Geometry Honors   Mathematician: _____

Unit 6: Congruent Triangles   Period:_____

6.3 Proving Congruency (Third Angle Theorem)

LEVEL: EMERGING
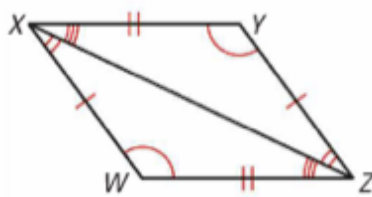
Directions: In the diagram, $\triangle XYZ \cong \triangle MNL$. Complete the following statements.

1) $m\angle Y =$ _____   2) $m\angle M =$ _____

3) $YX =$ _____   4) $\overline{YZ} \cong$ _____

5) $\triangle LNM \cong$ _____   6) $\triangle YXZ \cong$ _____

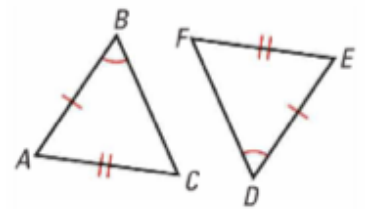Directions: Write a congruence statement for any figures that can be proved congruent.
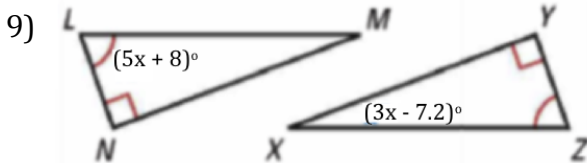
7)

Congruence
Statement:

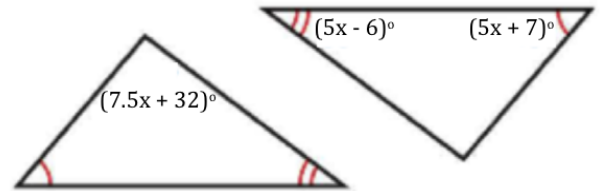_____

Explain:

8)

Congruence
Statement:

_____

Explain:

LEVEL: PROFICIENT
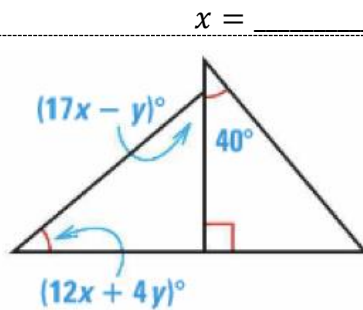
Directions: Use the diagrams to find the value of x or y.

9)

$(5x + 8)°$

$(3x - 7.2)°$
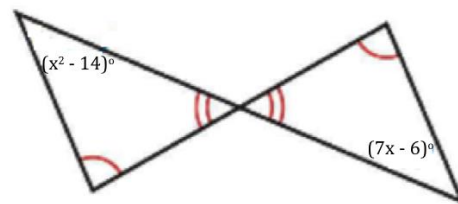
$x =$ _____

10)

$(5x - 6)°$ $(5x + 7)°$

$(7.5x + 32)°$

$x =$ _____

11)

$(17x - y)°$

$40°$

$(12x + 4y)°$

$x =$ _____ $y =$ _____

12)

$(x^2 - 14)°$

$(7x - 6)°$

$x =$ _____

13) Assume $\Delta ABC \cong \Delta XYZ$. ΔABC has coordinates $A(4,10), B(0,0),$ and $C(8,0)$. ΔXYZ has coordinates $X(-6,-1), Y(-6,-9),$ and $Z(j,k)$. What must be the values of j and k?

$j =$ _____ $k =$ _____
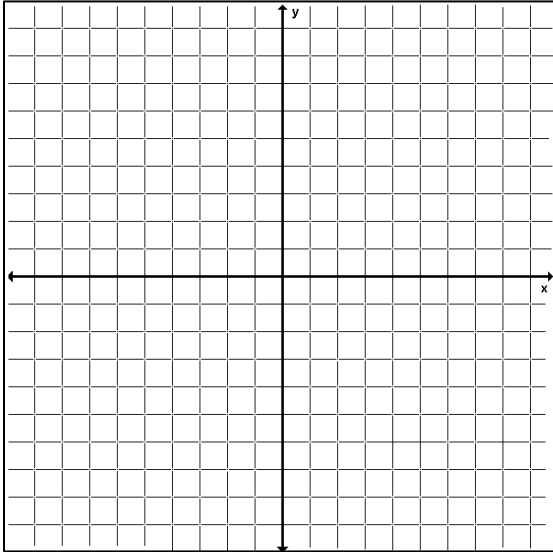
14) ΔABC has coordinates $A(3,9), B(10,7),$ and $C(6,4)$. ΔXYZ has coordinates $A(-8,-6), B(-2,-2),$ and $C(-5,-7)$.
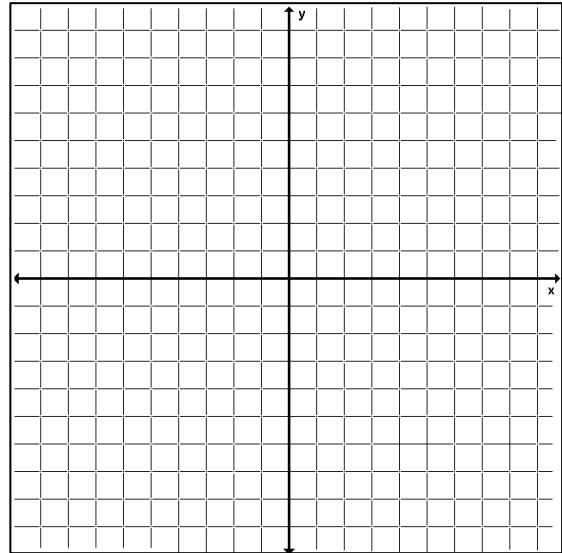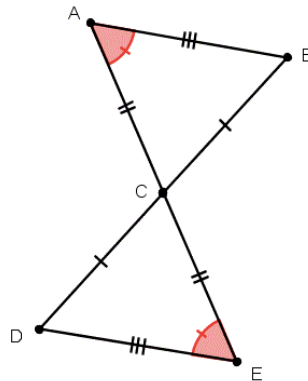
Are the triangles congruent?

(A) YES
(B) NO
(C) Unknown based on the information

15) Complete the two-column proof.

Given: $\angle A \cong \angle E$, $\overline{AB} \cong \overline{ED}$, $\overline{DC} \cong \angle BC$, $\overline{AC} \cong \overline{EC}$

Prove: $\Delta ABC \cong \Delta ECD$

Statements	Reason
(1)	
(2)	
(3)	
(4)	
(5)	
(6)	