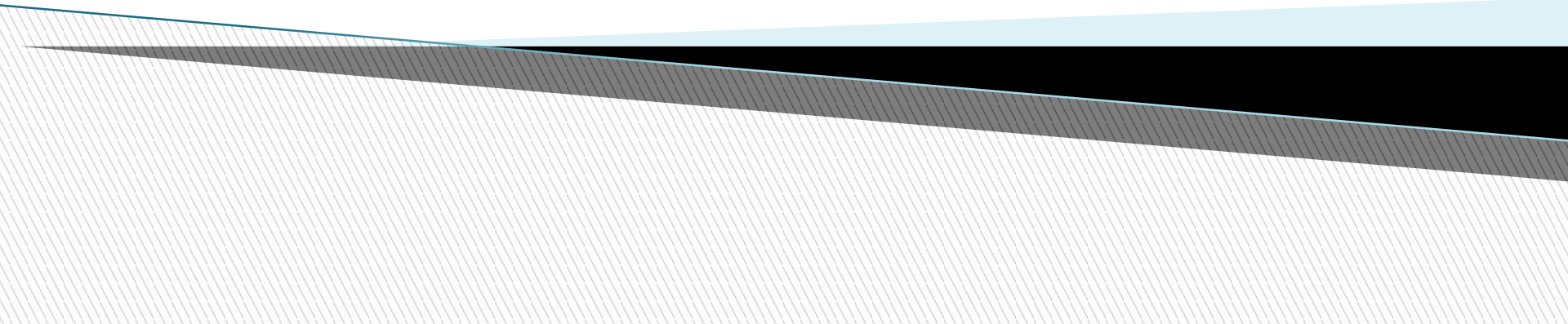
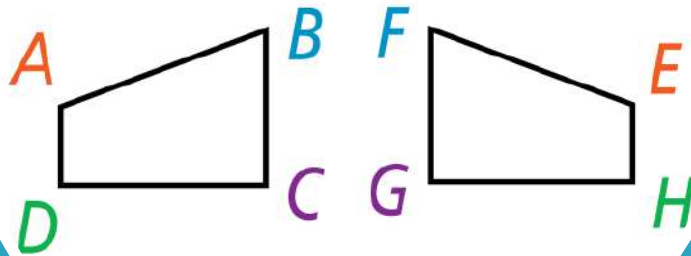


# 4.1 Congruent Figures



List all congruent corresponding parts if  $ABCD \cong EFGH$



Corresponding  
\_\_\_\_\_ are  $\cong$

Iff

\_\_\_\_\_  
are  $\cong$

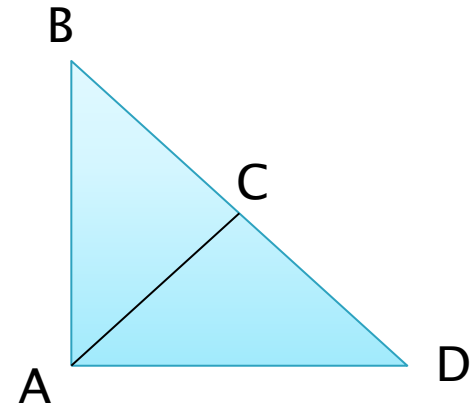
Corresponding  
\_\_\_\_\_ are  $\cong$

# Example 1 : Finding Congruent Parts

If  $\triangle BCA \cong \triangle DCA$ , name the congruent corresponding parts?

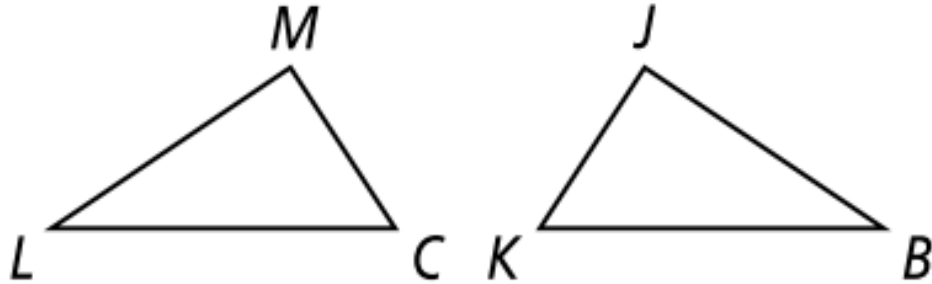
Sides:

Angles:



TIP: If 2  $\angle$ s share a vertex, use 3 letters to name them!

## YOU TRY!



$\triangle LMC \cong \triangle BJK$ . Complete the congruence statements.

