Name: _____AK_____ Period:_____ Date:_____

Unit 4 Transformations Practice

1. Point L is translated using the rule $(x, y) \rightarrow (x - 3, y + 4)$. If the image L' is at $(11, -3)$, find the coordinates of the preimage L.

$$\overset{L}{(x,y)} \rightarrow \overset{L'}{(x-3, y+4)}$$
$$ 11 -3$$

$$x - 3 = 11 \rightarrow \boxed{x = 14} \qquad \boxed{L(14, -7)}$$

$$y + 4 = -3 \rightarrow \boxed{y = -7}$$

2. Point W has the coordinates $(7, 4 + b)$. It is then translated along the vector $<6 - 2a, 5>$ creating the image of $W'(4a + 3, 5b + 1)$. Find the values of a and b.

$$7 + 6 - 2a = 4a + 3 \qquad\qquad 4 + b + 5 = 5b + 1$$
$$13 = 6a + 3 \qquad\qquad\qquad b + 9 = 5b + 1$$
$$10 = 6a \qquad\qquad\qquad\qquad 8 = 4b$$
$$\boxed{\tfrac{5}{3} = a} \qquad\qquad\qquad\qquad \boxed{2 = b}$$

3. In the figure below, lines FG and HI are parallel. Pentagon ABCDE is reflected over line FG to create A'B'C'D'E'. A'B'C'D'E' is then reflected over line HI to create A"B"C"D"E". The distance between lines FG and HI is $(2x + 8)$ inches and the distance between A and A" is $(10x - 2)$ inches. Find x.
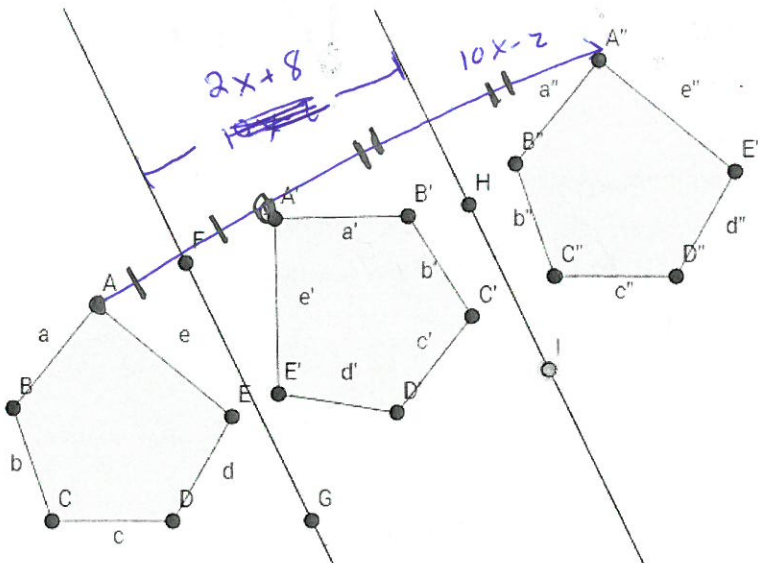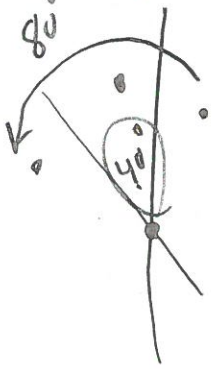
$$2(2x + 8) = 10x - 2$$
$$4x + 16 = 10x - 2$$
$$18 = 6x$$
$$\boxed{3 = X}$$

