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Proving Triangles Congruent by SSS, SAS, & HL

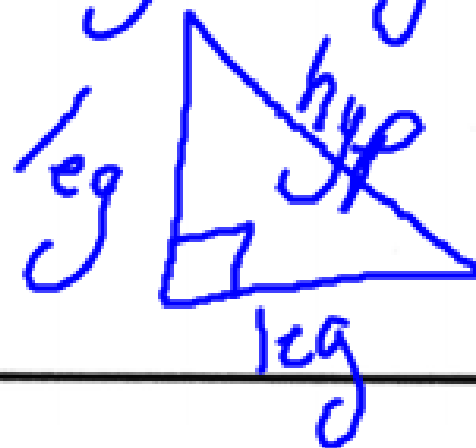
VOCABULARY

The sides adjacent to the right angle.

Leg of a right triangle

The side opposite the right angle.

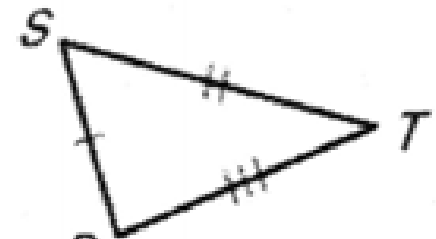
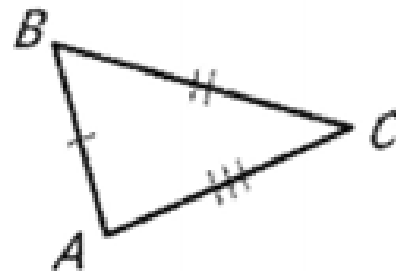
Hypotenuse



POSTULATE 19: SIDE-SIDE-SIDE (SSS) CONGRUENCE POSTULATE

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

If Side $\overline{AB} \cong \overline{SR}$,
Side $\overline{BC} \cong \overline{ST}$, and
Side $\overline{CA} \cong \overline{TR}$,



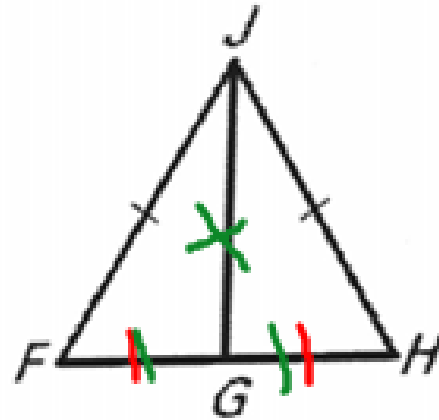
then $\triangle ABC \cong \triangle RST$

Reason
SSS \cong SSS

Example 1

Write a proof.

Given $\overline{FJ} \cong \overline{HJ}$,
 G is the midpoint of \overline{FH} .

Prove $\triangle FGJ \cong \triangle HGJ$ 

Statement

Reason

① $\overline{FJ} \cong \overline{HJ}$

① Given

G is the mdpt of \overline{FH}

② $\overline{GF} \cong \overline{GH}$

② Def of a mdpt.

③ $\overline{JG} \cong \overline{JG}$

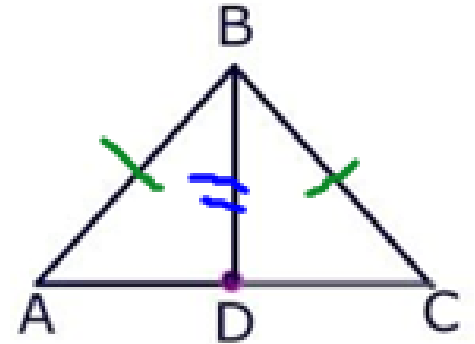
③ Reflexive Property

④ $\triangle FGJ \cong \triangle HGJ$ ④ SSS \cong SSS

Proof A — SSS

Given: $\overline{AB} \cong \overline{BC}$, D is the midpoint of side \overline{AC}

Prove: $\triangle ABD \cong \triangle CBD$



Statement	Reason
① $\overline{AB} \cong \overline{BC}$ D is the mdpt of \overline{AC}	① Given.
② $\overline{BD} \cong \overline{BD}$	② Reflexive Property
③ $\overline{AD} \cong \overline{DC}$	③ Def. of a mdpt.
④ $\triangle ABD \cong \triangle CBD$	④ SSS \cong SSS

