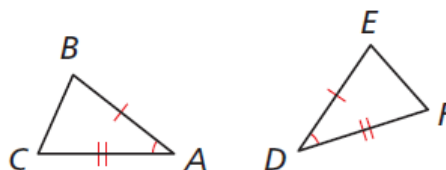


THEOREM

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 $\triangle ABC \cong \triangle DEF$.

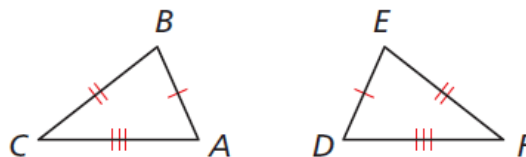


THEOREM

5.8 Side-Side-Side (SSS) Congruence Theorem

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

If $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, and $\overline{AC} \cong \overline{DF}$,
then $\triangle ABC \cong \triangle DEF$.



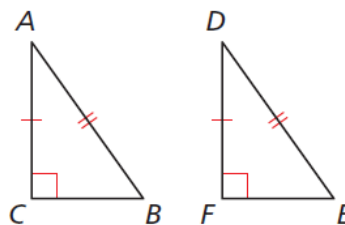
Prove this Theorem Exercise 1, page 259

THEOREM

5.9 Hypotenuse-Leg (HL) Congruence Theorem

If the hypotenuse and a leg of a right triangle are congruent to the hypotenuse and a leg of a second right triangle, then the two triangles are congruent.

If $\overline{AB} \cong \overline{DE}$, $\overline{AC} \cong \overline{DF}$, and
 $m\angle C = m\angle F = 90^\circ$, then $\triangle ABC \cong \triangle DEF$.



Prove this Theorem Exercise 30, page 459

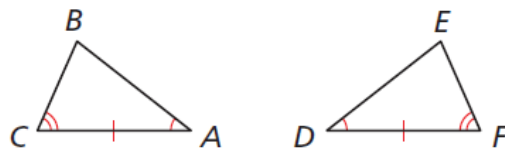
Proof BigIdeasMath.com

THEOREM

5.10 Angle-Side-Angle (ASA) Congruence Theorem

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

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



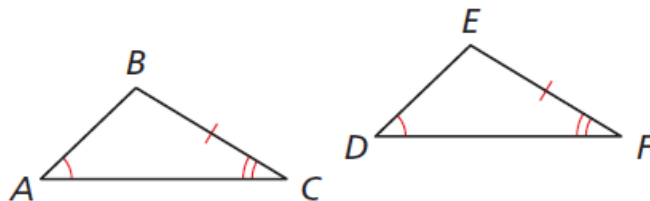
Prove this Theorem Exercise 1, page 267

THEOREM

5.11 Angle-Angle-Side (AAS) Congruence Theorem

If two angles and a non-included side of one triangle are congruent to two angles and the corresponding non-included side of a second triangle, then the two triangles are congruent.

If $\angle A \cong \angle D$, $\angle C \cong \angle F$,
and $\overline{BC} \cong \overline{EF}$, then
 $\triangle ABC \cong \triangle DEF$.



CONCEPT SUMMARY

Triangle Congruence Theorems

You have learned five methods for proving that triangles are congruent.

SAS	SSS	HL (right \triangle 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>

In the Exercises, you will prove three additional theorems about the congruence of right triangles: Hypotenuse-Angle, Leg-Leg, and Angle-Leg.