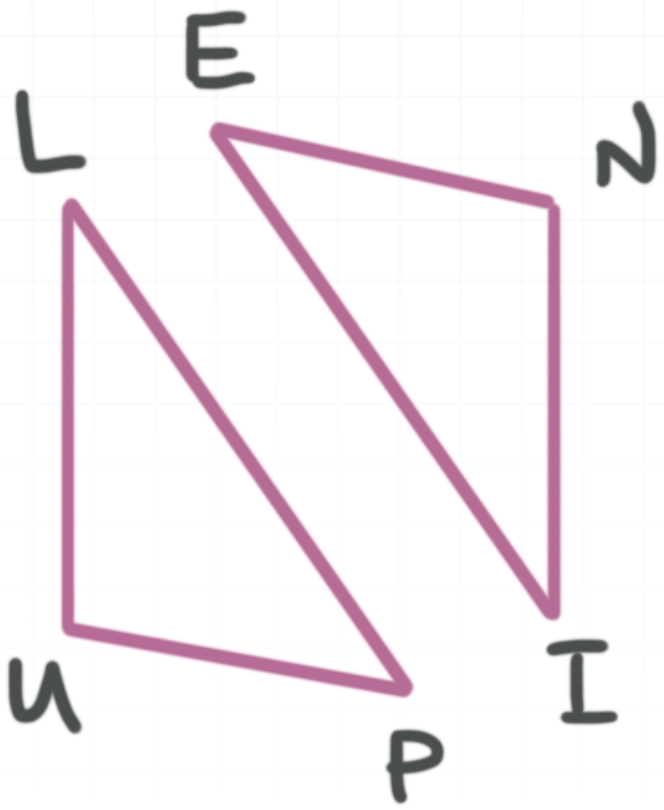
Topic: Triangle congruence with SSS, ASA, SAS

Question: Given triangles $\triangle LUP$ and $\triangle INE$, and $\overline{LU} \cong \overline{IN}$, $\angle P \cong \angle E$, and $\overline{LP} \cong \overline{IE}$, which theorem could you use to prove the triangles congruent?



Answer choices:

A SSS

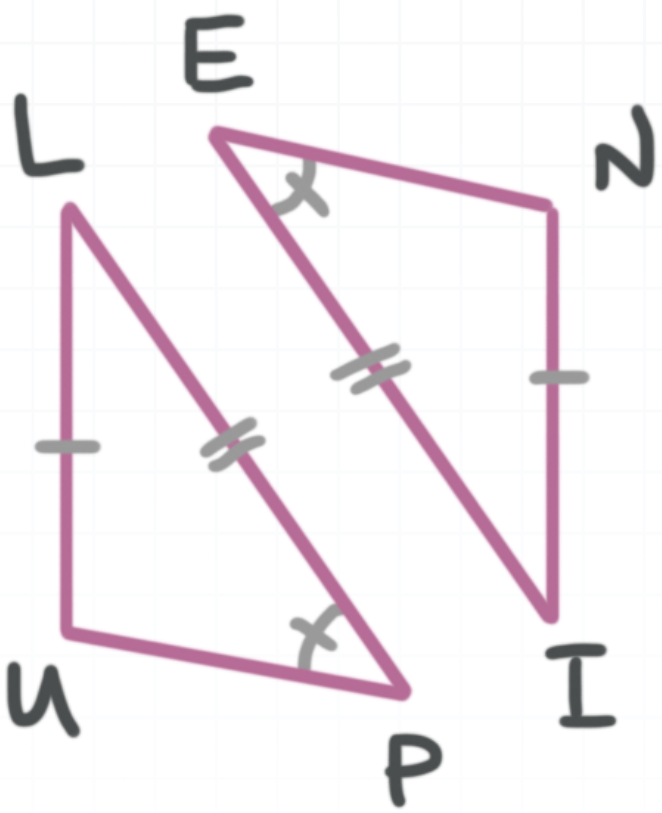
B SAS

C ASA

D None of these

Solution: D

Because only two pairs of sides and one pair of angles are given as congruent, you can rule out SSS and ASA.



Because $\angle P$ isn't the included angle of sides $\overline{LU}$ and $\overline{LP}$ in $\triangle LUP$, you can rule out SAS. If you look at this from the standpoint of $\triangle INE$, you would arrive at the same conclusion, because $\angle E$ isn't the included angle of sides $\overline{IN}$ and $\overline{IE}$.

