that you can compare most angles to a right angle and know whether it is greater or less than  $90^\circ$ , or you can measure it with a protractor.

Measure each angle with a protractor and classify it as acute, right, or obtuse.



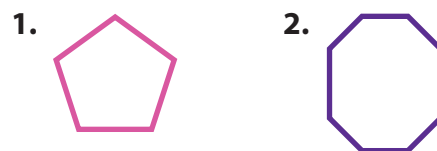
## Set C, pages 180–181

Name the polygon and state whether it is regular or irregular.



The polygon has six sides that are all equal in length and angles that are equal in measure. It is a regular hexagon.

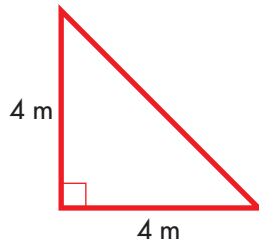
**Remember** that a regular polygon has sides and angles of equal length and measure.



**Set D**, pages 182–183

Classify the triangle by the measure of its angles and the length of its sides.

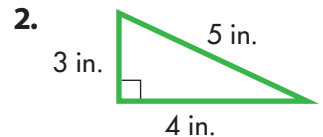
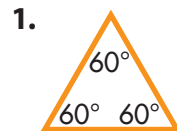
Since one of the angles is right, this is a right triangle. Since two of the sides are the same length, this is an isosceles triangle.



Using both terms, this is a right, isosceles triangle.

**Remember** that right, obtuse, and acute describe the angles of a triangle. Equilateral, scalene, and isosceles describe the sides of a triangle.

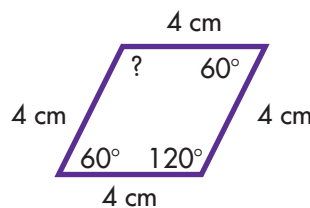
Classify each triangle by the size of its angles and the length of its sides.



**Set E**, pages 184–185

Classify the quadrilateral. Then find the missing angle measure.

The quadrilateral has two sets of parallel lines with all sides the same length. It is a rhombus.

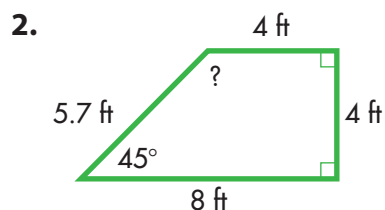
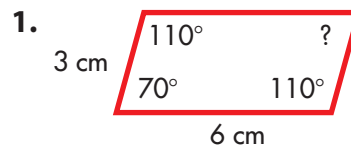


The sum of the measures of the angles in a quadrilateral is  $360^\circ$ .

$$360^\circ - (60^\circ + 60^\circ + 120^\circ) = 120^\circ$$

So, the missing angle measure is  $120^\circ$ .

**Remember** that the sum of the angles of a quadrilateral is  $360^\circ$ .



**Set F**, pages 186–187

Test the following generalization and state whether it appears to be correct or incorrect. If incorrect, give an example to support why.

**Generalization**

The sum of the angles in any rectangle is  $180^\circ$ .

**Test Your Generalization**

Draw a rectangle.

Notice that each of the four angles is  $90^\circ$ .

Add to find the sum of the angles.

$$90^\circ + 90^\circ + 90^\circ + 90^\circ = 360^\circ$$

**Conclusion**

The generalization is incorrect.

**Remember** to test a generalization more than once before drawing a conclusion that the generalization is true.

Test the generalization. State if it appears to be correct or not. If incorrect, give an example to support why.

1. Triangular prisms always have two bases that are equilateral triangles.