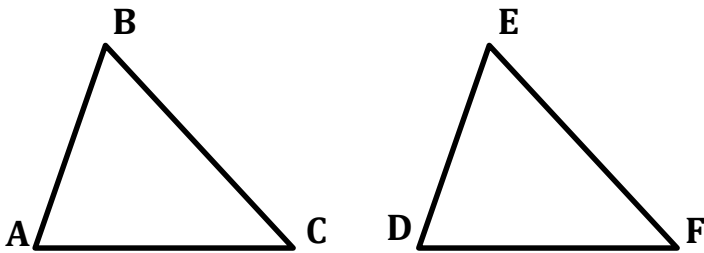


# NOTES 5.2 & 5.4 – CONGRUENT TRIANGLES

Objective: \_\_\_\_\_

## CONGRUENT TRIANGLES:

**EXAMPLE 1:** If  $\triangle ABC \cong \triangle DEF$ , then...



$\angle A \cong \angle$ _____	$\overline{AB} \cong$ _____
$\angle B \cong \angle$ _____	$\overline{BC} \cong$ _____
$\angle C \cong \angle$ _____	$\overline{AC} \cong$ _____

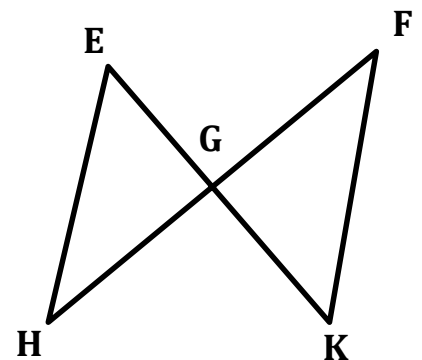
**EXAMPLE 2:** If  $\triangle XYZ \cong \triangle WMN$ , determine whether the following statements are TRUE or FALSE.

STATEMENT	TRUE	FALSE
$\triangle YZX \cong \triangle WMN$		
$\triangle ZXY \cong \triangle NWM$		
$\triangle YZX \cong \triangle NMW$		
$\triangle ZYX \cong \triangle NMW$		

**EXAMPLE 3:** Use the given figure and information to name three pairs of congruent angles and three pairs of congruent sides.

$$\triangle EHG \cong \triangle KFG$$

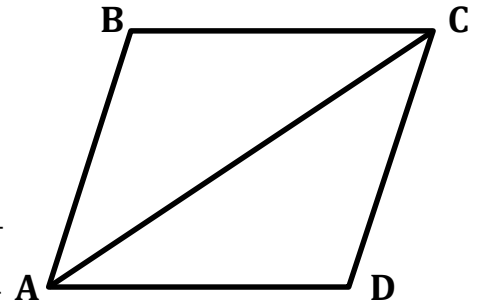
$\angle$  \_\_\_\_\_  $\cong$   $\angle$  \_\_\_\_\_      \_\_\_\_\_  $\cong$  \_\_\_\_\_  
 $\angle$  \_\_\_\_\_  $\cong$   $\angle$  \_\_\_\_\_      \_\_\_\_\_  $\cong$  \_\_\_\_\_  
 $\angle$  \_\_\_\_\_  $\cong$   $\angle$  \_\_\_\_\_      \_\_\_\_\_  $\cong$  \_\_\_\_\_



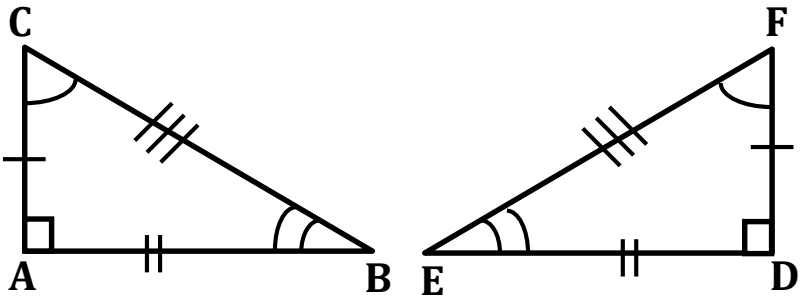
**EXAMPLE 4:** Use the given figure and information to name three pairs of congruent angles and three pairs of congruent sides.

$$\triangle ABC \cong \triangle CDA$$

$\angle$  \_\_\_\_\_  $\cong$   $\angle$  \_\_\_\_\_      \_\_\_\_\_  $\cong$  \_\_\_\_\_  
 $\angle$  \_\_\_\_\_  $\cong$   $\angle$  \_\_\_\_\_      \_\_\_\_\_  $\cong$  \_\_\_\_\_  
 $\angle$  \_\_\_\_\_  $\cong$   $\angle$  \_\_\_\_\_      \_\_\_\_\_  $\cong$  \_\_\_\_\_



