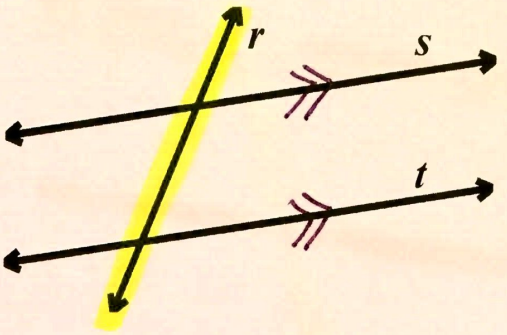
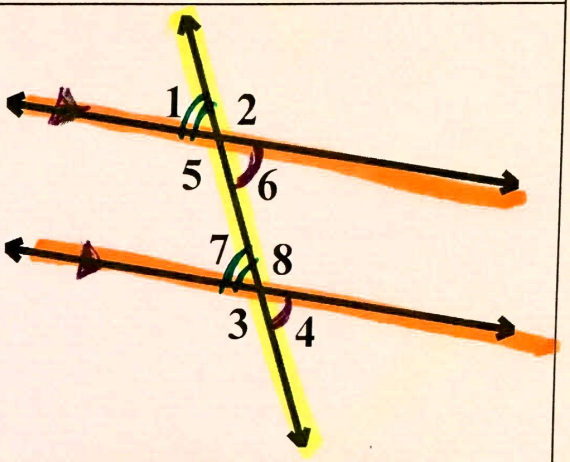
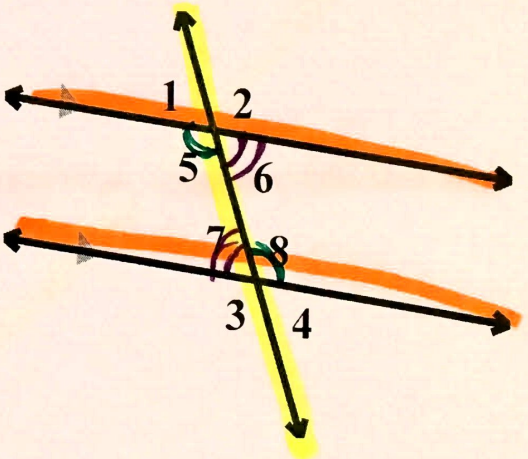
Notes 8-6

Sec 1 H **ASA and AAS Triangle Congruence** **Unit 8**

Vocabulary	Picture
Parallel Lines and Transversal: a line that crosses 2 parallel lines at different places	
Corresponding Angles: ∠'s that are on the SAME side of transversal, MATCHING positions ∠6 ≅ ∠4 ∠1 ≅ ∠7 opposite inside	
Alternate Interior Angles: OPPOSITE sides of the transversal INSIDE the parallel lines ∠6 ≅ ∠7 ∠5 ≅ ∠8	

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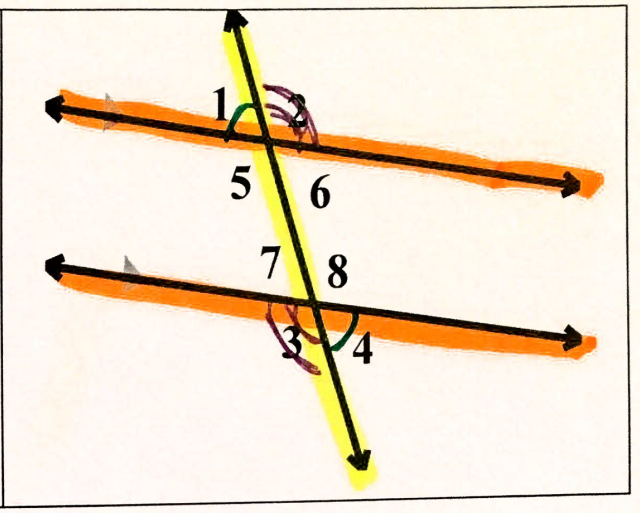
Alternate Exterior Angles:

OPPOSITE sides of transversal

OUTSIDE the parallel lines

$\angle 2 \cong \angle 3$ $\angle 1 \cong \angle 4$



Determine whether the given angle pair is *corresponding, alternate interior, alternate exterior, vertical,* or *neither.*

Ex. 1: ∠ 3 and ∠ 7 Corr.

