

# Scale Drawings

(pages 332–335)

You can use a **scale drawing** to represent something that is too large or too small for an actual-size drawing. A map is an example of a scale drawing. The **scale** on a map is the ratio of the distance on the map to the actual distance.

## EXAMPLES

- A** Tracy and Tyrone are planning a hiking trip. On the map, their route is 7.5 cm long. The map scale says that 1 cm represents 3 km. What is the actual length of their hike?

Let  $d$  represent the hiking distance. Write and solve a proportion.

$$\frac{\text{map distance}}{\text{actual distance}} \rightarrow \frac{1 \text{ cm}}{3 \text{ km}} = \frac{7.5 \text{ cm}}{d}$$

$$1 \times d = 3 \times 7.5$$

$$d = 22.5$$

The actual length is 22.5 km.

- B** The scale of a blueprint is 1 in. = 4 ft. If the actual width of a porch is 16 ft, what is the width on the blueprint?

Let  $w$  represent the porch width. Write and solve a proportion.

$$\frac{\text{blueprint width}}{\text{actual width}} \rightarrow \frac{1 \text{ in.}}{4 \text{ ft}} = \frac{w}{16 \text{ ft}}$$

$$1 \times 16 = 4 \times w$$

$$16 = 4w$$

$$\frac{16}{4} = \frac{4w}{4}$$

$$4 = w$$

The width on the blueprint is 4 inches.

## Try These Together

**Find the length of each object on a scale drawing with the given scale.**

- a house 75 feet long; 1 inch:1 foot
- a box 3 meters tall; 1 cm:1.5 m

## PRACTICE

**Find the length of each object on a scale drawing with the given scale.**

- a desk 4.5 meters long; 2 centimeters:1 meter
- an airplane with a 54-meter wingspan; 3 centimeters:1 meter
- an automobile that is 8 feet wide; 0.5 inch:1 foot
- a street that is 2 miles long; 5 inches:1 mile
- Find how far it is across the city of Bloomington if it is 2.45 centimeters on a map that has a scale of 1 centimeter:3 kilometers.
- Architecture** The Sears Tower in downtown Chicago is 110 stories high. A scale drawing has a scale of 1.5 centimeters: 1 story. How tall is the Sears Tower on the scale drawing?



- 9. Standardized Test Practice** Which is the actual length of a sofa that is 4 inches on a scale drawing if the scale is 2 inches:5 feet?

- A** 10 feet      **B** 20 feet      **C** 15 feet      **D** 30 feet

Answers: 1. 75 in., 2. 2 cm, 3. 9 cm, 4. 162 cm, 5. 4 in., 6. 10 in., 7. 7.35 km, 8. 165 cm, 9. A