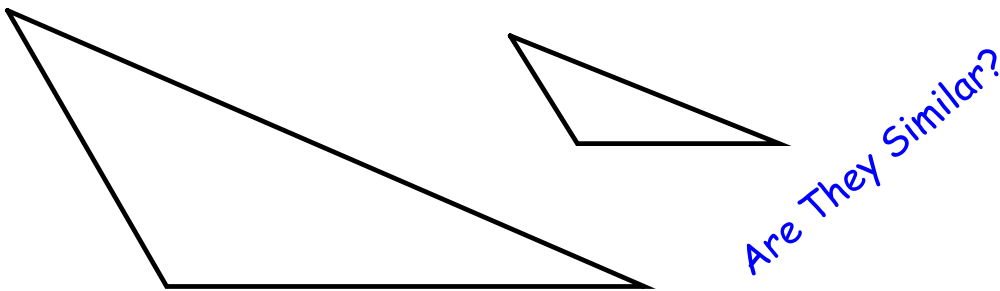




8.2: Angle-Angle Similarity

Essential Question

What can you conclude about two triangles when you know that two pairs of corresponding angles are congruent?



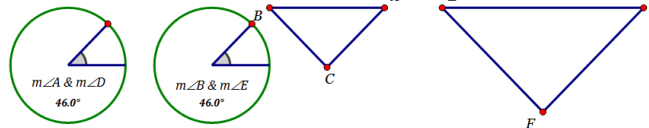
Exploration

Set two angles equal to each other and see if the sides are proportional.

Angle-Angle Similarity Explorer

The Big Question: If all you know is that $\angle A \cong \angle D$ and $\angle B \cong \angle E$, can we know for sure that $\triangle ABC \sim \triangle DEF$?

Step 1: Set the angles using the circles below.



Step 2: Calculate the 3rd angle measure.

[Show 3rd Angles](#)

Step 3: Calculate the length of the sides. Are they proportional?

[Hide Measurements](#)

$AB = 4.00$ $DE = 7.00$
 $AC = 2.88$ $DF = 5.04$
 $BC = 2.88$ $EF = 5.04$

Are the sides proportional if 2 angles are congruent?

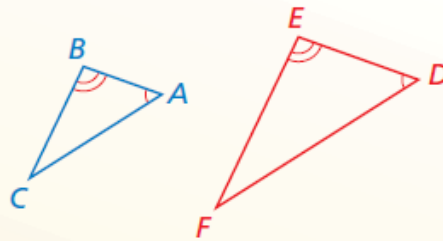
Theorem

Theorem 8.3 Angle-Angle (AA) Similarity Theorem

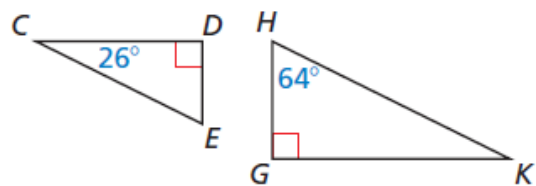
If two angles of one triangle are congruent to two angles of another triangle, then the two triangles are similar.

If $\angle A \cong \angle D$ and $\angle B \cong \angle E$,
then $\triangle ABC \sim \triangle DEF$.

Proof p. 428

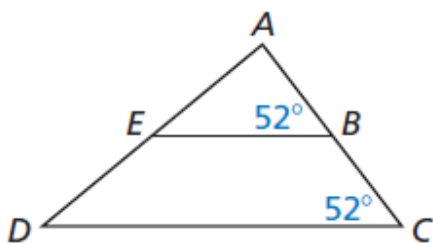


Determine whether the triangles are similar. If they are, write a similarity statement. Explain your reasoning.

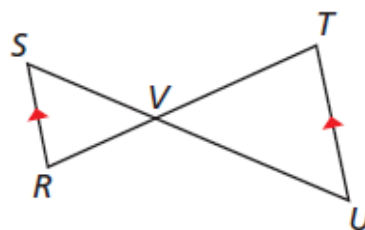


Show that the two triangles are similar.

a. $\triangle ABE \sim \triangle ACD$

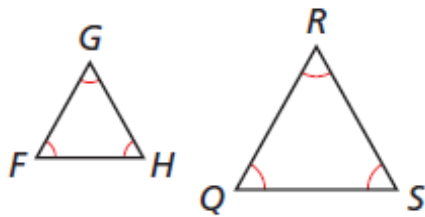


b. $\triangle SVR \sim \triangle UVT$

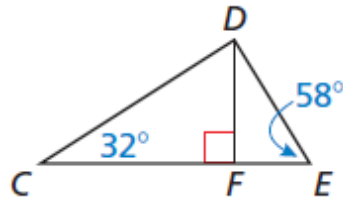


Show that the triangles are similar. Write a similarity statement.

1. $\triangle FGH$ and $\triangle RQS$



2. $\triangle CDF$ and $\triangle DEF$



3. **WHAT IF?** Suppose that $\overline{SR} \parallel \overline{TU}$ in Example 2 part (b). Could the triangles still be similar? Explain.

A flagpole casts a shadow that is 50 feet long. At the same time, a woman standing nearby who is 5 feet 4 inches tall casts a shadow that is 40 inches long. How tall is the flagpole to the nearest foot?

