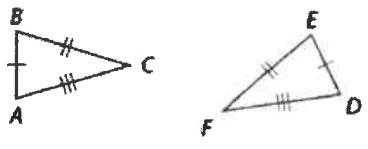
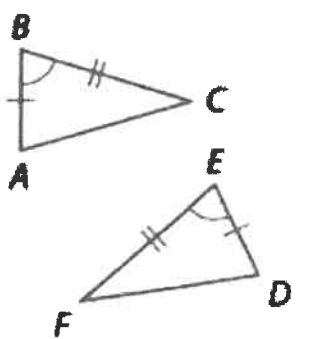
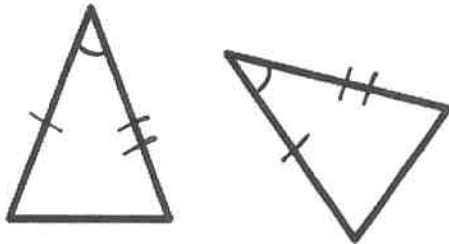


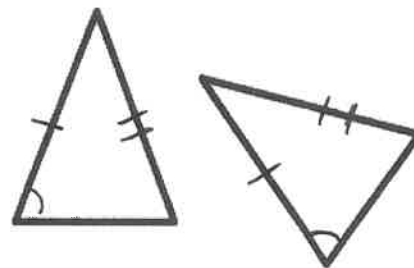
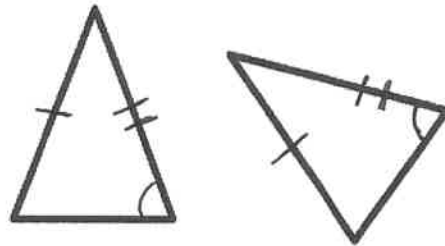
Geometry CP
4.4 Proving Triangles Congruent
(SSS and SAS)

<p>Side-Side-Side Congruence (SSS)</p>	<p>If three sides of one triangle are congruent to three sides of a second triangle, then the triangles are congruent.</p>	 <p>$\triangle ABC \cong \triangle DEF$</p>
<p>Side-Angle-Side Congruence (SAS)</p>	<p>If two sides and the <u>included angle</u> of one triangle are congruent to two sides and the <u>included angle</u> of a second triangle, then the triangles are congruent.</p>	 <p>$\triangle BCA \cong \triangle EFD$</p>

SAS:



NOT SAS:



Geometry CP
 4.4 Proving Triangles Congruent
 (SSS and SAS)

1. State the included angle of the following sides of the given triangle:

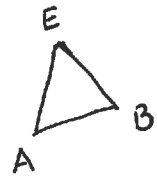
a. $\triangle AEB$

i. \overline{AE} and \overline{EB}

$\angle E$

ii. \overline{AB} and \overline{EB}

$\angle B$



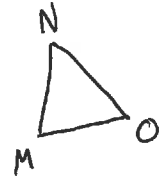
b. $\triangle MNO$

i. \overline{MN} and \overline{ON}

$\angle N$

ii. \overline{MO} and \overline{ON}

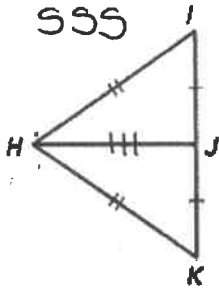
$\angle O$



2. Decide whether there is enough information given to prove if the triangles are congruent.

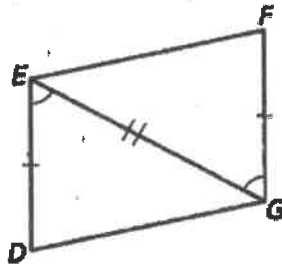
$\triangle IHJ \cong \triangle JHK$

SSS



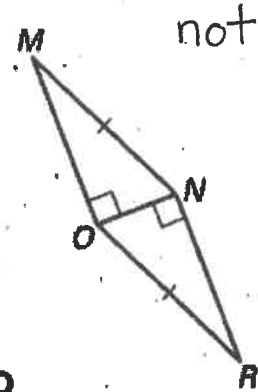
$\triangle DEG, \triangle FGE$

SAS



$\triangle MNO, \triangle RON$

not \cong



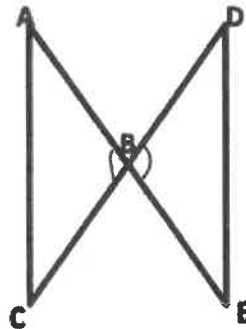
$\triangle STU, \triangle PUT$

SAS



$\triangle ABC, \triangle EBD$

not \cong

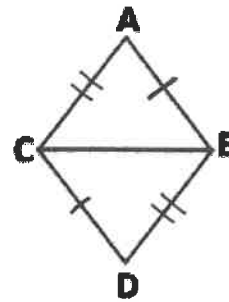


Geometry CP
 4.4 Proving Triangles Congruent
 (SSS and SAS)

3.

Given: $\overline{AB} \cong \overline{DC}$
 $\overline{AC} \cong \overline{DB}$

Prove: $\triangle ABC \cong \triangle DCB$



What congruence postulate could we use to prove the triangles congruent?

SSS

What sides must we show congruent?

