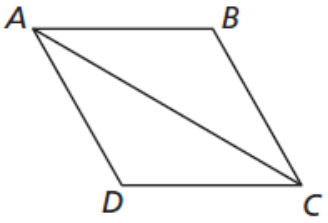
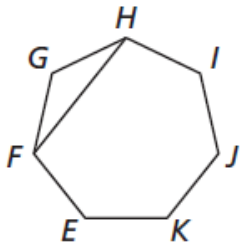
Name the diagonal segment in the figure.

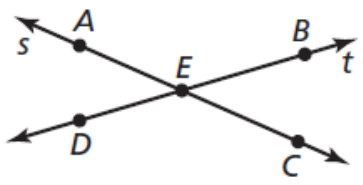
1. 



Use the diagram.

1. What is another name for $\overline{DE}$?

2. What is another name for $\overline{CE}$?

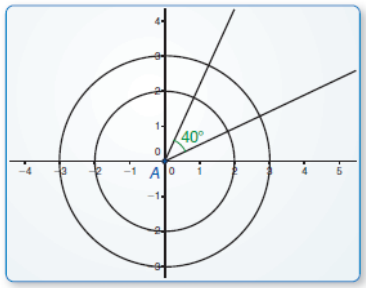


Essential Question

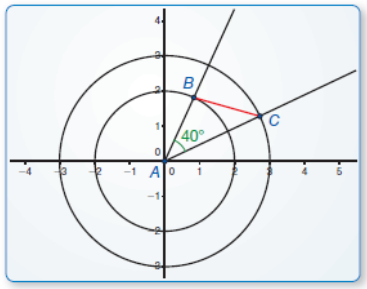
What can you conclude about two triangles when you know that two pairs of corresponding sides and the corresponding included angles are congruent?

Work with a partner. Use dynamic geometry software.

a. Construct circles with radii of 2 units and 3 units centered at the origin. Construct a 40° angle with its vertex at the origin. Label the vertex *A*.



b. Locate the point where one ray of the angle intersects the smaller circle and label this point *B*. Locate the point where the other ray of the angle intersects the larger circle and label this point *C*. Then draw $\triangle ABC$.



c. Find BC, $m\angle B$, and $m\angle C$.

d. Repeat parts (a)–(c) several times, redrawing the angle in different positions. Keep track of your results by copying and completing the table below. What can you conclude?

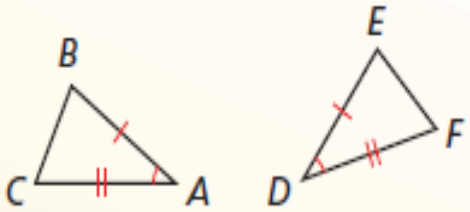
	A	B	C	AB	AC	BC	$m\angle A$	$m\angle B$	$m\angle C$
1.	(0, 0)			2	3		40°		
2.	(0, 0)			2	3		40°		
3.	(0, 0)			2	3		40°		
4.	(0, 0)			2	3		40°		
5.	(0, 0)			2	3		40°		

Theorem

Theorem 5.5 Side-Angle-Side (SAS) Congruence Theorem

If two sides and the included angle of one triangle are congruent to two sides and the included angle of a second triangle, then the two triangles are congruent.

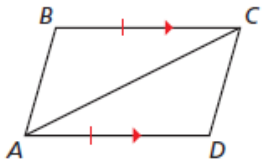
If $\overline{AB} \cong \overline{DE}$, $\angle A \cong \angle D$, and $\overline{AC} \cong \overline{DF}$, then $\triangle ABC \cong \triangle DEF$.



