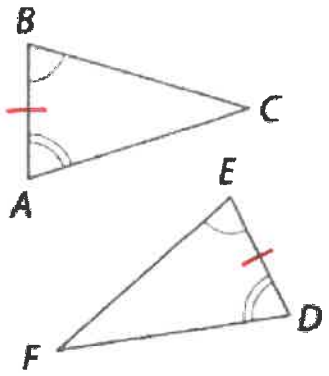
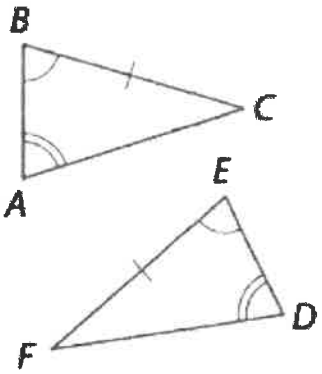
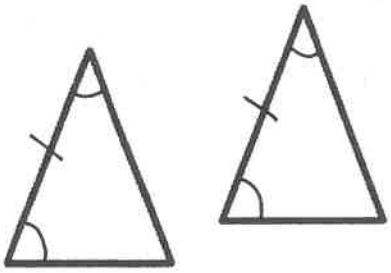
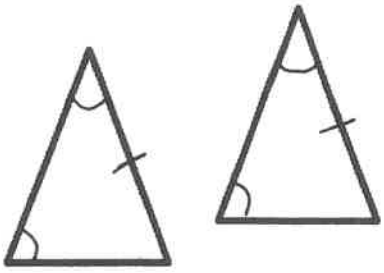
Geometry CP
4.5 Proving Triangles Congruent
(AAS, ASA, HL)

Angle-Side-Angle Congruence (ASA)	If two angles and the included side of one triangle are congruent to two angles and the included side of another triangle, then the triangles are congruent.	
Angle-Angle-Side Congruence (AAS)	If two angles and the nonincluded side of one triangle are congruent to the corresponding two angles and side of a second triangle, then the triangles are congruent.	

ASA



NOT ASA



Geometry CP
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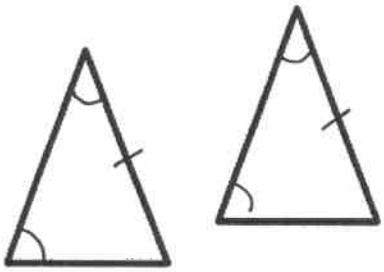
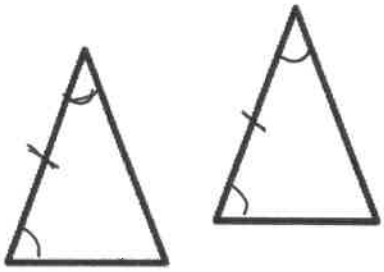
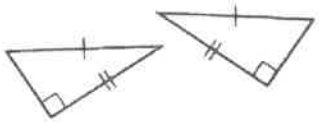
(AAS, ASA, HL)

AAS



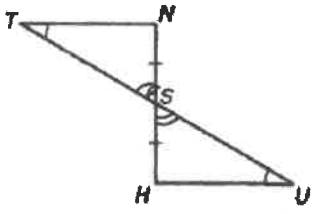
NOT AAS



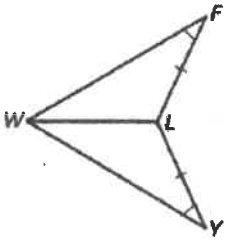
Hypotenuse-Leg Congruence (HL)	If the hypotenuse and a leg of one right triangle are congruent to the hypotenuse and corresponding leg of another triangle, then the triangles are congruent	