4. Lines g and f intersect at point A. Angle BAC = (7x - 5)°. DEFG was reflected over line g to create D'E'F'G', and D'E'F'G is reflected over line f to create D"E"F"G". DEFG can also be mapped to D"E"F"G" by a rotation about point A by (10x + 30)°. Find the measure of angle BAC.
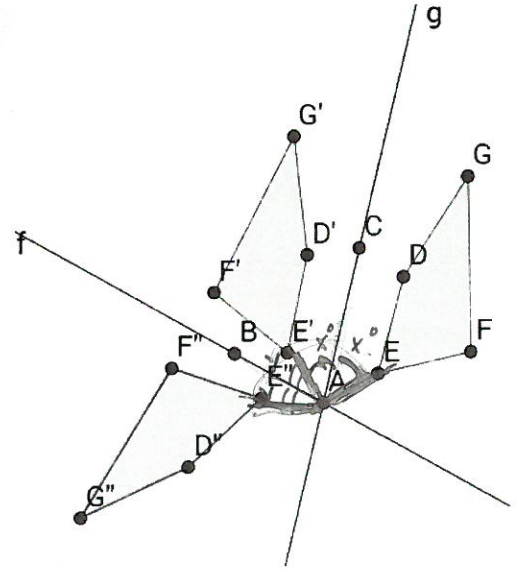
$$2(7x-5) = 10x + 30$$
$$14x - 10 = 10x + 30$$
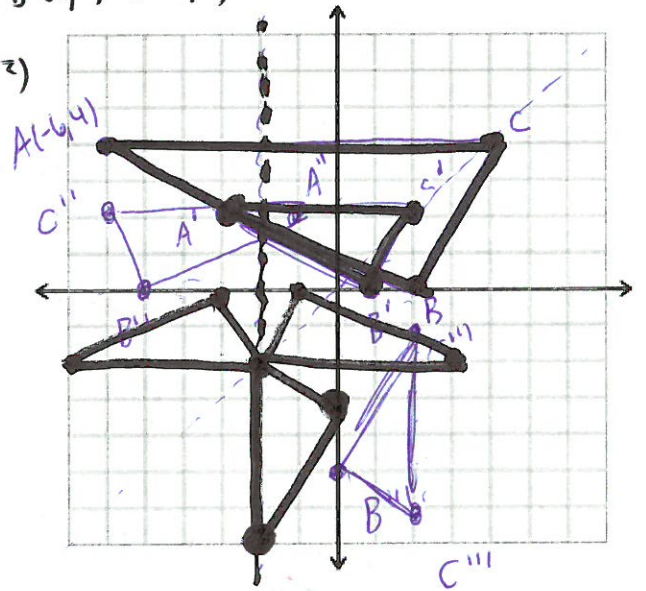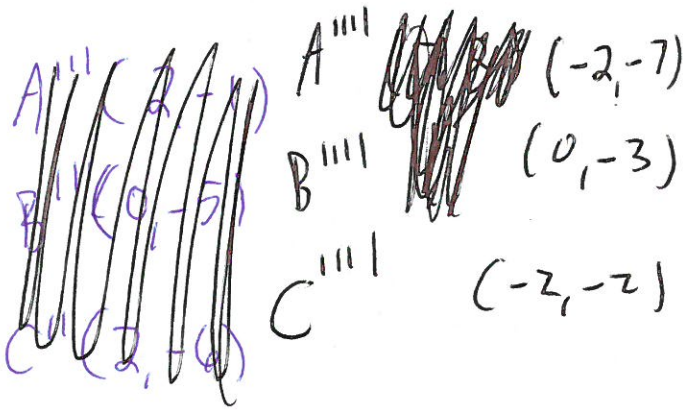$$4x = 40$$
$$\boxed{x = 10}$$

Angle BAC = 7(10) - 5
65°

5. Perform the following composition of transformations on triangle A(-6, 4), B(2, 0) C(4, 4).

Dilate about (0,0) with a scale factor of k = ½ A'(-3,2) B'(1,0) C'(2,2)

Rotate 180° about (0,0) A"(3,-2) B"(-1,0) C"(-2,-2)

Reflect over line x = -2 A'''(-7,-2) B'''(-3,0) C'''(-3,-2)

Reflect over line y = x

A'''' (-2,-7)

B'''' (0,-3)

C'''' (-2,-2)

6. Triangle ABC is dilated about (0,0) to created A'B'C'. Find the scaled factor. Then, find A'C'.

$$K = \frac{5}{2} = 2.5$$

AC = 3.8
B'C' = 5
BC = 2