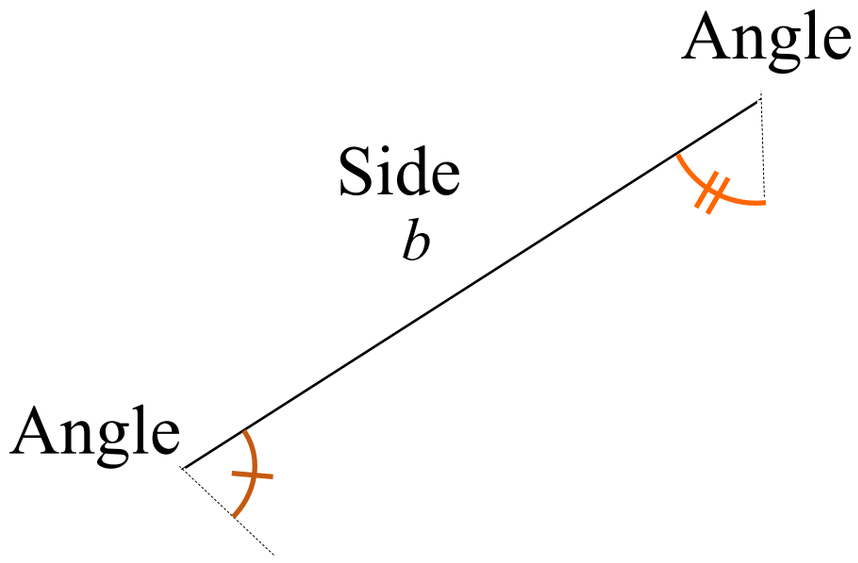
Triangle Congruence

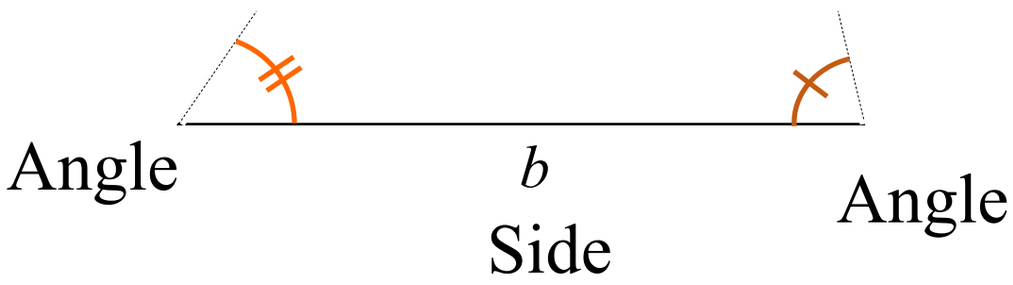
Section 4-6

Are these triangles congruent?

Yes, Angle-Side-Angle

ASA (Unit 4-6)

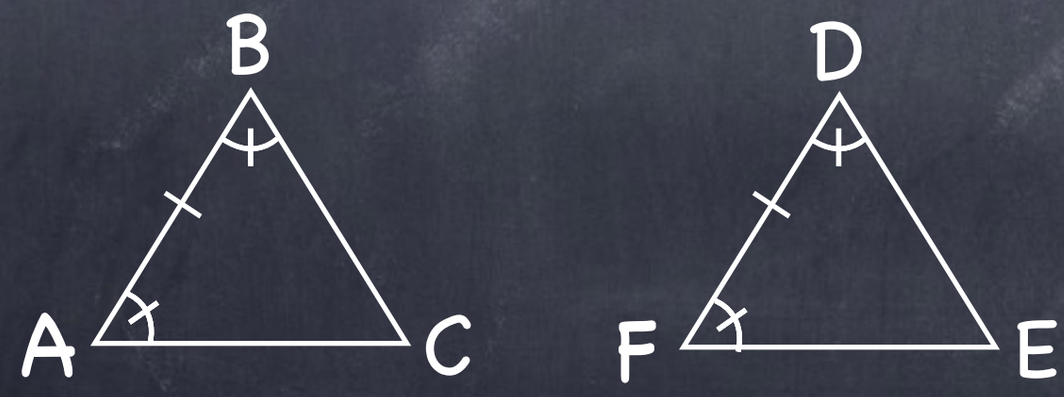




Angle-Side-Angle Congruence (ASA)