1. Is it possible to prove the triangles are congruent? If so, state the postulate of theorem you would use?

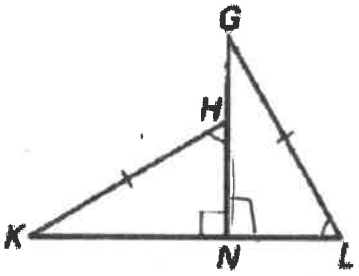
★ vertical angles ★ shared side



AAS



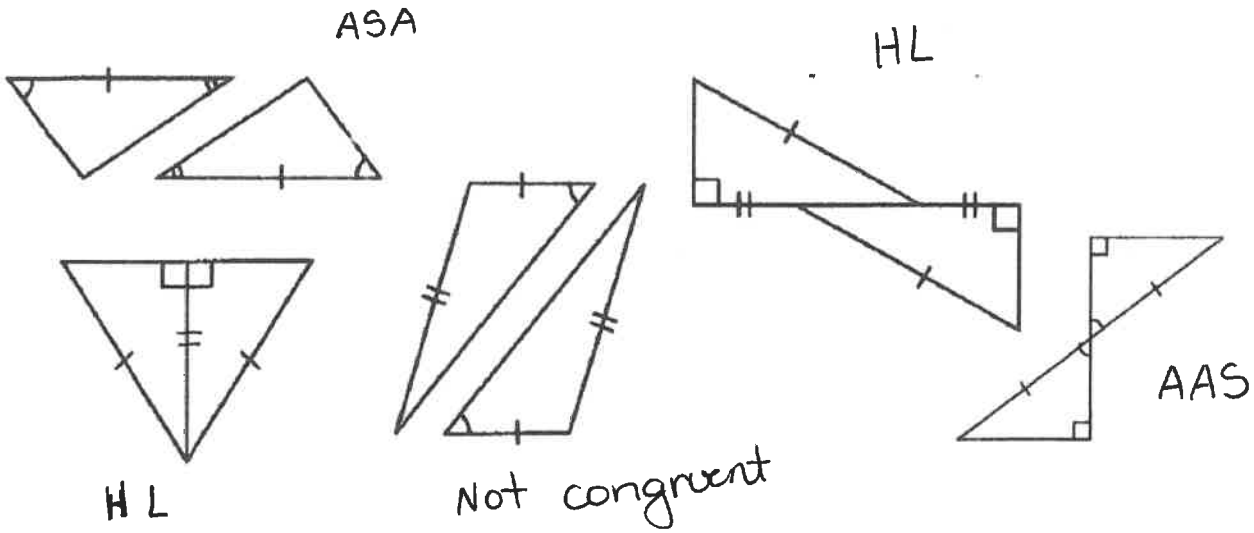
Not congruent



AAS

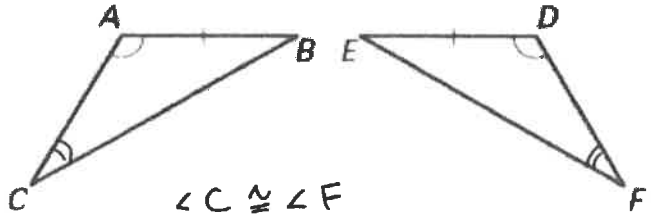
SSA forward or backward not allowed → check HL

2. Identify which property will prove the triangles below congruent.



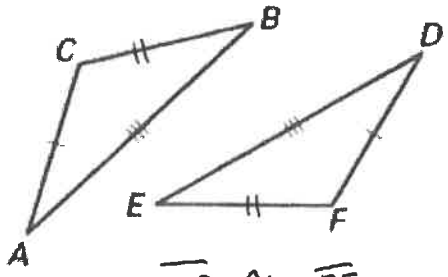
3. State the third corresponding part that will make the triangles below congruent using the congruence postulate given.

AAS Congruence Theorem



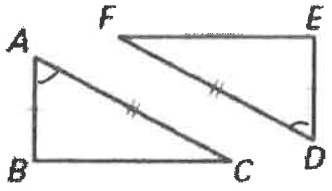
$\angle C \cong \angle F$

SSS Congruence Postulate



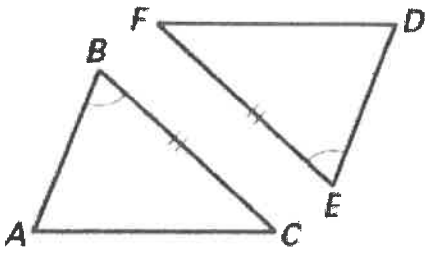
$\overline{CB} \cong \overline{FE}$

SAS Congruence Postulate



$\angle A \cong \angle D$

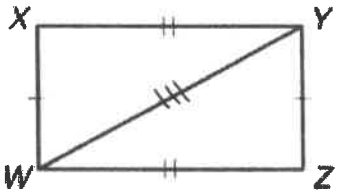
ASA Congruence Postulate



$\angle C \cong \angle F$

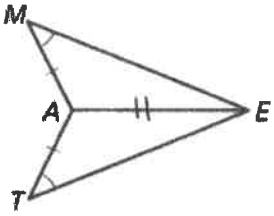
4. Decide whether there is enough information given to state the triangles congruent:

