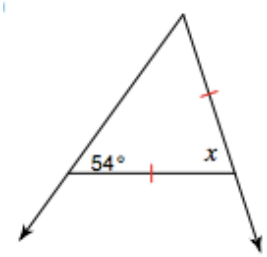
Geometry Honors
Unit 6: Congruent Triangles
6.2 Isosceles and Equilateral Triangle Theorems

Mathematician: _____
Period:_____

LEVEL: EMERGING

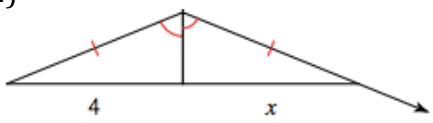
Directions: Find the value of x.

1)



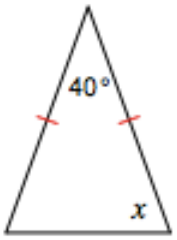
$x =$ _____

2)



$x =$ _____

3)

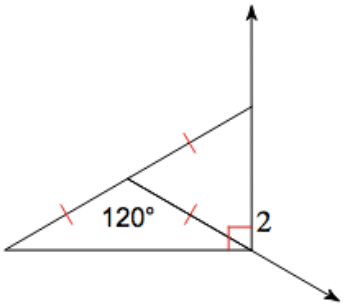


$x =$ _____

LEVEL: PROFICIENT

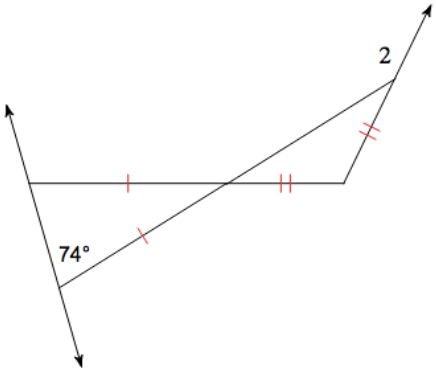
Directions: The measure of angle 2 is given. Find the value of x.

4) $m\angle 2 = x + 126$



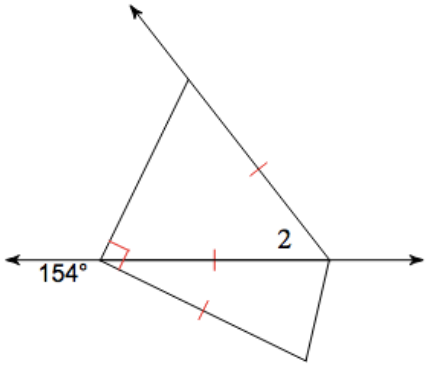
$x =$ _____

5) $m\angle 2 = x + 158$



$x =$ _____

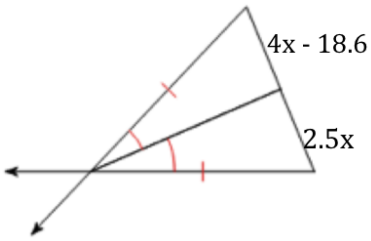
6) $m\angle 2 = x + 62$



$x =$ _____

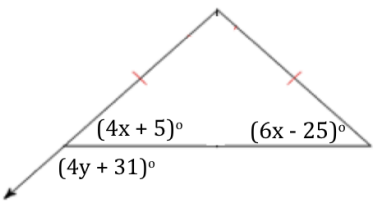
Directions: Find the value of x or y.

7)



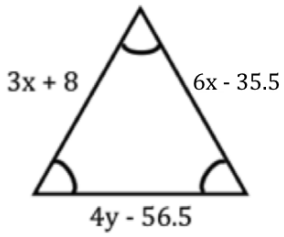
$x =$ _____

8)



$x =$ _____ $y =$ _____

9)



$x =$ _____ $y =$ _____

10) One base angle of an isosceles triangle measures 50°. What is the measure of the vertex angle?

(A) 50°
(B) 80°
(C) 100°
(D) 130°

11) In isosceles triangle ΔJKL, $m\angle J = 100°$ and $m\angle K = 40°$. This means (select all that apply):

(A) The side opposite $\angle J$ is congruent to the side opposite $\angle K$.
(B) The side opposite $\angle J$ is congruent to the side opposite $\angle L$.
(C) The side opposite $\angle K$ is congruent to the side opposite $\angle L$.
(D) The side opposite $\angle K$ is not congruent to either of the other sides.

12) DXYZ is isosceles, and the $m\angle X = 36°$. Which of the following statements cannot be true?

Select all that apply.

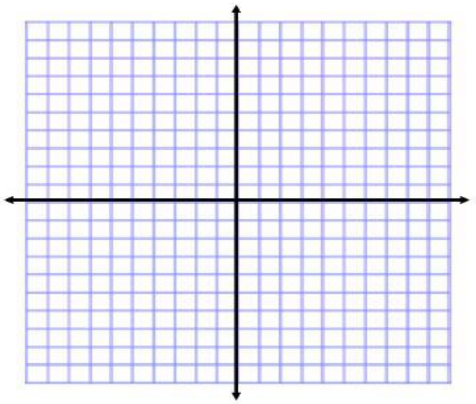
(A) $m\angle X = m\angle Z$
(B) $m\angle Z = 2(m\angle X)$
(C) $m\angle Y = m\angle Z$
(D) $m\angle X > m\angle Z$
(E) $m\angle X > m\angle Y$

13) DXYZ is equilateral. Which of the following statements cannot be true?

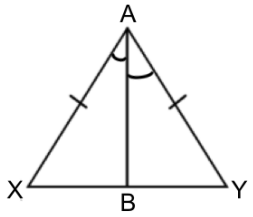
Select all that apply.

(A) $m\angle X = m\angle Z$
(B) $m\angle Z = 2(m\angle X)$
(C) $m\angle Y = m\angle Z$
(D) $m\angle X > m\angle Z$
(E) $m\angle X > m\angle Y$

14) Prove that the triangle with the following vertices is an isosceles triangle. Make sure to include the perpendicular bisector and midpoint:
$A(-6,3)$
$B(1,-6)$
$C(-2,5)$



Directions: Use the following diagram and the given description to find the indicated measure.



15) $XB = x^2 + 2x - 7$ and $YB = 4x + 8$

$XY =$ _____

16) $\angle AXY = 18x^2 - 19$ and $\angle AYB = 30x - 7$

$m\angle XAB =$ _____