



Created by Mrs. England

### Warmup 2/(# of valence electrons in Calcium • # of protons in Oxygen + Atomic # of Hydrogen)

**Which congruence shortcut, if any, can be used to prove the triangles congruent?**

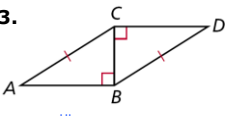
1. 

SAS or ASA or AAS

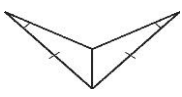
2. 

SSS

EACH GROUP NEEDS A GIANT WHITEBOARD AND GRAPHING SHEET!!!!

3. 

HL

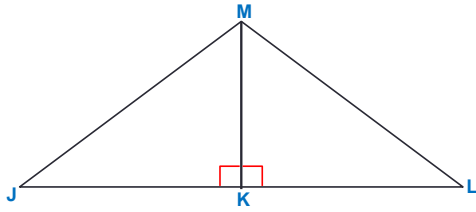
4. 

none

## Quiz on Thursday!

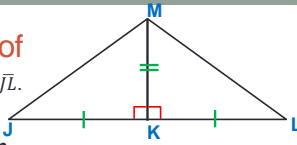
➤ Covers all Triangle Congruence Shortcuts as well as proofs

Given: K is the midpoint of  $\overline{JL}$ .  
 Prove:  $\triangle JKM \cong \triangle LKM$



### Two-Column Proof

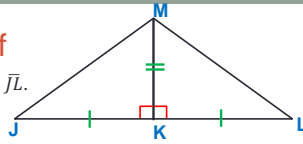
Given: K is the midpoint of  $\overline{JL}$ .  
 Prove:  $\triangle JKM \cong \triangle LKM$



Statement	Reason
1) $\overline{MK} \cong \overline{MK}$	1) Reflexive Property
2) $\angle JKM \cong \angle LKM$	2) Given
3) K is the midpoint of $\overline{JL}$	3) Given
4) $\overline{JK} \cong \overline{LK}$	4) Definition of midpoint
5) $\triangle JKM \cong \triangle LKM$	5) SAS ◻

### Flow-Chart Proof

Given: K is the midpoint of  $\overline{JL}$ .  
 Prove:  $\triangle JKM \cong \triangle LKM$



Given: K is the midpoint of  $\overline{JL}$

Def. of midpoint:  
 $\overline{JK} \cong \overline{LK}$

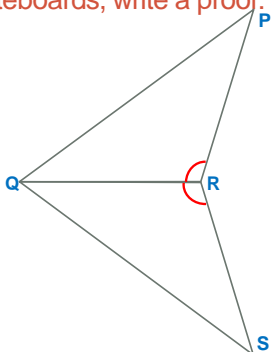
Reflexive Prop.  
 $\overline{KM} \cong \overline{KM}$

## SAS

$\triangle JKM \cong \triangle LKM$

### On your giant whiteboards, write a proof:

Given:  $\overline{QR}$  bisects  $\angle PQS$ .  
 Prove:  $\triangle PQR \cong \triangle SQR$



**On your giant whiteboards, write a proof:**

Prove:  $\triangle WXY \cong \triangle YZW$

**On your whiteboards, write a proof:**

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

Prove:  $\triangle ABC \cong \triangle EDC$

**Write a flowchart proof!**

**Given:**  $\overline{JL}$  bisects  $\angle KLM$

**Prove:**  $\triangle JKL \cong \triangle JML$

Flowchart proof for the previous problem:

- Given:  $\overline{JL}$  bisects  $\angle KLM$
- Given:  $\angle K \cong \angle M$
- Reflex. Prop. of  $\cong$ :  $\overline{JL} \cong \overline{JL}$
- Def. of  $\angle$  bisector:  $\angle KLJ \cong \angle MLJ$
- AAS:  $\triangle JKL \cong \triangle JML$

**Write a Two-Column Proof**

**Given:** C is the midpoint of  $\overline{BD}$  and  $\overline{AE}$ .

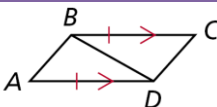
**Prove:**  $\triangle ABC \cong \triangle EDC$

Statements	Reasons
1. C is mdpt. of $\overline{BD}$ and $\overline{AE}$	1. Given
2. $\overline{AC} \cong \overline{EC}$ ; $\overline{BC} \cong \overline{DC}$	2. Def. of mdpt.
3. $\angle ACB \cong \angle ECD$	3. Vert. $\angle$ s Thm.
4. $\triangle ABC \cong \triangle EDC$	4. SAS
_____	_____
_____	_____

### Write a Two-Column Proof!

**Given:**  $\overline{BC} \parallel \overline{AD}$ ,  $\overline{BC} \cong \overline{AD}$

**Prove:**  $\triangle ABD \cong \triangle CDB$

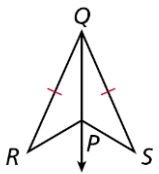


Statements	Reasons
1. $\overline{BC} \cong \overline{AD}$	1. Given
2. $\overline{BC} \parallel \overline{AD}$	2. Given
3. $\angle CBD \cong \angle ABD$	3. Alt. Int. $\angle$ s Thm.
4. $\overline{BD} \cong \overline{BD}$	4. Reflex. Prop. of $\cong$
5. $\triangle ABD \cong \triangle CDB$	5. SAS

