## Write

Provide an example of the term *indirect measurement*.

Remember

Indirect measurement is the process of using proportions related to similar triangles to determine a measurement when direct measurement is undesirable or not possible.

Practice

1. You want to measure the height of a tree at the community park. You stand in the tree's shadow so that the tip of your shadow meets the tip of the tree's shadow on the ground, 2 meters from where you are standing. The distance from the tree to the tip of the tree's shadow is 5.4 meters. You are 1.25 meters tall. Draw a diagram to represent the situation. Then, determine the height of the tree.
2. You and a friend are on the 10th floor of apartment buildings that are directly across the street from each other, and have balconies. The two of you are making a banner to hang between the apartment buildings. The banner must cross the street. To hang the banner, you and your friend need to attach it to hooks on the wall of each balcony. The wall of your balcony is 6 feet away from the street and the wall of your friend's balcony is 4 feet away from the street. You also know that your friend's balcony is 10 feet away from the end of his building and your balcony is 100 feet away from the edge of your building. How wide is the street between you and your friend's apartment buildings? How long does the banner need to be? Show all your work and use complete sentences in your answer.
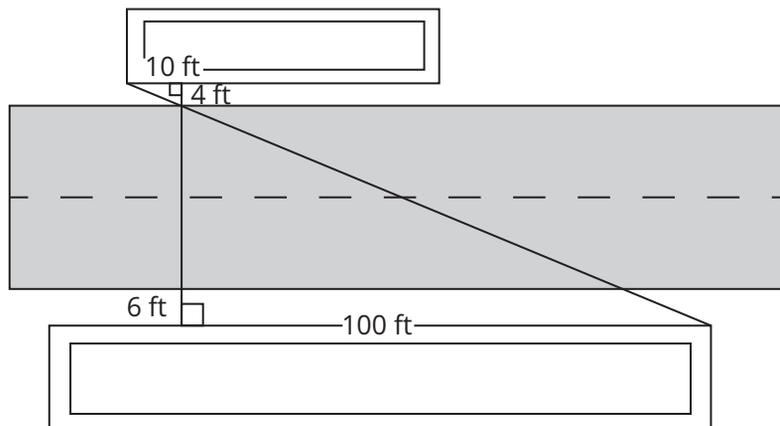
Stretch

1. Brecken places a mirror on the ground $7\frac{1}{5}$ ft from a wall. She stands $4\frac{1}{10}$ ft away from the mirror. She is going to shine the flashlight on the mirror so that it reflects onto the wall. Determine the height at which Brecken should hold the flashlight if she wants it to shine on the wall $3\frac{2}{7}$ ft higher than the height of the flashlight.

flashlight

wall

mirror
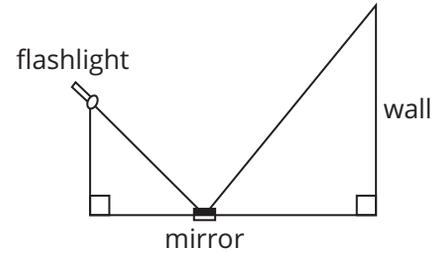
2. Triangles *ABC* and *DEF* are similar.
   a. Compare the ratios of side $\overline{AB}$ to side $\overline{AC}$ and side $\overline{DE}$ to side $\overline{DF}$.
   b. Compare the ratios of side $\overline{BC}$ to side $\overline{AC}$ and side $\overline{EF}$ to side $\overline{DF}$.
   c. Comment on the similarities and differences between the ratios in parts (a) and (b).

C

8   $4\sqrt{3}$

60°

A   4   B

F

12   $6\sqrt{3}$

60°

D   6   E
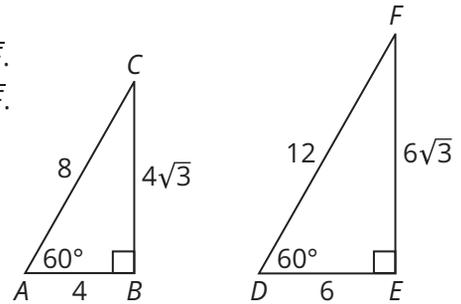
Review

1. The geometric mean of two numbers is $4\sqrt{7}$. One of the numbers is 14. What is the other number?

2. Solve for *a*, *b*, and *c*.
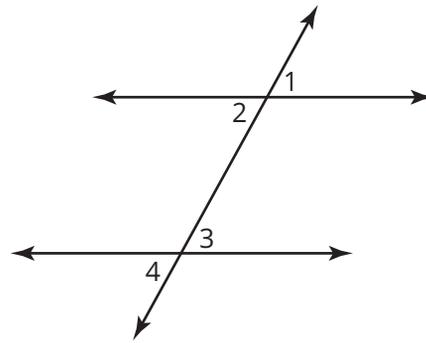
c

b

$2\sqrt{21}$

5

a
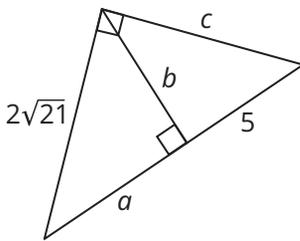
3. Consider the circle with its center at point *O*. Determine the information that is needed to show that $\overline{KJ}$ and $\overline{ML}$ are equidistant from point *O*.

K

M

O

J

L
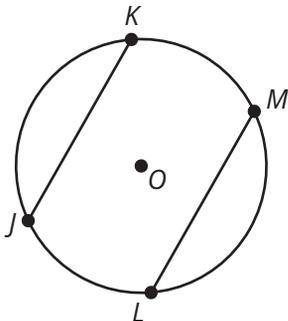
4. Provide reasons to complete the proof.

Given: $\angle 2 \cong \angle 3$
Prove: $\angle 1 \cong \angle 4$

Statements	Reasons
1. $\angle 2 \cong \angle 3$	1.
2. $\angle 1 \cong \angle 2$	2.
3. $\angle 3 \cong \angle 4$	3.
4. $\angle 1 \cong \angle 4$	4.