$\overline{CB} \cong \overline{BC}$

the reverse of

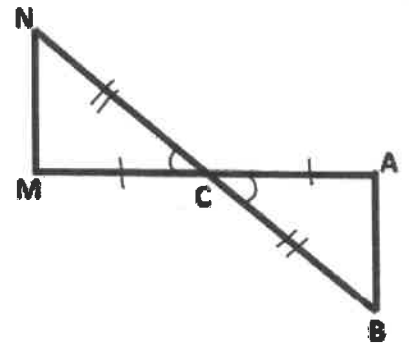
What property states that something (side, angle, etc.) is equal to itself?

Symmetric Prop of Triangle Congruence

Statements	Reasons
1) $\overline{AB} \cong \overline{DC}$ $\overline{AC} \cong \overline{DB}$	1) Given
2) $\overline{CB} \cong \overline{BC}$	2) Symmetric Prop of Triangle Congruence
3) $\triangle ABC \cong \triangle DCB$	3) SSS

Geometry CP
4.4 Proving Triangles Congruent
(SSS and SAS)

4. Given: C is the midpoint of \overline{NB}
 C is the midpoint of \overline{MA}
 Prove: $\triangle MNC \cong \triangle ABC$



What congruence postulate could we use to prove the triangles congruent?

SAS

What does the definition of midpoint tell us?

segment split into 2 congruent pieces

What sides are congruent by the definition of midpoint?

$$\overline{MC} \cong \overline{AC} \quad \overline{NC} \cong \overline{BC}$$

Can we show that all sides are congruent? If not what can we do?

$$\angle MCN \cong \angle ACB$$

Statements	Reasons
1) C is the midpoint of \overline{NB}	1) Given
2) $\overline{NC} \cong \overline{BC}$	2) Def of a midpoint
3) C is the midpoint of \overline{MA}	3) Given
4) $\overline{MC} \cong \overline{AC}$	4) Def of a midpoint
5) $\angle MCN \cong \angle ACB$	5) Vertical Angles
6) $\triangle MNC \cong \triangle ABC$	6) SAS

Geometry CP
4.4 Proving Triangles Congruent
(SSS and SAS)

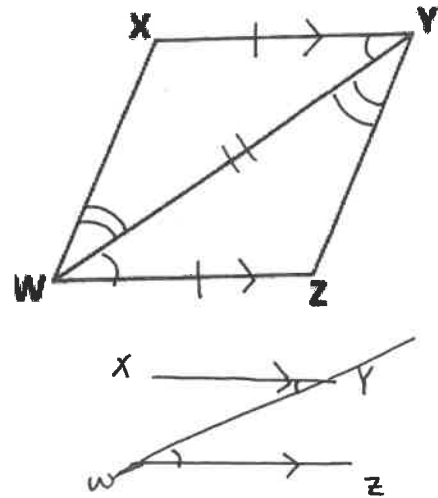
5. Given: $\overline{XY} \cong \overline{WZ}$
 $\overline{XY} \parallel \overline{WZ}$
 Prove: $\triangle XWY \cong \triangle ZYW$

What congruence postulate could you use to prove the two triangles congruent?

SSS , SAS

Since $\overline{XY} \parallel \overline{WZ}$ then \overline{WY} can be considered a

transversal



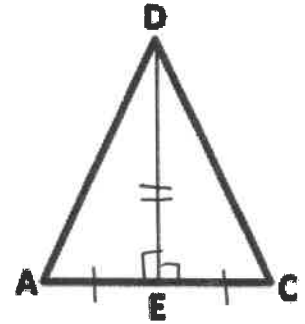
If you have answered the question above then you can determine which parts are congruent. Which parts are they and what theorems/postulates justify that they are congruent?

$\angle XYW \cong \angle ZYW$ Alt Int Angles Thm $\overline{WY} \cong \overline{YW}$
 $\angle XWY \cong \angle ZYW$

Statements	Reasons
1) $\overline{XY} \cong \overline{WZ}$ $\overline{XY} \parallel \overline{WZ}$	1) Given
2) $\angle XYW \cong \angle ZYW$ $\angle XWY \cong \angle ZYW$	2) Alternate Interior Angles Thm
3) $\overline{WY} \cong \overline{YW}$	3) Symmetric Prop of Triangle Congruence
4) $\triangle XWY \cong \triangle ZYW$	4) SAS

Geometry CP
4.4 Proving Triangles Congruent
(SSS and SAS)

6. Given: \overline{DE} is perpendicular to \overline{AC}
 \overline{DE} bisects \overline{AC}
 Prove: $\triangle DEA \cong \triangle DEC$



Statements

Reasons

1) \overline{DE} is \perp to \overline{AC}

1) Given

2) $m\angle DEC = 90^\circ$
 $m\angle DEA = 90^\circ$

2) Def of Perpendicular

3) $\angle DEC \cong \angle DEA$

3) All right angles are congruent

4) \overline{DE} bisects \overline{AC}

4) Given

5) $\overline{AE} \cong \overline{CE}$

5) Def of Bisector

6) $\overline{ED} \cong \overline{ED}$

6) Reflexive Prop of Triangle congruence

7) $\triangle DEA \cong \triangle DEC$

7) SAS

* or
transitive