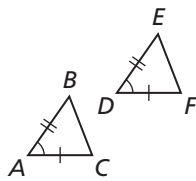
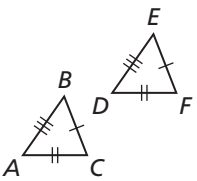
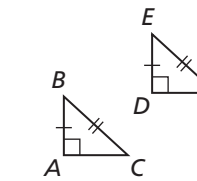
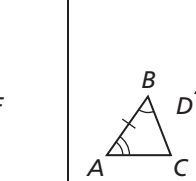
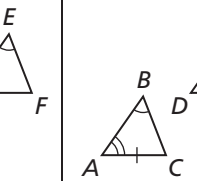


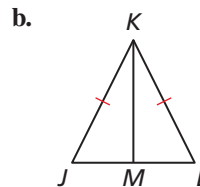
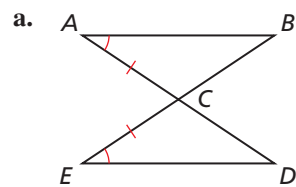
# Congruent Triangles

## Triangle Congruence Theorems

Five valid methods for proving that triangles are congruent are given below.

SAS	SSS	HL (right triangles only)	ASA	AAS
 <p>Two sides and the included angle are congruent.</p>	 <p>All three sides are congruent.</p>	 <p>The hypotenuse and one of the legs are congruent.</p>	 <p>Two angles and the included side are congruent.</p>	 <p>Two angles and a non-included side are congruent.</p>

**Example 1** Determine whether there is enough information to prove that the triangles are congruent. Explain your reasoning.

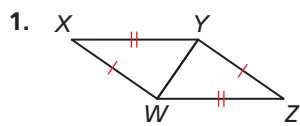


- a. You are given that  $\angle A \cong \angle E$  and  $\overline{AC} \cong \overline{EC}$ . By the Vertical Angles Congruence Theorem,  $\angle ACB \cong \angle ECD$ . So, two pairs of angles and their included sides are congruent. By the ASA Congruence Theorem,  $\triangle ABC \cong \triangle EDC$ .
- b. You are given that  $\overline{JK} \cong \overline{KL}$ . You know that  $\angle J \cong \angle L$  by the Base Angles Theorem. You also know that  $\overline{KM} \cong \overline{KM}$  by the Reflexive Property of Segment Congruence. Because two pairs of sides and their non-included angles are congruent, you cannot conclude that  $\triangle JKM \cong \triangle LKM$ .

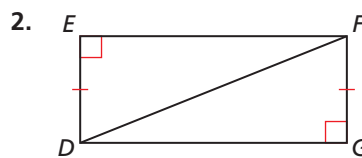
## Practice

Check your answers at [BigIdeasMath.com](http://BigIdeasMath.com).

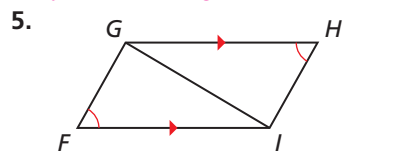
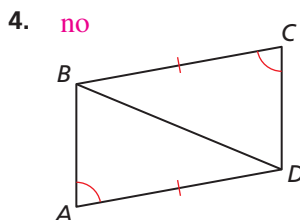
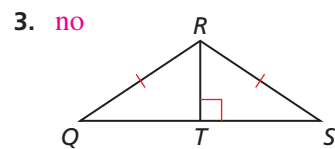
Determine whether there is enough information to prove that the triangles are congruent. If so, state the theorem you would use.



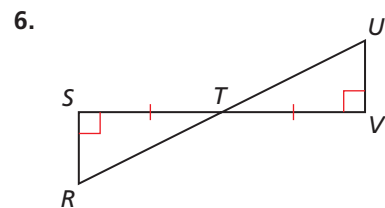
yes; SSS Congruence Theorem



yes; HL Congruence Theorem



yes; AAS Congruence Theorem



yes; ASA Congruence Theorem