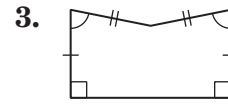
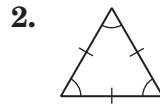
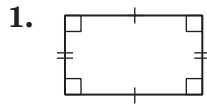


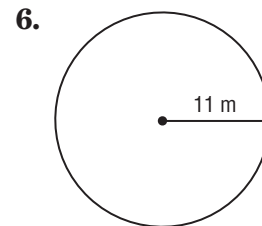
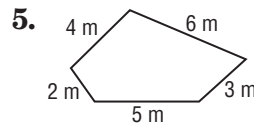
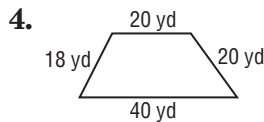
1-6 Skills Practice

Two-Dimensional Figures

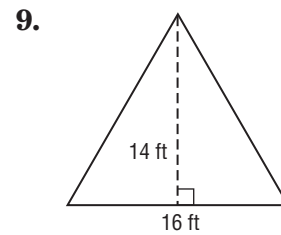
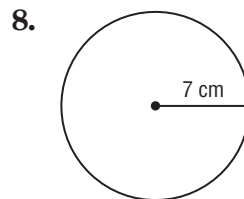
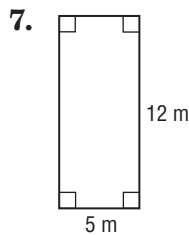
Name each polygon by its number of sides and then classify it as *convex* or *concave* and *regular* or *irregular*.



Find the perimeter or circumference of each figure. Round to the nearest tenth.



Find the area of each figure. Round to the nearest tenth.



COORDINATE GEOMETRY Graph each figure with the given vertices and identify the figure. Find the perimeter and area of the figure.

10. $A(3, 5), B(3, 1), C(0, 1)$

11. $Q(-3, 2), R(1, 2), S(1, -4), T(-3, -4)$

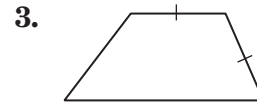
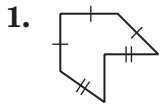
12. $G(-4, 1), H(4, 1), I(0, -2)$

13. $K(-4, -2), L(-1, 2), M(8, 2), N(5, -2)$

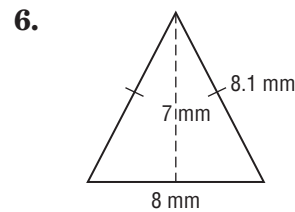
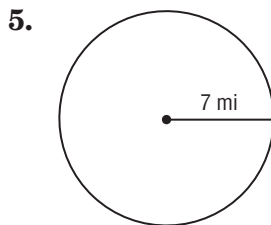
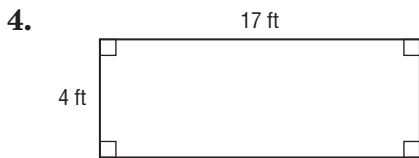
1-6 Practice

Two-Dimensional Figures

Name each polygon by its number of sides and then classify it as *convex* or *concave* and *regular* or *irregular*.



Find the perimeter or circumference and area of each figure. Round to the nearest tenth.



COORDINATE GEOMETRY Graph each figure with the given vertices and identify the figure. Then find the perimeter and area of the figure.

7. $O(3, 2), P(1, 2), Q(1, -4), R(3, -4)$

8. $S(0, 0), T(3, -2), U(8, 0)$

CHANGING DIMENSIONS Use the rectangle from Exercise 4.

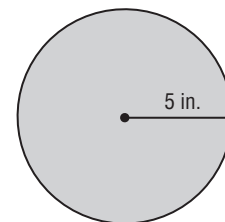
9. Suppose the length and width of the rectangle are doubled. What effect would this have on the perimeter? Justify your answer.

10. Suppose the length and width of the rectangle are doubled. What effect would this have on the area? Justify your answer.

11. **SEWING** Jasmine plans to sew fringe around the circular pillow shown in the diagram.

a. How many inches of fringe does she need to purchase?

b. If Jasmine doubles the radius of the pillow, what is the new area of the top of the pillow?



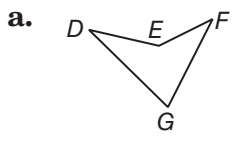
1-6 Study Guide and Intervention

Two-Dimensional Figures

Polygons A **polygon** is a closed figure formed by a finite number of coplanar segments called **sides**. The sides have a common endpoint, are noncollinear, and each side intersects exactly two other sides, but only at their endpoints. In general, a polygon is classified by its number of sides. The vertex of each angle is a **vertex of the polygon**. A polygon is named by the letters of its vertices, written in order of consecutive vertices. Polygons can be **concave** or **convex**. A convex polygon that is both **equilateral** (or has all sides congruent) and **equiangular** (or all angles congruent) is called a regular polygon.

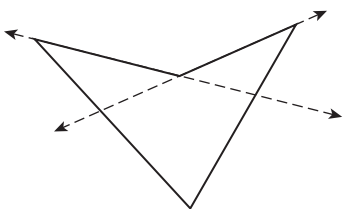
Lesson 1-6

Example Name each polygon by its number of sides. Then classify it as *convex* or *concave* and *regular* or *irregular*.

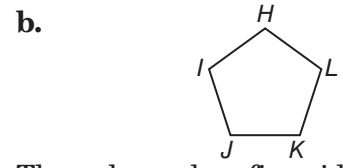


The polygon has four sides, so it is a quadrilateral.

Two of the lines containing the sides of the polygon will pass through the interior of the quadrilateral, so it is concave.



Only convex polygons can be regular, so this is an irregular quadrilateral.



The polygon has five sides, so it is a pentagon.

