8-7

Name _____ Date _____

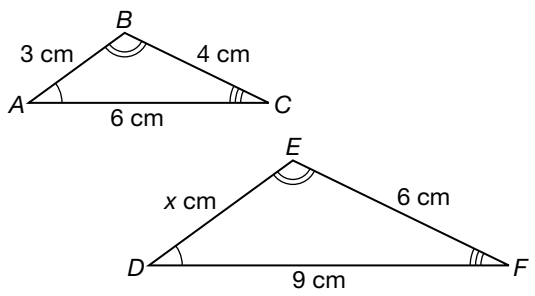
Similar Polygons (Pages 357–360)

A **polygon** is a simple, closed figure in a plane formed by three or more sides. A quadrilateral is a polygon with four sides. A **pentagon** is a polygon with five sides.

Similar Polygons	Two polygons are **similar** if their corresponding angles are congruent and their corresponding sides are in proportion.

EXAMPLE

In the figure at the right, $\triangle ABC \sim \triangle DEF$. Find the length of side $\overline{DE}$.



$\overline{AB}$ corresponds to $\overline{DE}$ and $\overline{BC}$ corresponds to $\overline{EF}$. So you can write a proportion.

$\frac{AB}{DE} = \frac{BC}{EF}$

$\frac{3}{x} = \frac{4}{6}$ *AB = 3, DE = x, BC = 4, EF = 6*

$18 = 4x$ *Find the cross products.*

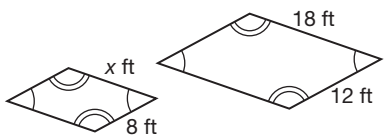
$4.5 = x$ *Solve for x.*

The length of $\overline{DE}$ is 4.5 centimeters.

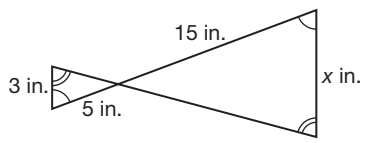
PRACTICE

Each pair of polygons is similar. Write a proportion to find the missing measure x. Then find the value of x.

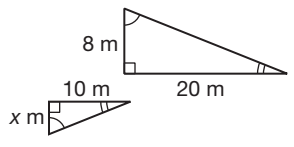
1.



2.



3.



4. Hobbies Sean wants to enlarge a 4-inch by 6-inch photo so the shortest side is 6 inches. How long will the longest side be?

5. Standardized Test Practice $\triangle ABC$ is similar to $\triangle DEF$. If $AB = 2$, $BC = 5$, and $DE = 26$, then EF is equal to what?

A $2\frac{4}{5}$ **B** $10\frac{2}{5}$ **C** $20\frac{4}{5}$ **D** 65

Answers: 1–3. Sample proportions are given. **1.** $\frac{8}{12} = \frac{x}{18}$; 12 **2.** $\frac{3}{x} = \frac{5}{15}$; 9 **3.** $\frac{x}{8} = \frac{10}{20}$; 4 **4.** 9 in. **5.** D