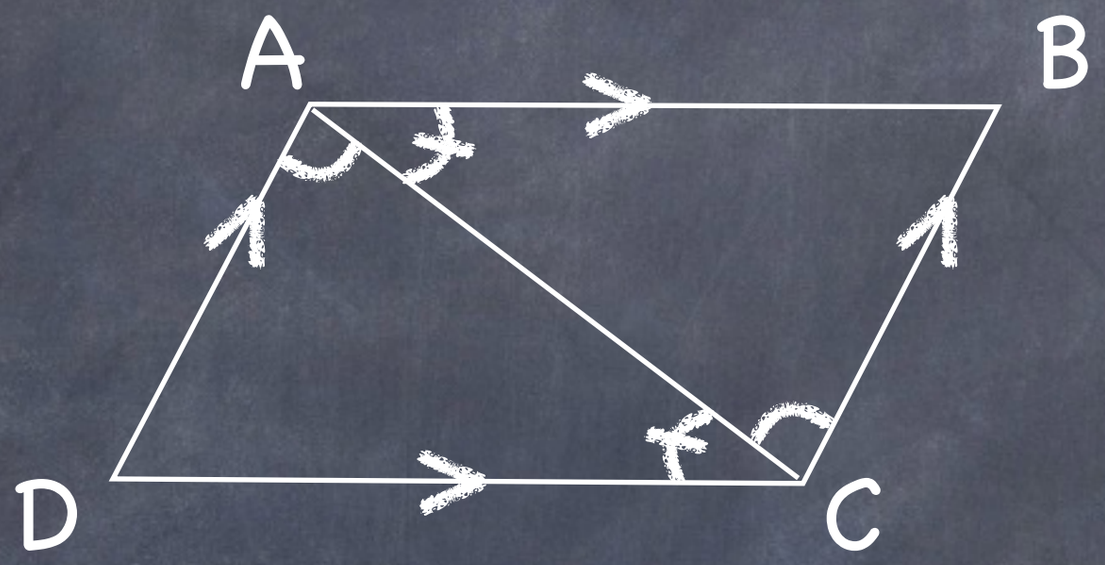
- If two angles and the included side of one triangle are congruent to two angles and the included side of another, then the triangles are congruent.

If $\angle A \cong \angle F$, $\overline{AB} \cong \overline{FD}$, and $\angle B \cong \angle D$, then $\triangle ABC \cong \triangle FDE$.



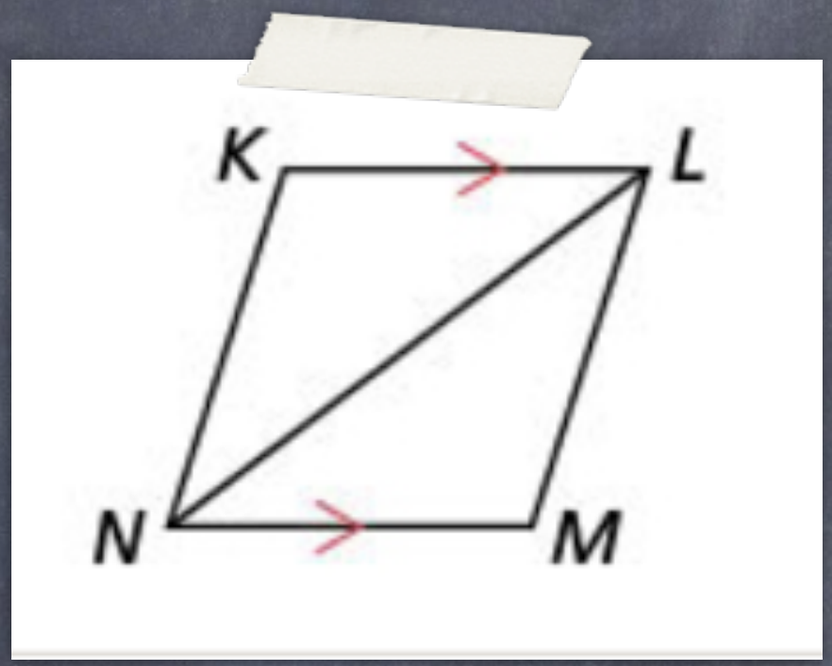
Given the parallelogram $\square ABCD$

Use ASA to explain why $\triangle ABC \cong \triangle CDA$



Angle	$\angle DAC \cong \angle BCA$	Alternate Interior Angles Theorem
Side	$\overline{AC} \cong \overline{AC}$	Reflexive Property of Congruence
Angle	$\angle BAC \cong \angle DCA$	Alternate Interior Angles Theorem

Can you use ASA to prove △NKL ≅△LMN? Explain.

