

Triangle Congruence

- 5 ways to prove Δ 's \cong

1) Side-Side-Side (SSS) \rightarrow All 3 sides \cong

2) Side-Angle-Side (SAS) \rightarrow 2 sides \cong + angle b/w is \cong

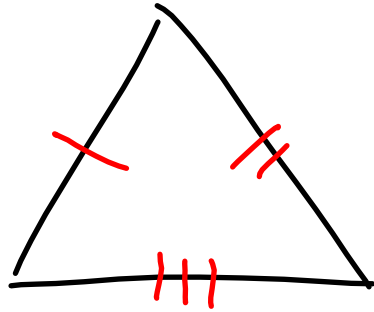
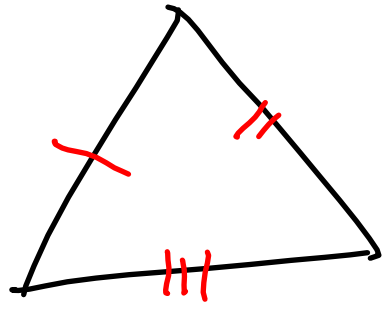
3) Angle-Side-Angle (ASA) \rightarrow 2 angles \cong + side b/w is \cong

4) Angle-Angle-Side (AAS) \rightarrow 2 angles \cong + side next to one angle \cong

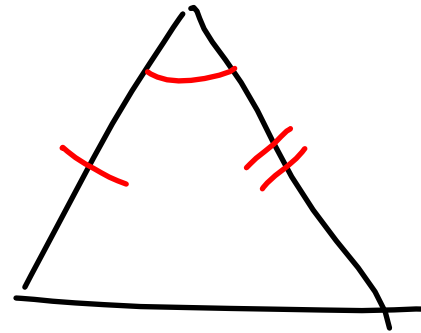
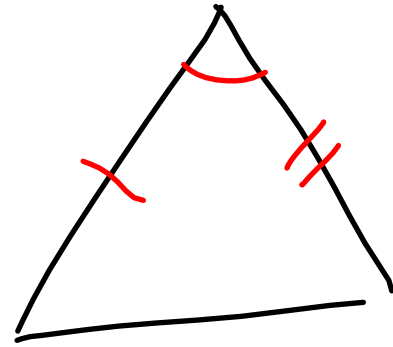
5) Hypotenuse-Leg (HL) \rightarrow RIGHT TRIANGLES ONLY!

\hookrightarrow need \cong hypotenuse + \cong leg

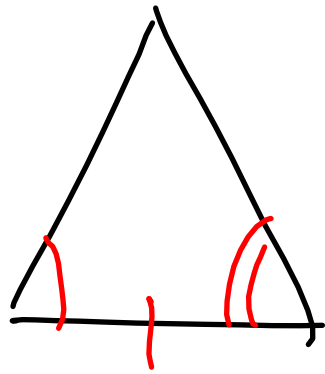
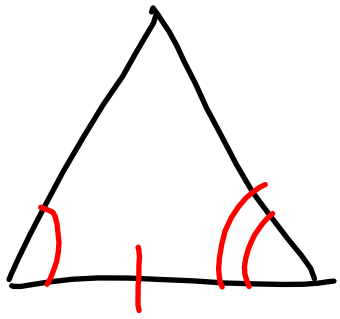
SSS



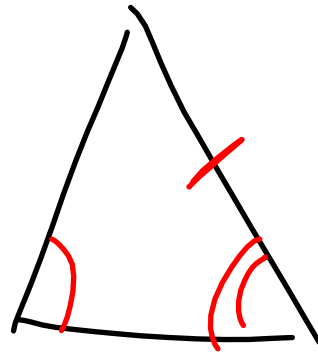
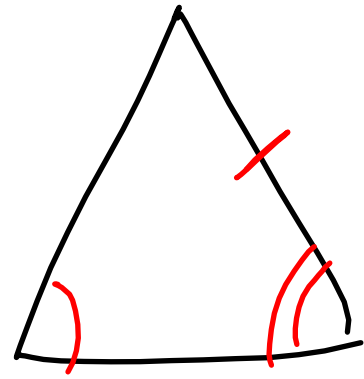
SAS



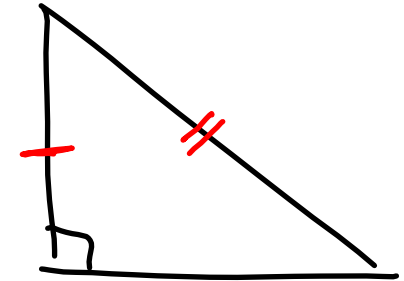
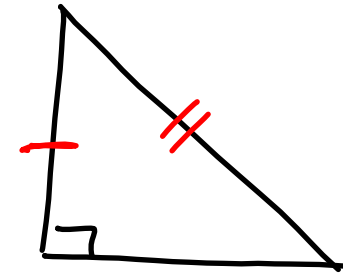
ASA



