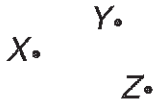
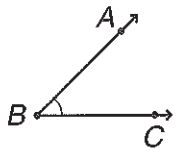
Geometry

Reviewing Geometry Terms

Geometry is the branch of mathematics that deals with lines, points, curves, angles, surfaces, and solids, and with relationships among these things. The chart contains some basic terms used in geometry.

Term	Definition	Symbol
point	a location on an object or a position in space	a point labeled with a capital letter 
line	a connected set of points extending forever in both directions	 $\overleftrightarrow{PQ}$ (or $\overleftrightarrow{QP}$) is a line. A line is named by two points on the line.
line segment	two points (endpoints) and the straight path between them	 $\overline{ST}$ (or $\overline{TS}$) is a line segment. A line segment is named by its endpoints.
ray	part of a line that extends in one direction	$\overrightarrow{WX}$ is a ray. The endpoint is always named first.
angle	a figure formed by two rays or line segments that meet at a common endpoint	 The angle symbol can be followed by three letters. The letter at the common endpoint should be in the middle. $\angle ABC$ or $\angle B$

PRACTICE

Circle the term that identifies each of the following.

1. $\overline{GH}$

   A ray
   B line
   C line segment
   D angle

2. $\overleftrightarrow{MN}$

   F ray
   G line
   H line segment
   J angle

3. $\overrightarrow{JK}$

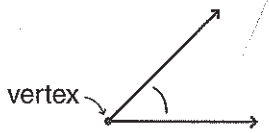
   A ray
   B line
   C line segment
   D angle

For Questions 4–7, draw the figure named.

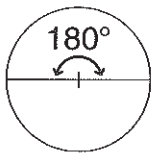
4. Point C
5. $\overline{AB}$
6. $\overleftrightarrow{ST}$
7. $\angle MOP$

Recognizing Types of Angles

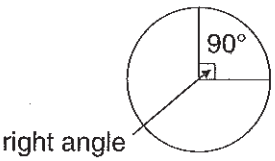
The point where the two rays of an angle meet is called the **vertex**. The distance between the rays is the size or measure of the angle. You can find a more precise measurement using a tool called a protractor, but there are general terms to describe the measure of an angle.



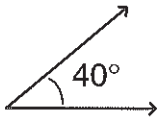
- Angle measurements are related to degrees of a circle. A full circle has 360º. Half of a circle is 180º or 360 ÷ 2. A 180º angle forms a **straight angle** or straight line.



- One-fourth of a circle is 90º (360 ÷ 4). A 90º angle is called a **right angle**. A right angle symbol looks like a square corner.

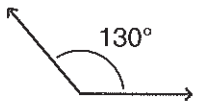


- **Acute angles** are angles that are less than 90º.



An acute angle is less than 90°.

- **Obtuse angles** are greater than 90º but less than 180º.

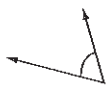


An obtuse angle is greater than 90°.

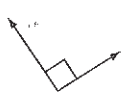
PRACTICE

Identify each angle as *acute*, *right*, or *obtuse*.

1. 

2. 

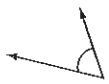
3. 

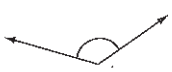
4. 

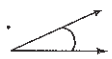
5. 

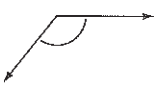
6. 

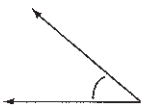
7. 

8. 

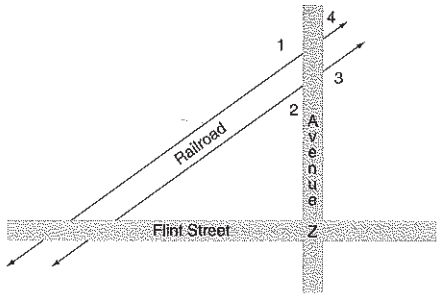
9. 

10. 

11. 

12. 

Use this diagram for Numbers 13 and 14.



13. The 4 angles formed at the intersection of Flint Street and Avenue Z are

    A right angles **C** obtuse angles
    B acute angles **D** straight angles

14. The angles formed by the intersection of the railroad and Avenue Z are numbered. Which angles are acute?

    F 1 and 2 **H** 1 and 4
    G 2 and 3 **J** 2 and 4

Recognizing Relationships of Lines

Two lines that cross or that will cross are called **intersecting lines.**

Intersecting Lines

Two lines that are always the same distance apart are called **parallel lines.** The symbol for parallel is ||.

Parallel Lines

Two lines that form right angles when they meet are called **perpendicular lines.** The symbol for perpendicular is ⊥.

Perpendicular Lines

PRACTICE

Write *P* if the lines are parallel. Write *I* if the lines are intersecting.

1. 

2. 

3. 

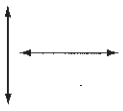
4. 

Write *yes* if the lines are perpendicular. Write *no* if they are not perpendicular.

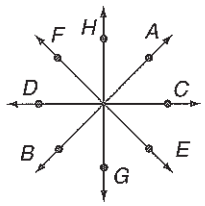
5. 

6. 

7. 

8. 

Use this diagram to answer Numbers 9–11.