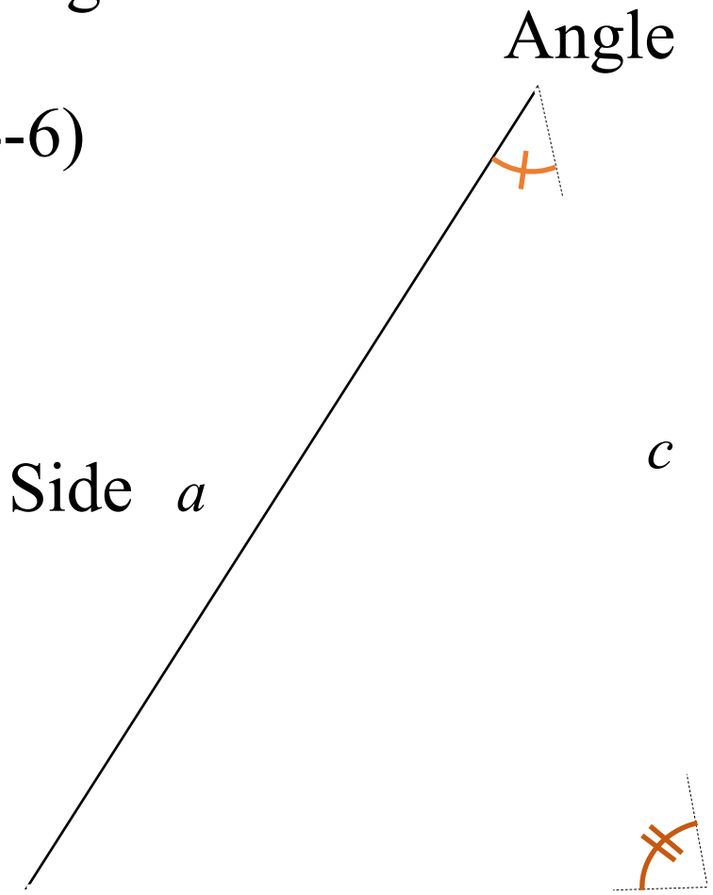


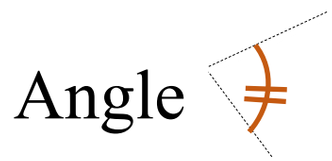
Nope. We only have one angle and one side

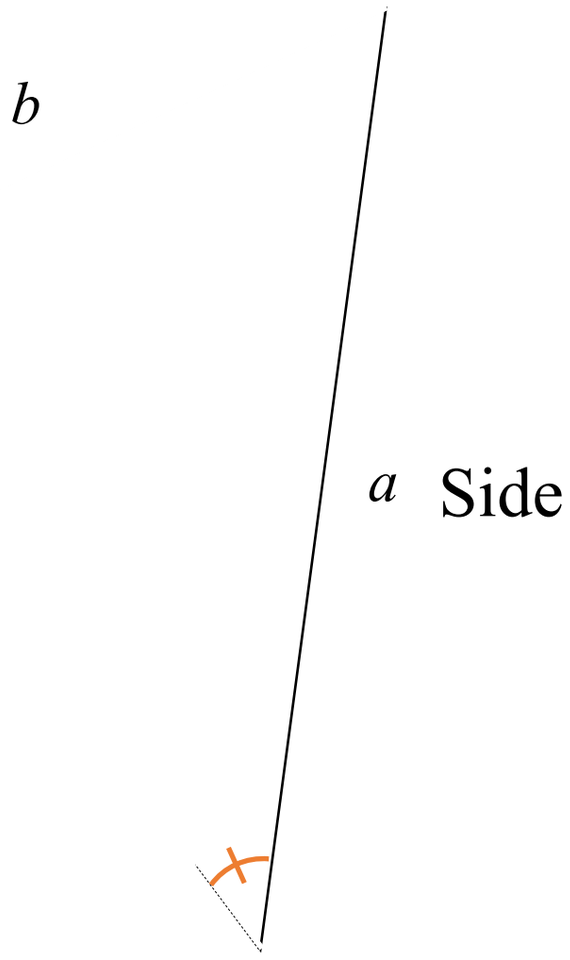
Are these triangles congruent?