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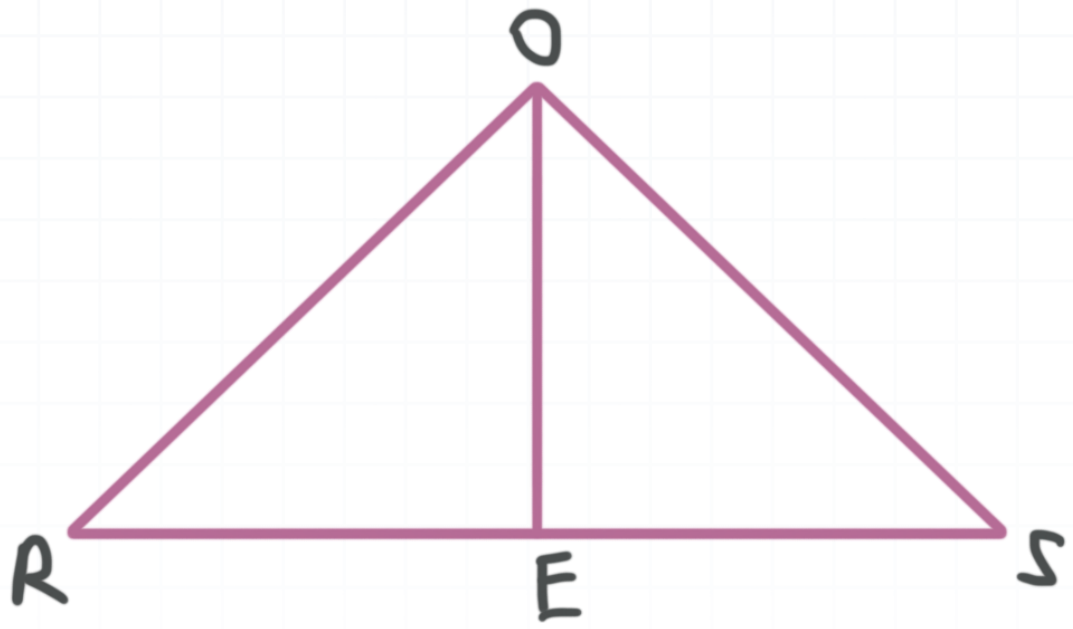
Question: Given $\triangle ROE$ and $\triangle SOE$, and $\overline{OE} \perp \overline{RS}$ and $\angle ROE \cong \angle EOS$, which theorem could you use to prove the triangles congruent?



Answer choices:

A SSS

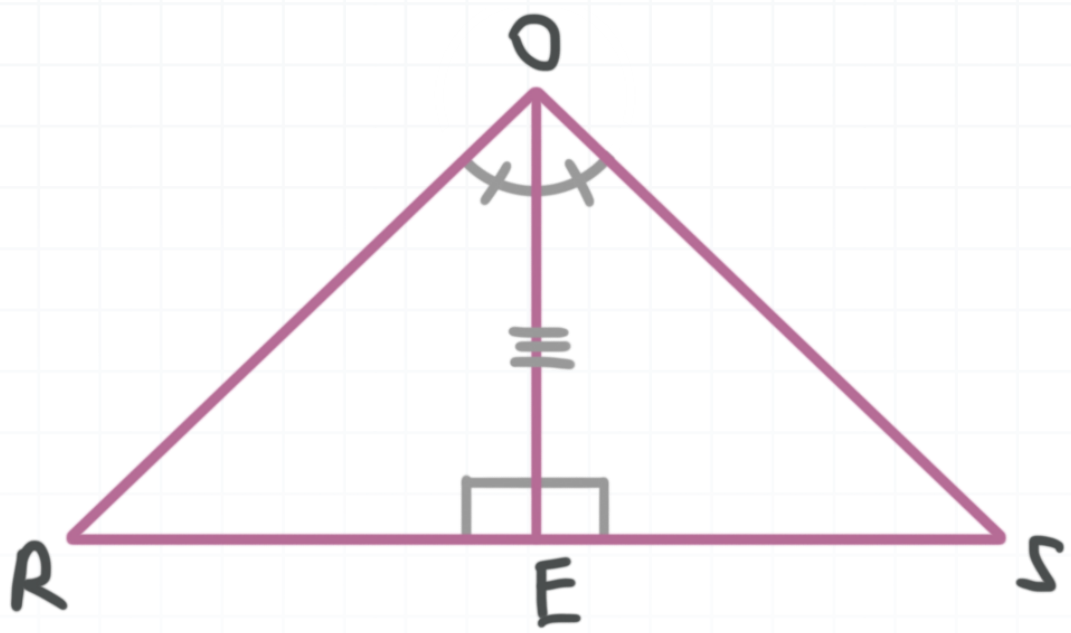
B SAS

C ASA

D None of these

Solution: C

Fill in the diagram with the given information.