ΔXYW, ΔZWY



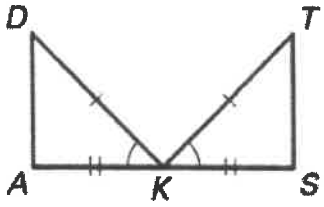
SSS

ΔMAE, ΔTAE



Not Congruent

ΔDKA, ΔTKS

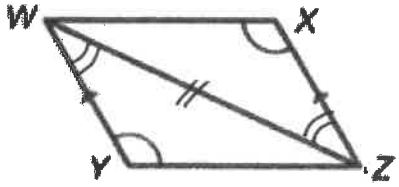


SAS

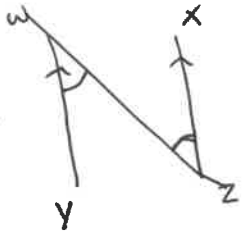
5.

Given: $\overline{WY} \parallel \overline{ZX}$
$\angle Y \cong \angle X$

Prove: $\triangle WYZ \cong \triangle ZXW$



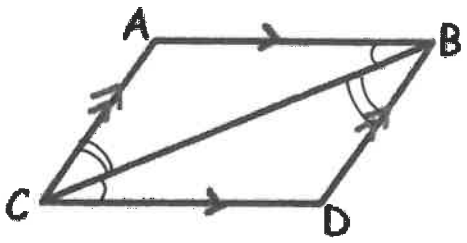
Statements	Reasons
1) $\overline{WY} \parallel \overline{ZX}$ $\angle Y \cong \angle X$	1) Given
2) $\angle ZWY \cong \angle WZX$	2) Alt Int $\angle$s Thm
3) $\overline{WZ} \cong \overline{ZW}$	3) Symmetric Prop of $\triangle$ congruence
4) $\triangle WYZ \cong \triangle ZXW$	4) AAS



6.

Given: $\overline{AB} \parallel \overline{DC}$
$\overline{AC} \parallel \overline{DB}$

Prove: $\triangle ABC \cong \triangle DCB$

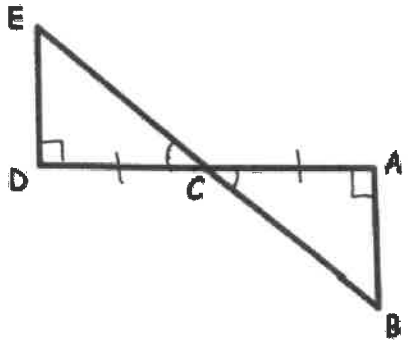


Statements	Reasons
1) $\overline{AB} \parallel \overline{DC}$	1) Given
2) $\angle ABC \cong \angle DCB$	2) Alt Int $\angle$s Thm
3) $\overline{AC} \parallel \overline{DB}$	3) Given
4) $\angle ACB \cong \angle DBC$	4) Alt Int $\angle$s Thm
5) $\overline{BC} \cong \overline{CB}$	5) Symmetric Prop of $\triangle$ congruence
6) $\triangle ABC \cong \triangle DCB$	6) ASA

7.

Given: $\overline{AB} \perp \overline{AD}$
$\overline{DE} \perp \overline{AD}$
C is the midpoint of $\overline{BE}$

Prove: $\triangle ABC \cong \triangle DEC$



Statements	Reasons
1) $\overline{AB} \perp \overline{AD}$	1) Given
2) $\angle BAD = 90°$	2) Def of perpendicular
3) $\overline{DE} \perp \overline{AD}$	3) Given
4) $\angle EDA = 90°$	4) Def of perpendicular
5) $\angle BAD \cong \angle EDA$	5) All right angles are congruent
6) C is the midpoint of $\overline{BE}$	6) Given
7) $\overline{DC} \cong \overline{AC}$	7) Def of midpoint
8) $\angle DCE \cong ACB$	8) Vertical Angles
9) $\triangle ABC \cong \triangle DEC$	9) ASA