

SECTION

5B

Ready to Go On? Skills Intervention

5-7 Using Similar Figures

To find the measurement of objects that are too difficult to measure, use **indirect measurement**. This involves using proportions to find an unknown measure.

Vocabulary

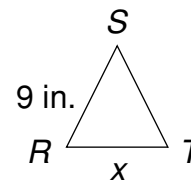
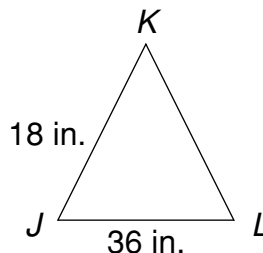
indirect measurement

Finding Unknown Lengths in Similar Figures.

Find the unknown length in the pair of similar figures below.

$$\frac{\overline{RS}}{\overline{JL}} = \frac{\overline{JK}}{\overline{KL}}$$

Write a proportion to find x .



$$\frac{18}{\underline{\quad}} = \frac{\underline{\quad}}{x}$$

Substitute values for the lengths of the sides.

$$18 \cdot \underline{\quad} = \underline{\quad} \cdot 36$$

Write the cross products.

$$\underline{\quad} = 324$$

Multiply.

$$\frac{18x}{\underline{\quad}} = \frac{324}{\underline{\quad}}$$

Divide each side by _____.

$$x = 18$$

Solve for x .

RT is _____ long.

Measurement Application

The length of a living room in the blueprint of a house is 3 inches long and the width is 2 inches wide. The length of the actual living room is 180 inches long. What is the width of the actual living room?

$$\frac{\overline{\text{blueprint width}}}{\overline{\text{actual length}}} = \frac{\overline{\text{actual width}}}{\overline{\text{actual length}}}$$

Write a proportion to find the actual width.

$$\frac{3}{\underline{\quad}} = \frac{\underline{\quad}}{w}$$

Substitute values for the lengths of the sides.

$$3 \cdot \underline{\quad} = \underline{\quad} \cdot 180$$

Write the cross products.

$$\underline{\quad} = 360$$

Multiply.

$$\frac{3w}{\underline{\quad}} = \frac{360}{\underline{\quad}}$$

Divide each side by _____.

$$w = 120$$

Solve for w .

The width of the actual living room is _____ inches.

SECTION

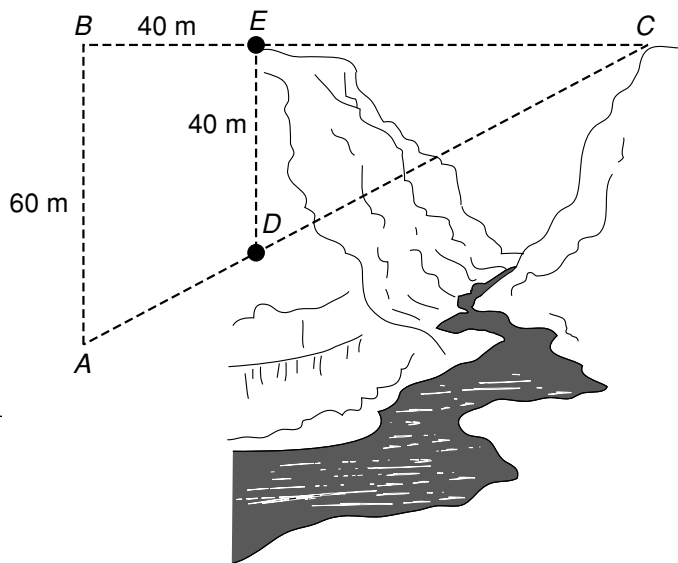
5B

Ready to Go On? Problem Solving Intervention

5-7 Using Similar Figures

A line segment parallel to the base of a triangle forms a smaller triangle that is similar to the original. You can use that idea to measure distances that are not practical to measure directly.

A hiker measured the distances AB , BE , and ED in order to calculate the distance across a canyon. How far is it across the canyon?



Understand the Problem

1. Name the two similar triangles in the figure.

Make a Plan

2. Complete the proportion.

$$\frac{EC}{DE} = \frac{BC}{\square}$$

3. Let x be the distance across the canyon. Write an expression for BC using x .

4. Substitute expressions with x in your proportion so you can use it to solve for x . Remember, $x = EC$, the distance across the canyon.

Solve

5. Solve the proportion you wrote in Exercise 4.

6. What is the distance across the canyon?

Check

7. Does the diagram appear to be close to scale? If so, does your answer appear to be reasonable? Explain.