### Write a Two-Column Proof

**Given:**  $\overline{QP}$  bisects  $\angle RQS$ .  $\overline{QR} \cong \overline{QS}$

**Prove:**  $\triangle RQP \cong \triangle SQP$



Statements	Reasons
1. $\overline{QR} \cong \overline{QS}$	1. Given
2. $\overline{QP}$ bisects $\angle RQS$	2. Given
3. $\angle RQP \cong \angle SQP$	3. Def. of angle bisector
4. $\overline{QP} \cong \overline{QP}$	4. Reflex. Prop. of $\cong$
5. $\triangle RQP \cong \triangle SQP$	5. SAS

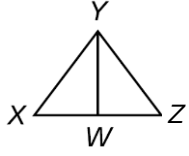
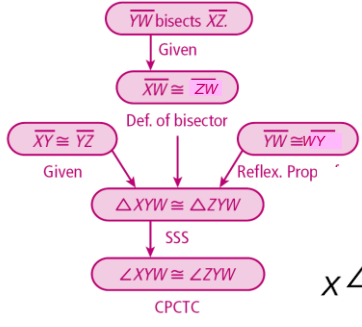
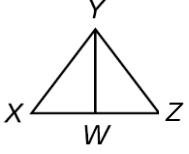
**CPCTC** is an abbreviation for the phrase "Corresponding Parts of Congruent Triangles are Congruent." It can be used as a justification in a proof after you have proven two triangles congruent.

**Remember!** SSS, SAS, ASA, AAS, and HL use corresponding parts to prove triangles congruent. CPCTC uses congruent triangles to prove corresponding parts congruent.

### Write a Flowchart Proof!

**Given:**  $\overline{YW}$  bisects  $\overline{XZ}$ ,  $\overline{XY} \cong \overline{ZY}$ .

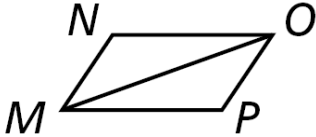
**Prove:**  $\angle XYW \cong \angle ZYW$

## Write a Two Column Proof!

**Given:**  $\overline{NO} \parallel \overline{MP}$ ,  $\angle N \cong \angle P$

**Prove:**  $\angle NMO \cong \angle POM$

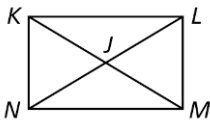


Statements	Reasons
1. $\angle N \cong \angle P$	1. Given
2. $\overline{NO} \parallel \overline{MP}$	2. Given
3. $\angle NOM \cong \angle PMO$	3. Alt. Int. $\angle$ s Thm.
4. $\overline{MO} \cong \overline{MO}$	4. Reflex. Prop. of $\cong$
5. $\triangle MNO \cong \triangle OPM$	5. AAS
6. $\angle NMO \cong \angle POM$	6. CPCTC

## Write a Two Column Proof!

**Given:**  $J$  is the midpoint of  $\overline{KM}$  and  $\overline{NL}$ .

**Prove:**  $\angle LKJ \cong \angle NMJ$

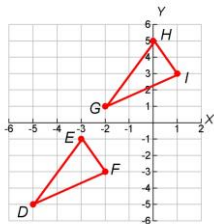


Statements	Reasons
1. $J$ is the midpoint of $\overline{KM}$ and $\overline{NL}$ .	1. Given
2. $\overline{KJ} \cong \overline{MJ}$ , $\overline{NJ} \cong \overline{LJ}$	2. Def. of mdpt.
3. $\angle KJL \cong \angle MJN$	3. Vert. $\angle$ s Thm.
4. $\triangle KJL \cong \triangle MJN$	4. SAS
5. $\angle LKJ \cong \angle NMJ$	5. CPCTC

## Using CPCTC In the Coordinate Plane

**Given:**  $D(-5, -5)$ ,  $E(-3, -1)$ ,  $F(-2, -3)$ ,  
 $G(-2, 1)$ ,  $H(0, 5)$ , and  $I(1, 3)$

**Prove:**  $\angle DEF \cong \angle GHI$



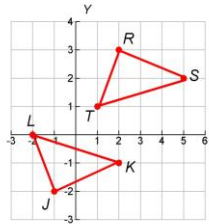
Use the Distance Formula to find the lengths of the sides of each triangle.

Determine that  $\triangle DEF \cong \triangle GHI$  by SSS.  $\angle DEF \cong \angle GHI$  by CPCTC.

### Using CPCTC In the Coordinate Plane

Given:  $J(-1, -2)$ ,  $K(2, -1)$ ,  $L(-2, 0)$ ,  $R(2, 3)$ ,  $S(5, 2)$ ,  $T(1, 1)$

Prove:  $\angle JKL \cong \angle RST$



Use the Distance Formula to find the lengths of the sides of each triangle.

Determine that  $\triangle JKL \cong \triangle RST$  by SSS.  $\angle JKL \cong \angle RST$  by CPCTC.

Worksheet Review