Yes, Angle-Angle-Side

AAS (Unit 4-6)



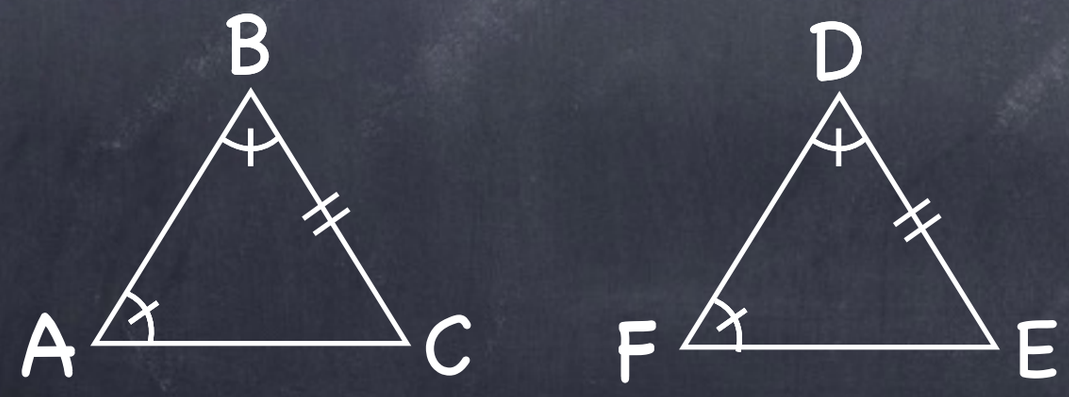




Angle-Angle-Side Congruence (AAS)

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

If $\angle A \cong \angle F$, $\angle B \cong \angle D$, and $\overline{BC} \cong \overline{DE}$, then $\triangle ABC \cong \triangle FDE$.

