

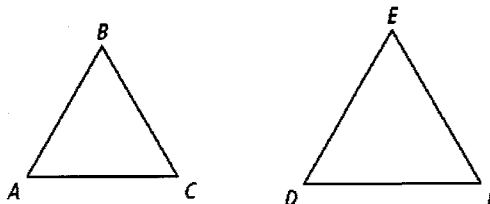
2-8 Reteaching

Proportions and Similar Figures

In similar figures, the measures of corresponding angles are equal, and the ratios of corresponding side lengths are equal. It is important to be able to identify the corresponding parts in similar figures.

Since $\angle A \cong \angle D$, $\angle B \cong \angle E$, and $\angle C \cong \angle F$,

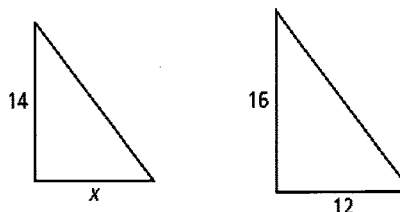
$\frac{AB}{DE} = \frac{BC}{EF}$, $\frac{AB}{DE} = \frac{AC}{DF}$. This fact can help you to find missing lengths.



Problem

What is the missing length in the similar figures?

First, determine which sides correspond. The side with length 14 corresponds to the side with length 16. The side with length x corresponds to the side with length 12. These can be set into a proportion.



$$\frac{14}{16} = \frac{x}{12}$$

$$(16)x = (14)(12)$$

$$16x = 168$$

$$x = 10.5$$

Write a proportion using corresponding lengths.

Cross Products Property

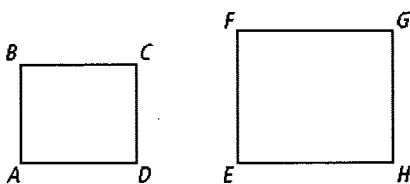
Multiply.

Divide each side by 16 and simplify.

Exercises

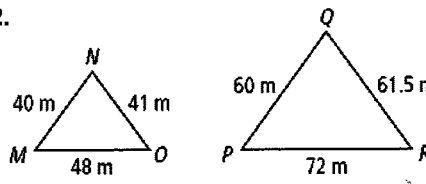
The figures in each pair are similar. Identify the corresponding sides and angles.

1.



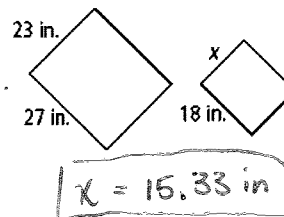
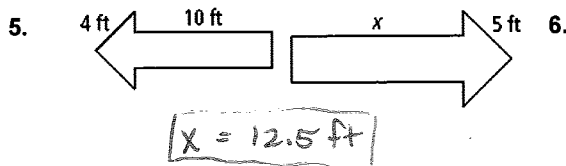
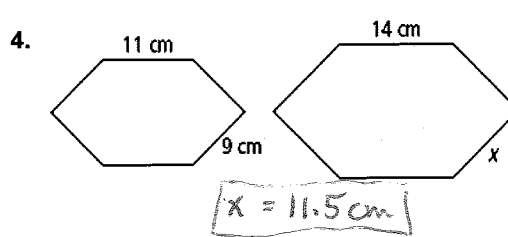
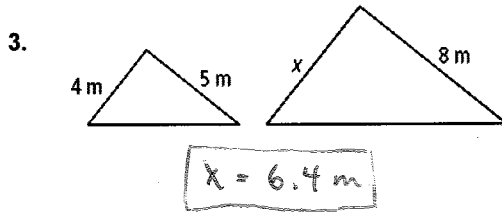
$AB \cong EF$ $BC \cong FG$ $CD \cong GH$ $HE \cong DA$ $EA \cong AH$ $FB \cong BH$ $GC \cong CH$ $LD \cong DH$ $\angle A \cong \angle E$ $\angle B \cong \angle F$ $\angle C \cong \angle G$ $\angle D \cong \angle H$

2.



$MN \cong PQ$ $NO \cong QR$ $OM \cong RP$ $\angle M \cong \angle P$ $\angle N \cong \angle Q$ $\angle O \cong \angle R$

The figures in each pair are similar. Find the missing length.



Problem

A map shows the distance between two towns is 3.5 inches where the scale on the map is 0.25 in. : 5 mi. What is the actual distance between the towns?

$$\text{Map scale: } \frac{\text{map distance}}{\text{actual distance}}$$

If you let x be the actual distance between the towns, you can set up and solve a proportion to answer the question.

$$\frac{0.25 \text{ in.}}{5 \text{ mi}} = \frac{3.5 \text{ in.}}{x \text{ mi}}$$

$$0.25 = 17.5$$

$$x = 70$$

The towns are 70 miles apart.

Exercises

The scale of a map is 1.5 in. : 50 mi. Find the actual distance corresponding to each map distance.

7. 10 in.

$$333\frac{1}{3} \text{ mi}$$

8. 4.25 in.

$$141\frac{2}{3} \text{ mi}$$

9. 6.75 in.

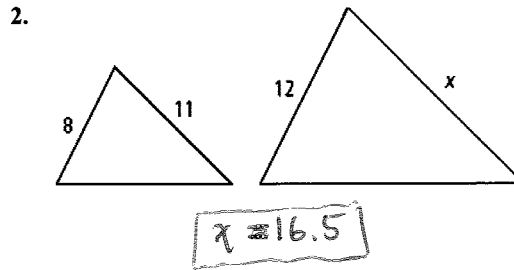
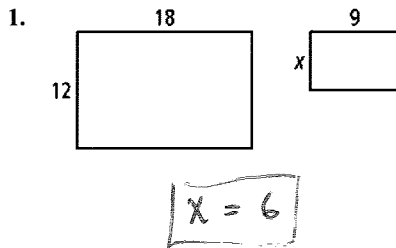
$$225 \text{ mi}$$

10. The blueprints of an octagonal shaped hot tub are drawn with a 1 in. : 5 ft scale. In the drawing the sides are 3.5 inches long. What is the perimeter of the hot tub?

$$140 \text{ ft}$$

Lesson 2-8

The figures in each pair are similar. Find the missing length. Round to the nearest tenth.



3. The scale on a map is 1 in : 15 mi. The distance between two cities is 25 mi. Find the distance in inches between the cities on the map. 1.7 in

4. A 40 : 1 scale model of an airplane is being used to conduct wind-tunnel tests. If the model is 4.5 feet long, how long is the actual airplane? 180 ft

Answers: 6, 16.5, 1.7 in, 180 ft