Homework

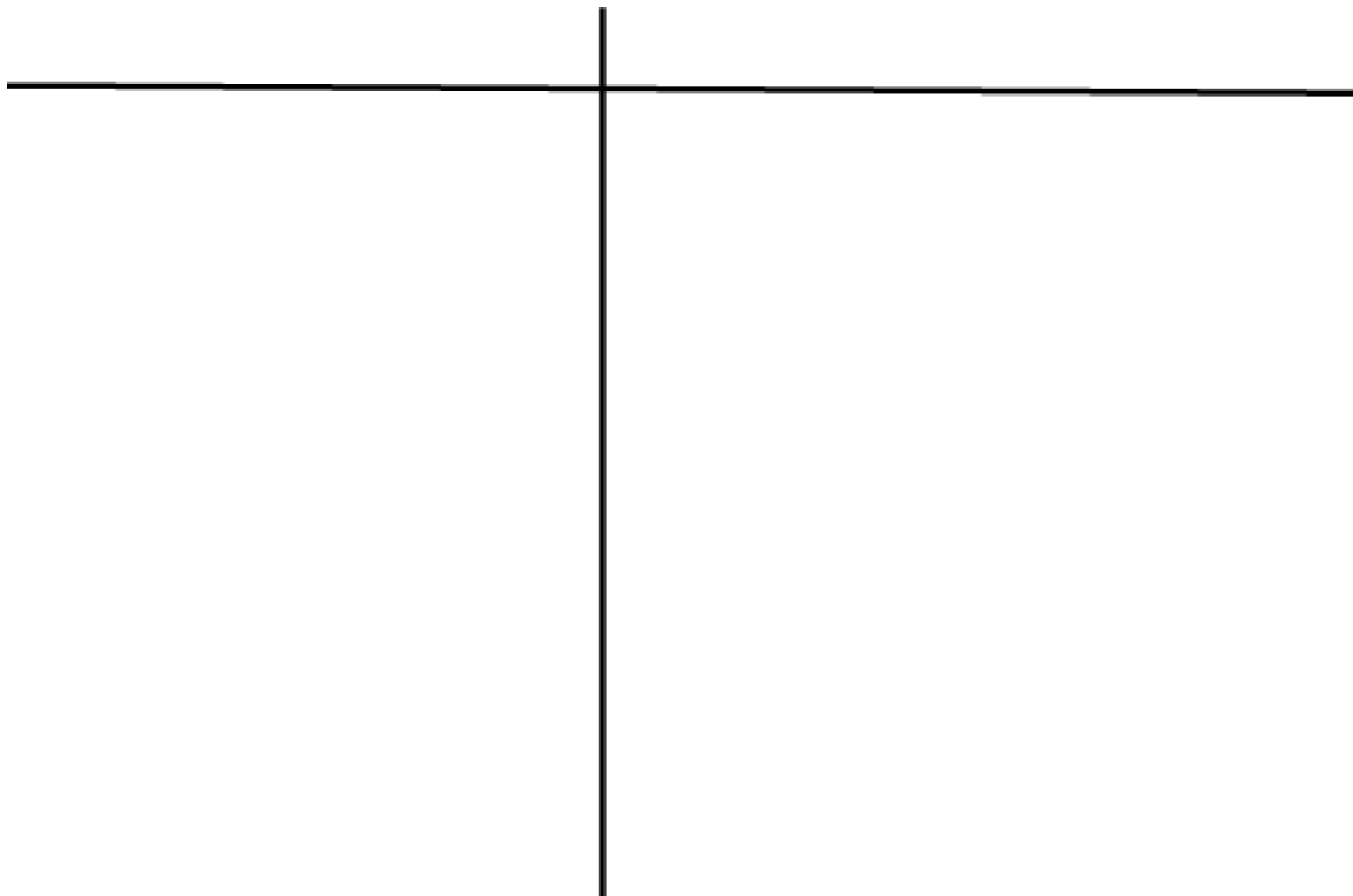
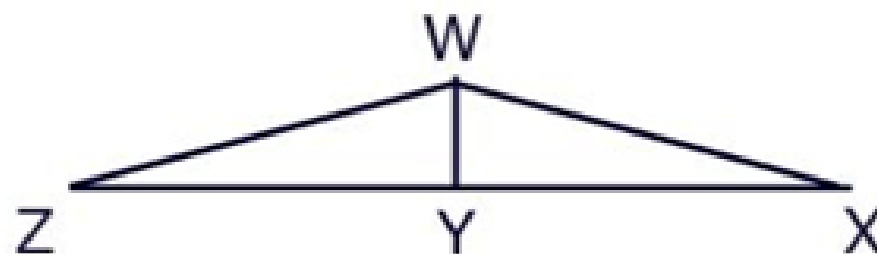
Proof B & Proof C

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Proof B

Given: $\overline{WZ} \cong \overline{WX}$, \overline{WY} bisects \overline{ZX}

Prove: $\triangle WYZ \cong \triangle WYX$



Proof C

Given: $\overline{BA} \cong \overline{AD}$, $\overline{BC} \cong \overline{CD}$

Prove: $\triangle ABC \cong \triangle ADC$

