

Name: _____ Date: _____

Dilations

- In a dilation, we are just resizing the image.
 - Dilations are NOT an isometry.
 - When we dilate an image, the sides change, the angles do not.
 - This is the one transformation where the pre-image and image are similar, but not congruent.

Scale Factor:

- We use "k" to represent scale factor.
- We multiply by k to find the image.

If...	We call it...	The shape gets...
$0 < k < 1$	a reduction	smaller
$k = 1$	a congruence	stays the same
$k > 1$	an enlargement	bigger

Determine if the scale factor represents a reduction, enlargement, or congruence.

- | | | | |
|---------------------------|-----------------------------|----------------------------|-------------------------------|
| a. $k = 1/3$
reduction | b. $k = 2.5$
enlargement | c. $k = 50\%$
reduction | d. $k = 200\%$
enlargement |
|---------------------------|-----------------------------|----------------------------|-------------------------------|

1. Dilate the image by $k=2$.

$$A(-2, 4) \rightarrow A'(-4, 8)$$

$$B(0, -8) \rightarrow B'(0, -16)$$

$$C(-3, 5) \rightarrow C'(-6, 10)$$

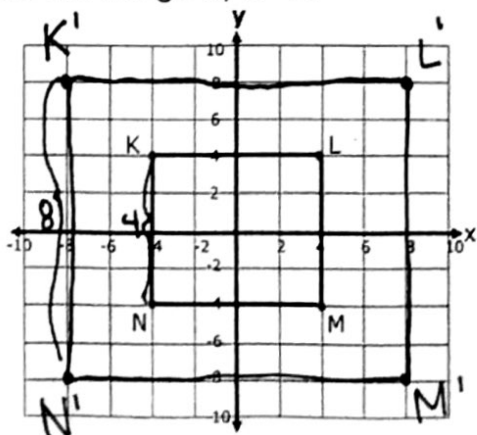
2. Dilate the image by $k = 1/2$.

$$D(1, 2) \rightarrow D'(0.5, 1)$$

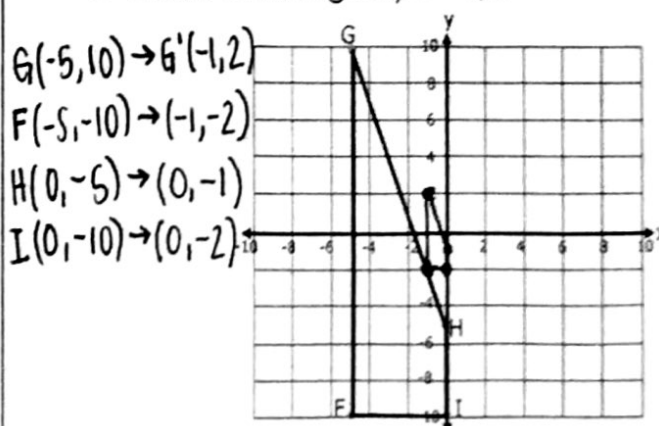
$$E(-3, -5) \rightarrow E'(-1.5, -2.5)$$

$$F(4, -1) \rightarrow F'(2, -0.5)$$

3. Dilate the image by $k = 2$.



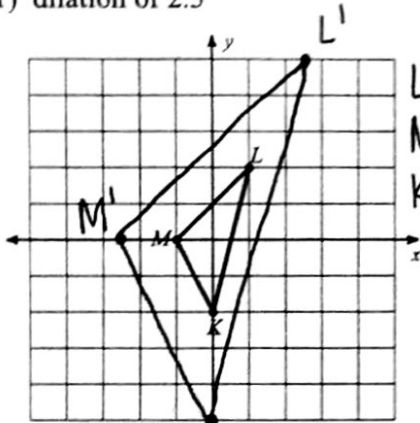
4. Dilate the image by $k = 1/5$



Dilations Practice

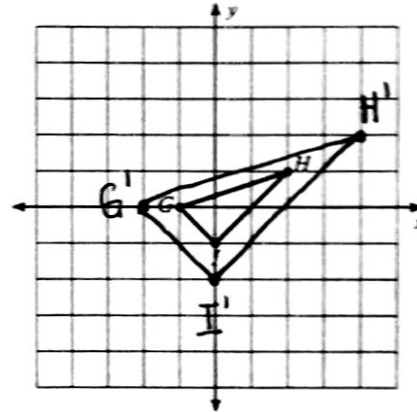
Graph the image of the figure using the transformation given.

