Pop Quiz.
Get out a scrap sheet of paper.

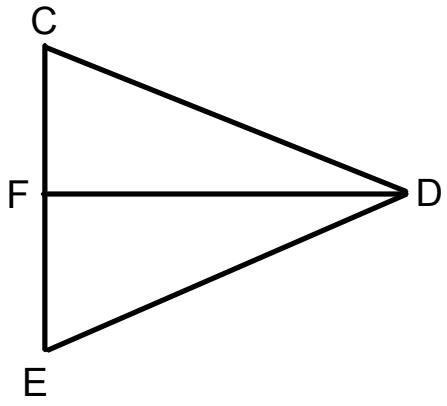
1. What is the definition of congruent triangles?

2. What is the SSS Postulate?

3. How might the reflexive property be useful in proving two triangles congruent?

Bellwork
10/18/2011

1. **Given: $\overline{DF}$ bisects $\overline{CE}$, $\overline{DC} \cong \overline{DE}$**
   Prove: $\Delta CDF \cong \Delta EDF$

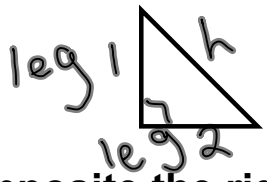


1. $\overline{DF}$ bisects $\overline{CE}$ $\overline{DC} \cong \overline{DE}$	1. Given
2. $\overline{CF} \cong \overline{EF}$	2. Def. of a segment bisector
3. $\overline{DF} \cong \overline{DF}$	3. Reflexive Property
4. $\Delta CDF \cong \Delta EDF$	4. SSS Postulate

Geometry
4.4 Prove Triangles Congruent by SAS and HL
Standard(s): 3,7

Vocabulary:

1. **Legs of a Right Triangle: The sides adjacent to the right angle.**



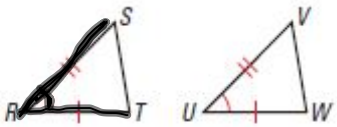
2. **Hypotenuse: The side opposite the right angle.**

POSTULATE *For Your Notebook*

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 $\triangle RST \cong \triangle UVW$.

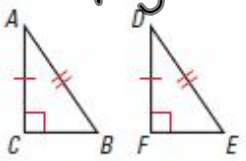


THEOREM *For Your Notebook*

THEOREM 4.5 Hypotenuse-Leg (HL) Congruence Theorem Right Δ

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.

Proofs: Ex. 37, p. 439; p. 932



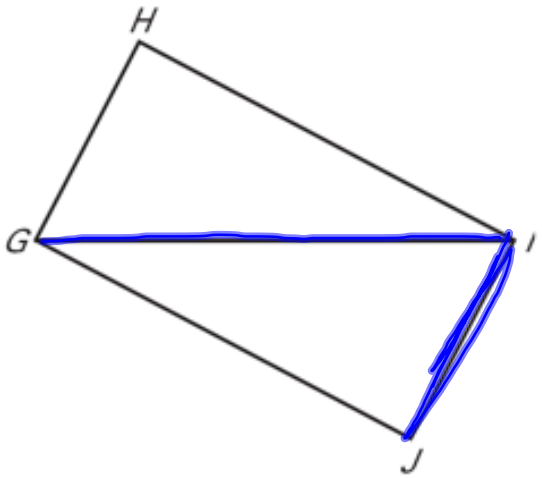
$\triangle ABC = \triangle DEF$

How to Prove Δ's ≅:

1. Def. of ≅ Δ's
2. SSS Postulate
3. SAS Postulate
4. HL Theorem

Naming Included Angles

Use the diagram to name the included angle between the given pair of sides.



$\overline{GH}$ & $\overline{HI}$ $\angle GHI$

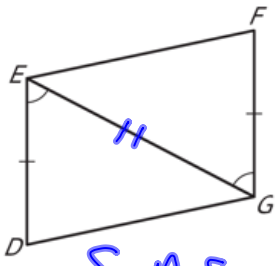
$\overline{HI}$ & $\overline{IG}$ $\angle HIG$

$\overline{IG}$ & $\overline{HG}$ $\angle IGH$

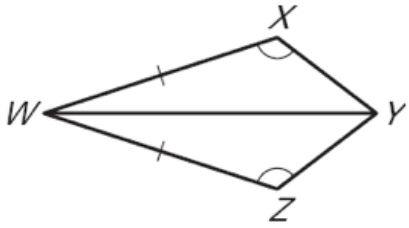
$\overline{GI}$ & $\overline{IJ}$ $\angle GIJ$

