

www.mathwarehouse.com/geometry/congruent\_triangles/

Use the site above to help!!

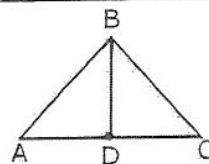
Name \_\_\_\_\_

### Ch4 Proof Project

[http://www.mathwarehouse.com/geometry/congruent\\_triangles/side-side-side-postulate.php](http://www.mathwarehouse.com/geometry/congruent_triangles/side-side-side-postulate.php)

#### Warm Up

1) What property states that  $BD \cong BD$ ?

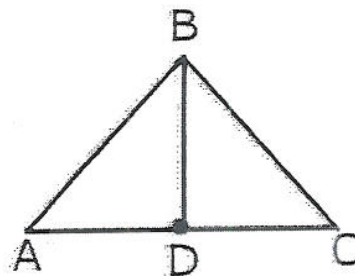


#### Model Problems Side Side Side Proofs

##### Proof A

Given:  $\overline{AB} \cong \overline{BC}$ ,  $\overline{BD}$  is a bisector of side  $\overline{AC}$

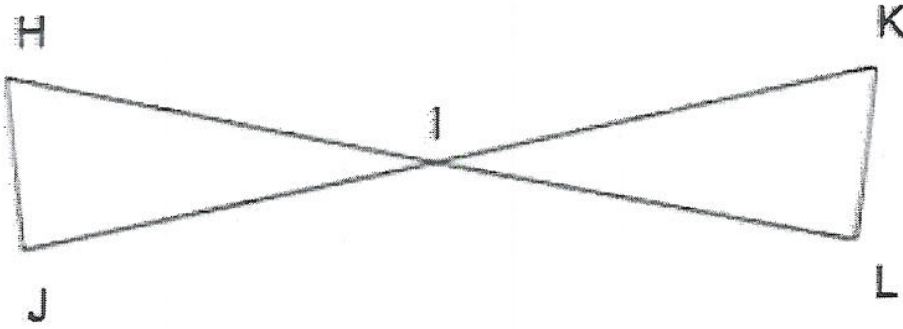
Prove:  $\triangle ABD \cong \triangle CBD$



Statement	Reasons

**Given:** HL bisects JK,  $HJ \cong KL$

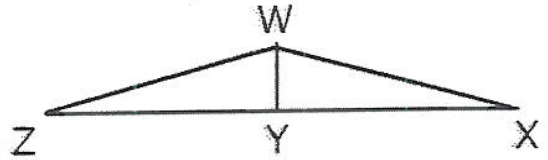
What other information do you need to be able to prove that these two triangles are congruent?



**Proof B**

**Given:**  $\overline{WZ} \cong \overline{WX}$ ,  $\overline{WY}$  bisects  $\overline{ZX}$

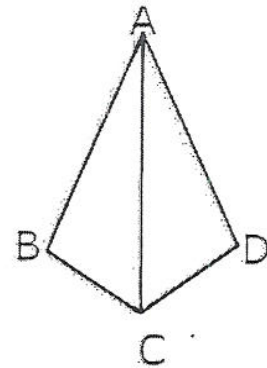
**Prove:**  $\triangle WYZ \cong \triangle WYX$



Statement	Reasons

**Proof C**

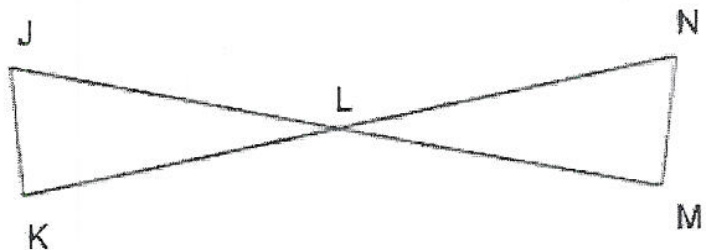
**Given:**  $\overline{BA} \cong \overline{AD}$ ,  $\overline{BC} \cong \overline{CD}$   
**Prove:**  $\triangle ABC \cong \triangle ADC$



Statement	Reason

**Proof D**

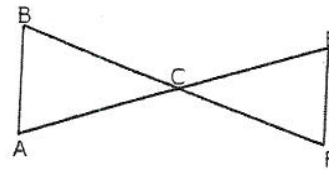
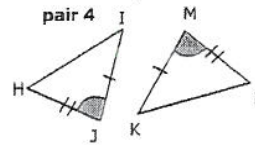
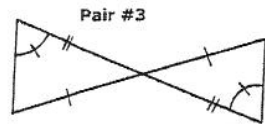
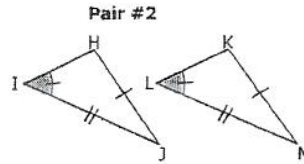
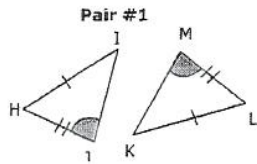
**Given:**  $\overline{JM}$  bisects  $\overline{KN}$ ,  $\overline{KN}$  bisects  $\overline{JM}$ ,  $\overline{JK} \cong \overline{NM}$   
**Prove:**  $\triangle JLK \cong \triangle MLN$



Statement	Reason

### Identify SAS

1. Which pair of triangles below illustrates the SAS postulate?



### Model Practice Proof

Given 1) C is the midpoint of  $\overline{BF}$

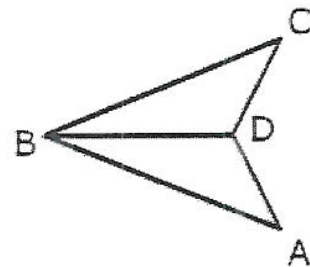
2)  $\overline{AC} \cong \overline{CE}$

Statement	Reason
1) $\overline{AC} \cong \overline{CE}$	
2) $\angle ACB = \angle ECF$	
3) $\overline{BC} \cong \overline{CF}$	
4) $\triangle ABC \cong \triangle EFC$	