1) dilation of 2.5



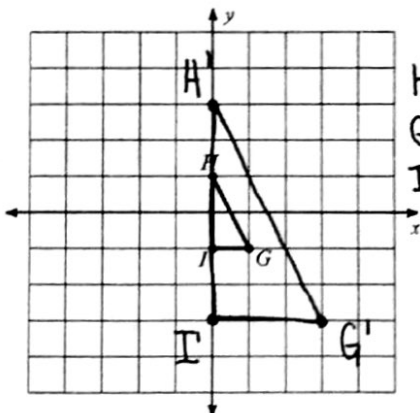
$L(1,2) \rightarrow (2.5,5)$
 $M(-1,0) \rightarrow (-2.5,0)$
 $K(0,-2) \rightarrow (0,-5)$

2) dilation of 2



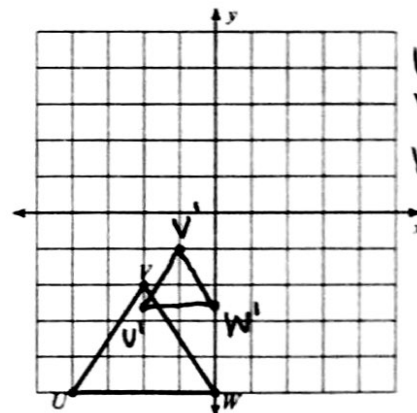
$H(2,1) \rightarrow (4,2)$
 $G(-1,0) \rightarrow (-2,0)$
 $I(0,-1) \rightarrow (0,-2)$

3) dilation of 3



$H(0,1) \rightarrow (0,3)$
 $G(1,-1) \rightarrow (3,-3)$
 $I(0,-1) \rightarrow (0,-3)$

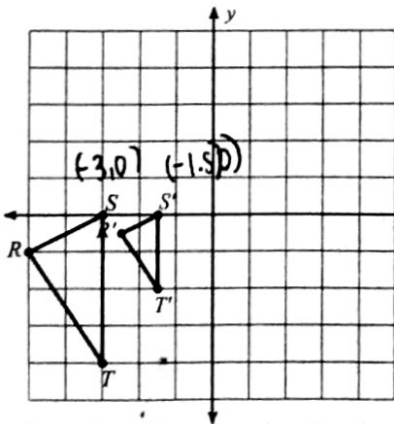
4) dilation of 0.5



$U(-4,-5) \rightarrow (-2,-2.5)$
 $V(-2,-2) \rightarrow (-1,-1)$
 $W(0,-5) \rightarrow (0,-2.5)$

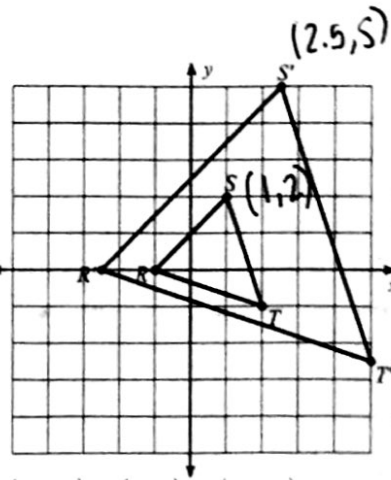
Write a rule to describe each transformation.

5)



$k = 1/2$
 $(x,y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$

6)



$k = 2.5$
 $(x,y) \rightarrow (2.5x, 2.5y)$

7) $E(-1, 2), F(-2, 4), G(3, 2)$

to
 $E'(-0.5, 1), F'(-1, 2), G'(1.5, 1)$

$k = 0.5$ or $1/2$
 $(x,y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$

8) $A(-2, 1), B(0, 2), C(2, -1)$

to
 $A'(-4, 2), B'(0, 4), C'(4, -2)$

$k = 2$
 $(x,y) \rightarrow (2x, 2y)$