9. Which line or lines are perpendicular to $\overleftrightarrow{AB}$?

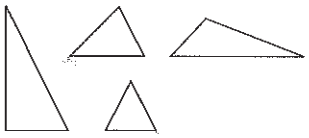
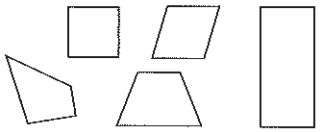
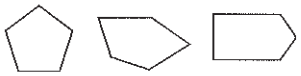
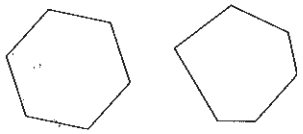
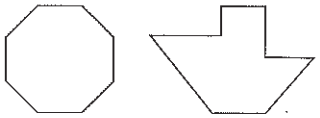
10. Is $\overleftrightarrow{FE}$ perpendicular to $\overleftrightarrow{DC}$?

11. Are there any parallel lines in this figure? If so, name the lines.

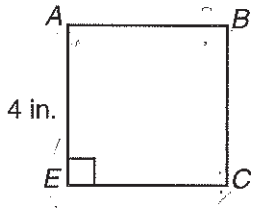
Identifying Polygons

A **polygon** is a two-dimensional shape that is closed and has straight sides. Polygons are classified by the number of sides they have.

Some Common Polygons

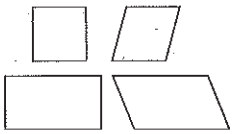
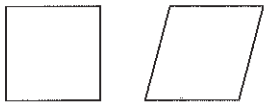
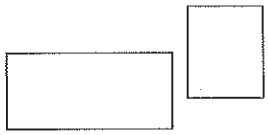
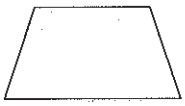
Name	Examples	Number of Sides	Number of Angles
triangle		3	3
quadrilateral		4	4
pentagon		5	5
hexagon		6	6
octagon		8	8

To name a polygon, list the letters of the vertices in order. For example, you can name the figure at the right *ABCE*, *BCEA*, or *CBAE*, but ***not*** *ACBE*.



A **regular polygon** is one in which all of the sides are the same length, and the angles are all the same size. For example, a square is a regular quadrilateral; it has four sides that are the same length, and each of its four angles measures 90°.

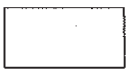
Several special polygons belong to the family of quadrilaterals. These figures are identified by the relationship of their sides, and by their angles (see chart on next page). The sum of the four angles in every quadrilateral is 360°.

Quadrilaterals	Definition	Examples
parallelogram	a quadrilateral with opposite sides parallel opposite sides and opposite angles are equal	
rhombus	a parallelogram with four equal sides	
rectangle	a parallelogram with four right angles	
square	a rectangle with four equal sides	
trapezoid	a quadrilateral with exactly one pair of parallel sides	

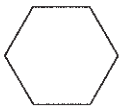
PRACTICE

There are three terms next to each figure. One of the three terms *does not* describe the figure. Circle the letter for the term that *does not* apply.

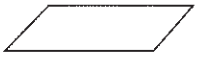
1. **A** quadrilateral
   B parallelogram
   C square



2. **F** parallelogram
   G regular
   H hexagon

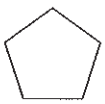


3. **A** quadrilateral
   B parallelogram
   C rectangle

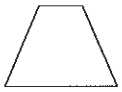


4. **F** trapezoid
   G parallelogram
   H rectangle

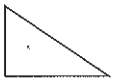
5. **A** pentagon
   B regular
   C octagon



6. **F** quadrilateral
   G parallelogram
   H trapezoid

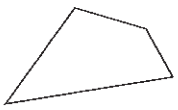


7. **A** polygon
   B regular
   C triangle



8. **F** triangle
   G regular
   H parallelogram

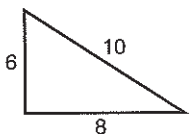
9. **A** polygon
   B regular
   C quadrilateral



10. **F** pentagon
    G hexagon
    H polygon

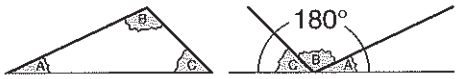
Recognizing Types of Triangles

Triangles are a particularly interesting type of figure. The sum of any two sides of a triangle must be greater than the third side.



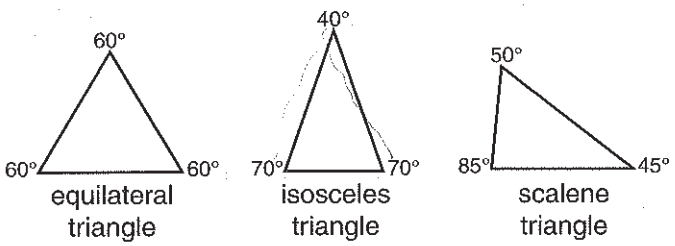
6 + 8 is greater than 10.
6 + 10 is greater than 8.
8 + 10 is greater than 6.

The sum of the three angles of any triangle is always 180°.



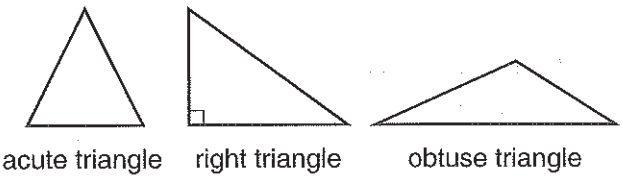
Triangles can be classified by the lengths of their sides

- An **equilateral triangle** has three equal sides (and three equal angles).
- An **isosceles triangle** has two equal sides (and two equal angles).
- A **scalene triangle** has no equal sides (and no equal angles).



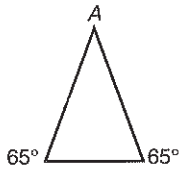
Triangles can also be classified by their angles:

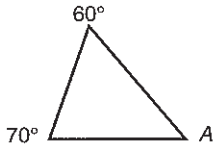
- An **acute triangle** has three acute angles.
- A **right triangle** has exactly one right angle.
- An **obtuse triangle** has exactly one obtuse angle.