Proof p. 246

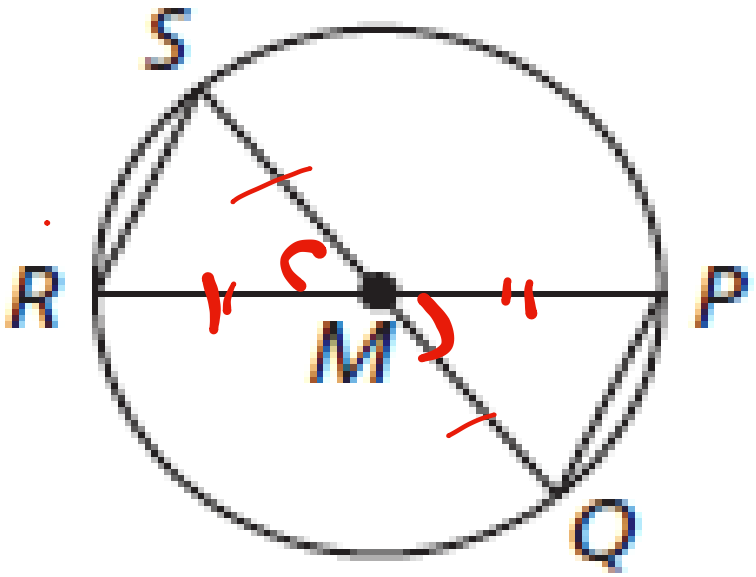
Write a proof.

Given $\overline{BC} \cong \overline{DA}, \ \overline{BC} \parallel \overline{AD}$



Prove $\triangle ABC \cong \triangle CDA$

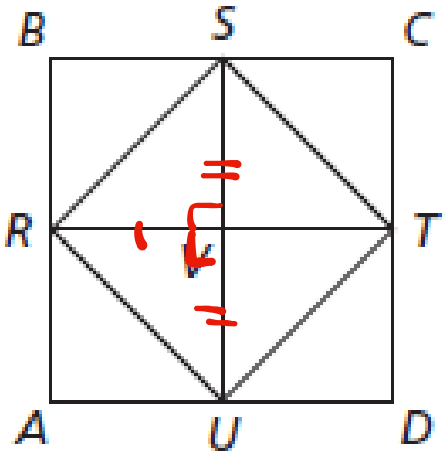
In the diagram, $\overline{QS}$ and $\overline{RP}$ pass through the center *M* of the circle. What can you conclude about $\triangle MRS$ and $\triangle MPQ$?



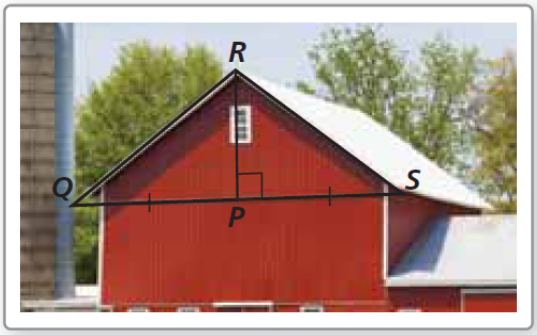
In the diagram, *ABCD* is a square with four congruent sides and four right angles. *R*, *S*, *T*, and *U* are the midpoints of the sides of *ABCD*. Also, $\overline{RT} \perp \overline{SU}$ and $\overline{SV} \cong \overline{VU}$.

1. Prove that $\triangle SVR \cong \triangle UVR$.

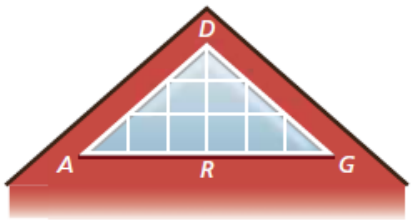
2. Prove that $\triangle BSR \cong \triangle DUT$.



You are making a canvas sign to hang on the triangular portion of the barn wall shown in the picture. You think you can use two identical triangular sheets of canvas. You know that $\overline{RP} \perp \overline{QS}$ and $\overline{PQ} \cong \overline{PS}$. Use the SAS Congruence Theorem to show that $\triangle PQR \cong \triangle PSR$.



3. You are designing the window shown in the photo. You want to make $\triangle DRA$ congruent to $\triangle DRG$. You design the window so that $\overline{DA} \cong \overline{DG}$ and $\angle ADR \cong \angle GDR$. Use the SAS Congruence Theorem to prove $\triangle DRA \cong \triangle DRG$.



• **Response Logs:** Select from “I feel confident about …” or “At first I thought … but now I think ….”