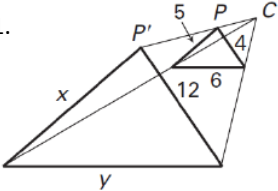
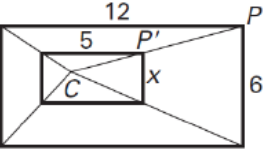


Unit 10.7 worksheet Dilations

Period: _____

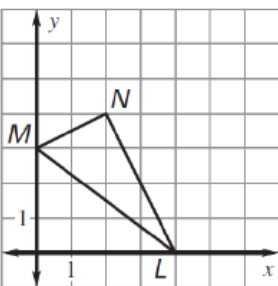
Find the scale factor. Tell whether the dilation is a reduction or an enlargement. Then find the value of the variables.

1.  Scale factor: $k = 3$
Type of dilation: **enlargement**
 $x = 15$ $y = 18$

2.  Scale factor: $\frac{5}{12}$
Type of dilation: **reduction**
 $x = 2.5$

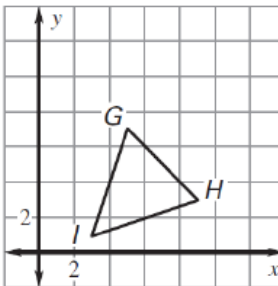
Use the origin as the center of the dilation and the given scale factor to find the coordinates of the vertices of the image of the polygon.

3. $k = 3$



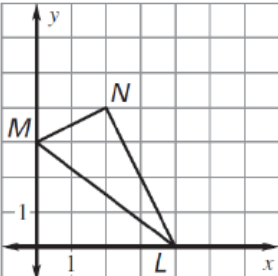
$L'(12, 0)$
 $M'(0, 9)$
 $N'(6, 12)$

4. $k = \frac{1}{3}$



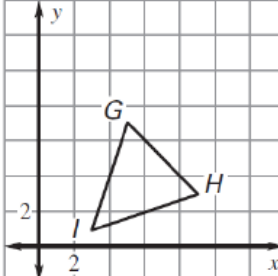
$G'(\frac{5}{3}, \frac{7}{3})$
 $H'(3, 1)$
 $I'(1, \frac{1}{3})$

5. $k = 2$



$L'(8, 0)$
 $M'(0, 6)$
 $N'(4, 8)$

6. $k = \frac{5}{2}$



$G'(\frac{25}{2}, \frac{35}{2})$
 $H'(\frac{45}{2}, \frac{15}{2})$
 $I'(\frac{15}{2}, \frac{5}{2})$

A dilation maps A to A' and B to B'. Find the scale factor of the dilation. Find the center of the dilation.

7. $A(4, 2), A'(5, 1), B(10, 6), B'(8, 3)$ Scale factor: $k = \frac{1}{2}$ Center of dilation: $(6, 0)$

8. $A(1, 6), A'(3, 2), B(2, 12), B'(6, 20)$ Scale factor: $k = 3$ Center of dilation: $(0, 8)$

9. $A(3, 6), A'(6, 3), B(11, 10), B'(8, 4)$ Scale factor: $k = \frac{1}{4}$ Center of dilation: $(7, 2)$

10. $A(-4, 1), A'(-5, 3), B(-1, 0), B'(1, 1)$ Scale factor: $k = 2$ Center of dilation: $(-3, -1)$

The vertices of parallelogram ABCD are $A(1, 1)$, $B(3, 5)$, $C(11, 5)$, and $D(9, 1)$.

Graph the image of the parallelogram after a composition of the transformations in the order they are listed.

11. Translation: $(x, y) \rightarrow (x + 5, y - 2)$

then Dilation: centered at the origin with a scale factor of $\frac{3}{5}$

$A''(3.6, -0.6)$

$B''(4.8, 1.8)$

$C''(9.6, 1.8)$

$D''(8.4, -0.6)$

12. Dilation: centered at the origin with a scale factor of 2

then Reflection: in the x-axis

$A''(2, -2)$

$B''(6, -10)$

$C''(22, -10)$

$D''(18, -2)$

You are projecting images onto a wall with a flashlight. The lamp of the flashlight is 8.3 centimeters away from the wall. The preimage is imprinted onto a clear cap that fits over the end of the flashlight. This cap has a diameter of 3 centimeters. The preimage has a height of 2 centimeters and the lamp of the flashlight is located 2.7 centimeters from the preimage.

13. Sketch a diagram of the dilation.

Sketch:

14. Find the diameter of the circle of light
Projected onto the wall from the flashlight.

Diameter of circle of light: **about 9.22 cm**

15. Find the height of the image
Projected onto the wall.

Height of projected image: **about 6.15 cm**