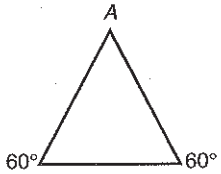


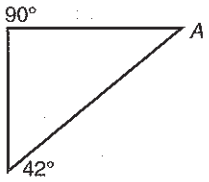
PRACTICE

For each triangle, give the measure of ∠ *A*. Then identify the type triangle by its sides and by its angles.

1. 

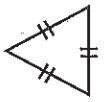
2. 

3. 

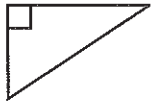
4. 

Below, sides of a triangle that have the same length are marked with a symbol. Study each triangle. Then circle the letter for the term that *does not* apply to the triangle.

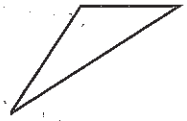
5. A right
   B acute
   C equilateral



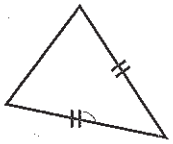
6. F right
   G scalene
   H obtuse



7. A obtuse
   B isosceles
   C scalene

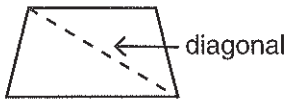


8. F acute
   G isosceles
   H equilateral



Drawing Diagonals in a Polygon

A **diagonal** is a line segment drawn inside a polygon that connects two vertices of the figure. A side of the figure cannot be a diagonal.

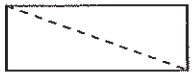
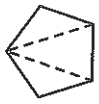
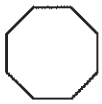


You can draw diagonals inside polygons with more than three sides to create triangles. Draw as many diagonals as possible from one vertex. In a quadrilateral, for example, only one diagonal can be drawn from a single vertex.

When you know how many triangles a polygon contains, you can find the total number of degrees in the angles of the figure. A quadrilateral contains two triangles. You know there are 180° in a triangle, so the sum of degrees in the quadrilateral is $2 \times 180°$, or 360°.

PRACTICE

Complete the chart.

Figure	Number of Sides	Diagonals from One Vertex	Number of Triangles	Total Number of Degrees
 triangle	3	0	1	180°
 quadrilateral	4	1	2	$2 \times 180° = 360°$
 pentagon	5	2	3	$3 \times 180° = 540°$
 hexagon	6			
 octagon				

In a **regular polygon,** the angles are congruent. To find the number of degrees in one angle of a regular polygon, divide the total number of degrees by the number of angles. For example, to find the number of degrees in each angle of square, divide 360° by 4. Each angle is 90°.

PRACTICE

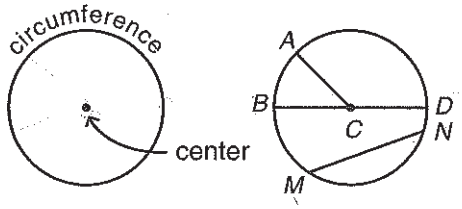
Find the number of degrees in each angle of the following regular polygons.

1. pentagon _____ | 2. hexagon _____ | 3. octagon _____

Identifying Parts of a Circle

A **circle** is a closed 2-dimensional shape. All of the points of a circle are the same distance from its center. The following terms describe parts of a circle.

- **Circumference** *(C)* is the distance around the edge of the circle.
- **Radius** *(r)* is the distance from the center of the circle to its circumference.
- A **chord** is a straight line from one point on the circumference to another.
- A **diameter** *(d)* is a chord that passes through the center of the circle. The diameter is the chord in the circle with the greatest length.

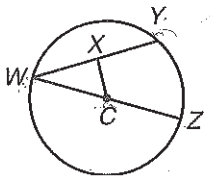


radii: $\overline{AC}$, $\overline{BC}$, $\overline{CD}$
diameter: $\overline{BD}$
chords: $\overline{MN}$, $\overline{BD}$

The diameter of a circle is twice the length of its radius. $d = 2 \times r$
The radius of a circle is equal to one-half of its diameter. $r = \frac{d}{2}$

PRACTICE

Complete the questions.

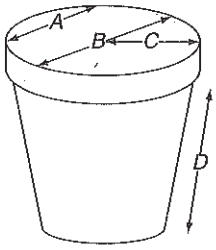


1. Which segment is a radius of the circle above?

   A $\overline{CZ}$
   B $\overline{WY}$
   C $\overline{XY}$
   D $\overline{CX}$

2. Which segment names a chord?

   F $\overline{CZ}$
   G $\overline{WY}$
   H $\overline{WX}$
   J $\overline{CX}$



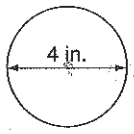
3. Jessica needs a flowerpot that is 6 inches in diameter. Which line shows what she should measure?

   _____

4. Jessica wants to place trim around the outside of the flowerpot. Which term names the part of the flowerpot she will trim?

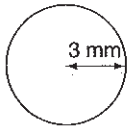
   _____

Write the diameter and the radius of each circle below. If you do not have enough information to do that, write "cannot tell."

5. 

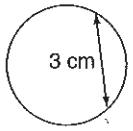
   radius: 2"

   diameter: 4"

6. 

   radius: _____

   diameter: _____

7. 

   radius: _____

   diameter: _____

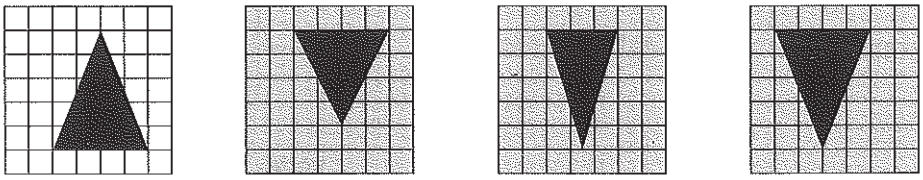
Recognizing Similarity and Congruence

Two figures that are exactly the same shape, but not necessarily the same size, are **similar**. **Congruent** figures are exactly the same shape *and* the same size. Figures do not have to be facing the same way to be similar or congruent.

