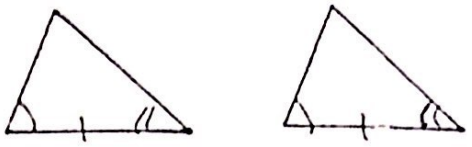
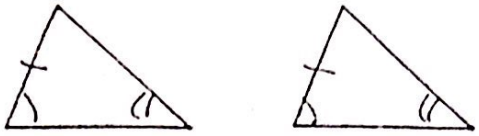
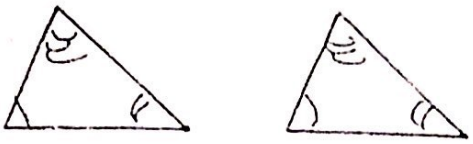
H.Geometry – Chapter 4 – Definition Sheet

Section 4.5

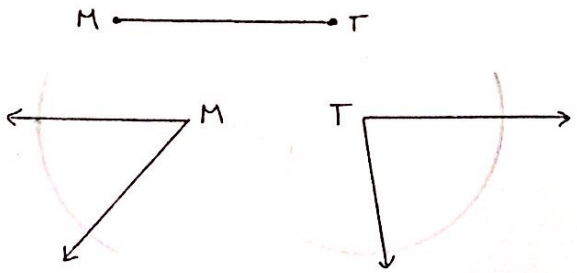
Remaining Cases:

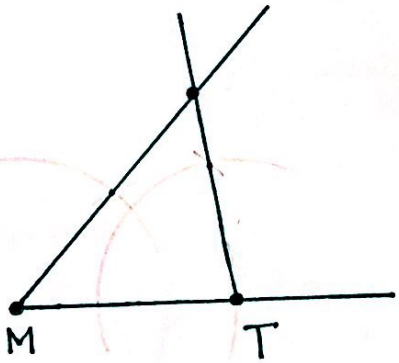
ASA  (INCLUDED SIDE)

SAA  (NON-INCLUDED SIDE)

AAA 

INVESTIGATION 1 **ASA** CASE (P. 227)





* only one triangle can be constructed!

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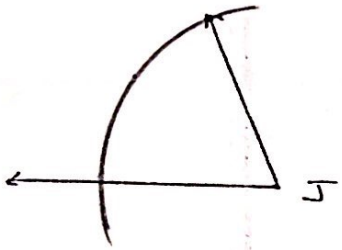
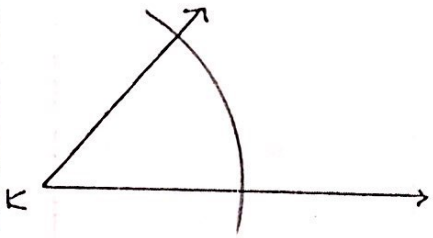
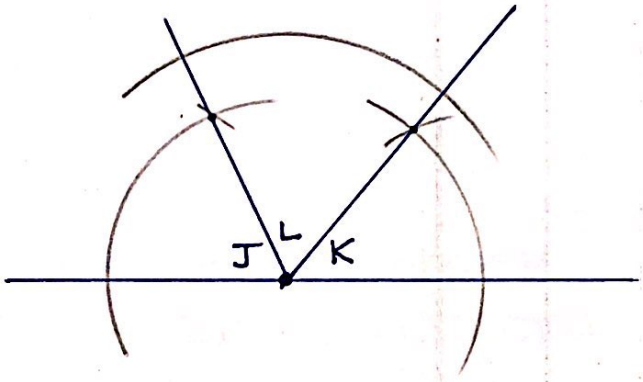
INVESTIGATION 2 **SAA** CASE (P. 228)

