

4-2

NAME _____ DATE _____

Similar Triangles (Pages 201–205)

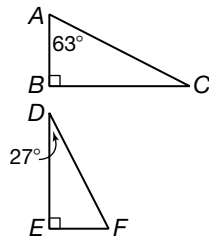
Two figures are **similar** (\sim) if they have the same shape, but not necessarily the same size.

Similar Triangles	<ul style="list-style-type: none"> • If the corresponding angles of two triangles have equal measures, the triangles are similar. The sides opposite the corresponding angles are corresponding sides. • If two triangles are similar, the measures of their corresponding sides are proportional, and the measures of their corresponding angles are equal.
--------------------------	--

EXAMPLES

A Determine whether the pair of triangles shown at the right are similar.

Two triangles are similar if the measures of their corresponding angles are equal.
 $m\angle C = 180^\circ - (90^\circ + 63^\circ) = 27^\circ$
 $m\angle F = 180^\circ - (90^\circ + 27^\circ) = 63^\circ$



Since corresponding angles have equal measures, triangle ABC is similar to triangle FED, or $\triangle ABC \sim \triangle FED$.

B In the figure below, $\triangle ABC \sim \triangle ADE$. Find the value of x .

Write a proportion matching corresponding sides of each triangle.

$$\frac{BC}{DE} = \frac{AC}{AE}$$

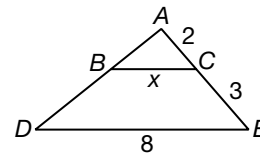
$$\frac{x}{8} = \frac{2}{2+3}$$

$(2 + 3)(x) = 8(2)$ Find the cross products.

$$5x = 16$$

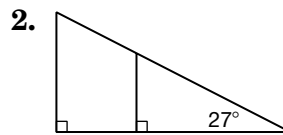
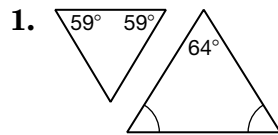
$$\frac{5x}{5} = \frac{16}{5}$$

$$x = 3.2$$



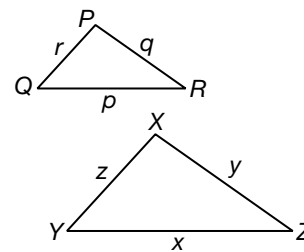
PRACTICE

Determine whether each pair of triangles is similar.



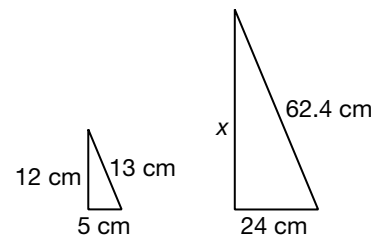
Triangle PQR is similar to triangle XYZ. For each set of measures given, find the measures of the remaining sides.

- $p = 4, q = 3.5, r = 3, x = 8$
- $p = 5, q = 5, r = 2, z = 3$
- $x = 20, y = 18, z = 16, q = 9$
- $x = 22.5, y = 18, z = 15, r = 10$



7. Standardized Test Practice The triangles in the figure at the right are similar. Find the value of x .

- A** 24 cm **B** 48 cm
C 57.6 cm **D** 67.6 cm



Answers: 1. no 2. yes 3. $y = 7, z = 6$ 4. $x = 7.5, y = 7.5, z = 7.5$ 5. $p = 10, r = 8$ 6. $p = 15, q = 12, z = 7.5$