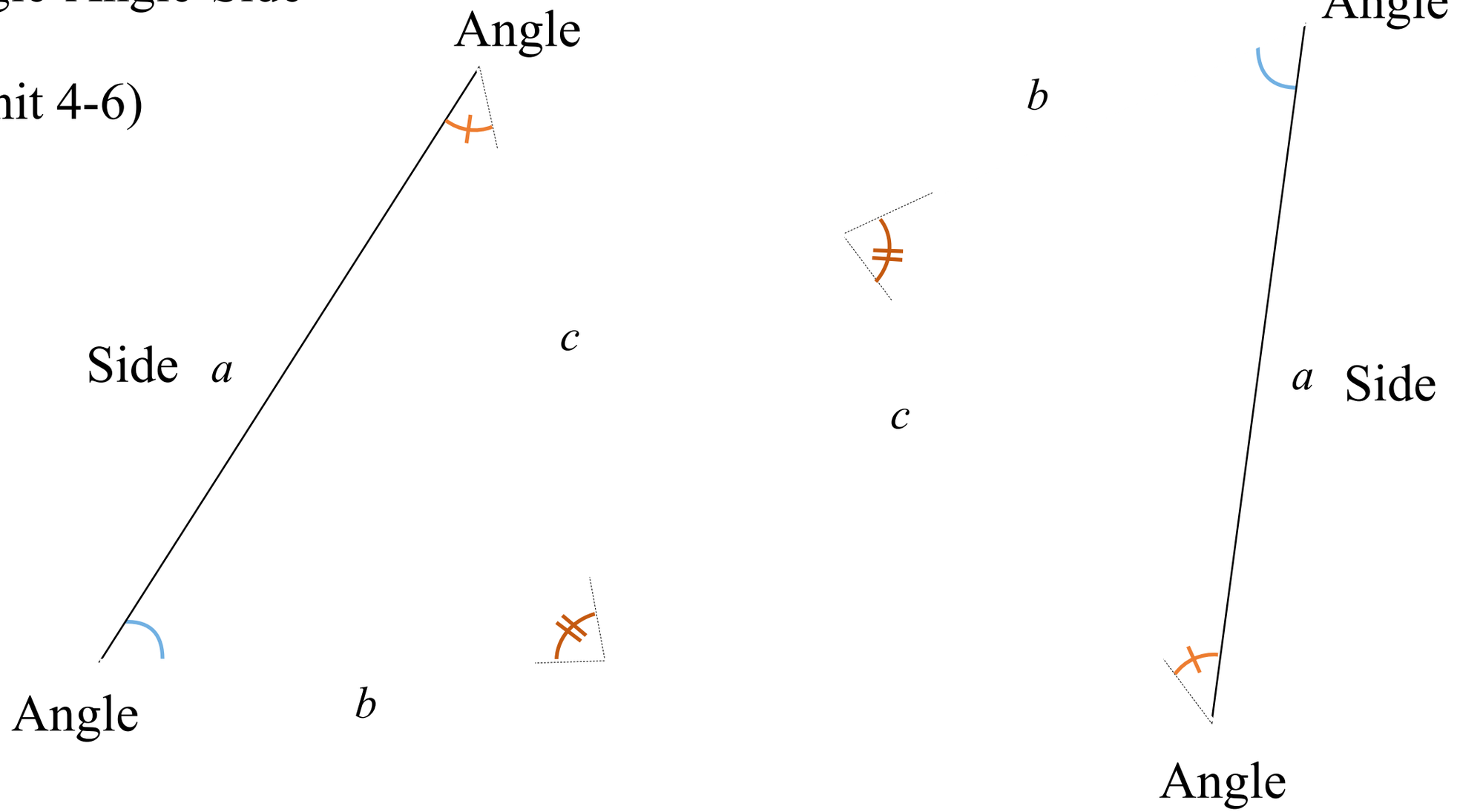


This is really just using ASA and Third Angle Theorem

Are these triangles congruent?

Yes, Angle-Angle-Side

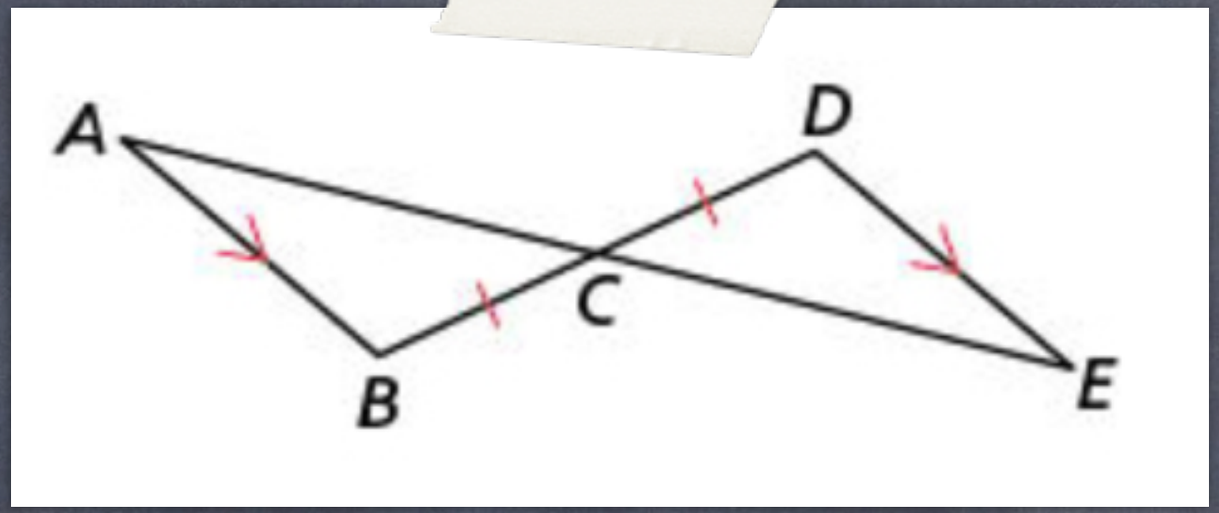
AAS (Unit 4-6)



Third Angle Theorem tells us that these angles are congruent as well

So with that extra step we can also prove congruence by ASA

Can you use AAS to prove $\triangle ABC \cong \triangle EDC$? Explain.

