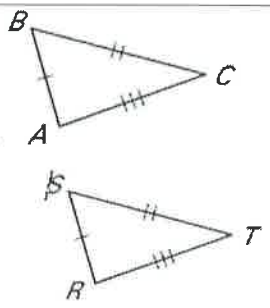
Geometry A
Section 4.3 SSS Notes

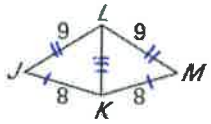
Name : Key
Date : _____ Period : _____

- I can prove triangles congruent by the SSS Congruence Postulate

Side-Side-Side Congruence Postulate (SSS)	**Example:**
If three sides of one triangle are congruent to three sides of a second triangle, then the two triangles are congruent.	If Side $\overline{AB} \cong$ $\overline{RS}$, Side $\overline{BC} \cong$ $\overline{ST}$, and Side $\overline{CA} \cong$ $\overline{TR}$, then $\triangle ABC \cong$ $\triangle RST$. by SSS 

Example 1 – Use the SSS Congruence Postulate Decide whether the congruence statement is true.

a) $\triangle JKL \cong \triangle MKL$ Yes, true by SSS

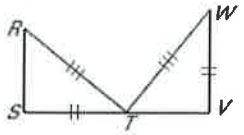


$\overline{JK} \cong \overline{MK}$

$\overline{JL} \cong \overline{ML}$

$\overline{LK} \cong \overline{LK}$ by Reflexive Property

b) $\triangle RST \cong \triangle TVW$ no, not enough info



$\overline{RT} \cong \overline{TW}$

$\overline{ST} \cong \overline{VW}$

$\overline{RS} \cong \overline{TV}$ ← no markings, can't assume $\cong$

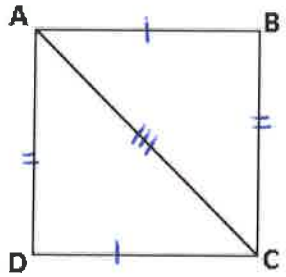
Reasons to prove sides are congruent in triangle proofs:

- Given
- Reflexive Property
- Definition of Midpoint

Example 2 – Use the SSS Congruence Postulate to write a proof.

Given: $\overline{AB} \cong \overline{CD}, \overline{DA} \cong \overline{CB}$

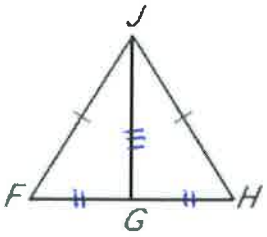
Prove: $\triangle ABC \cong \triangle CDA$



Statements	Reasons
1. $\overline{AB} \cong \overline{CD}$	1. Given
2. $\overline{DA} \cong \overline{CB}$	2. Given
3. $\overline{AC} \cong \overline{AC}$	3. Reflexive Property
4. $\triangle ABC \cong \triangle CDA$	4. SSS

Given $\overline{FJ} \cong \overline{HJ}$,
G is the midpoint of $\overline{FH}$.

Prove $\triangle FGJ \cong \triangle HGJ$



Statements	Reasons
1. $\overline{FJ} \cong \overline{HJ}$	1. Given
2. G is the midpoint of $\overline{FH}$	2. Given
3. $\overline{FG} \cong \overline{HG}$	3. Definition of Midpoint
4. $\overline{JG} \cong \overline{JG}$	4. Reflexive Property
5. $\triangle FGJ \cong \triangle HGJ$	5. SSS

Example 3 – Congruent Triangles in the Coordinate Plane

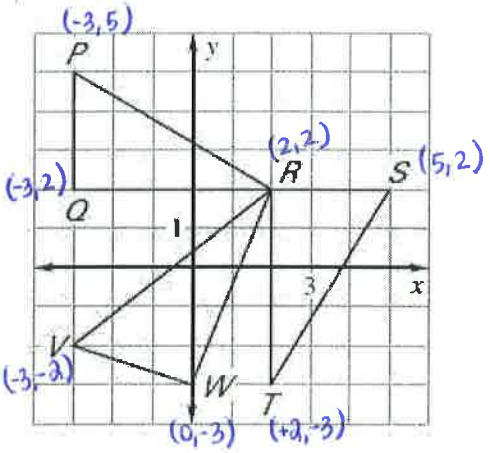
a) Determine whether ΔPQR is congruent to the other triangles shown at the right.

Use distance formula to find the lengths of the sides:

PQ = 3 VW = 3.2 RS = 3

QR = 5 WR = 5.4 RT = 5

PR = 5.8 VR = 6.4 ST = 5.8



$PR = \sqrt{(2+3)^2+(2-5)^2} = \sqrt{(5)^2+(-3)^2} = \sqrt{25+9} = \sqrt{34} \approx 5.8$

$VW = \sqrt{(0+3)^2+(-3+2)^2} = \sqrt{(3)^2+(-1)^2} = \sqrt{9+1} = \sqrt{10} \approx 3.2$

$WR = \sqrt{(0-2)^2+(-3-2)^2} = \sqrt{(-2)^2+(-5)^2} = \sqrt{4+25} = \sqrt{29} \approx 5.4$

$VR = \sqrt{(-3-2)^2+(-2-2)^2} = \sqrt{(-5)^2+(-4)^2} = \sqrt{25+16} = \sqrt{41} \approx 6.4$

$ST = \sqrt{(2-5)^2+(-3-2)^2} = \sqrt{(-3)^2+(-5)^2} = \sqrt{9+25} = \sqrt{34} \approx 5.8$

CONCLUSIONS:

ΔPQR ≅ ΔSRT since all three sides have the same length.