SIMILAR FIGURES
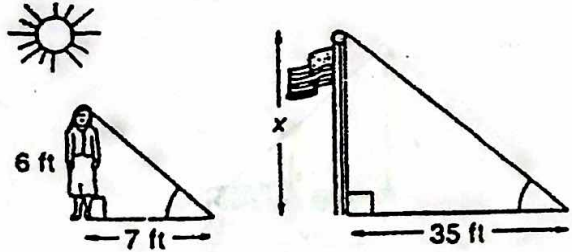
Write a proportion to find each missing measure *x*.

1.

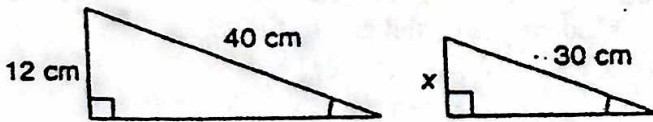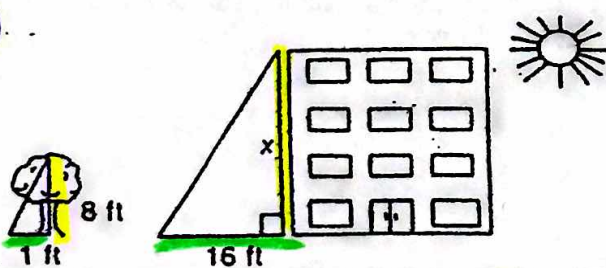x | 25 ft | 6 ft | 10 ft

2.

6 ft | 7 ft | x | 35 ft

3.

35 mm | x | 25 mm | 18 mm | 45 mm

$$\frac{35}{x} \times \frac{45}{18}$$

$$\frac{45x}{45} = \frac{630}{45}$$

$$\boxed{x = 14\,mm}$$

4.

21 m | 9 m | 3 m | 6 m | x

$$\frac{x}{3} \times \frac{21}{9}$$

$$\frac{9x}{9} = \frac{63}{9}$$

$$\boxed{x = 7\,m}$$

5.

40 cm | 12 cm | 30 cm | x

6.

25 m | 7 m | x | 14 m

7.

8 ft | 1 ft | x | 16 ft

$$\frac{1}{16} \times \frac{8}{x}$$

$$\boxed{x = 128\,ft}$$

8.

8 km | 12 km | 150 km | x
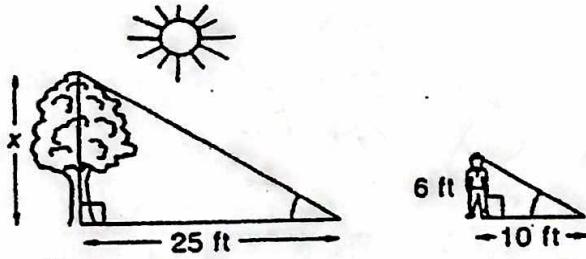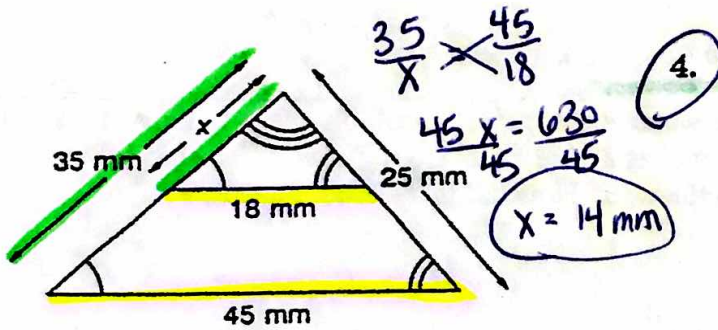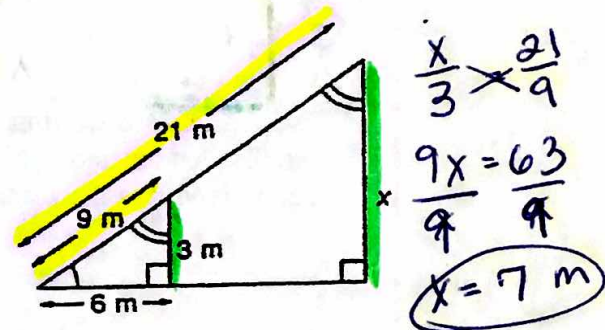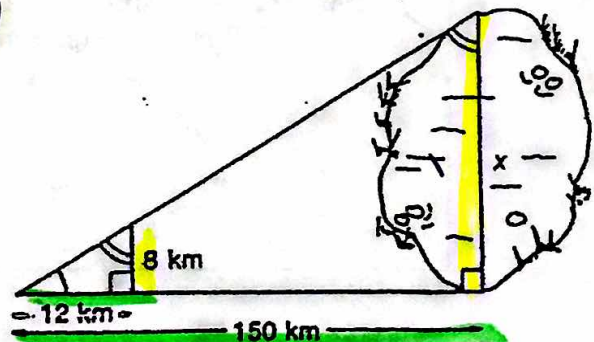
$$\frac{x}{150} \times \frac{8}{12} \nearrow \quad \frac{12x}{12} = \frac{1200}{12}$$

$$\boxed{x = 100\,km}$$

PROPORTIONS AND SIMILARITY
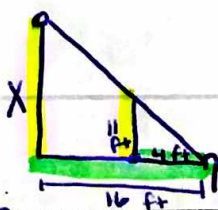
1. Draw a diagram for each.
2. Then solve each using a proportion.

1. A rope attached to the top of a flagpole is fastened to the ground with a hook 16 feet from the base of the pole. At a point 4 feet from the hook, the height from the ground to the rope is 11 feet. What is the height of the flagpole?
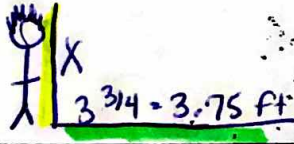
$$\frac{x}{11} \times \frac{16}{4}$$

$$\frac{4x}{4} = \frac{176}{4}$$

$$x = 44 \text{ ft}$$

x

11 ft   4 ft

16 ft

2. A girl standing next to her father casts a 3-foot shadow. Her father casts a 3¾-foot shadow. If the girl is 4 feet tall, how tall is her father?

4 ft
3 ft

x
$3 \, 3/4 = 3.75 \text{ ft}$

3. Two ladders are leaning at the same angle against a wall on opposite sides of the wall. The first ladder is 8 feet tall, and has a base 2 feet from the wall. The base of the second ladder is 2.5 feet from the wall. How tall is the second ladder?

4. Two buildings stand next to each other. Building A is 84 feet tall and casts a 60-foot shadow. Building B casts a 36-foot shadow. How tall is building B?

5. Triangle ABC is similar to Triangle XYZ. Side AB is 6 meters, side XY is 2 meters and side XZ is 6 meters. Find the length of side AC.