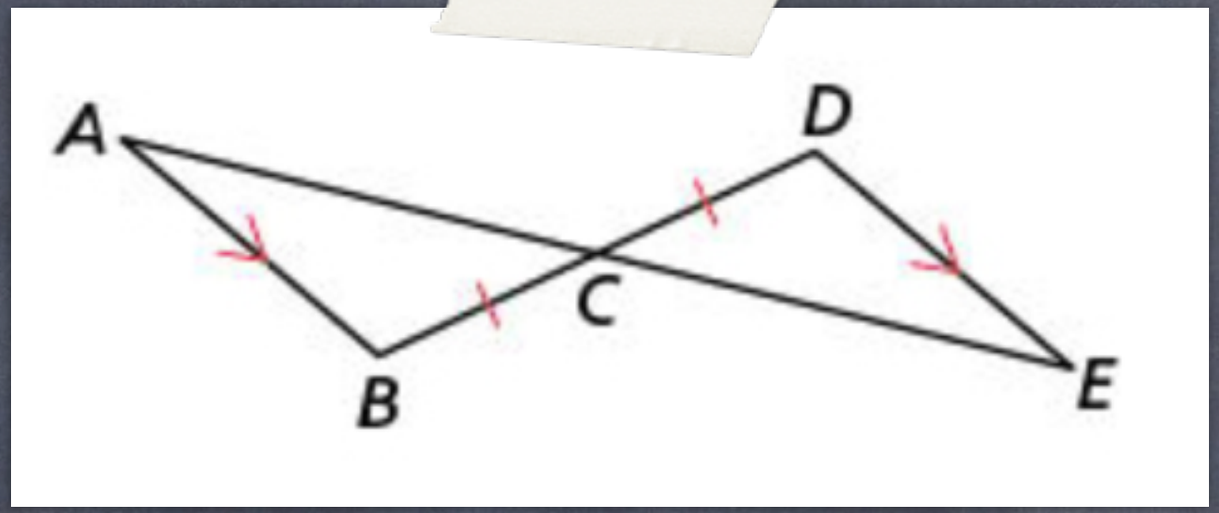


Yes

Angle	$\angle A \cong \angle E$	Alternate Interior Angles Theorem
Angle	$\angle ACB \cong \angle ECD$	Vertical Angles Theorem
Side	$\overline{BC} \cong \overline{DC}$	Given

We can also choose to use ASA.

Can you use AAS to prove $\triangle ABC \cong \triangle EDC$? Explain.



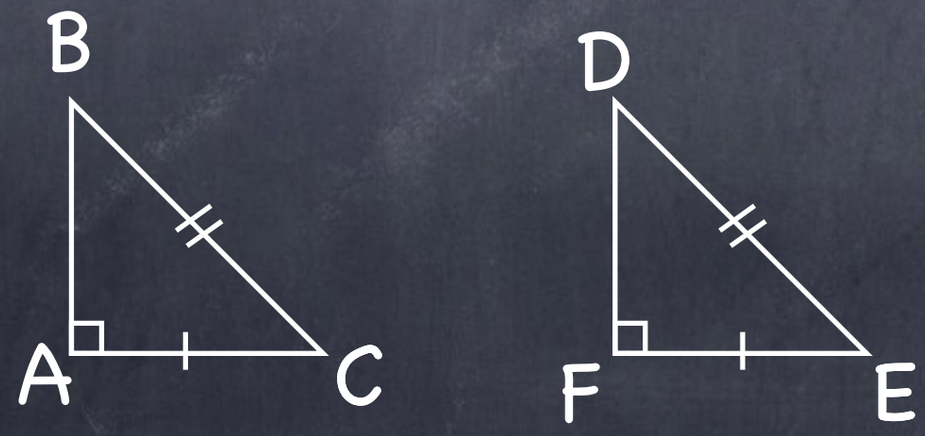
Yes

Angle	$\angle ABC \cong \angle EDC$	Alternate Interior Angles Theorem
Side	$\overline{BC} \cong \overline{DC}$	Given
Angle	$\angle A \cong \angle E$	Alternate Interior Angles Theorem

