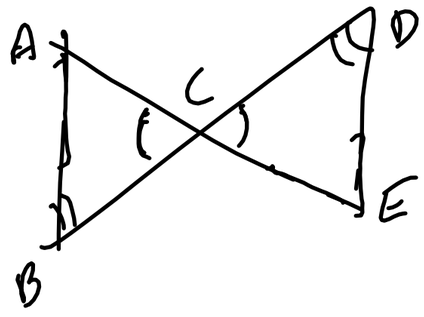
Proving Triangles Similar

- 3 ways to prove similar
  - Angle-Angle Similarity ($AA\sim$) → uses 2 $\cong$ $\angle$'s
    - ↳ Tips:
      - → In "Given", look for parallel sides (can use Alt. Int. $\angle$'s)
      - → Look for vertical $\angle$'s
      - → Remember, you only need 2 angles!

EX →

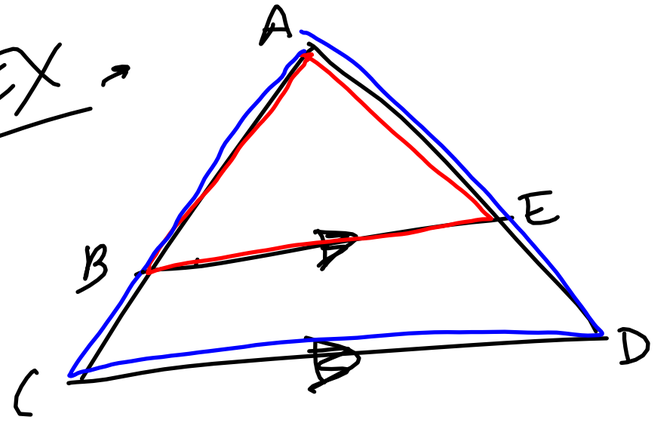


Given: $\overline{AB} \parallel \overline{DE}$

Prove: $\triangle ABC \sim \triangle EDC$

S	R
1) ∴	1) Given
2) $\angle ACB \cong \angle DCE$	2) Vertical $\angle$'s
3) $\angle B \cong \angle D$	3) Alt. Int. $\angle$'s
4) $\triangle \sim \triangle$	4) $AA\sim$

EX →



Given: $\overline{BE} \parallel \overline{CD}$

Prove: $\triangle ABE \sim \triangle ACD$

S	R
① ∴	① Given
② $\angle A \cong \angle A$	② Reflexive Prop. → use w/ overlapping Δ's
③ $\angle C \cong \angle ABE$	③ Corr. ∠'s
④ $\triangle ABE \sim \triangle ACD$	④ AA~

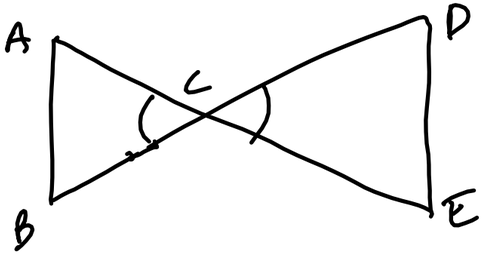
- Side-Angle-Side (SAS~) Similarity → use 2 similar sides + angle between sides

↳ Tips:

→ Need ratios of 2 sets of sides (EX → $\frac{AB}{XY} = \frac{BC}{YZ}$)

→ Need ∠ in between 2 proportional sides

EX →



Given: $\frac{AC}{DC} = \frac{BC}{CE}$

Prove: $\triangle ACB \sim \triangle DCE$

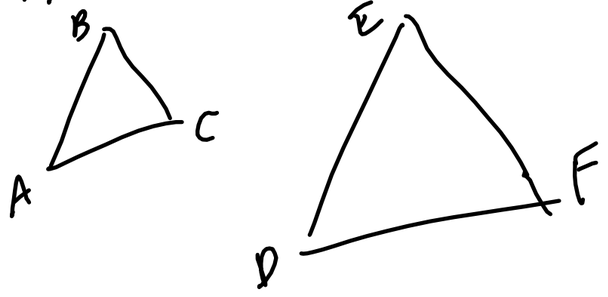
S	R
1) ∴	1) Given
2) ∠ACB ≅ ∠DCE	2) Vertical ∠'s
3) △ ~ △	3) SAS~

- Side-Side-Side (SSS~) Similarity → uses all 3 similar sides

↳ Tips:

→ Need extended proportion using all 3 sides (EX → $\frac{AB}{XY} = \frac{BC}{YZ} = \frac{AC}{XZ}$)

EX →



Given: $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

Prove: $\triangle ABC \sim \triangle DEF$

S	R
1) ∴	1) Given
2) △ ~ △	2) SSS~