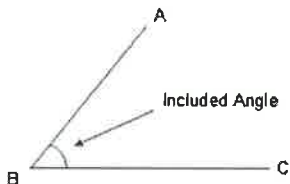




➤ I can prove triangles congruent using SAS.

Vocabulary:

➤ An included angle is an angle made by two lines with a common vertex.

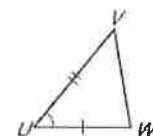
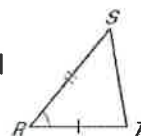


Side – Angle – Side Congruence Postulate (SAS)

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.

Example:

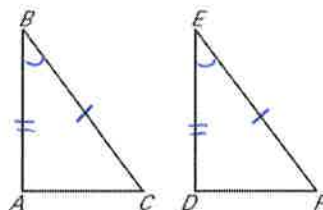
If Side $\overline{RS} \cong \overline{UV}$,
Angle $\angle R \cong \angle U$, and
Side $\overline{RT} \cong \overline{UW}$,
then $\triangle RST \cong \triangle UWV$
by SAS



Example 1: Use the SAS Congruence Postulate

1. State the third congruence that must be given in order to prove $\triangle ABC \cong \triangle DEF$ using the SAS Congruence Postulate.

Given: $\angle B \cong \angle E$, $\overline{BC} \cong \overline{EF}$, $\overline{AB} \cong \overline{DE}$



2. Decide whether enough information is given to prove that the triangles are congruent using the SAS Congruence Postulate.

$\triangle PQT, \triangle RQS$

a)
Yes, by SAS

$\triangle NKJ, \triangle LKM$

b)
Yes, by SAS

$\triangle WXY, \triangle ZXY$

c)
Reflexive Prop.
 $\triangle WYX$ has two sides and an included angle, but in $\triangle XYZ$, $\angle X$ is not the included angle. So, there is not enough info to prove these triangles are \cong .

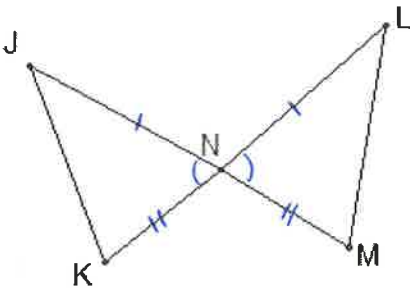
Reasons to prove angles are congruent:

- Vertical Angles Theorem
- Definition of Angle Bisector
- Base Angles Theorem
- Alt. Interior Angles Thm, Alt. Exterior Angles Thm, Corresponding Angles Postulate, Consec. Int Angles Thm
- Givens

Example 2: Use the SAS Congruence Postulate to write a proof.

Given: $\overline{JN} \cong \overline{LN}$, $\overline{KN} \cong \overline{MN}$

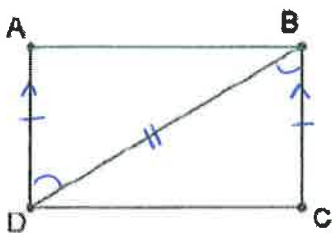
Prove: $\triangle JKN \cong \triangle LMN$



Statement	Reason
1. $\overline{JN} \cong \overline{LN}$	1. Given
2. $\overline{KN} \cong \overline{MN}$	2. Given
3. $\angle JNK \cong \angle LNM$	3. Vertical Angles Theorem
4. $\triangle JKN \cong \triangle LMN$	4. SAS

Given: $\overline{AD} \cong \overline{CB}$, $\overline{AD} \parallel \overline{CB}$

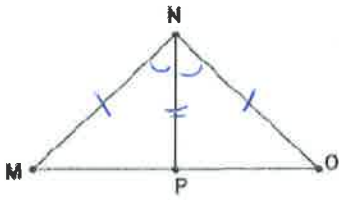
Prove: $\triangle ABD \cong \triangle CDB$



Statements	Reasons
1. $\overline{AD} \cong \overline{CB}$	1. Given
2. $\overline{AD} \parallel \overline{CB}$	2. Given
3. $\angle ADB \cong \angle CBD$	3. Alt. Interior Angles Thm
4. $\overline{BD} \cong \overline{BD}$	4. Reflexive Prop
5. $\triangle ABD \cong \triangle CDB$	5. SAS

Given: \overline{NP} bisects $\angle MNO$, $\overline{MN} \cong \overline{ON}$

Prove: $\triangle MNP \cong \triangle ONP$



Statements	Reasons
1. \overline{NP} bisects $\angle MNO$	1. Given
2. $\angle MNP \cong \angle ONP$	2. Def. of Angle Bisector
3. $\overline{MN} \cong \overline{ON}$	3. Given
4. $\overline{NP} \cong \overline{NP}$	4. Reflexive Property
5. $\triangle MNP \cong \triangle ONP$	5. SAS