NAME _____ DATE _____ PERIOD _____

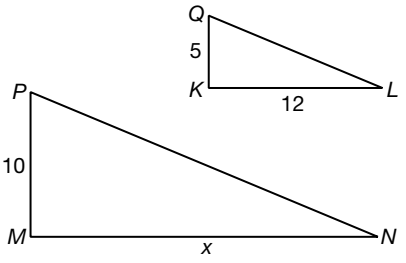
9-7 Similar Triangles and Indirect Measurement *(Pages 471–475)*

Figures that have the same shape but not necessarily the same size are **similar** figures. The symbol ~ means *is similar to*.

Similar Triangles	• If two triangles are similar, then the corresponding angles are congruent. If the corresponding angles of two triangles are congruent, then the triangles are similar. • If two triangles are similar, then their corresponding sides are proportional. If the corresponding sides of two triangles are proportional, then the triangles are similar.

Example

If $\triangle MNP \sim \triangle KLQ$, find the value of x.
Write a proportion using the known measures.



$\frac{QK}{KL} = \frac{PM}{MN}$ *Corresponding sides are proportional.*

$\frac{5}{12} = \frac{10}{x}$ *Substitute.*

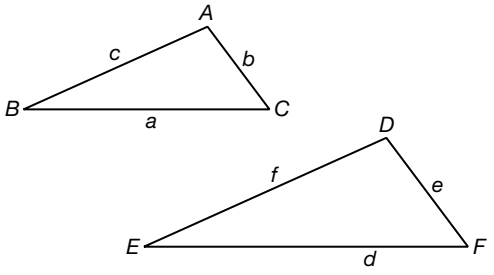
$5x = 12 \cdot 10$ *Find the cross products.*

$5x = 120$ *Multiply.*

$x = 24$ *The measure of $\overline{MN}$ is 24.*

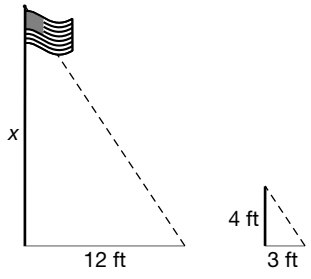
Practice

$\triangle ABC \sim \triangle DEF$. Use the two triangles to solve each of the following.



1. Find b if $e = 4$, a $= 9$, and $d = 12$.
2. Find c if $f = 9$, $b = 8$, and $e = 12$.
3. Find d if $a = 6$, $f = 7$, and $c = 5$.
4. Find e if $d = 30$, $a = 10$, and $b = 6$.

5. **Standardized Test Practice** Ancient Greeks used similar triangles to measure the height of a column. They measured the shadows of a column and a smaller object at the same time of day. Then they measured the height of the smaller object and solved for the height of the column. In the picture to the right, use the length of the shadows and the height of the smaller object to solve for the height of the flagpole.



A 15 ft **B** 16 ft **C** 20 ft **D** 21 ft

Answers: 1. 3 2. 6 3. 8.4 4. 18 5. B