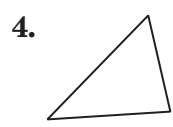
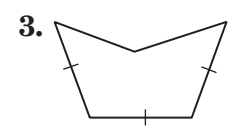
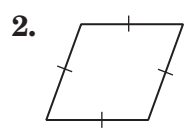
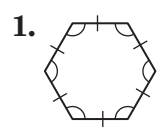
No line containing any of the sides will pass through the interior of the pentagon, so it is convex.

All of the sides are congruent, so it is equilateral. All of the angles are congruent, so it is equiangular.

Since the polygon is convex, equilateral, and equiangular, it is regular. So this is a regular pentagon.

Exercises

Name each polygon by its number of sides. Then classify it as *convex* or *concave* and *regular* or *irregular*.



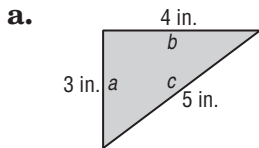
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1-6 Study Guide and Intervention *(continued)*

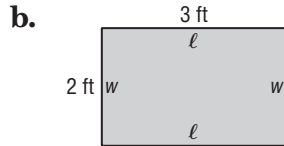
Two-Dimensional Figures

Perimeter, Circumference, and Area The **perimeter** of a polygon is the sum of the lengths of all the sides of the polygon. The **circumference** of a circle is the distance around the circle. The **area** of a figure is the number of square units needed to cover a surface.

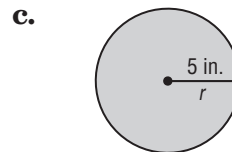
Example Write an expression or formula for the perimeter and area of each. Find the perimeter and area. Round to the nearest tenth.



$$\begin{aligned}
 P &= a + b + c \\
 &= 3 + 4 + 5 \\
 &= 12 \text{ in.} \\
 A &= \frac{1}{2}bh \\
 &= \frac{1}{2}(4)(3) \\
 &= 6 \text{ in}^2
 \end{aligned}$$



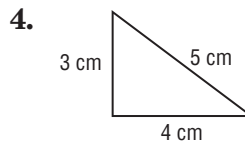
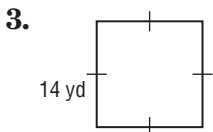
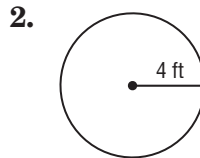
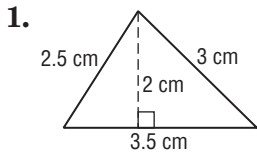
$$\begin{aligned}
 P &= 2\ell + 2w \\
 &= 2(3) + 2(2) \\
 &= 10 \text{ ft} \\
 A &= \ell w \\
 &= (3)(2) \\
 &= 6 \text{ ft}^2
 \end{aligned}$$



$$\begin{aligned}
 C &= 2\pi r \\
 &= 2\pi(5) \\
 &= 10\pi \text{ or about } 31.4 \text{ in.} \\
 A &= \pi r^2 \\
 &= \pi(5)^2 \\
 &= 25\pi \text{ or about } 78.5 \text{ in}^2
 \end{aligned}$$

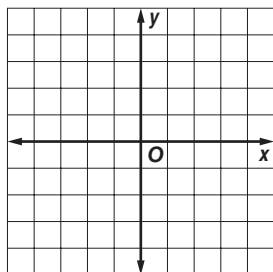
Exercises

Find the perimeter or circumference and area of each figure. Round to the nearest tenth.

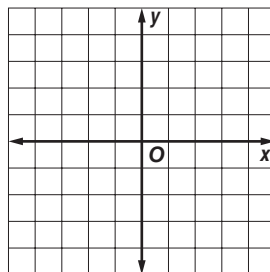


COORDINATE GEOMETRY Graph each figure with the given vertices and identify the figure. Then find the perimeter and area of the figure.

5. $A(-2, -4), B(1, 3), C(4, -4)$



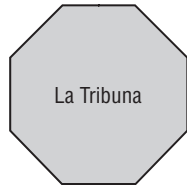
6. $X(-3, -1), Y(-3, 3), Z(4, -1), P(4, 2)$



1-6 Word Problem Practice

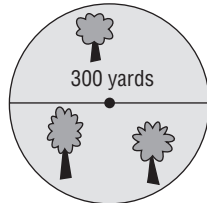
Two-Dimensional Figures

- 1. ARCHITECTURE** In the Uffizi gallery in Florence, Italy, there is a room filled with paintings by Bronzino called the Tribune room (*La Tribuna* in Italian). The floor plan of the room is shown below.



What kind of polygon is the floor plan?

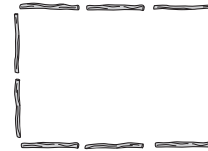
- 2. JOGGING** Vassia decides to jog around a city park. The park is shaped like a circle with a diameter of 300 yards. If Vassia makes one loop around the park, approximately how far has she run?



- 3. PORTRAITS** Around 1550, Agnolo Bronzino painted a portrait of Eleonore of Toledo and her son. The painting measures 115 centimeters by 96 centimeters. What is the area of the painting?

- 4. ORIGAMI** Jane takes a square piece of paper and folds it in half making a crease that connects the midpoints of two opposite sides. The original piece of paper was 8 inches on a side. What is the perimeter of the resulting rectangle?

- 5. STICKS** Amy has a box of teriyaki sticks. They are all 15 inches long. She creates rectangles using the sticks by placing them end to end like the rectangle shown in the figure.



- How many different rectangles can she make that use exactly 12 of the sticks? What are their dimensions?
- What is the perimeter of each rectangle listed in Exercise a?
- Which of the rectangles in Exercise a has the largest area?