

# Section Overview

## Similar Figures

Lessons 5-7, 5-8

**Why?** You can use facts about similar figures to solve problems involving indirect measurement, such as finding the height of a tall building without physically measuring it.

**Similar figures** are figures that have the same shape.

- Corresponding pairs of sides of similar figures are proportional.
- Pairs of corresponding sides have equal ratios.
- All corresponding angles of similar figures are congruent.

The triangle formed by the height of the man and his shadow and the triangle formed by the height of the building and its shadow are similar. Find the height of the building.

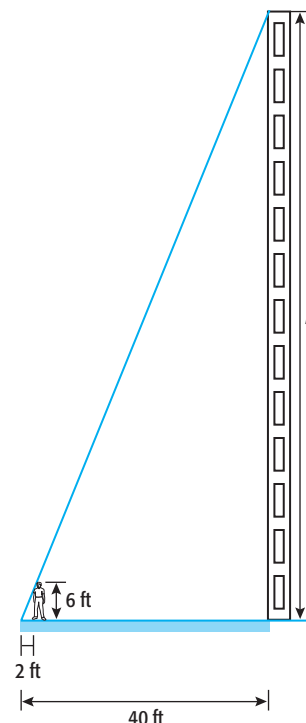
$$\frac{6}{2} = \frac{h}{40}$$

$$2 \cdot h = 6 \cdot 40$$

$$2 \cdot h = 240$$

$$h = 120$$

The height of the building is 120 feet.



## Scale Drawings and Scale Models

Lesson 5-9

**Why?** Scales are used in maps, blueprints, and other scale drawings.

Scale drawings and scale models have the same shape but not the same size as the objects they represent.

A **scale** is a ratio between two sets of measurements. Using the scale and a proportion, you can find the actual measurement of an object pictured on a scale drawing or represented by a scale model.

Map scale: 1 in. = 50 mi

Map measurement between points A and B: 4.5 in.

$$\frac{1}{50} = \frac{4.5}{d}$$

$$d = 50 \cdot 4.5$$

$$d = 225$$

The actual distance between points A and B is 225 miles.

## Dimensional Analysis

Extension

**Why?** You can use dimensional analysis to convert from one unit to another when solving equations and real-world problems involving situations such as recipes and timetables.

- Convert 6 hours to seconds.

$$6 \text{ hr} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{60 \text{ s}}{1 \text{ min}} = 6 \cdot 60 \cdot 60 \text{ s} = 21,600 \text{ s}$$

- Convert 3 gallons to pints.

$$3 \text{ gal} \cdot \frac{4 \text{ qt}}{1 \text{ gal}} \cdot \frac{2 \text{ pt}}{1 \text{ qt}} = 3 \cdot 4 \cdot 2 \text{ pt} = 24 \text{ pt}$$