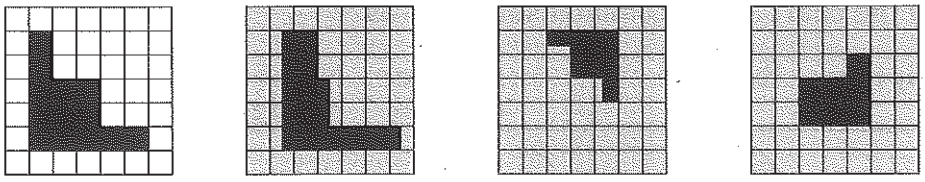
PRACTICE

For Numbers 1–5, circle the letter of the figure described.

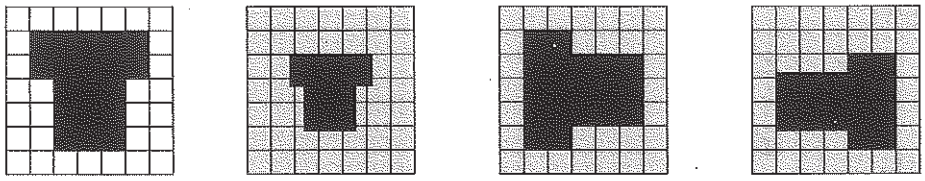
1. the figure that is congruent to the figure in the first box



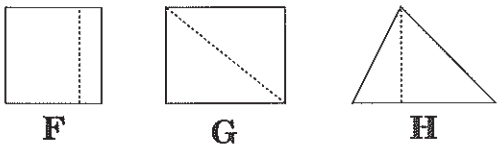
2. the figure that is similar to, but not congruent to, the figure in the first box



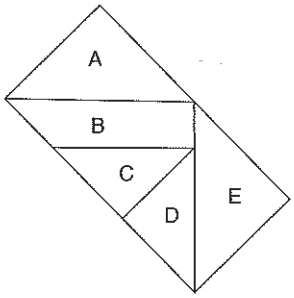
3. the figure that is both similar and congruent to the figure in the first box



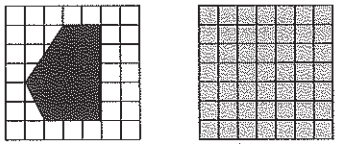
4. the figure that is divided into two congruent halves



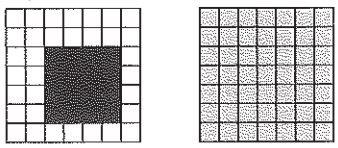
5. two congruent sections of this figure



6. In the gray box, draw a figure that is congruent to the dark figure in the white box. Use the grid in the box to make sure your drawing is the same shape and the same size.

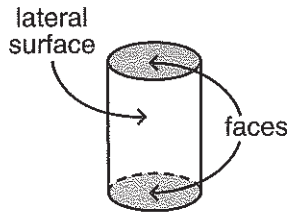


7. In the gray box, draw a figure that is similar to the dark figure, but whose sides are half the length of the dark figure's sides.

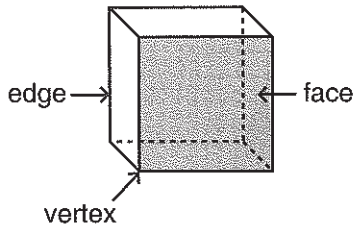


Working with Three-Dimensional Figures

Three-dimensional figures, or **solid figures**, have three dimensions; length, height, and width.

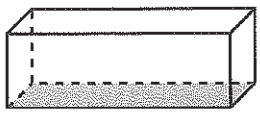
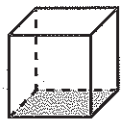
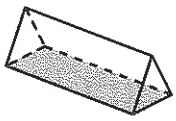


- A flat surface on the outside of three-dimensional figure is called a **face**. Faces have shapes of two-dimensional figures. In a cylinder, the two circular faces are parallel. The curved surface that connects them is called a **lateral surface**.
- The line where two faces of a figure meet is called an **edge**.
- The point where two or more edges meet is called a **vertex**.



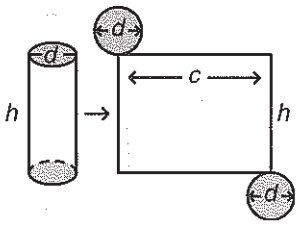
PRACTICE

Complete the information in the chart about common solid figures.

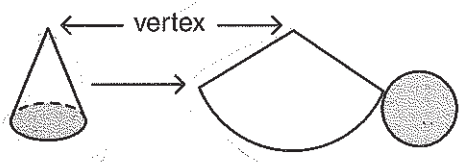
Name of Figure and Description	Example	Number of Faces	Number of Edges	Number of Vertices
rectangular prism (box) All faces are rectangles. Opposite faces are parallel. All corners form a right angle.				
cube All faces are square. Opposite faces are parallel. All corners form a right angle.				
square pyramid Base is a square. All other faces are triangles.				
triangular pyramid Base is a triangle. All other faces are triangles.				
triangular prism One pair of triangular faces are parallel. All other faces are rectangular.				

Some three-dimensional figures have curved surfaces.