Then from the figure, we can say

A: $\angle ROE \cong \angle EOS$

S: $\overline{OE} \cong \overline{OE}$ by the reflexive property

A: $\overline{OE} \perp \overline{RS}$ so $\angle OER \cong \angle SEO$ because right angles are congruent.

This makes the triangles congruent by ASA: $\overline{OE}$ is the included side of $\angle ROE$ and $\angle OER$ in $\triangle ROE$, and $\overline{OE}$ is also the included side of $\angle EOS$ and $\angle SEO$ in $\triangle SOE$.

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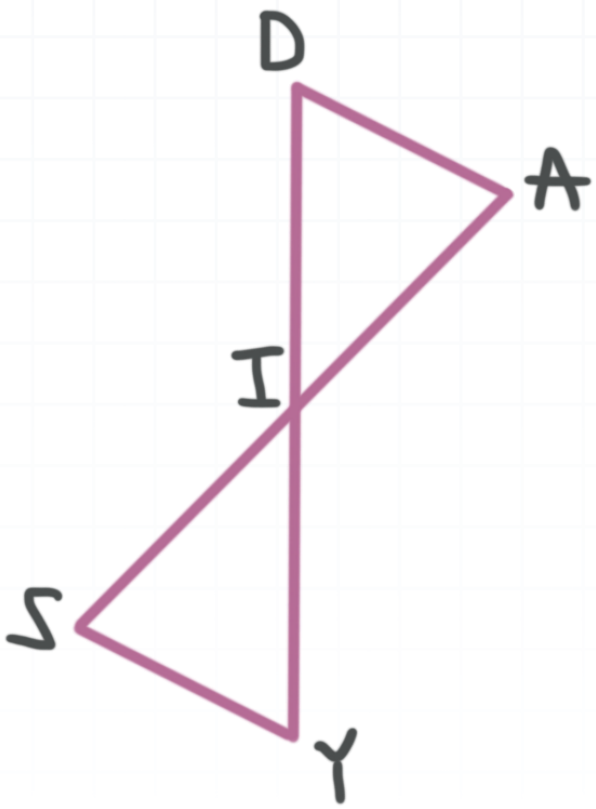
Question: Given $\triangle DAI$ and $\triangle YSI$, and $\overline{AI} \cong \overline{SI}$ and $\overline{DI} \cong \overline{YI}$, which theorem could you use to prove the triangles congruent?



Answer choices:

A SSS

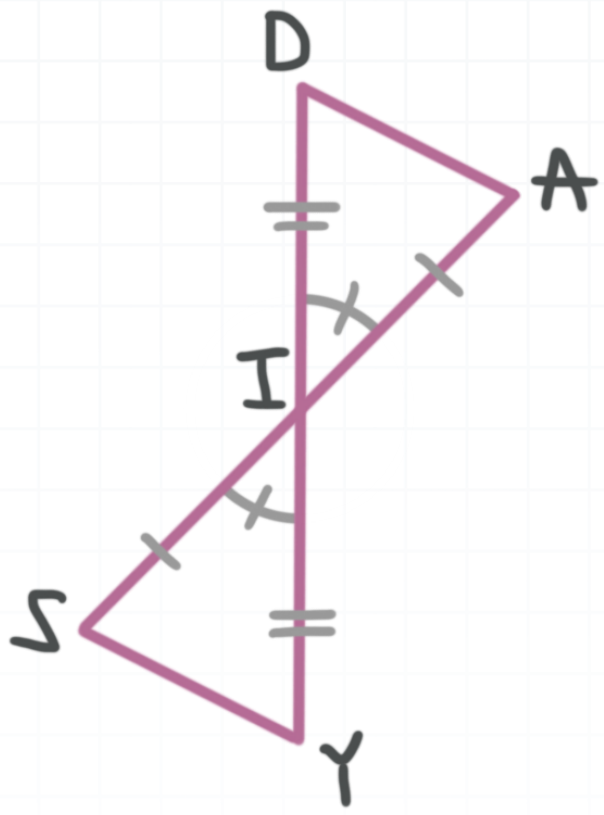
B SAS

C ASA

D None of these

Solution: B

Fill in the diagram with the given information.



Then from the figure, we can say

S: $\overline{AI} \cong \overline{SI}$

A: $\angle AID \cong \angle SIY$ because vertical angles are congruent.

S: $\overline{DI} \cong \overline{YI}$

This makes the triangles congruent by SAS: The included angle of sides $\overline{AI}$ and $\overline{DI}$ in $\triangle DAI$ is $\angle AID$, and the included angle of sides $\overline{SI}$ and $\overline{YI}$ in $\triangle YSI$ is $\angle SIY$.