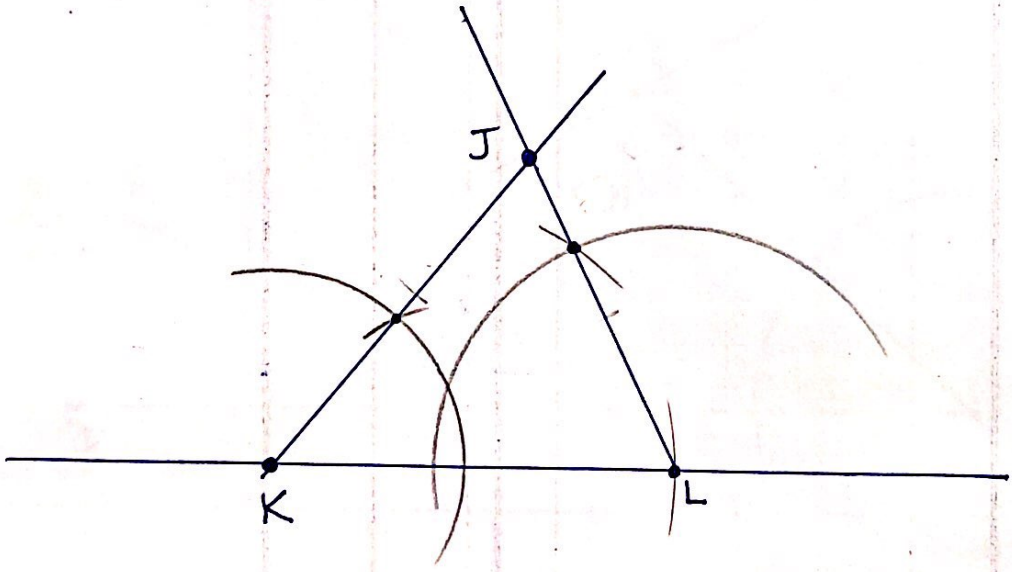




To construct angle L... form a straight line with J and K.



only one triangle can be constructed



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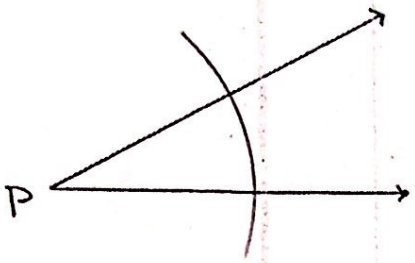
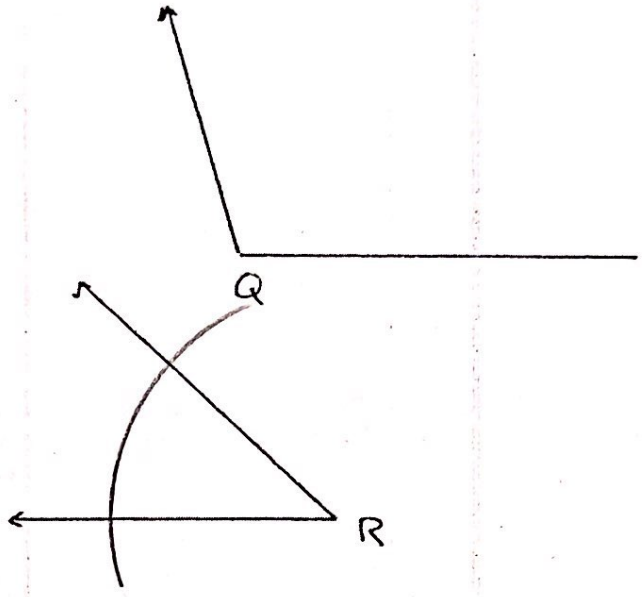
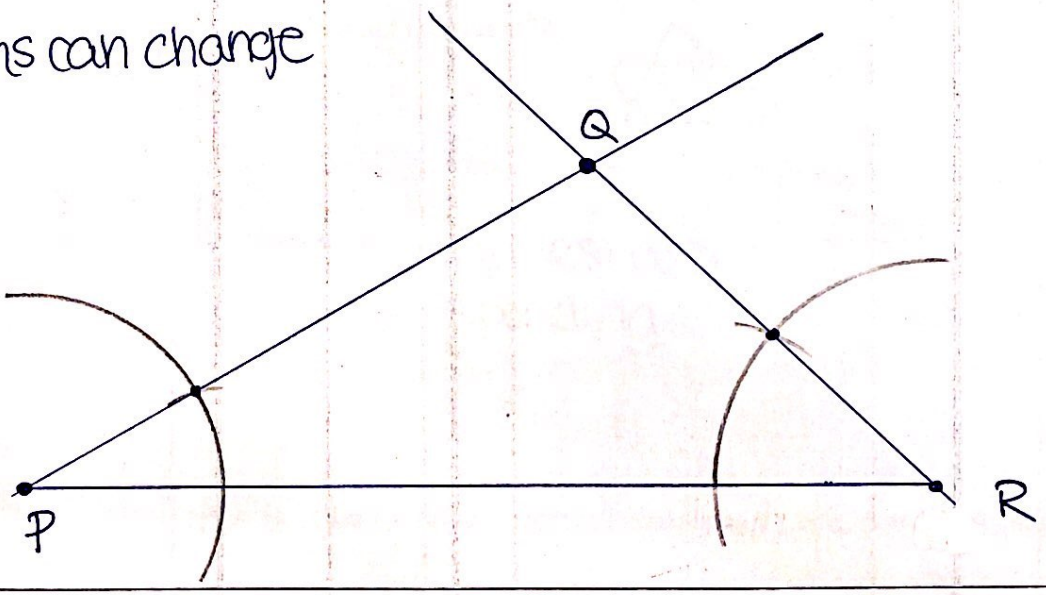
INVESTIGATION 3 **AAA** CASE (P. 228)