Proof #1) Given: 1)  $\overline{BD}$  bisects  $\angle CDA$  2)  $\overline{CD} \cong \overline{DA}$   
 Prove:  $\triangle BCD \cong \triangle BAD$

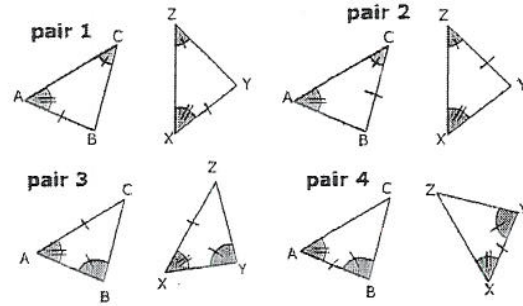
Statement

Reason

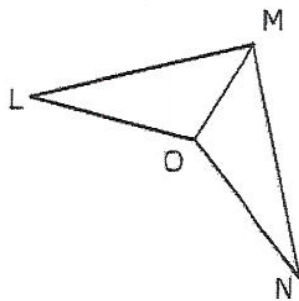


Identify Angle Side Angle Relationships

1) Which pair of triangles on the right illustrates a angle side angle relationship?



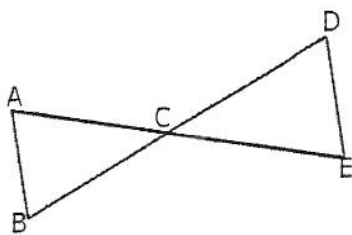
Proof #3)



Given  
 $\overline{OM}$  bisects  $\angle LMN$   
 $\angle LOM \cong \angle NOM$

Prove:  $\triangle LMO \cong \triangle NMO$

Proof #4)

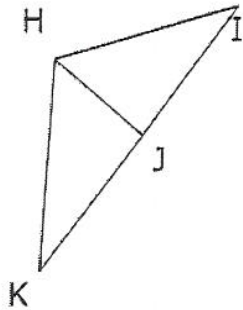


Given  
 $\angle BAC \cong \angle DEC$   
 $\overline{BD}$  bisects  $\overline{AE}$

Prove:  $\triangle ACB \cong \triangle ECD$

Proof #5) **Given**  $\overline{HJ}$  is a perpendicular bisector of  $\overline{KI}$

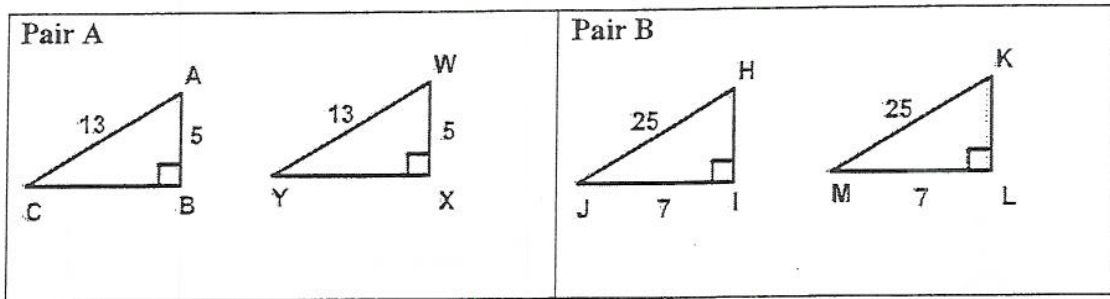
**Prove:**  $\triangle HJK \cong \triangle HJI$



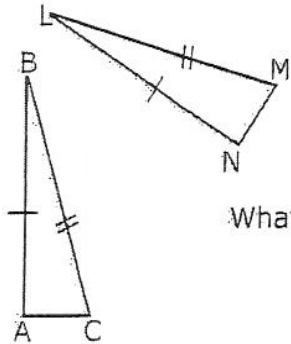
**Activity** Below is the proof that two triangles are congruent by Side Angle Side. Draw two triangles,  $\triangle BCA$  and  $\triangle XCY$ , whose diagram is consistent with the proof below.

Statement	Reason
1) $c$ is midpoint of $\overline{BX}$	1) Given
2) $c$ is midpoint of $\overline{AY}$	2) Given
3) $\overline{BC} = \overline{XC}$	3) definition of midpoint
4) $\overline{CA} = \overline{CY}$	4) definition of midpoint
5) $\angle BCA \cong \angle XCY$	5) Vertical angles are congruent
<b><math>\triangle BCA \cong \triangle XCY</math></b>	<b>by SAS</b>

Look at the pairs of triangles below. Are they congruent?

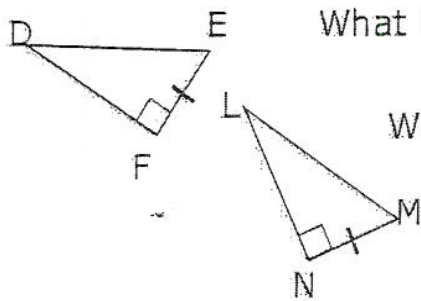


What additional information would you need to prove the triangles are congruent using the Hypotenuse-Leg Postulate?



What is already known?

What is needed for Hypotenuse-leg?



What is already known?

What is needed for Hypotenuse-leg?

Proof A)

Given:  $\overline{AD} \perp \overline{BC}$ ,  $\overline{BA} \cong \overline{AC}$

Prove:  $\triangle ABD \cong \triangle ACD$

