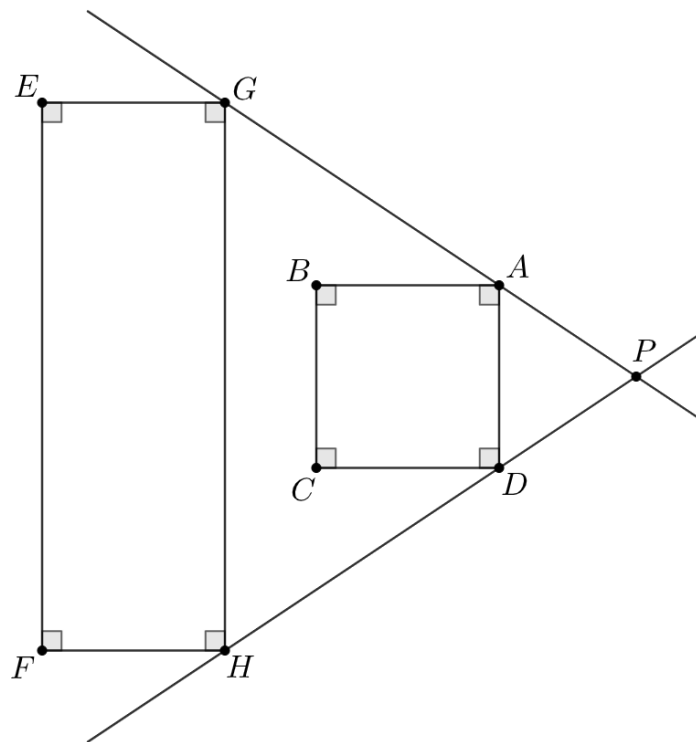# Lesson 3.04
Similar Figures

Geometry GT

Recall

What's wrong with this dilation? Why is $GHFE$ not a dilation of $ADCB$?

Definition

Similar: two figures with the same shape and proportional sides; if there exists a sequence of rigid motions and dilations that takes one figure onto another, then the two figures are similar

Explore

Sketch two triangles with all pairs of corresponding angles congruent, and with all pairs of corresponding side lengths in the same proportion. Label the triangles ΔABC and ΔDEF such that $\angle A \cong \angle D$, $\angle B \cong \angle E$, and $\angle C \cong \angle F$. Label each side with its length (to the nearest millimeter).

Do the two triangles you drew fit the definition of similar? If so, find a sequence of rigid motions and dilations that will take ΔABC to ΔDEF.

Swap triangles with a neighbor. Does your sequence work for their figures?

Discuss

The following triangles are similar.
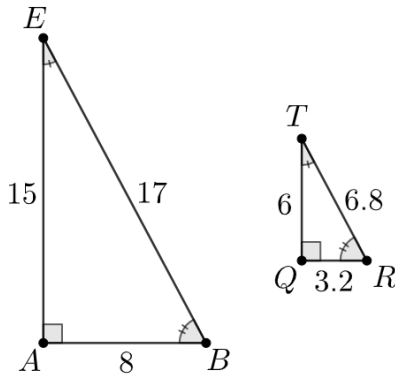
Write a similarity statement about the 2 figures, and explain how you know they are similar.

Compare your statement with a neighbor's statement. Is there more than one correct way to write a similarity statement? Is there a wrong way to write a similarity statement?

Demonstrate

Determine if each statement must be true, could possibly be true, or definitely can't be true. Explain or show your reasoning.

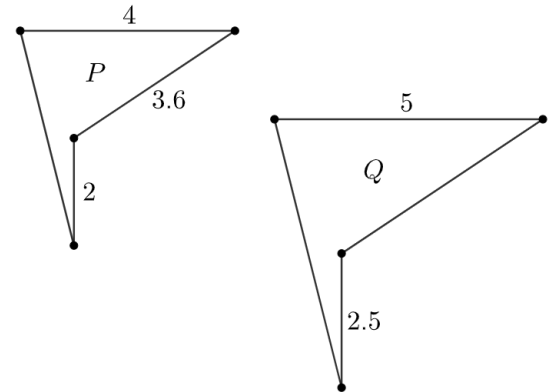   **A.** Congruent figures are similar.

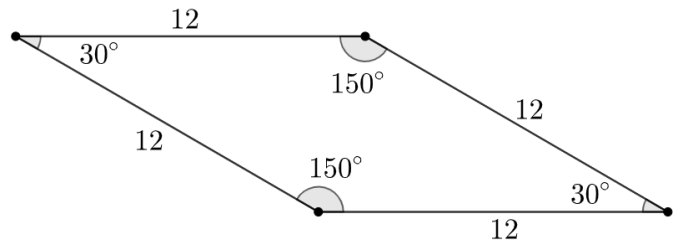   **B.** Similar figures are congruent.

Practice

1. Quadrilaterals Q and P are similar.

    A. What is the scale factor of the dilation that takes P to Q?

    B. What is the scale factor of the dilation that takes Q to P?

2. Sketch a figure that is similar to the given figure. Label side and angle measures.

3. Write two different sequences of transformations that would show that $\triangle ABC$ and $\triangle AED$ are similar. The length of $\overline{AC}$ is 6 units.