Ex. 2: ∠ 4 and ∠ 10 Alt. Ext.

Ex. 3: ∠ 5 and ∠ 8 Neither

Ex. 4: ∠ 8 and ∠ 6 Alt. Int.

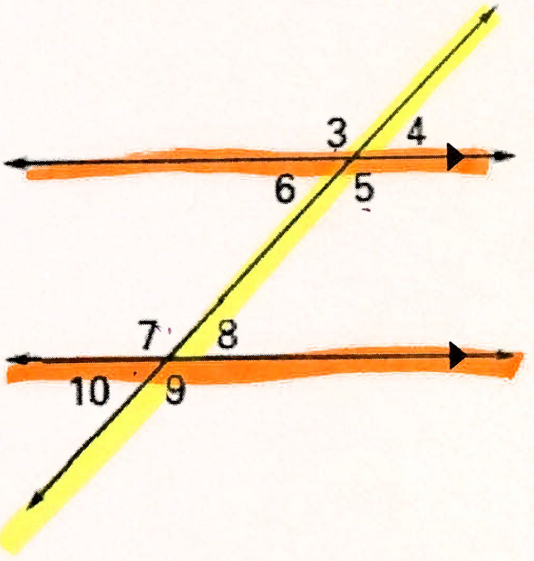
Ex. 5: ∠ 9 and ∠ 5 Corr.

Ex. 6: ∠ 5 and ∠ 7 Alt. Int.

Ex. 7: ∠ 4 and ∠ 6 Vertical

Ex. 8: ∠ 10 and ∠ 3 Neither

Ex. 9: ∠ 9 and ∠ 7 Vertical



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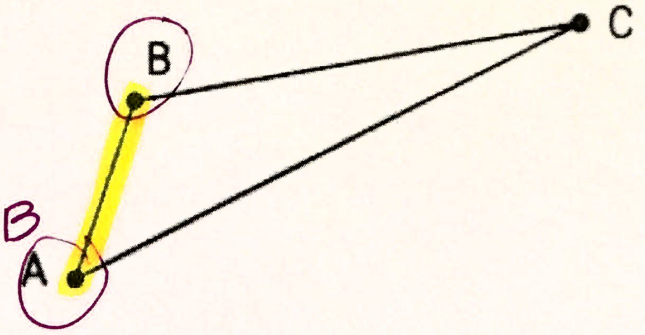
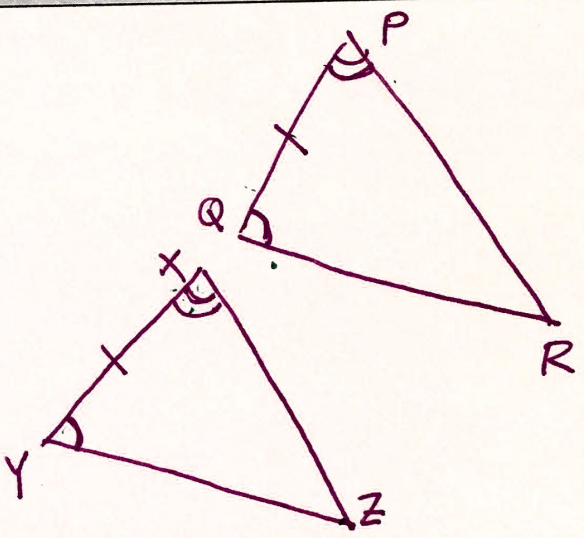
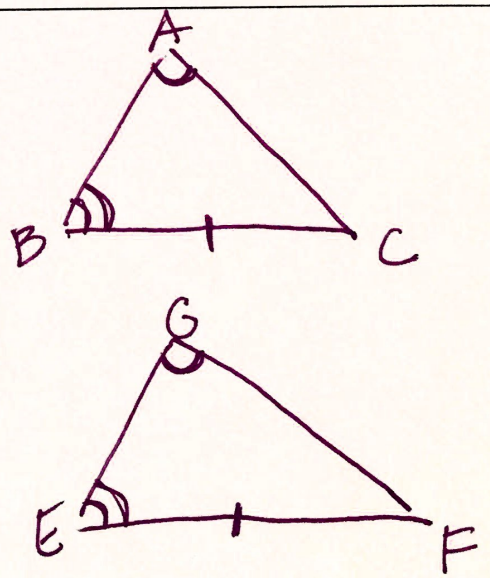
Included Side:

side connects 2 angles

$\overline{AB}$ is the inc. side between $\angle A$ & $\angle B$

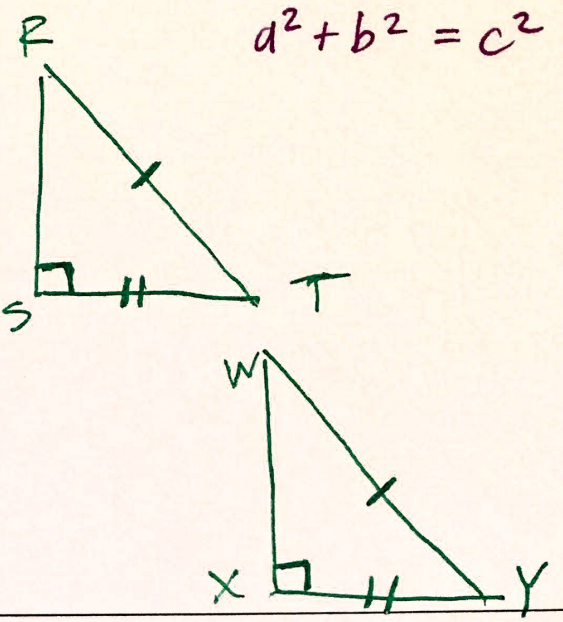


Postulate/Theorem	Picture
Angle-Side-Angle (ASA) Congruence Postulate: If 2 corresponding $\angle$'s and their included side are $\cong$ between 2 $\triangle$'s, then the 2 $\triangle$'s are $\cong$. $\angle Y \cong \angle Q$ $\overline{XY} \cong \overline{PQ}$ $\angle X \cong \angle P$, then $\triangle XYZ \cong \triangle PQR$.	
Angle-Angle-Side (AAS) Congruence Theorem: If 2 corresponding $\angle$'s and a non-included side are $\cong$ between 2 $\triangle$'s, then the 2 $\triangle$'s are $\cong$. $\angle A \cong \angle G$ $\angle B \cong \angle E$ $\overline{BC} \cong \angle EF$, then $\triangle ABC \cong \triangle GEF$	

Hypotenuse-Leg (HL) Congruence Theorem:

*ONLY applies to right triangles!

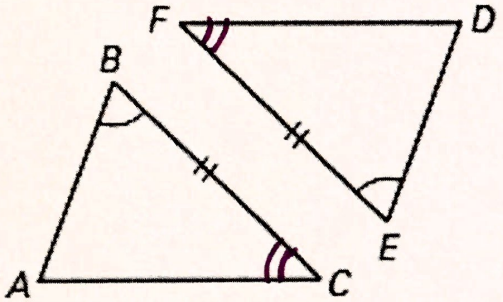
If the hypotenuse and a corresponding leg are $\cong$ between 2 right triangles, then the 2 Δ's are $\cong$.



