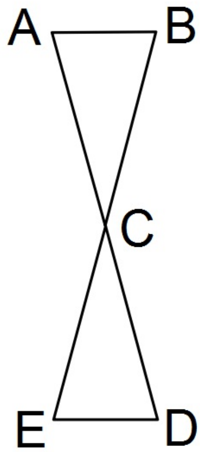
Bellwork

Given: AB | | ED
C is the midpoint of AD
AB ≅ ED

Prove: △ABC ≅ △DEC



Proving Triangle Congruence

Throughout this unit we will be focusing on several methods of proving two triangles are congruent including:

1. Side-Side-Side (SSS)
2. Side-Angle Side (SAS)
3. Hypotenuse Leg (HL)
4. Angle-Side-Angle (ASA)
   [This is a main focus of this lesson]
5. Angle-Angle-Side (AAS)
   [This is a main focus of this lesson]

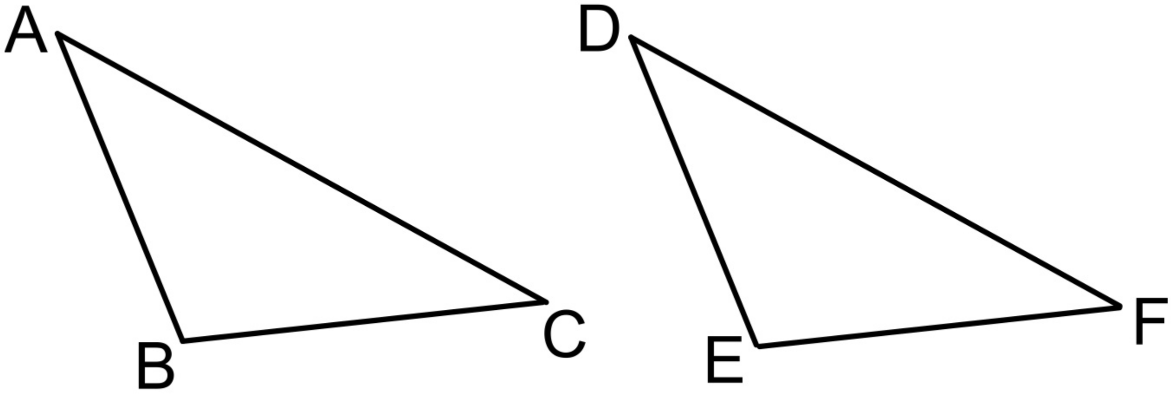
Angle-Side-Angle

Angle-Side-Angle (ASA) Congruece Postulate:

IF two angles and the included side of one triangle are congruent to two angles and the included side of a second triangle,

THEN the two triangles are congruent.

Angle-Side-Angle Visually

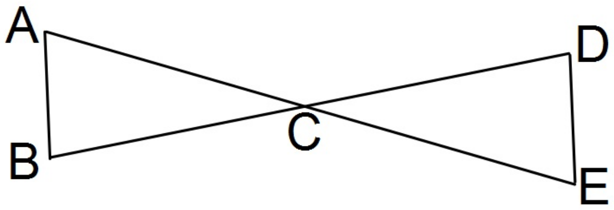


List some possible combinations that would allow for us to state that the two triangles are congruent by ASA.

Example

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

C is the midpt of $\overline{AE}$



Proof: $\triangle ABC \cong \triangle EDC$

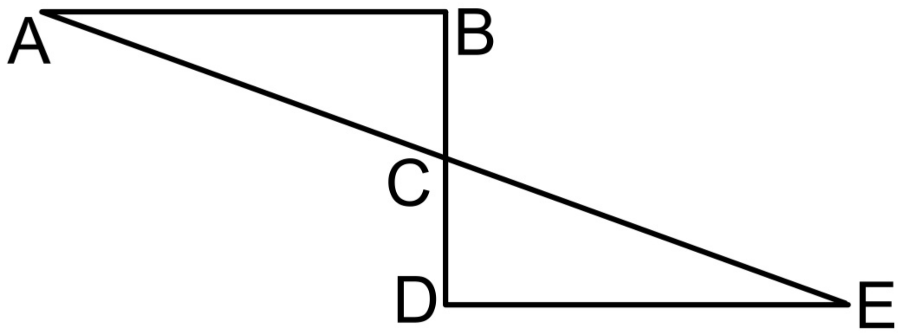
Angle-Angle-Side

Angle-Angle-Side (AAS) Congruence Postulate:

IF two angles and a non-included side of one triangle are congruent to two angles and the corresponding non-included side,

THEN, the triangles are congruent.

Angle-Angle-Side Visually



List some possible combinations that would allow for us to state that the two triangles are congruent by AAS.

Useful Information

Supplementary angles of two congruent angles are congruent.

Reasoning -

Given: $\angle A \cong \angle B$

Let: $\angle C$ be supplementary to A

$\angle D$ be supplementary to B

Then: A + C = 180

B + D = 180

So... A + C = B + D (by transitive prop)

A + C = A + D (Since B = A)

C = D (By subtraction)

Example

Given: $\angle A \cong \angle E$
$\overline{BF} \cong \overline{FD}$

Prove: $\triangle ABF \cong \triangle EDF$