

Day 7 – Dilations and Combinations

1. Determine if the following scale factors will result in an enlargement, reduction, or congruence:

A. $\frac{5}{6} \approx .83$
reduction

B. $150\% = 1.5$
enlargement

C. $100\% = 1$
congruence

D. $\frac{5}{4} = 1.25$
enlargement

E. 0.4
reduction

2. If segment AB has a length of 3 units and is dilated by a scale factor of 2.25, what is the length of AB? Is this an enlargement or reduction?

$3 \cdot 2.25 = 6.75$

AB = 6.75 units, enlargement

3. $\triangle ABC$ has vertices D (25, 25), E (15, 10), and F (20, 10). What are the vertices of the image after a dilation with a scale factor of $\frac{1}{5}$ using the origin as the center of dilation?

$D(25, 25) \times \frac{1}{5} \rightarrow$	$D'(5, 5)$
$E(15, 10) \times \frac{1}{5} \rightarrow$	$E'(3, 2)$
$F(20, 10) \times \frac{1}{5} \rightarrow$	$F'(4, 2)$

Determine if the following transformations preserve similarity, congruence, or both.

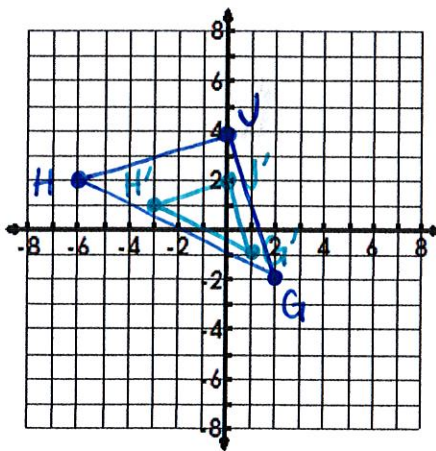
4. Rotation of 90 degrees clockwise, then a dilation by scale factor of 3.

Similarity

5. Reflection across x-axis followed by a rotation of 270 degrees clockwise.

both-congruence + similarity

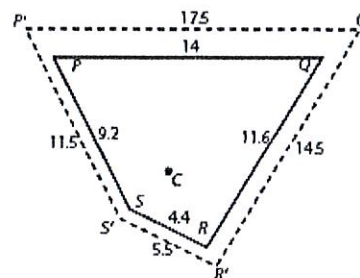
6. A triangle has vertices G(2, -2), H(-6, 2), and J(0, 4). If the triangle is dilated by a scale factor of 0.5 through the center (0,0), what are the image vertices? Draw the pre-image and image on the coordinate plane.



$G(2, -2) \times .5 \rightarrow$	$G'(1, -1)$
$H(-6, 2) \times .5 \rightarrow$	$H'(-3, 1)$
$J(0, 4) \times .5 \rightarrow$	$J'(0, 2)$

7. Determine the scale factor and whether the dilation is an enlargement, reduction, or congruency transformation. The dotted figure is the new image.

$\frac{17.5}{14} = 1.25$ enlargement

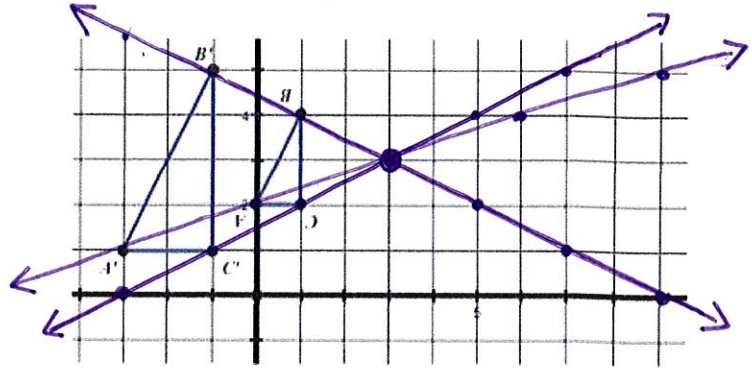


8. Work backwards to find the center of dilation and also determine the scale factor.

Center of Dilation: (3,3)

Scale Factor: 2

$$\frac{4}{2} = 2$$



Use the graph of the rhombus to answer questions 1-3.

1. Perform a glide reflection over the x-axis and a translation to the right 3 units. Write the new coordinates. $A(-4,5)$ $B(-5,3)$ $C(-3,3)$ $D(-4,1)$

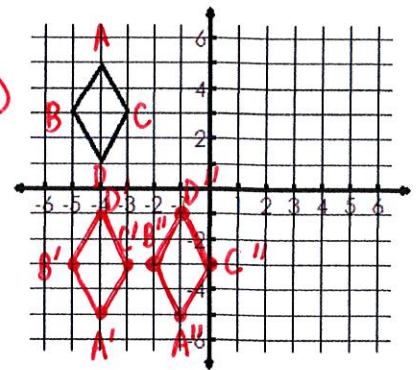
$A''(-1,-5)$ $B''(-2,-3)$ $C''(0,-3)$ $D''(-1,-1)$

2. What is the rule for this glide reflection?

$$(x, y) \rightarrow (x+3, -y)$$

3. What glide reflection would move the image back to the pre-image?

$$(x, y) \rightarrow (x-3, -y)$$



Use the graph of the triangle to answer questions 4-6.

4. Perform a glide reflection over the y-axis and down 5 units. Write the new coordinates. $A(2,5)$ $B(5,1)$ $C(1,1)$

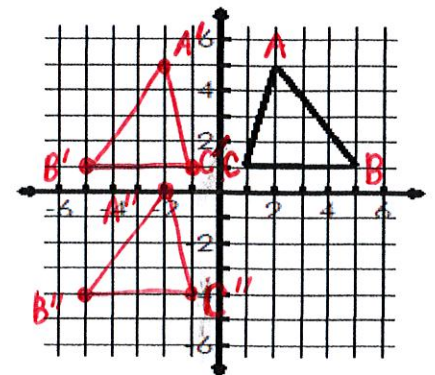
$A''(-2,0)$ $B''(-5,-4)$ $C''(-1,-4)$

5. What is the rule for this glide reflection?

$$(x, y) \rightarrow (-x, y-5)$$

6. What glide reflection would move the image back to the pre-image?

$$(x, y) \rightarrow (-x, y+5)$$



Use the graph of the triangle to the right to answer questions 7-9.

7. Reflect the pre-image over $y = 2$ followed by $y = -3$. Draw the new triangle.

8. What one transformation is this double reflection the same as?

translation down 10

9. Write the rule.

$$(x, y) \rightarrow (x, y-10)$$