**EXAMPLE 5:** Using the diagram, complete the congruence statement.

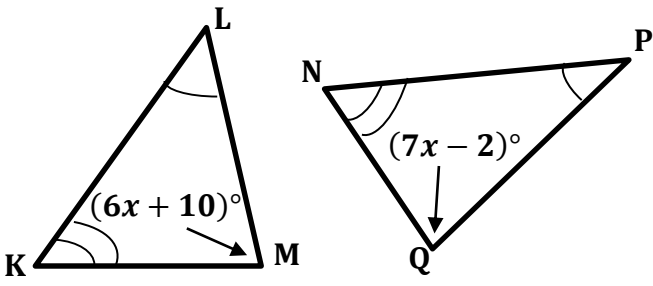


$\triangle ABC \cong \triangle$  \_\_\_\_\_

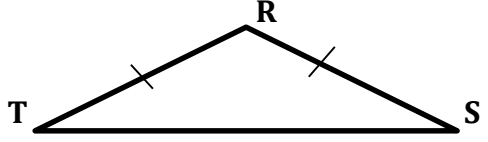
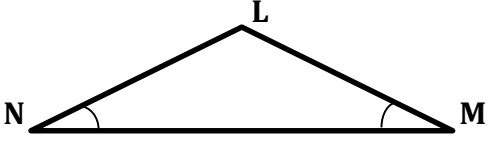
**EXAMPLE 6:** If  $\triangle DOG \cong \triangle CAT$ ,  $DO = 10$ ,  $OG = 12$ ,  $DG = 16$ , and  $AT = 2x + 6$ , find the value of 'x'.

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

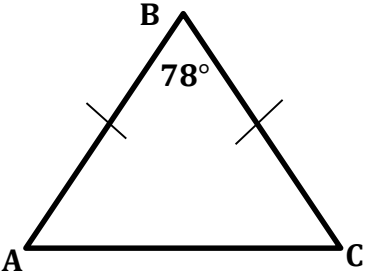
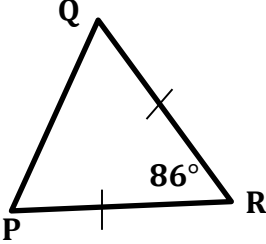
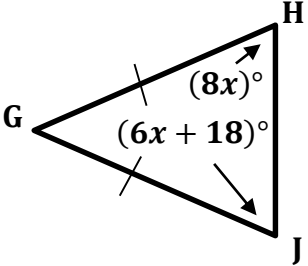
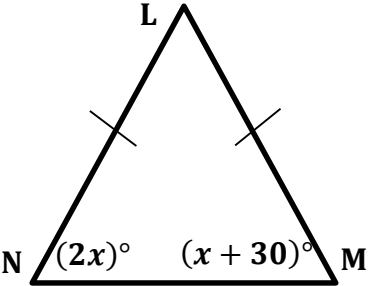
**EXAMPLE 7:** Find  $m\angle M$  and  $m\angle Q$ .

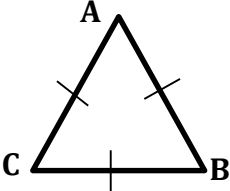
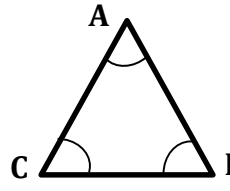


# ISOSCELES & EQUILATERAL TRIANGLES

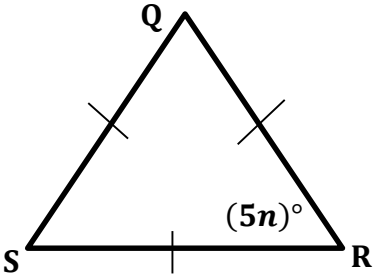
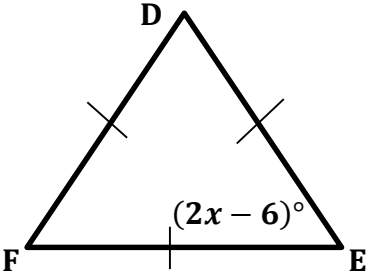
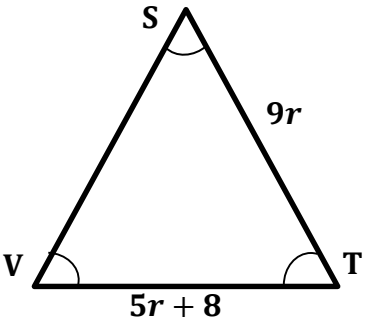
THEOREM	DIAGRAM
<p><b>ISOSCELES TRIANGLE THEOREM</b></p> <p>If two sides of a triangle are congruent, then the angles opposite the sides are congruent.</p>	 <p>If <math>\overline{RT} \cong \overline{RS}</math>, then <math>\angle T \cong \angle S</math>.</p>
<p><b>CONVERSE OF ISOSCELES TRIANGLE THEOREM</b></p> <p>If two angles of a triangle are congruent, then the sides opposite those angles are congruent.</p>	 <p>If <math>\angle N \cong \angle M</math>, then <math>\overline{LN} \cong \overline{LM}</math>.</p>

**EXAMPLES:**

<p>1. <math>m\angle C =</math> _____</p> 	<p>2. <math>m\angle Q =</math> _____</p> 
<p>3. <math>m\angle H =</math> _____</p> 	<p>4. <math>m\angle M =</math> _____</p> 

COROLLARY	DIAGRAM
<p><b>EQUILATERAL TRIANGLE COROLLARY</b></p> <p>If a triangle is equilateral, then it is equiangular.</p>	 <p>If <math>\overline{AB} \cong \overline{BC} \cong \overline{AC}</math>, then <math>\angle A \cong \angle B \cong \angle C</math>.</p>
<p><b>EQUIANGULAR TRIANGLE COROLLARY</b></p> <p>If a triangle is equiangular, then it is equilateral.</p>	 <p>If <math>\angle A \cong \angle B \cong \angle C</math>, then <math>\overline{AB} \cong \overline{BC} \cong \overline{AC}</math>.</p>

**EXAMPLES:**

<p>5. <math>n =</math> _____</p> 	<p>6. <math>x =</math> _____</p> 
<p>7. <math>VT =</math> _____</p> 	<p>8. <math>MN =</math> _____</p> 