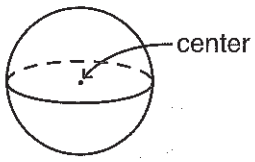
- A **cylinder** has two circular faces that are parallel. The surface between the circular faces is rectangular.



- A **cone** has one circular face. The curved surface ends in a point or vertex.



- A **sphere** has a curved surface that looks like a ball or globe. All of the points on the sphere are the same distance from the center of the sphere.



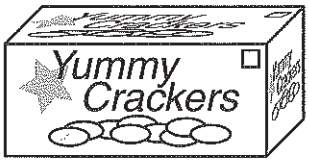
PRACTICE

Name the solid that the object named most closely resembles.

1. 

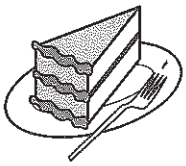
_____

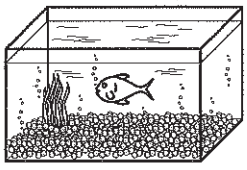
2. 
_____

3. 

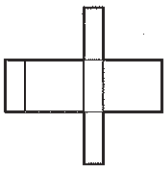
_____

4. 
_____

5. 
_____

6. 
_____

Name the solid that would be made by folding each pattern.

7. 
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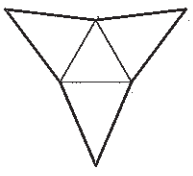
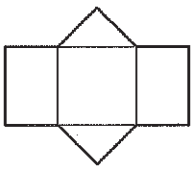
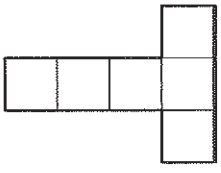
8. 
_____

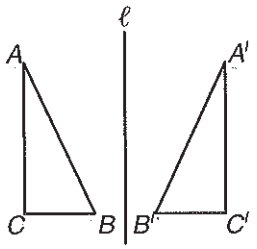
9. 
_____

10. 
_____

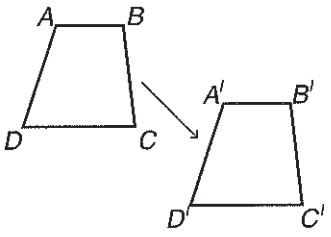
Distinguishing Among Transformations

When something is transformed, it is changed in some way. In geometry, there are three **transformations** that include a change in position but not a change in shape or size.

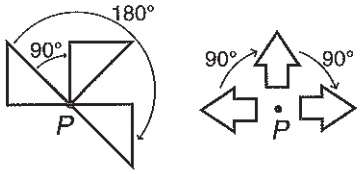
- **A reflection or flip** is a flip over a line to form a mirror image.



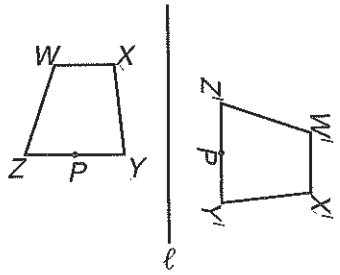
- **A translation or slide** is a move to another position without rotating or reflecting the figure.



A rotation or turn is a turn a certain number of degrees around a fixed point. If you rotate a figure 360°, it comes back to its starting position. To find whether a rotation has been performed, you can trace the figure and the fixed point. Keep the fixed points lined up and turn the paper to see whether the traced figure lines up with the second image.



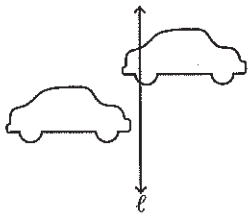
More than one transformation can be performed on a shape. For example, trapezoid $W'X'Y'Z'$ is the image of $WXYZ$ after being slid over the line and then rotated clockwise 90° around point P.



PRACTICE

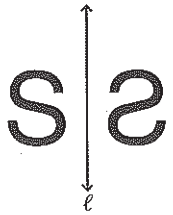
Circle the letter of the correct name for the transformation that is shown.

1.



A reflection
B rotation
C translation

2.

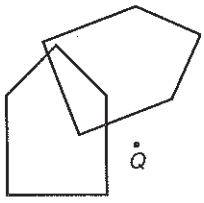


F reflection
G rotation
H translation

3.

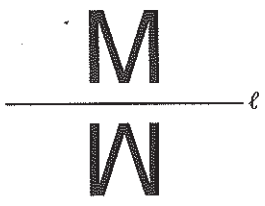
A reflection
B rotation
C translation

4.



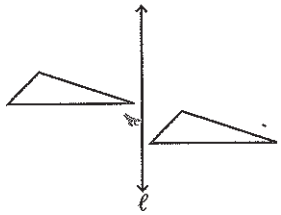
F reflection
G rotation
H translation

5.



A reflection
B rotation
C translation

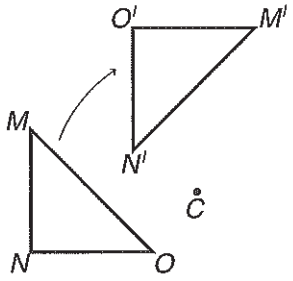
6.



F reflection
G rotation
H translation

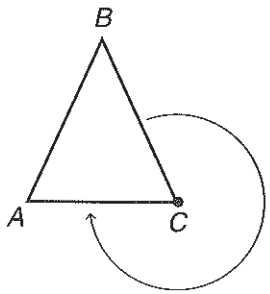
For Numbers 7–9, tell how many degrees the figure has been rotated.

7.



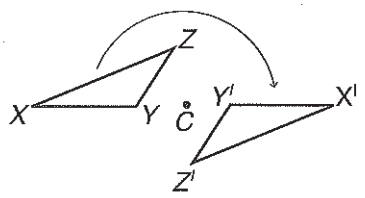
_____

8.