Applying HL or SAS

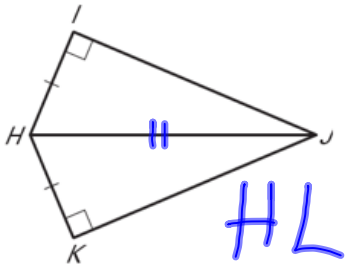
Decide whether enough information is given to prove that triangles are congruent using SAS or HL.



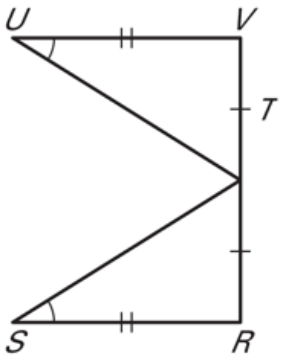
SAS



N/a



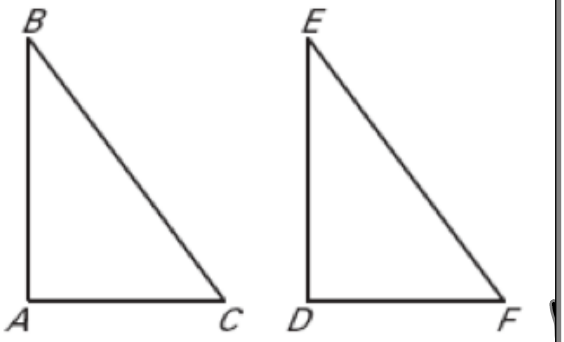
HL



N/a

Missing Congruence for Congruent Δ's

State the third congruence that must be given to prove that $\Delta ABC \cong \Delta DEF$ using the indicated postulate or theorem.



Given: $\angle B \cong \angle E$, $\overline{BC} \cong \overline{EF}$, BA ≅ ED **(SAS)**

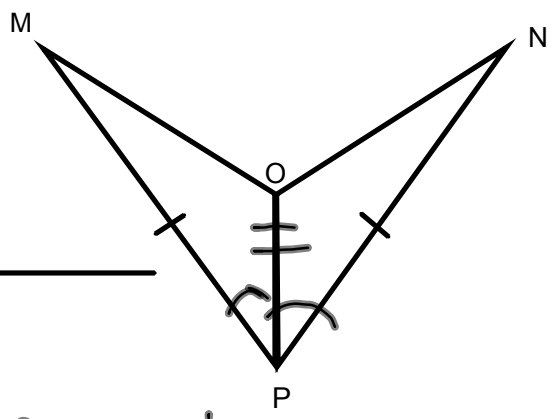
Given: $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, CA ≅ FD **(SSS)**

Given: $\overline{AC} \cong \overline{DF}$, $\angle A$ is a right angle and $\angle A \cong \angle D$, BC ≅ EF **(HL)**

Use the SAS Congruence Postulate

Given: $\overline{MP} \cong \overline{NP}$, $\overrightarrow{OP}$ bisects $\angle MPN$

Prove: $\triangle MOP \cong \triangle NOP$

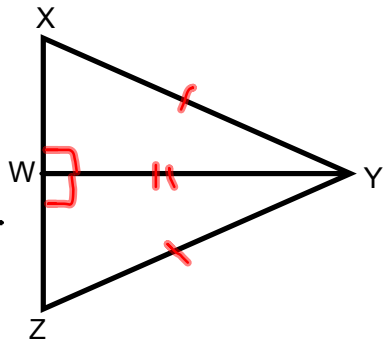


1. $\overline{MP} \cong \overline{NP}$, $\overrightarrow{OP}$ bisects $\angle MPN$	1. Given
2. $\angle MPO \cong \angle NPO$	2. Def. of $\angle$ bisector
3. $\overline{OP} \cong \overline{OP}$	3. Reflexive Prop.
4. $\triangle MOP \cong \triangle NOP$	4. SAS Post.