AAS



HL



- Proof Tips

→ Reflexive Property → $\overline{AB} \cong \overline{AB}$

↳ see w/ shared sides

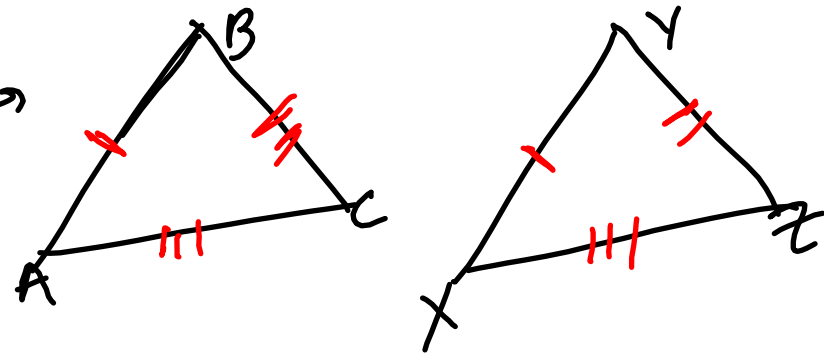
→ Midpoint

→ Vertical \angle 's

→ Parallel Lines

↳ use alt. int. \angle 's or corresponding \angle 's

EX →



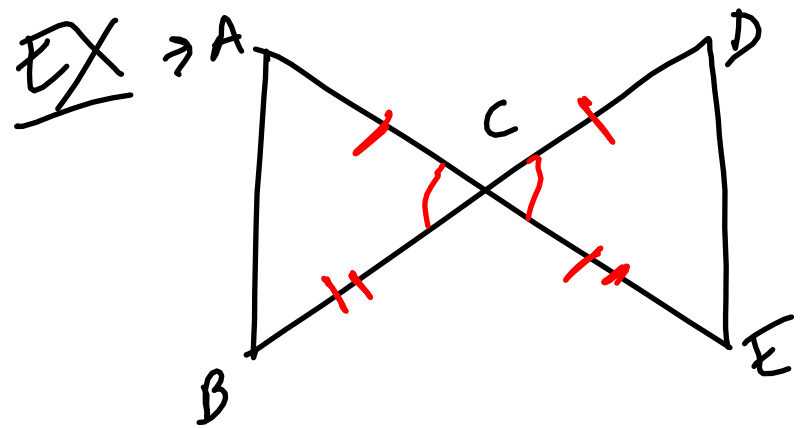
$$G: \overline{AB} \cong \overline{XY},$$

$$\overline{BC} \cong \overline{YZ},$$

$$\overline{AC} \cong \overline{XZ}$$

Prove: $\triangle ABC \cong \triangle XYZ$

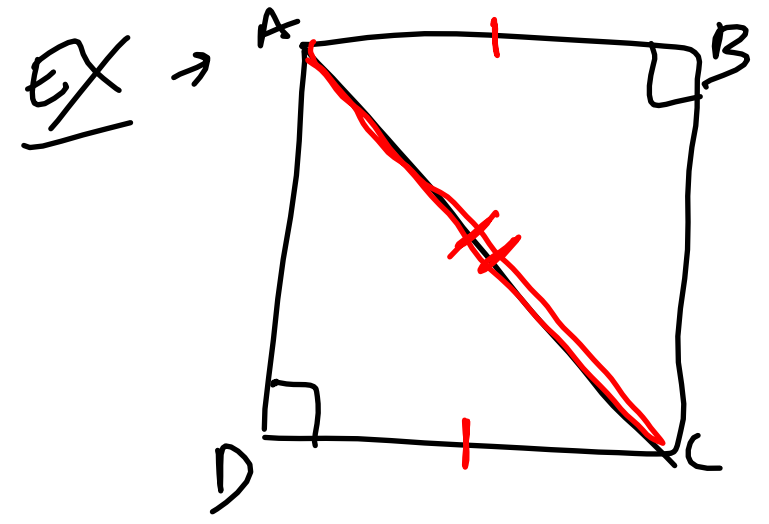
S	R
① ☺	① Given
② $\triangle ABC \cong \triangle XYZ$	② SSS



G: $\overline{AC} \cong \overline{CD}$,
 $\overline{BC} \cong \overline{CE}$

P: $\triangle ABC \cong$
 $\triangle EDC$

S	R
① $\ddot{}$	① Given
② $\angle ACB \cong$ $\angle ECD$	② Vertical \angle 's
③ $\triangle ABC \cong \triangle EDC$	③ SAS



G: $\overline{AB} \cong \overline{CD}$

P: $\triangle ABC \cong \triangle CDA$

S	R
① $\ddot{}$	① Given
② $\overline{AC} \cong \overline{AC}$	② Reflexive Prop.
③ $\triangle ABC \cong \triangle CDA$	③ HL

HW : p. 230 → 9, 10, 16, 17, 28, 29
p. 238 → 12, 14, 20, 26
p. 263 → 10, 17