_____

9.



_____

For Numbers 10–11, circle the letter of the steps taken to transform Figure 1 to Figure 2.

10.

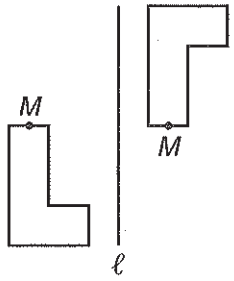


Figure 1 Figure 2

- **A** Reflect Figure 1 across line *l*, and rotate it clockwise 90° about Point *M*.
- **B** Reflect Figure 1 across line *l*, but do not rotate it.
- **C** Reflect Figure 1 across line *l*, and rotate it clockwise 180° about Point *M*.
- **D** Reflect Figure 1 across line *l*, and rotate it counterclockwise 90° about Point *M*.

11.

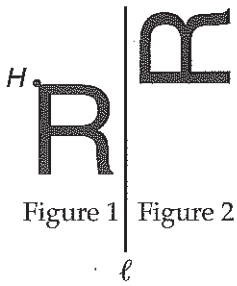
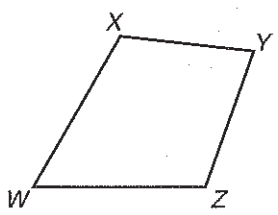


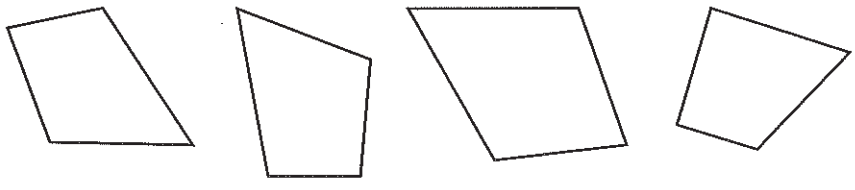
Figure 1 Figure 2

- **F** Slide Figure 1 across line *l*, and rotate it clockwise 90° about Point *H*.
- **G** Slide Figure 1 across line *l*, and rotate it counterclockwise 180° about Point *H*.
- **H** Slide Figure 1 across line *l*, but do not rotate it.
- **J** Slide Figure 1 across line *l*, and rotate it clockwise 270° about Point *H*.

For Number 12, circle the letter of the figure that illustrates quadrilateral *WXYZ* reflected over $\overline{WZ}$.

12.

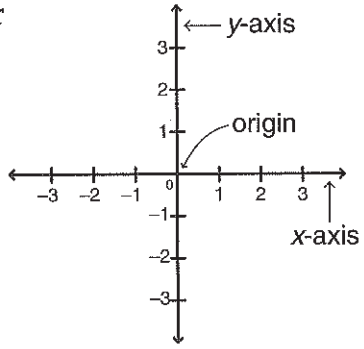




A **B** **C** **D**

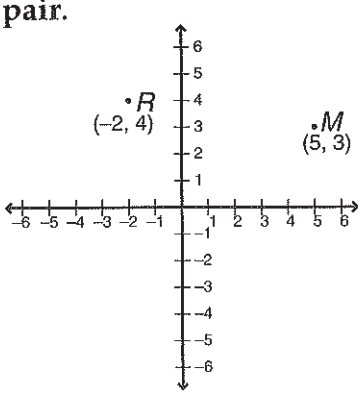
Locating Points on the Coordinate Plane

When you divide a **plane**, or flat surface, with a pair of perpendicular number lines, you create a two-dimensional **coordinate plane**. The number lines are called **axes**. The horizontal number line is the ***x*-axis**, and the vertical number line is the ***y*-axis**. The point where the *x*- and *y*-axes cross is called the **origin**.



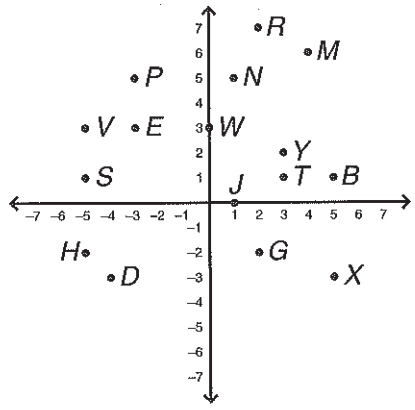
The coordinate plane provides a useful system for locating or giving the location of a point. Maps are created using such a system. A location is given by two numbers called **coordinates** written in parentheses and separated by a comma. Together, the coordinates form an **ordered pair**.

- The ***x*-coordinate** is always given first. It tells how far to the left or right of the origin the point is located.
- The ***y*-coordinate** tells how far above or below the origin the point is located.



At right, *M* is 5 units to the right of the origin and 3 units up, so its ordered pair is (5, 3). The ordered pair for point *R* is (-2, 4) because *R* is 2 units to the left of the origin and 4 units up.

PRACTICE



Write the letter for each coordinate pair.

1. (3, 2) _____
2. (5, 1) _____
3. (1, 5) _____
4. (−3, 3) _____
5. (−5, 1) _____
6. (−5, −2) _____

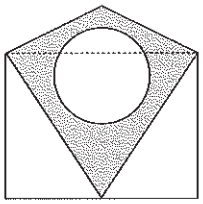
Write the ordered pair for each point.

7. *G* _____
8. *M* _____
9. *J* _____
10. *R* _____
11. *X* _____
12. *W* _____

Geometry Skills Checkup

Circle the letter for the correct answer to each question.

Study the diagram below. Then do Numbers 1–6.



