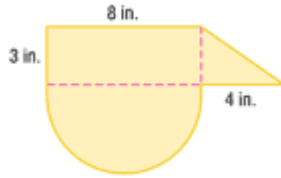


## Lesson 10-8

### Example 1 Find Area of Irregular Figures

Find the area of the figure to the nearest tenth.



**Explore** You know the dimensions of the figure. You need to find its area.

**Plan** Solve a simpler problem. First, separate the figure into a triangle, parallelogram, and semi-circle. Then find the sum of the area of the figures.

**Solve** Area of Triangle

$$A = \frac{1}{2}bh \quad \text{Area of a triangle}$$

$$A = \frac{1}{2}(4)(3) \quad \text{Replace } b \text{ with 4 and } h \text{ with 3.}$$

$$A = \frac{1}{2}(12) \quad \text{Multiply 4 and 3.}$$

$$A = 6 \quad \text{Simplify.}$$

Area of Parallelogram

$$A = bh \quad \text{Area of parallelogram}$$

$$A = (8)(3) \quad \text{Replace } b \text{ with 8 and } h \text{ with 3.}$$

$$A = 24 \quad \text{Simplify.}$$

Area of Semi-circle

$$A = \frac{1}{2}\pi r^2 \quad \text{Area of a half-circle}$$

$$A = \frac{1}{2} \cdot \pi \cdot (4)^2 \quad \text{Replace } r \text{ with 4.}$$

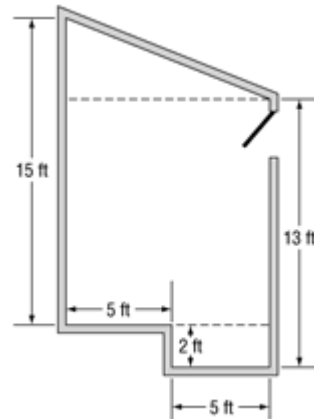
$$A \approx 25.1 \quad \text{Simplify.}$$

The area of the figure is  $6 + 24 + 25.1$  or about 55.1 square inches.

**Examine** Check the reasonableness of the solution.

**Example 2 Apply Area of Irregular Figures**  
**CARPETING** Alec needs to carpet the floor of the room shown. How many square feet of carpet are needed?

Separate the figure into a trapezoid and a rectangle. The shorter base of the trapezoid is  $13 - 2$  or 11 feet long and the height is  $5 + 5$  or 10 feet long.



Area of trapezoid

$$A = \frac{1}{2}h(a + b) \quad \text{Area of a trapezoid}$$

$$A = \frac{1}{2}(10)(15 + 11) \quad \text{Replace } h \text{ with 10, } a \text{ with}$$

15, and  $b$  with 11.

$$A = 130 \quad \text{Simplify.}$$

Area of rectangle

$$A = bh \quad \text{Area of a rectangle}$$

$$A = (5)(2) \quad \text{Replace } b \text{ with 5 and } h \text{ with 2.}$$

$$A = 10 \quad \text{Simplify.}$$

The area of the room is  $130 + 10$  or 140 square feet.