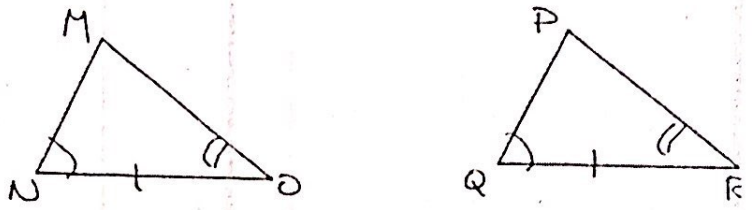
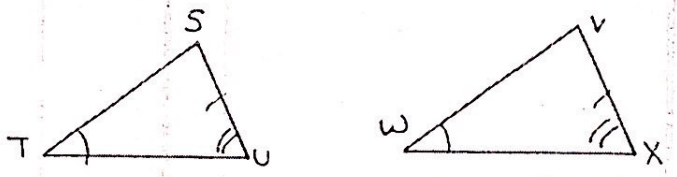
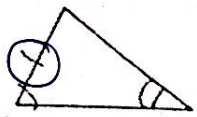
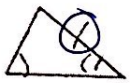




* Numerous triangles can be constructed
* lengths can change



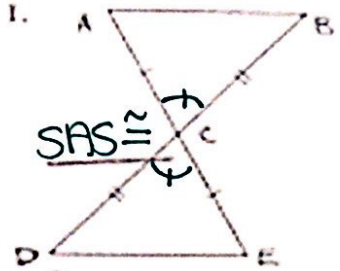
H.Geometry – Chapter 4 – Definition Sheet

Angle-Side-Angle **Congruence Conjecture** (ASA ≅)	If two angles and their included side in one triangle are congruent to two angles and included side in another triangle, then the triangles are congruent.  △MNO ≅ △PQR
Side-Angle-Angle **Congruence Conjecture** (SAA ≅)(AAS ≅)	If two angles and their non-included side in one triangle are congruent to two angles and their corresponding non-included side in another triangle, then the triangles are congruent.  △STU ≅ △PQR Why are these not congruent??   The two sides aren't corresponding. Note: AAS Case – is not sufficient in determining if triangles are congruent.

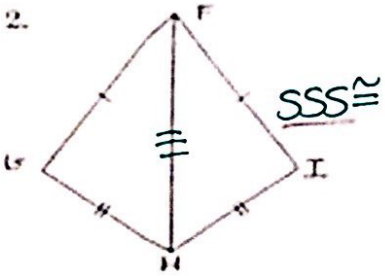
H.Geometry – Chapter 4 – Definition Sheet

a) WRITE THE CONGRUENCE CONJECTURE (SSS, SAS, ASA, AAS) BY WHICH YOU CAN SAY THE TRIANGLES ARE CONGRUENT

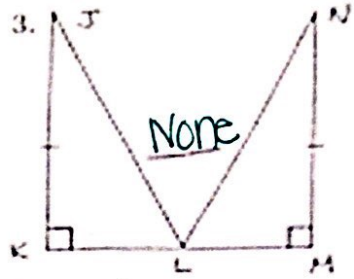
b) WRITE A CONGRUENCE STATEMENT FOR THE TRIANGLES. (ex: $\triangle XYZ \cong \triangle RST$)

1. 

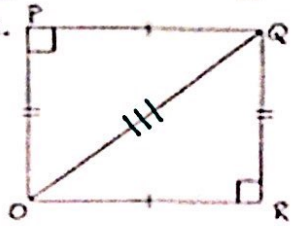
SAS ≅

2. 

