

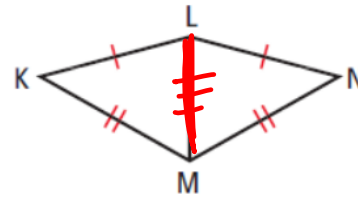
Geometry  
5.4 SSS Proofs

**EXAMPLE 1** Use the SSS Congruence Postulate

Write a proof.

**GIVEN**  $\triangleright \overline{KL} \cong \overline{NL}, \overline{KM} \cong \overline{NM}$

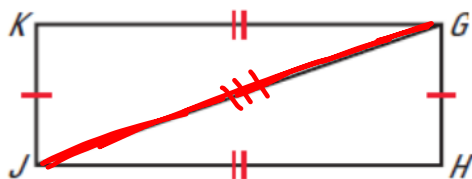
**PROVE**  $\triangleright \triangle KLM \cong \triangle NLM$



Statements	reasons
① $\overline{KL} \cong \overline{NL}, \overline{KM} \cong \overline{NM}$	① Given
② $\overline{LM} \cong \overline{LM}$	② Reflexive
③ $\triangle KLM \cong \triangle NLM$	③ SSS

**GIVEN**  $\triangleright \overline{GH} \cong \overline{JK}, \overline{HJ} \cong \overline{KG}$

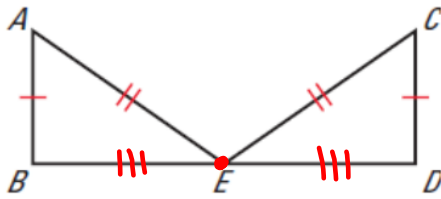
**PROVE**  $\triangleright \triangle GHJ \cong \triangle JKG$



Statements	reasons
① $\overline{GH} \cong \overline{JK}, \overline{HJ} \cong \overline{KG}$	① Given
② $\overline{JG} \cong \overline{GJ}$	② Reflexive
③ $\triangle GHJ \cong \triangle JKG$	③ SSS

**GIVEN** ▶  $\overline{AE} \cong \overline{CE}$ ,  $\overline{AB} \cong \overline{CD}$ ,  
 $E$  is the midpoint of  $\overline{BD}$ .

**PROVE** ▶  $\triangle EAB \cong \triangle ECD$



statements	reasons
① $\overline{AE} \cong \overline{CE}$ , $\overline{AB} \cong \overline{CD}$ $E$ is the midpt of $\overline{BD}$	① Given
② $\overline{BE} \cong \overline{DE}$	② Def of midpoint
③ $\triangle EAB \cong \triangle ECD$	③ SSS

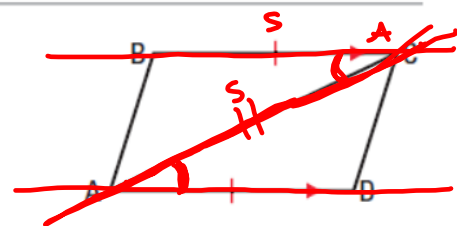
5.3 & 6.3 SAS and HL Proofs

**EXAMPLE 1** Use the SAS Congruence Postulate

Write a proof.

**GIVEN** ▶  $\overline{BC} \cong \overline{DA}$ ,  $\overline{BC} \parallel \overline{AD}$

**PROVE** ▶  $\triangle ABC \cong \triangle CDA$



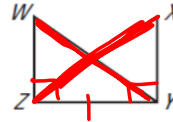
statements	reasons
① $\overline{BC} \cong \overline{DA}$ , $\overline{BC} \parallel \overline{AD}$	① Given
② $\angle DAC \cong \angle BCA$	② Alt Int $\angle$ 's Thm
③ $\overline{AC} \cong \overline{CA}$	③ Reflexive
④ $\triangle ABC \cong \triangle CDA$	④ SAS

**EXAMPLE 3** Use the Hypotenuse-Leg Congruence Theorem

Write a proof.

**GIVEN**  $\overline{WY} \cong \overline{XZ}$ ,  $\overline{WZ} \perp \overline{ZY}$ ,  $\overline{XY} \perp \overline{ZY}$

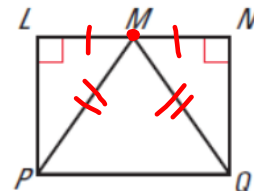
**PROVE**  $\triangle WYZ \cong \triangle XZY$



statements	reasons
① $\overline{WY} \cong \overline{XZ}$ , $\overline{WZ} \perp \overline{ZY}$ , $\overline{XY} \perp \overline{ZY}$	① Given
② $\angle WZY$ is a right $\angle$ $\angle XZY$ is a right $\angle$	② Def of $\perp$
③ $\angle WZY \cong \angle XZY$	③ Rt. $\angle$ 's $\cong$ Thm
③ $\triangle WYZ$ & $\triangle XZY$ are rt. $\triangle$ 's	③ Def of a right $\triangle$
④ $\overline{ZY} \cong \overline{YZ}$	④ Reflexive
⑤ $\triangle WYZ \cong \triangle XZY$	⑤ HL

**GIVEN**  $\triangleright$  Point  $M$  is the midpoint of  $\overline{LN}$ .  
 $\triangle PMQ$  is an isosceles triangle with base  $\overline{PQ}$ .  
 $\angle L$  and  $\angle N$  are right angles.

**PROVE**  $\triangleright \triangle LMP \cong \triangle NMQ$



statements	reasons
① Pt. $M$ is the midpt of $\overline{LN}$ $\triangle PMQ$ is isosceles w/ base $\overline{PQ}$ $\angle L$ & $\angle N$ are right $\angle$ 's	① Given
② $\overline{LM} \cong \overline{NM}$	② Def of Midpt.
③ $\overline{PM} \cong \overline{QM}$	③ Def of Isosceles $\triangle$
④ $\angle L \cong \angle N$	④ Rt. $\angle$ 's $\cong$ Thm
⑤ $\triangle LMP \cong \triangle NMQ$	⑤ HL