4.3 Triangle Congruence by ASA and AAS

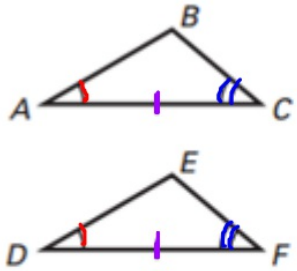
Learning Targets for today

- To be able to prove triangles are congruent using the ASA and the AAS congruence postulates.
- To be able to use congruence postulates to real-life problems.

Key Concept!

POSTULATE 21: ANGLE-SIDE-ANGLE (ASA) CONGRUENCE POSTULATE

If two angles and the included side of one triangle are congruent to two angles and the included side of a second triangle, then the two triangles are congruent.



If Angle $\angle A \cong$ $\angle D$, A ✓

Side $\overline{AC} \cong$ $\overline{DF}$, and S ✓

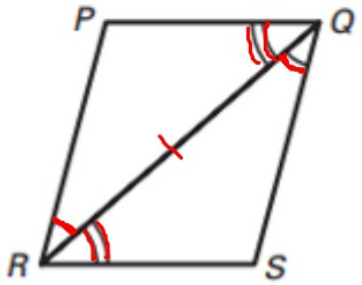
Angle $\angle C \cong$ $\angle F$, A ✓

then $\triangle ABC \cong$ $\triangle DEF$.

Using ASA

Example for you…

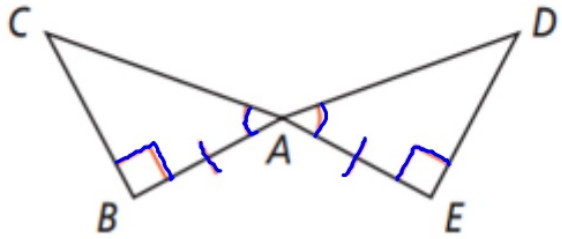
Prove $\Delta PRQ \cong \Delta SQR$.



Statements	*Reasons*
a. $\angle PRQ \cong \angle SQR$ ✓	a. GIVEN
b. $\angle SRQ \cong \angle PQR$ ✓	b. GIVEN
c. $\overline{RQ} \cong \overline{RQ}$	c. Reflexive Prop.
d. $\Delta PRQ \cong \Delta SQR$	d. ASA

Your turn to try…

Prove $\Delta ABC \cong \Delta AED$.

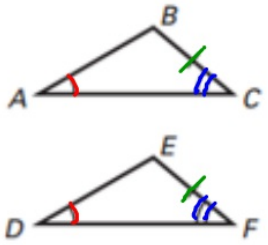


Statements	*Reasons*
a. $\overline{BA} \cong \overline{EA}$	a. GIVEN
b. $\angle CAB \cong \angle DAE$	b. GIVEN
c. $\angle CBA \cong \angle DEA$	c. Def. of Right ∠'s
d. $\Delta CBA \cong \Delta DEA$	d. ASA

Key Concept!

THEOREM 4.5: ANGLE-ANGLE-SIDE (AAS) CONGRUENCE THEOREM

If two angles and a nonincluded side of one triangle are congruent to two angles and the corresponding nonincluded side of a second triangle, then the two triangles are congruent.



If Angle $\angle A \cong$ $\angle D$, ✓

Angle $\angle C \cong$ $\angle F$, and ✓

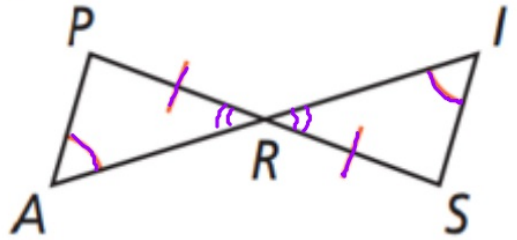
Side $\overline{BC} \cong \overline{EF}$; ✓

then $\triangle ABC \cong$ $\triangle DEF$. AAS

Using AAS

Example for you…

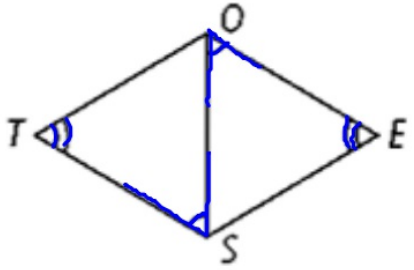
Prove $\Delta ARP \cong \Delta IRS$.



Statements	*Reasons*
a. $\angle A \cong \angle I$	a. GIVEN
b. $\overline{PR} \cong \overline{SR}$	b. GIVEN
c. $\angle PRA \cong \angle SRI$	c. VERTICAL $\angle$'S
d. $\Delta ARP \cong \Delta IRS$	d. AAS

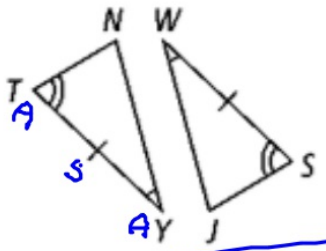
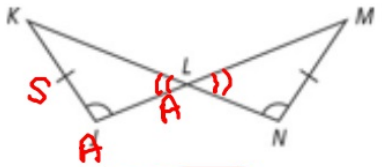
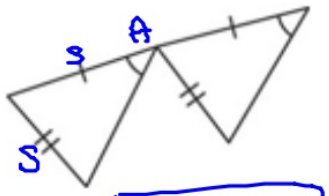
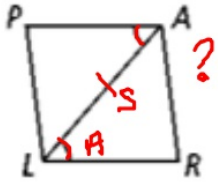
Your turn to try…

Prove $\Delta STO \cong \Delta OES$.



Statements	*Reasons*
a. $\angle T \cong \angle E$	a. GIVEN
b. $\angle OST \cong \angle SOE$	b. GIVEN
c. $\overline{OS} \cong \overline{OS}$	c. Reflexive Prop.
d. $\Delta STO \cong \Delta OES$	d. AAS

Identifying Congruent Triangles.

Example for you…	**Your turn to try…**
Is there enough information to determine these triangles are congruent? If so, state why.	Is there enough information to determine these triangles are congruent? If so, state why.
1.  ASA	1.  AAS ~~ASA~~
2.  NEI	2.  NEI