1. What shape is formed by the outline of this diagram?
   - **A** a pentagon
   - **B** an octagon
   - **C** a hexagon
   - **D** a quadrilateral

2. Which parts of this diagram, if any, are congruent?
   - **F** the shaded shape and the outside edges
   - **G** the circle and the shaded shape
   - **H** the two unshaded triangles
   - **J** No two of the shapes are congruent.

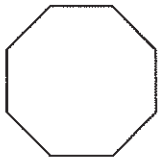
3. What types of triangles are shown in the bottom corners of the diagram?
   - **A** equilateral
   - **B** isosceles
   - **C** right
   - **D** obtuse

4. What type of angle is shown at the very top of the diagram?
   - **F** an acute angle
   - **G** a right angle
   - **H** a square corner
   - **J** an obtuse angle

5. Which line segments in the diagram, if any, are parallel?
   - **A** the bottom and the right side
   - **B** the top and the left side
   - **C** the right and left sides
   - **D** There are no parallel line segments in the diagram.

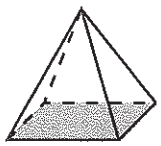
6. Which type of polygon is formed by the outline of the shaded area?
   - **F** a regular polygon
   - **G** a quadrilateral
   - **H** a parallelogram
   - **J** all of the above

7. How many different diagonals can be drawn to divide this figure in half?

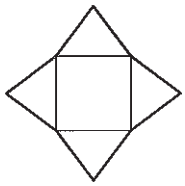


   - **A** 2
   - **B** 4
   - **C** 6
   - **D** 8

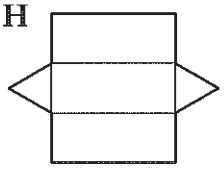
8. Which pattern could be folded to make the figure shown at the right?



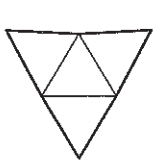
F



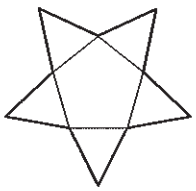
H



G

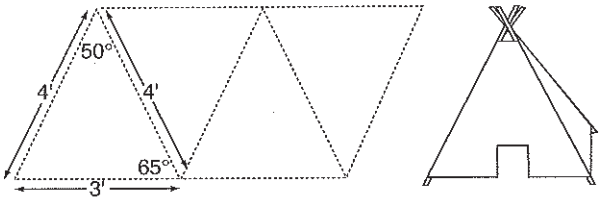


J



Geometry Skills Checkup (continued)

The diagram below shows 4 fabric pieces for the tent shown at the right. The sides of the tent are congruent triangles. Study the diagram. Then do Numbers 9–13.



9. What type of line segments are formed by the tent poles?
   - F parallel
   - G perpendicular
   - H intersecting
   - J none of the above

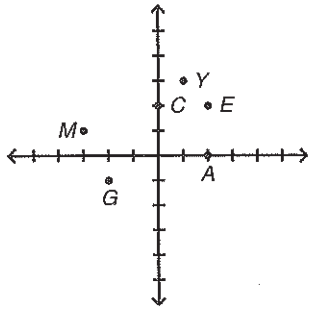
10. What kind of triangle is formed by each side of the tent?
    - A equilateral
    - B isosceles
    - C right
    - D obtuse

11. What is the measure of the unmarked angle in the first triangle?
    - F 50°
    - G 100°
    - H 60°
    - J 65°

12. What shape is the region on the floor that this tent covers?
    - A square
    - B triangle
    - C rectangle
    - D circle

13. Each triangle in the diagram contains what type(s) of angles?
    - F obtuse only
    - G obtuse and acute
    - H acute and right
    - J acute only

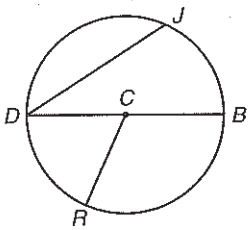
Use the coordinate grid below to answer Numbers 14 and 15.



14. Which ordered pair names the location of Point *A*?
    - A (2, 2)
    - B (-2, 2)
    - C (0, 2)
    - D (2, 0)

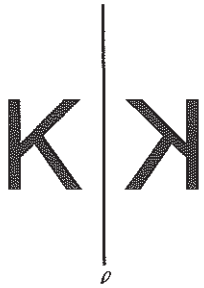
15. Which point is located at (1, 3)?
    - F Point *C*
    - G Point *M*
    - H Point *Y*
    - J Point *G*

16. This line segment names a diameter of the circle.



- A $\overline{CR}$
- B $\overline{BJ}$
- C $\overline{DB}$
- D $\overline{DC}$

17. Which type of transformation is shown in the diagram?
    - F reflection
    - G rotation
    - H translation
    - J none of the above



16. 8
17. 10
18. 150

Page 108

1. $x < 32$
2. $m < 38$
3. $p > 27$
4. $y < 34$
5. $n > 13$
6. $a < -27$
7. $n > 7$
8. $y < 3$
9. $p > 23$
10. $x > 75$
11. $y < 93$
12. $m > 16$

Page 109

1. D
2. F
3. B
4. G
5. B
6. $8 > n$
7. $15 = 3n$
8. $12 < 5y$
9. $\frac{r}{6} = 18$
10. $5n = 75$
11. $14 - n = 2$
12. $n + p = 47$
13. $2y > 8$
14. $\frac{n}{4} > 16$

Page 110

Equations may differ.