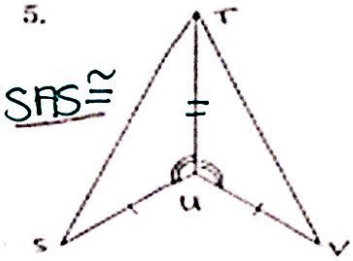
SSS ≅

3. 

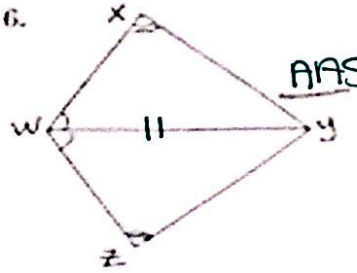
None

4. 

SAS ≅ OR SSS ≅

5. 

SAS ≅

6. 

AAS ≅

Section 4.6

Recall: Triangle congruence shortcuts

SSS ≅, SAS ≅, AAS ≅, ASA ≅, HL ≅

- Allows us to determine if triangles are congruent without having info on all 6 pairs of sides and angles.

CPCTC

Theorem

"Corresponding Parts of Congruent Triangles are Congruent"

- When you have two congruent triangles, use this to determing which parts of the triangles are congruent.

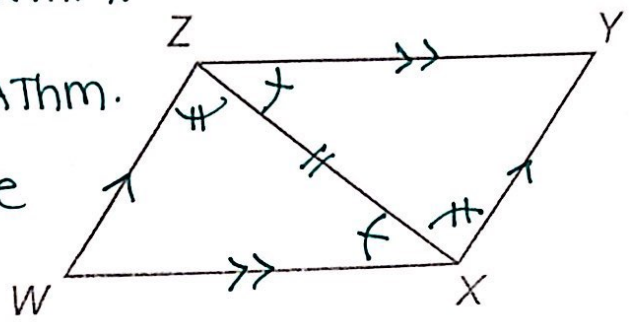
Parts of a triangle:

sides, altitudes, midsegments, angles, medians, etc.

H.Geometry – Chapter 4 – Definition Sheet

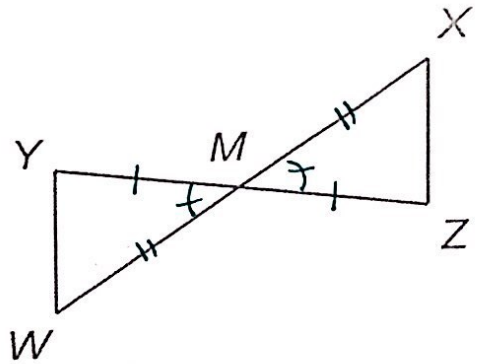
Examples:

In examples 1–5, use the figure at right to explain why each congruence is true. $WXYZ$ is a parallelogram.



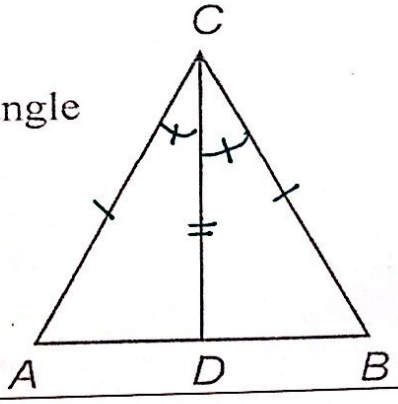
1. $\angle WXZ \cong \angle YZX$ AIAThm.
2. $\angle WZX \cong \angle YXZ$ AIAThm.
3. $\overline{XZ} \cong \overline{ZX}$ Reflexive
4. $\triangle WZX \cong \triangle YXZ$ ASA $\cong$
5. $\angle W \cong \angle Y$ CPCTC

7. Given: M is the midpoint of $\overline{WX}$
   M is the midpoint of $\overline{YZ}$



Is $\overline{YW} \cong \overline{ZX}$?
Yes! $\triangle WYM \cong \triangle XZM$ by SAS $\cong$
- $\overline{YW} \cong \overline{ZX}$ by CPCTC

8. Given: $\triangle$~~WZX~~ ABC is isosceles
   $\overline{CD}$ is the bisector of the vertex angle



Is $\overline{AD} \cong \overline{BD}$?
Yes! $\triangle ACD \cong \triangle BCD$ by SAS $\cong$
$\overline{AD} \cong \overline{BD}$ by CPCTC