1)  $LC \cong ?$

2)  $KJ \cong ?$

3)  $\angle L \cong ?$

4)  $\angle M \cong ?$

5)  $\triangle CML \cong ?$

6)  $\triangle KBJ \cong ?$

If  $ML = 10$ ,  $KB = 9$ ,  $m\angle L = 44^\circ$ , and  $m\angle J = 50^\circ$ , find the following values:

7)  $CL = ?$

8)  $JB = ?$

9)  $m\angle M = ?$

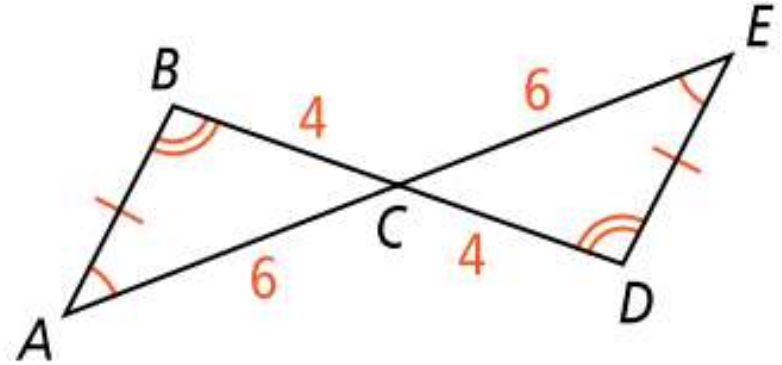
10)  $m\angle C = ?$

# Finding Congruent Triangles:

Are the triangles congruent? Justify your answer.

$$\overline{AB} \cong \overline{ED}$$

$$\angle A \cong \angle E, \angle B \cong \angle D \quad \text{Given}$$



Yes  $\triangle$ \_\_\_\_\_  $\cong$   $\triangle$ \_\_\_\_\_

## Plan

How do you determine whether two triangles are congruent?

Compare each pair of corresponding parts. If all six pairs are congruent, then the triangles are congruent.

## Example 2:

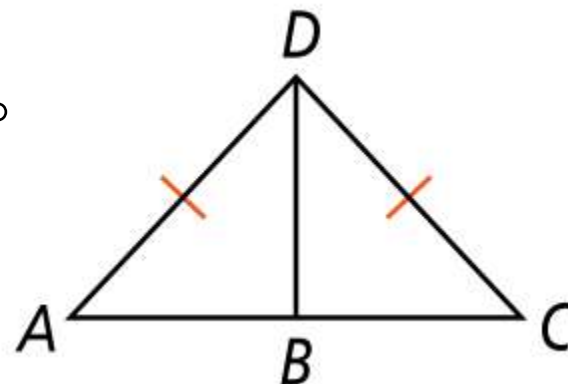
$$\triangle ABD \cong \triangle CBD$$

$$\text{If } m\angle A = 3x + 10^\circ \text{ \& } m\angle C = 4x^\circ$$

Find each angle measure:

$$m\angle A = \underline{\hspace{2cm}}$$

$$m\angle C = \underline{\hspace{2cm}}$$



take note

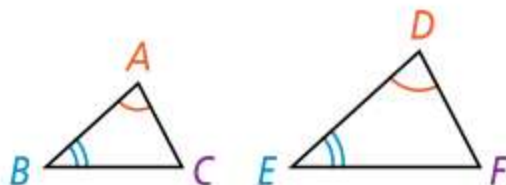
## Theorem 4-1 Third Angles Theorem

### Theorem

If two angles of one triangle are congruent to two angles of another triangle, then the third angles are congruent.

If ...

$$\angle A \cong \angle D \text{ and } \angle B \cong \angle E$$

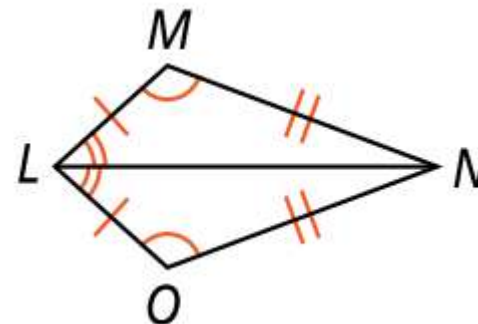


Then ...

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### Example:

Determine the missing information needed to prove the triangles congruent. Then write a triangle congruence statement. Justify your answer.



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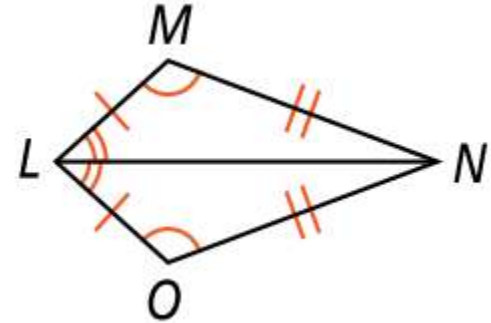
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# Proving Triangles Congruent

**Given:**  $LM \cong LO$ ,  $MN \cong ON$ ,  
 $\angle M \cong \angle O$ ,  $\angle MLN \cong \angle OLN$

**Prove:**  $\triangle LMN \cong \triangle LON$



Statements
1) $LM \cong LO$ , $MN \cong ON$ $\angle M \cong \angle O$ , $\angle MLN \cong \angle OLN$
2) $LN \cong LN$
3)
4) $\triangle LMN \cong \triangle LON$

Reasons
1) Given
2)
3) Third Angles Theorem
4)