

4.5

Prove Triangles Congruent by ASA and AAS

VOCABULARY

Flow proof

**A flow proof uses arrows to show
the flow of a logical argument.**

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.

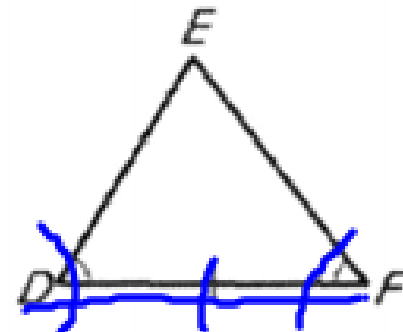
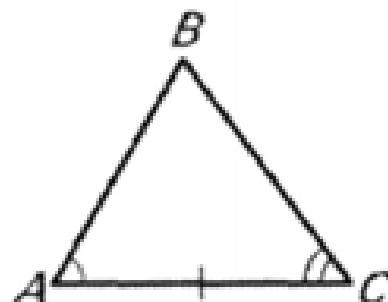
If Angle $\angle A \cong \underline{\angle D}$

Side $\overline{AC} \cong \underline{\overline{DF}}$, and

Angle $\angle C \cong \underline{\angle F}$,

then

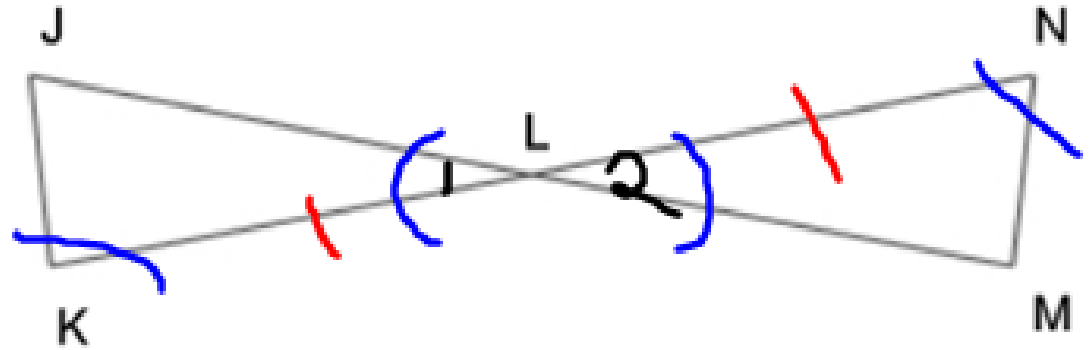
$\triangle ABC \cong \underline{\triangle DEF}$



Proof C)

ASA

Given: JM bisects KN,
 $\angle K \cong \angle N$
Prove: $\triangle JLK \cong \triangle MLN$

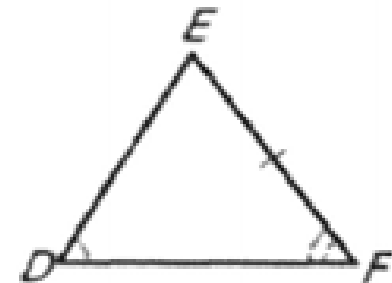
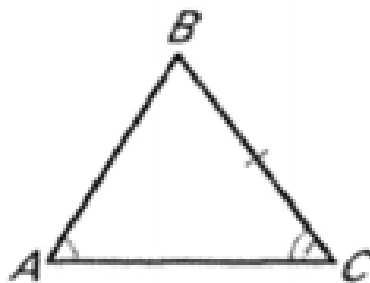


Statement	Reason
① JM bisects KN	① Given
② $\overline{KL} \cong \overline{LN}$	② Def of a bisector
③ $\angle 1$ & $\angle 2$ are vertical angles.	③ Def of vertical angles.
④ $\angle 1 \cong \angle 2$	④ Vertical \angle s are \cong
⑤ $\triangle JLK \cong \triangle MLN$	⑤ ASA \cong ASA

