Triangle Congruence by ASA and AAS
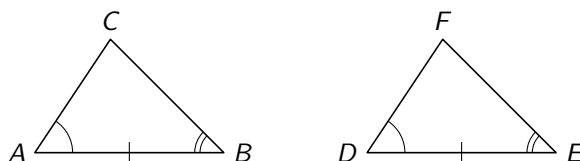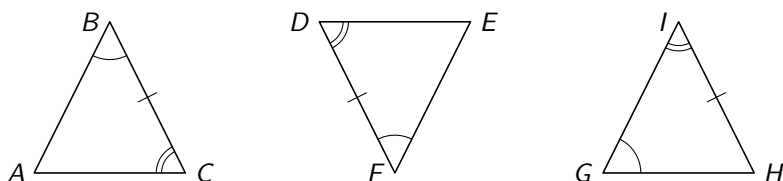
Angle-Side-Angle (ASA) Shortcut

If 2 angles and the included side of one triangle are congruent to 2 angles and the included side of another triangle, then the triangles are congruent.

- $\triangle ABC \cong \triangle DEF$

Example 1. Which two triangles are congruent by ASA? Explain.

(a)

(b)

Example 2. **Given:** $\angle CAB \cong \angle DAE$, $\overline{BA} \cong \overline{EA}$, $\angle B$ and $\angle E$ are right angles.   **Prove:** $\triangle ABC \cong \triangle AED$

Angle-Angle-Side (AAS) Shortcut

If 2 angles and a non-included side of one triangle are congruent to 2 angles and a non-included side of another triangle, then the triangles are congruent.
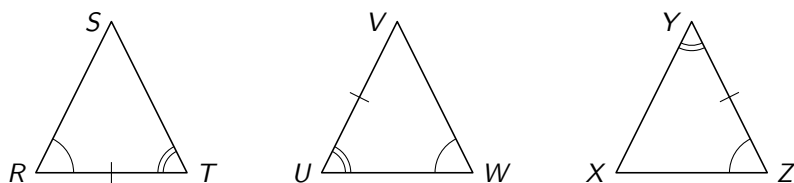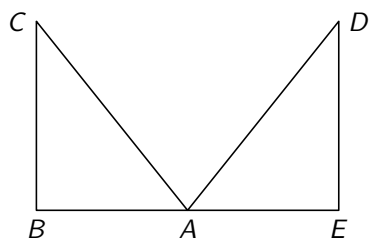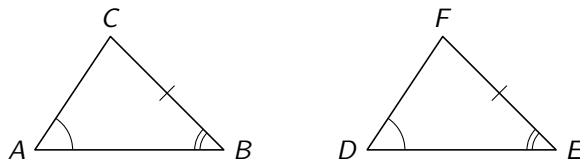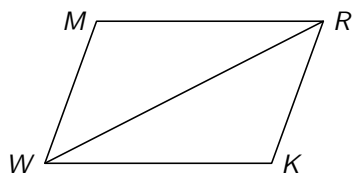
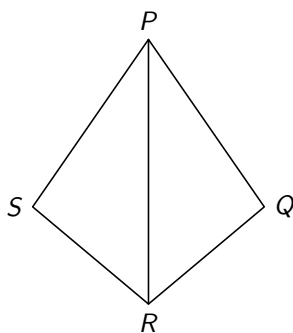- $\triangle ABC \cong \triangle DEF$

Example 3. Prove each of the following.

(a) **Given:** $\angle M \cong \angle K$, $\overline{WM} \parallel \overline{RK}$ **Prove:** $\triangle WMR \cong \triangle RKW$

(b) **Given:** $\angle S \cong \angle Q$, $\overline{RP}$ bisects $\angle SRQ$ **Prove:** $\triangle SRP \cong \triangle QRP$

Example 4. Are $\triangle PAR$ and $\triangle SIR$ congruent? Explain.