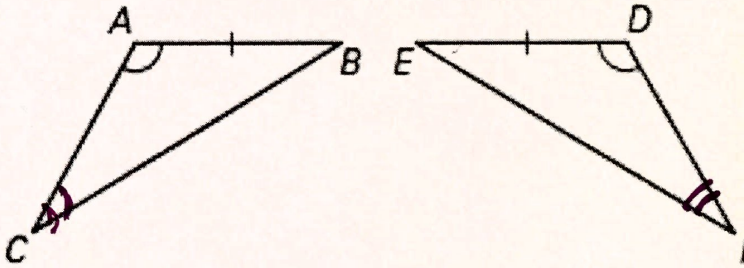
$a^2+b^2=c^2$

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

Ex. 10: ASA Congruence Postulate



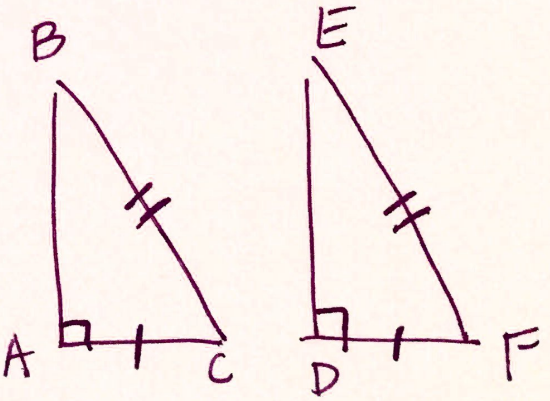
Ex: 11: AAS Congruence Theorem



Ex. 12: Given: $\overline{AC} \cong \overline{DF}$, $\angle A \cong \angle D$

Method: HL Congruence Theorem

* has to be right triangle



Is it possible to prove that the triangles are congruent? If so, state the postulate or theorem you would use. Explain your reasoning.

Ex. 12:

Ex. 13:

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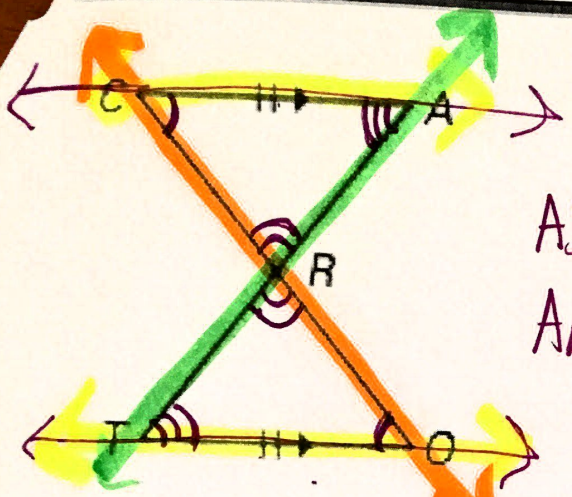
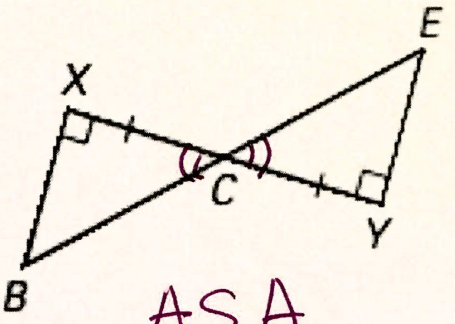


ASA
AAS

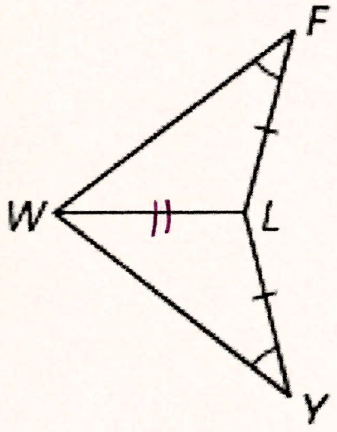


ASA

*What Allowed to Add:
→ vertical angles
→ shared sides
→ ∠'s from // lines

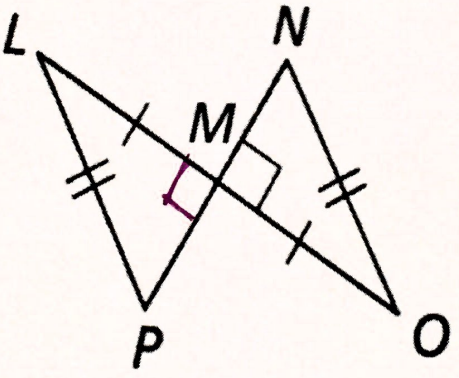
Is it possible to prove that the triangles are congruent? If so, state the postulate or theorem you would use. Explain your reasoning.

Ex. 14:



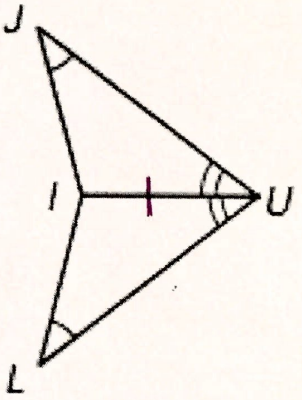
No

Ex. 15:



HL

Ex. 16:



AAS