

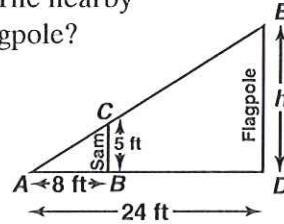
## Reteaching 5-8

### Similarity and Indirect Measurement

You can use similar triangles to solve problems.

*Example:* Sam is 5 ft tall and casts a shadow 8 ft long. The nearby flagpole casts a shadow 24 feet long. How tall is the flagpole?

- 1 Draw a diagram. Show similar triangles formed by the flagpole, Sam, and the shadows. Let  $h$  = height of the flagpole.



- 2 Write a proportion. Use the similar triangles.
- 3 Substitute.
- 4 Use cross products.
- 5 Solve.

$$\frac{\text{flagpole's height}}{\text{Sam's height}} = \frac{\text{length of flagpole's shadow}}{\text{length of Sam's shadow}}$$

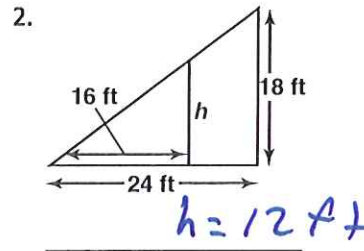
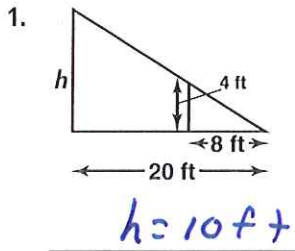
$$\frac{h}{5} = \frac{24}{8}$$

$$8h = 5 \cdot 24$$

$$h = \frac{120}{8} = 15$$

The height of the flagpole is 15 ft.

In each figure, find  $h$ .



Use similar triangles to answer each question.

3. A child 4 ft tall casts a shadow 12 ft long. She stands next to a sculpture that has a 36 ft long shadow. How tall is the sculpture?

$12 \text{ ft}$

4. A building 35 ft tall casts a shadow 105 ft long. Patty casts a shadow 16.5 ft long. How tall is Patty?

$5.5 \text{ ft}$

5. A man 6 ft tall casts a shadow 3 ft long. He stands next to a tree that has a 47.5 ft shadow. How tall is the tree?

$95 \text{ ft}$

6. A fence post 3 ft tall casts a shadow 16 ft long. At the same time the barn casts a shadow 96 ft long. How tall is the barn?

$18 \text{ ft}$