

Honors Geometry

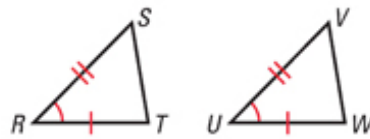
Notes Section 4.5

Prove Triangle Congruent by SAS and HL

POSTULATE 20 Side-Angle-Side (SAS) Congruence Postulate

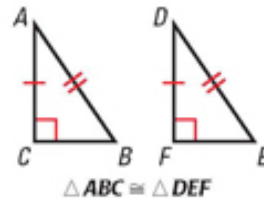
If two sides and the included angle of one triangle are congruent to two sides and the included angle of a second triangle, then the two triangles are congruent.

If **Side** $\overline{RS} \cong \overline{UV}$,
Angle $\angle R \cong \angle U$, and
Side $\overline{RT} \cong \overline{UW}$,
 then $\triangle RST \cong \triangle UVW$.



THEOREM 4.5 Hypotenuse-Leg (HL) Congruence Theorem

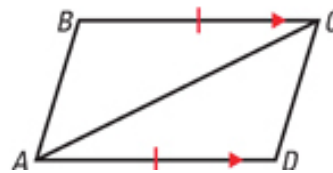
If the hypotenuse and a leg of a right triangle are congruent to the hypotenuse and a leg of a second right triangle, then the two triangles are congruent.



EXAMPLE 1 Complete the proof.

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

Prove: $\triangle ABC \cong \triangle CDA$



1. $\overline{BC} \cong \overline{DA}$

2. $\overline{BC} \parallel \overline{AD}$

3. $\angle BCA \cong \angle DAC$

4. $\overline{AC} \cong \overline{CA}$

5. $\triangle ABC \cong \triangle CDA$

1. _____

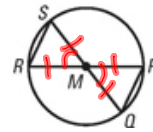
2. _____

3. _____

4. _____

5. _____

EXAMPLE 2 In the diagram, \overline{QS} and \overline{RP} pass through the center M of the circle. What can you conclude about $\triangle MRS$ and $\triangle MPQ$?

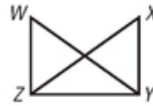


$\overline{SM} \cong \overline{RM} \cong \overline{QM} \cong \overline{PM}$ (radii) Post. 20
 $\angle RMS \cong \angle QMP$ (Th. 2.6)

Legs of a Right Triangle: the sides that \cap to form the rt. \angle

Hypotenuse: longest side; the side opposite the rt. \angle

EXAMPLE 3 Complete the proof.



Given: $WY \cong XZ$, $WZ \perp ZY$, $XY \perp ZY$

Prove: $\triangle WYZ \cong \triangle XZY$

1. $WY \cong XZ$
2. $WZ \perp ZY$, $XY \perp ZY$
3. $\angle Z$ and $\angle Y$ are right angles
4. $\triangle WYZ$ and $\triangle XZY$ are right triangles
5. $ZY \cong ZY$
6. $\triangle WYZ \cong \triangle XZY$

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

EXAMPLE 4 What Postulate or Theorem can you use to conclude $\triangle PQR \cong \triangle PSR$?