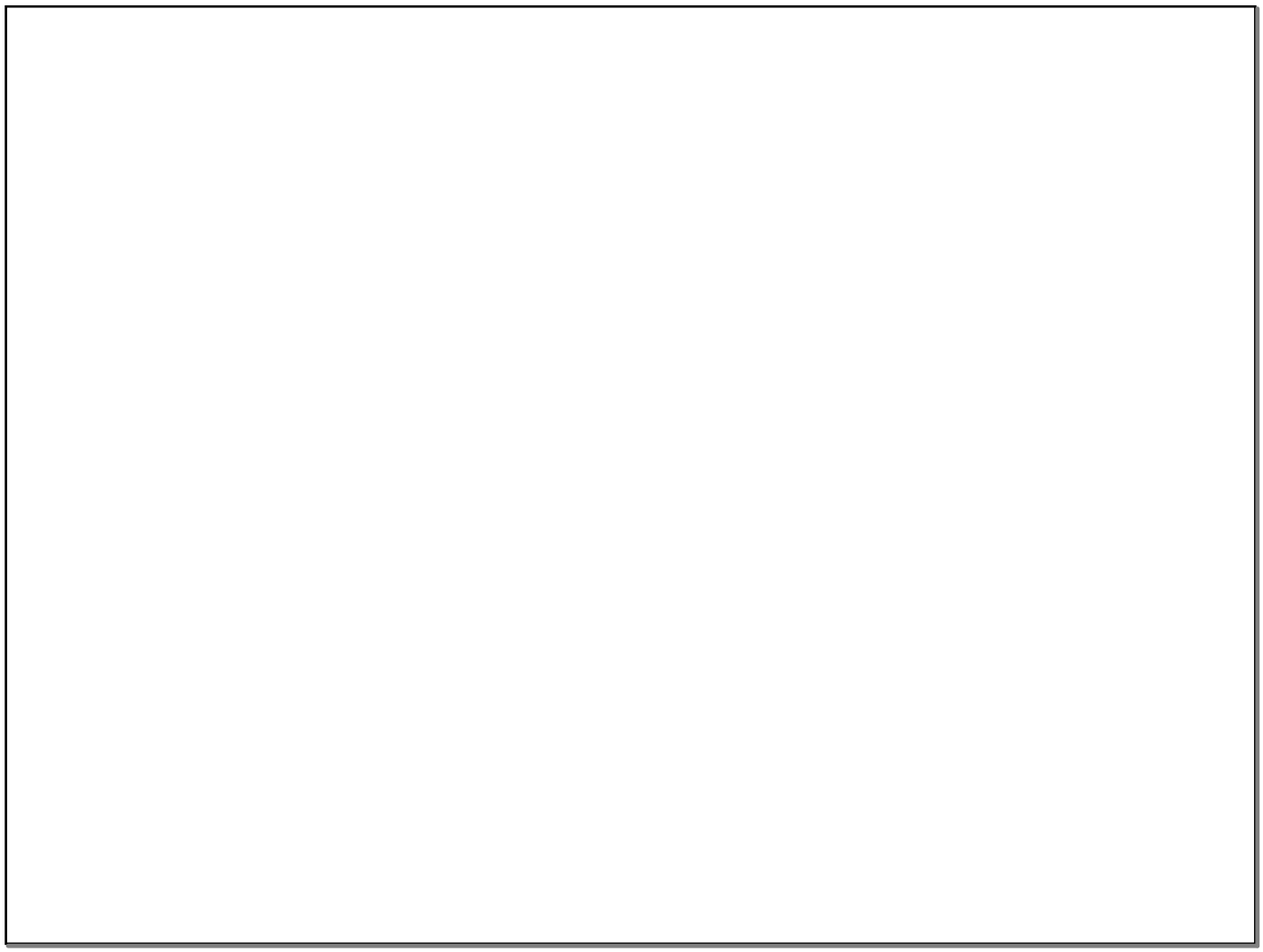
Use the HL Congruence Theorem

Given: $\overline{YW} \perp \overline{XZ}$, $\overline{XY} \cong \overline{ZY}$

Prove: $\triangle XYW \cong \triangle ZYW$



1. $YW \perp XZ$, $XY \cong ZY$	1. Given
2. $\angle YWZ$ is a right $\angle$ $\angle YWX$ is a right $\angle$	2. Def. of $\perp$ lines
3. $YW \cong YW$	3. Reflexive Property
4. $\triangle XYW \cong \triangle ZYW$	4. HL Theorem

Homework Assignment

Worksheet 4.4B