1. $(\$2.75 \times n) + \$14 = \$36$; $n = 8$ hours
2. $(\$60 - \$18) \div 2 = n$; $n = \$21$
3. $7n + 5 = 89$; $n = 12$
4. $\frac{n}{2} - \$14.60 = \$3.90$; $n = \$37$
5. $n + \frac{n}{3} = 600$; $n = 450$
6. $6n + 5 = 185$; $n = 30$

Algebra Skills Checkup

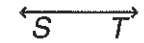
Pages 111–112

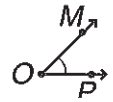
1. B
2. F
3. A
4. J
5. A
6. H
7. D
8. G
9. D
10. G
11. D
12. H
13. A
14. J
15. B
16. J
17. C
18. G
19. D
20. H

Geometry

Page 113

1. C
2. F
3. B
4. .C
5. 

6. 

7. 

Page 114

1. right
2. acute
3. obtuse
4. right
5. acute
6. obtuse
7. right
8. acute
9. obtuse
10. acute
11. obtuse
12. acute
13. A
14. J

Page 115

1. P
2. I
3. I
4. P
5. yes
6. no
7. no
8. yes
9. 

10. no
11. none

Page 117

1. C
2. F
3. C
4. F
5. C
6. G
7. B
8. H
9. B
10. F

Page 118

1. 50°, isosceles and acute
2. 50°, scalene and acute
3. 60°, equilateral and acute
4. 48°, scalene and right
5. A
6. H
7. B
8. H

Page 119

hexagon:
3, 4, $4 \times 180° = 720°$
octagon:
8, 5, 6, $6 \times 180° = 1{,}080°$

1. 108°
2. 120°
3. 135°

Page 120

1. A
2. G
3. line B
4. circumference
5. 2 in.; 4 in.
6. 3 mm, 6mm
7. cannot tell
   cannot tell

Page 121

1. C
2. G
3. B
4. G
5. C and D or A and E
6. & 7. Figures should be drawn correctly.

Page 122

rectangular prism: 6, 12, 8
cube: 6, 12, 8
square pyramid: 5, 8, 5
triangular pyramid: 4, 6, 4
triangular prism: 5, 9, 6

Page 123

1. cylinder
2. cone
3. rectangular prism
4. sphere
5. triangular prism
6. rectangular prism
7. rectangular prism
8. triangular pyramid
9. triangular prism
10. cube

Pages 124–125

1. C
2. F
3. B
4. G
5. A
6. H
7. 90º
8. 360º
9. 180º
10. C
11. J
12. C

Page 126

1. *Y*
2. *B*
3. *N*
4. *E*
5. *S*
6. *H*
7. $(2, {}^{-}2)$
8. (4, 6)
9. (1, 0)
10. (2, 7)
11. $(5, {}^{-}3)$
12. (0, 3)

Geometry Skills Checkup

Page 127-128

1. A
2. H
3. C
4. J
5. C
6. G
7. B
8. F
9. H
10. B
11. J
12. A
13. J
14. D
15. H
16. C
17. F

Measurement

Page 129

1. 19
2. 95
3. 70
4. 65
5. 25
6. 70
7. 50
8. 75

Page 130

9. 2
10. 2
11. 5
12. 20
13. 20
14. 4
15. 25, 75
16. 2, 32
17. 10, 20
18. 1, 43

Page 131

1. $1\frac{1}{2}$
2. 2
3. $\frac{1}{2}$
4. $2\frac{1}{2}$

5. 1
6. $1\frac{1}{2}$
7. $\frac{1}{2}$
8. $\frac{1}{4}$
9. $\frac{3}{4}$
10. $1\frac{1}{4}$
11. $\frac{1}{2}$
12. $1\frac{3}{4}$
13. 1
14. 2

Page 132

1. 4 by $7\frac{1}{2}$ in.
2. $\frac{1}{4}$ by $7\frac{1}{2}$ in.
3. 3 by 5 in.
4. 8 by 11 in.
5. $2\frac{1}{2}$ by $4\frac{1}{2}$ in.
6. 4 by 12 in.
7. $2\frac{5}{8}$ by 4 in.
8. $3\frac{1}{2}$ by $3\frac{5}{8}$ in.
9. $2\frac{5}{8}$ by $6\frac{1}{8}$ in.
10. 1 by $1\frac{3}{4}$ in.
11. A
12. H
13. D
14. J
15. B
16. H

Page 133

1. C
2. G
3. B
4. F
5. 15 inches
6. 2 yards
7. 1 pound
8. 22 ounces
9. 3 cups
10. 1 quart
11. 1 gallon
12. 2 hours

Page 134

1. 3
2. 2
3. 1
4. 6
5. 1
6. 18
7. 5
8. 48
9. 8
10. 2
11. 4,000
12. 6
13. 90
14. 15
15. 14
16. 3, 2
17. 1, 7

Page 135

1. C
2. F
3. G
4. C
5. E
6. H

Page 136

1. 500
2. 2,000
3. 3
4. 1,500
5. 3.5
6. 100
7. 2,500
8. 1.5
9. 315
10. 1,450
11. 3,015
12. 1 kg 515 g

Page 137

1. 1 in.
2. 1 oz
3. 1 L
4. 1 m
5. 1 mi
6. 18.2
7. 1.4
8. 25
9. 11
10. 3.3
11. 6.8
12. 40
13. 0.5
14. 30
15. 2.4

Page 138

1. 4 hr
2. 2 lb 1 oz
3. 8 yd 1 ft
4. 16 ft 5 in.
5. 2 hr 5 min
6. 3 qt 1 c
7. 7 lb 3 oz
8. 1 yd 1 ft
9. 3 ft 8 in.
10. 2 qt
11. 2 hr 30 min
12. 2 pt 1 c

Page 139

1. 10:15
2. 8:45 A.M.
3. 4:45
4. 40 min
5. 9:10