

Name _____ Date _____

Indirect Measurement (Pages 361–364)

Using proportions to find a measurement is called **indirect measurement**.

Using Indirect Measurement

Use the corresponding parts of similar triangles to write a proportion. Solve the proportion to find the missing measurement.

EXAMPLE

George is $5\frac{1}{2}$ feet tall. His shadow is 22 inches long at the same time that a tree has a shadow that is 120 inches long. How many feet tall is the tree?

$$\frac{5.5 \text{ feet}}{22 \text{ inches}} = \frac{t \text{ feet}}{120 \text{ inches}} \quad \text{Write a proportion.}$$

$$5.5(120) = 22t \quad \text{Find the cross products.}$$

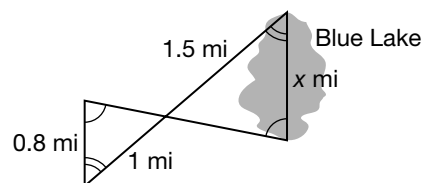
$$30 = t \quad \text{Solve for } t.$$

The tree is 30 feet tall.

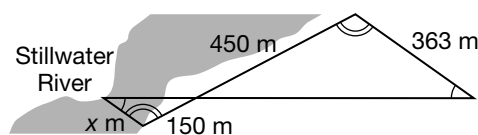
PRACTICE

Write a proportion for each problem and then solve it. Assume the triangles are similar.

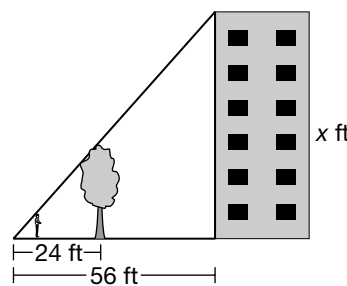
1. Find the distance across Blue Lake.



2. The city of Hutchinson plans to build a bridge over the narrowest part of Stillwater River. Find the distance across this part of the river.



3. When Peter stands in front of a 27-foot tree in front of his apartment building he can barely see the very top of the building over the tree. How tall is his apartment building?



4. **Standardized Test Practice** $\triangle ABC \sim \triangle XYZ$. $AB = 45$ m, $BC = 15$ m, and $XY = 24$ m. How long is YZ ?

- A** $2\frac{2}{3}$ m **B** $7\frac{2}{3}$ m **C** 8 m **D** 72 m

Answers: 1–3. Sample proportions are given. 1. $\frac{0.8}{1} = \frac{1.5}{x}$; 1.2 mi 2. $\frac{363}{150} = \frac{x}{450}$; 121 m 3. $\frac{27}{56} = \frac{x}{24}$; 63 ft 4. C