THEOREM 4.6: ANGLE-ANGLE-SIDE (AAS) CONGRUENCE THEOREM

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

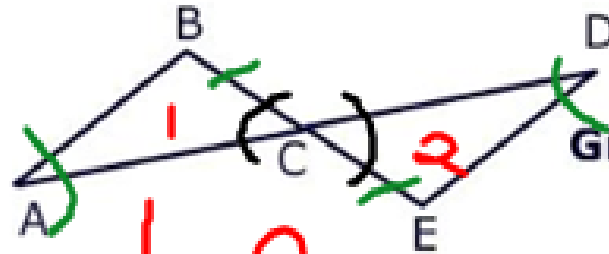
If Angle $\angle A \cong \angle D$,
Angle $\angle C \cong \angle F$, and
Side $\overline{BC} \cong \overline{FE}$,



then $\triangle ABC \cong \triangle DEF$

AAS

Prove $\triangle ABC \cong \triangle EDC$



Given C is midpoint \overline{BE}
 $\overline{AB} \parallel \overline{DE}$

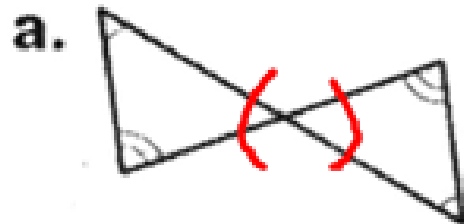
Statement

Reason

- | | |
|---|--|
| ① | ① Given |
| ② $\angle BCA \cong \angle ECD$
vert. angles | ② Def of verticle \angle s |
| ③ $\angle A \cong \angle D$ | ③ Vertical \angle s are \cong |
| ④ $\overline{BC} \cong \overline{CE}$ | ④ Def of a mdpt. |
| ⑤ $\angle B \cong \angle D$ | ⑤ If 2 \parallel lines are cut
by a transversal, the alt
int angle are \cong |
| ⑥ $\triangle 1 \cong \triangle 2$ | ⑥ \cong AAS |

Example 1

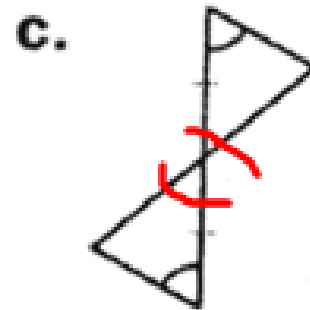
Can the triangles be proven congruent with the information given in the diagram? If so, state the postulate or theorem you would use.



No

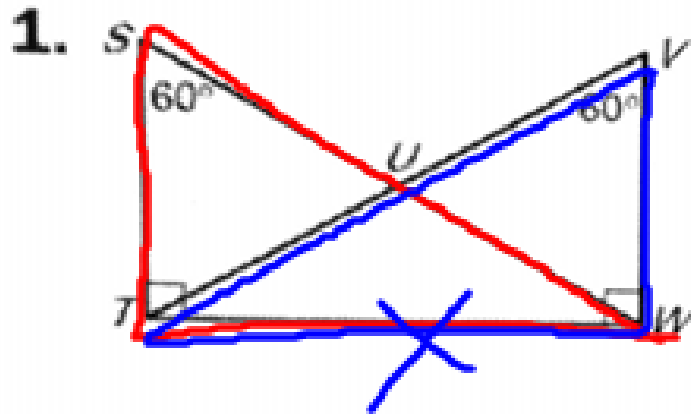


AAS

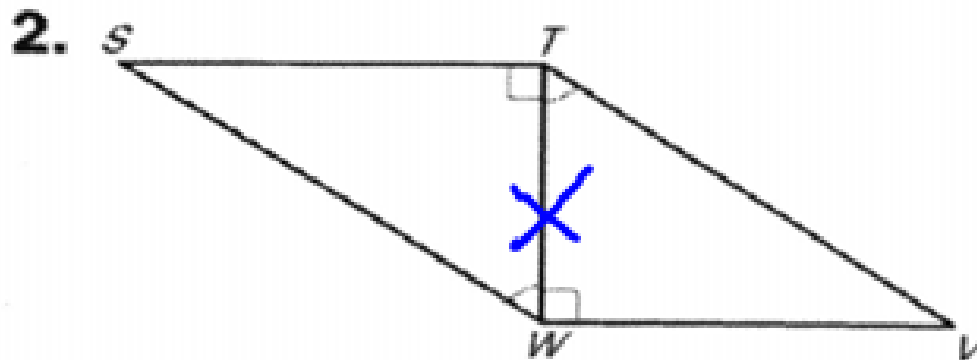


ASA

- ✓ **Checkpoint** Can $\triangle STW$ and $\triangle VWT$ be proven congruent with the information given in the diagram? If so, state the postulate or theorem you would use.



AAS



ASA

Proof D)

Given: WY bisects $\angle ZWX$

$\angle Z \cong \angle X$

Prove: $\triangle WYZ \cong \triangle WYX$

