

**Reteaching with Practice**

For use with pages 51–58

**GOAL****Find the perimeter and area of common plane figures and use a general problem-solving plan****VOCABULARY**

Formulas for the perimeter  $P$ , area  $A$ , and circumference  $C$  of some common plane figures are given below.

**Square**Side length  $s$ 

$$P = 4s$$

$$A = s^2$$

**Triangle**Side lengths  $a$ ,  $b$ , and  $c$ ,base  $b$ , and height  $h$ 

$$P = a + b + c$$

$$A = \frac{1}{2}bh$$

**Rectangle**length  $l$  and width  $w$ 

$$P = 2l + 2w$$

$$A = lw$$

**Circle**radius  $r$ 

$$C = 2\pi r$$

$$A = \pi r^2$$

**A Problem-Solving Plan:**

1. Ask yourself what you need to solve the problem. Write a **verbal model** or **draw a sketch** that will help you find what you need to know.
2. **Label known and unknown facts** on or near your sketch.
3. Use labels and facts to **choose related definitions, theorems, formulas**, or other results you may need.
4. **Reason logically** to link the facts, using a proof or other written argument.
5. Write a **conclusion** that answers the original problem. **Check** that your reasoning is correct.

**EXAMPLE 1****Finding the Perimeter and Area of a Square**

Find the perimeter and area of a square with a side of 4 inches.

**SOLUTION**

Begin by drawing a diagram and labeling one of the sides. Then, use the formulas for perimeter and area of a square.

$$P = 4s$$

$$= 4(4)$$

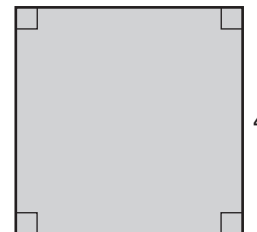
$$= 16$$

$$A = s^2$$

$$= 4^2$$

$$= 16$$

So, the perimeter is 16 inches and the area is 16 square inches.



## Reteaching with Practice

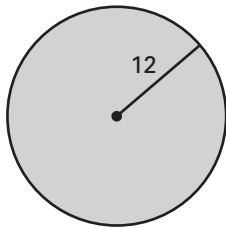
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### Exercises for Example 1

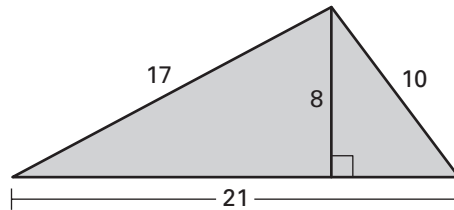
Find the perimeter (or circumference) and area of the figure.

(Where necessary, use  $\pi \approx 3.14$ .)

1.

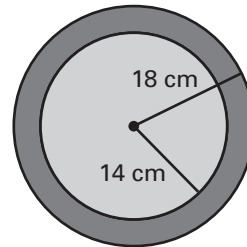


2.



### EXAMPLE 2 Using the Area of a Circle

You are making a cardboard model of a car. You make the tires with a radius of 18 centimeters. If the rim alone has a radius of 14 centimeters, what is the area of the rubber part of the tire?



### SOLUTION

#### Draw a Sketch

From the diagram, you can see that the area of the rubber can be represented by the area of the larger circle minus the area of the smaller circle.

#### Verbal Model

$$\boxed{\text{Area of rubber}} = \boxed{\text{Area of large circle}} - \boxed{\text{Area of small circle}}$$

#### Labels

Area of rubber =  $A$  (square centimeters)

Radius of whole tire = 18 (centimeters)

Radius of rim = 14 (centimeters)

#### Reasoning

$$\begin{aligned} A &= \pi \cdot 18^2 - \pi \cdot 14^2 && \text{Write model for rubber area.} \\ &\approx 3.14 \cdot 324 - 3.14 \cdot 196 && \pi \approx 3.14 \text{ and evaluate powers.} \\ &= 1017.36 - 615.44 && \text{Multiply.} \\ &= 401.92 && \text{Subtract.} \end{aligned}$$

The area of the rubber is about 401.92 square centimeters.

### Exercise for Example 2

3. A window has the shape of a rectangle with a half-circle (see figure). The rectangle has a width of 3 feet and a height of 7 feet. Find the perimeter and area of the window. Use  $\pi \approx 3.14$  where necessary.