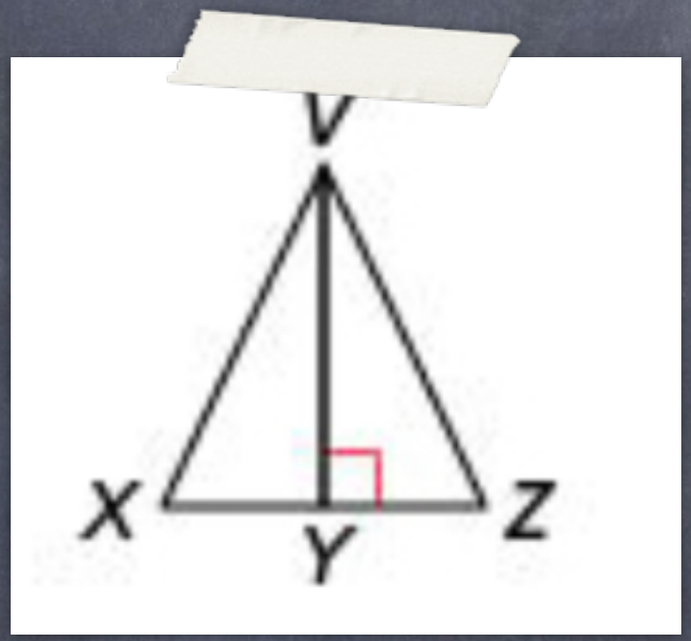
Hypotenuse-Leg Congruence (HL)

- In a right triangle, if the hypotenuse and leg of one triangle are congruent to the hypotenuse and leg of another, then the triangles are congruent.

If $\overline{AC} \cong \overline{FE}$ and $\overline{BC} \cong \overline{DE}$, then $\triangle ABC \cong \triangle FDE$.



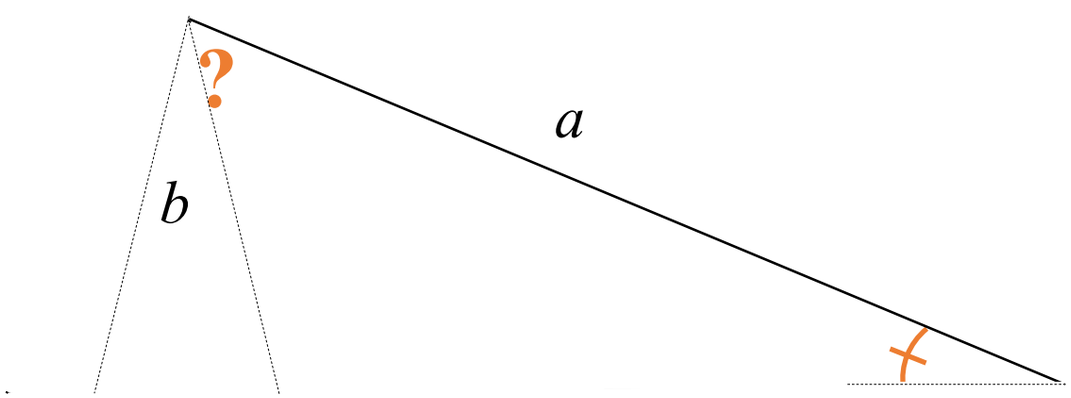
Can you use HL to prove $\triangle ABC \cong \triangle DCB$? Explain.



Are these triangles congruent?

No, Side-Side-Angle or Angle-Side-Side is not a method for proving triangle congruence

Note: we know for sure the length of *b* but not the measure of the angle between *a* and *b*



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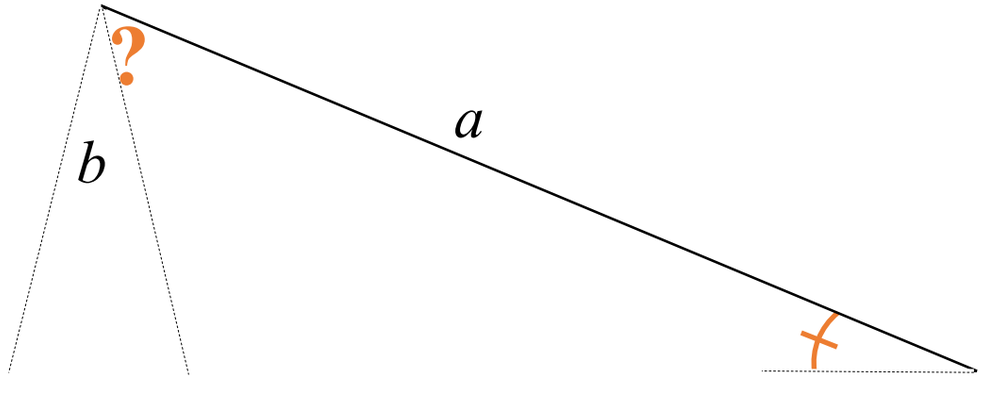

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