Geometry A
Section 4.4 Notes – SAS

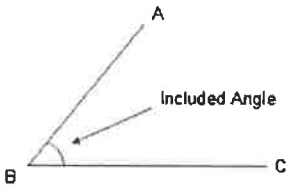
Name : Key
Date : _____ Period : ____

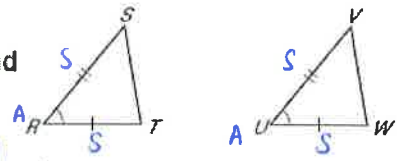
LEARNING TARGETS

➢ I can prove triangles congruent using SAS.

**Vocabulary:**

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

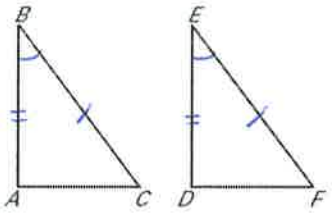



| **Side – Angle – Side Congruence Postulate (SAS)** | **Example:** |
|---|---|
| If two sides and the included angle of one triangle are congruent to two sides and the included angle of a second triangle, then the two triangles are congruent. | If Side $\overline{RS} \cong$ $\overline{UV}$, Angle $\angle R \cong$ $\angle U$, and Side $\overline{RT} \cong$ $\overline{UW}$, then $\triangle RST \cong$ $\triangle UVW$. by SAS  |

**Example 1: Use the SAS Congruence Postulate**

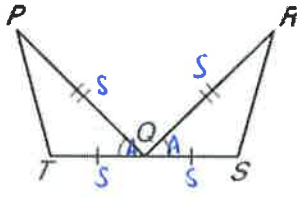
1. State the third congruence that must be given in order to prove $\triangle ABC \cong \triangle DEF$ using the SAS Congruence Postulate.

**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.

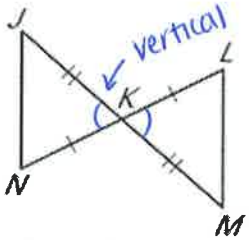
a) $\triangle PQT, \triangle RQS$



Yes, by SAS

$\triangle PQT \cong \triangle RQS$

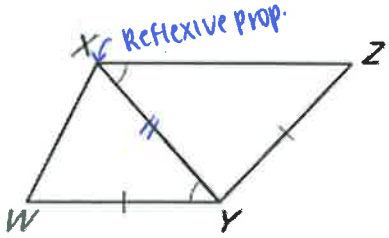
b) $\triangle NKJ, \triangle LKM$




Yes, by SAS

$\triangle NKJ \cong \triangle LKM$

c) $\triangle WXY, \triangle ZXY$




$\triangle WYX$ 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 $\cong$.

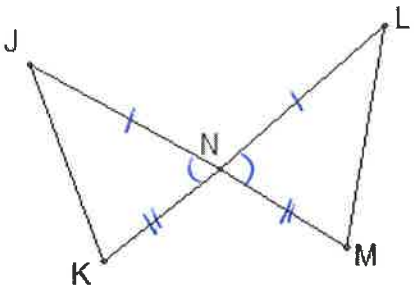
**Reasons to prove angles are congruent:**

- Vertical Angles
- Definition of angle bisector
- Base Angles Theorem
- Alt. Int. Angles Thm, Corresponding Angles Postulate, Consec. Int. Angles Thm
- Givens

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

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

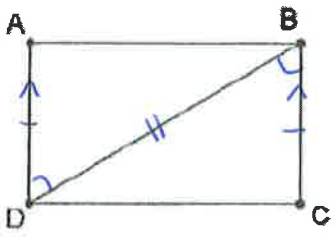
**Prove:** $\Delta JKN \cong \Delta LMN$




| Statement | Reason |
|---|---|
| 1. $\overline{JN} \cong \overline{LN}$ | 1. Given |
| 2. $\overline{KN} \cong \overline{MN}$ | 2. Given |
| 3. $\angle JNK \cong \angle MNL$ | 3. VAT |
| 4. $\Delta JKN \cong \Delta LMN$ | 4. SAS |

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

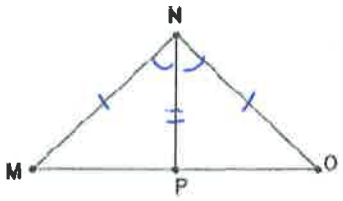
**Prove:** $\Delta ABD \cong \Delta CDB$




| 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. Int. Angles Thm |
| 4. $\overline{BD} \cong \overline{BD}$ | 4. Reflexive Property |
| 5. $\Delta ABD \cong \Delta CDB$ | 5. SAS |

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

**Prove:** $\Delta MNP \cong \Delta ONP$




| Statements | Reasons |
|---|---|
| 1. $\overline{NP}$ bisects $\angle MNO$ | 1. Given |
| 2. $\angle MNP \cong \angle ONP$ | 2. Definition of angle bisector |
| 3. $\overline{MN} \cong \overline{ON}$ | 3. Given |
| 4. $\overline{NP} \cong \overline{NP}$ | 4. Reflexive Property |
| 5. $\Delta MNP \cong \Delta ONP$ | 5. SAS |