Geometry Honors
Unit 3: Similar Figures and Dilation
3.4 Compositions (with dilations)

Mathematician: _____
Period:_____

LEVEL: EMERGING

1) Determine the coordinates of point P' after the indicated glide reflection.

a) P(-5,6) is translated -4 units horizontally and dilated by a factor of $\frac{1}{3}$.

P': _____

P'': _____

b) P(4,8) is dilated by a factor of 2 units and reflected across the y-axis.

P': _____

P'': _____

c) P(1,-1) is translated 3 units vertically and dilated by a factor of $\frac{1}{2}$.

P': _____

P'': _____

d) P(8,-4) is dilated by a factor of $\frac{1}{4}$ and then rotated 180° CW.

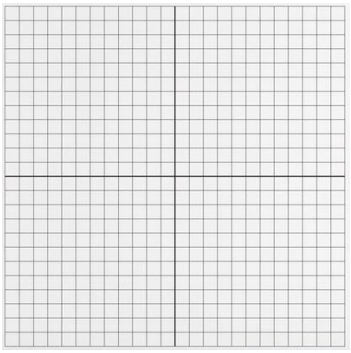
P': _____

P'': _____

Directions: The endpoints of $\overline{CD}$ are C(3, -6) and D(2, 0). Graph $\overline{CD}$. Give the coordinate of C'D' and C''D''. Then graph image of $\overline{CD}$.

2) Transformation #1: Reflect over the line $y = -3$

Transformation #2: Dilate by a factor of $\frac{1}{3}$ centered at the origin.

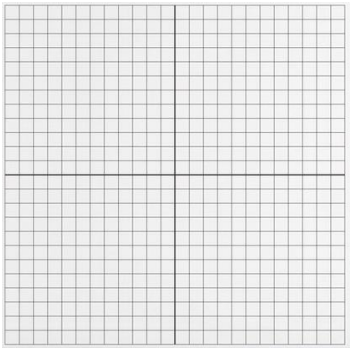


C' C''

D' D''

3) Transformation #1: Dilate by a factor of 2 centered at the origin.

Transformation #2: Translate $(x, y) \rightarrow (x + 2, y)$



C' C''

D' D''

LEVEL: PROFICIENT

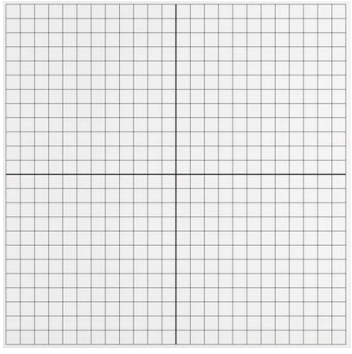
Directions: The vertices of ΔPQR are P(2, 4), Q(6, 0), and R(4, -2). Give the coordinates of $\Delta P'Q'R'$ and $\Delta P''Q''R''$ Graph the image of ΔPQR after a composition of transformations in the order they are listed.

4) Transformation #1: Dilate by a factor of 1.5
Transformation #2: Rotate 90° CCW about the origin.

P' P''

Q' Q''

R' R''

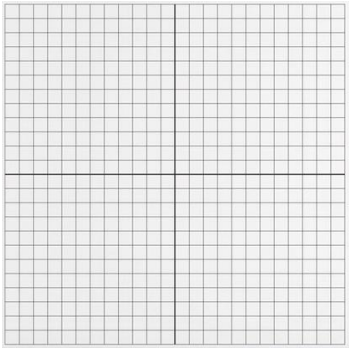


5) Transformation #1: Translate $(x, y) \rightarrow (x, y + 2$
Transformation #2: Dilate by a factor of $\frac{1}{2}$ centered at the origin.

P' P''

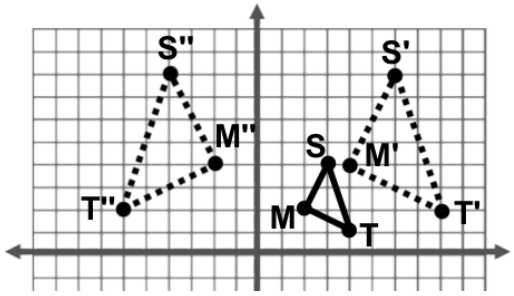
Q' Q''

R' R''



Directions: *Describe* the composition of transformations. Give the exact translation, reflection or rotation.

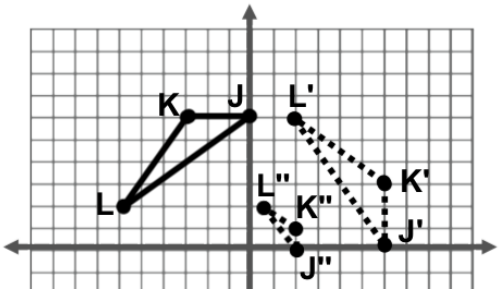
6)



Transformation 1:

Transformation 2:

7)



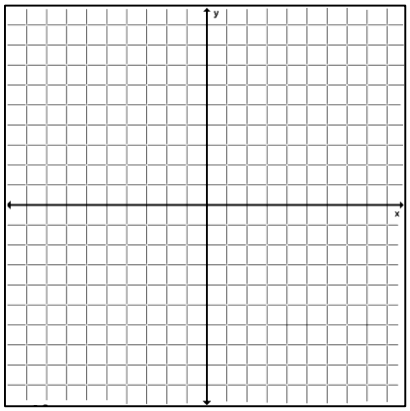
Transformation 1:

Transformation 2:

LEVEL: MASTERY

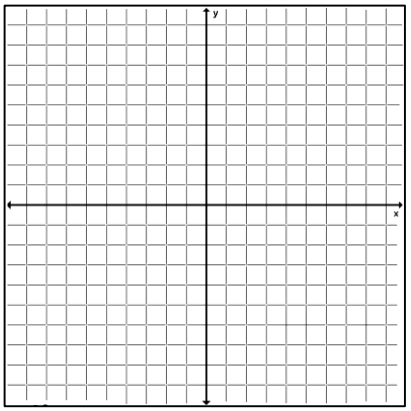
8) POINT A(-1, 1)
Dilate by factor of 3.4 centered at the origin.
Reflect over line y = 2.
Find the sum of image coordinates.

SUM = _____



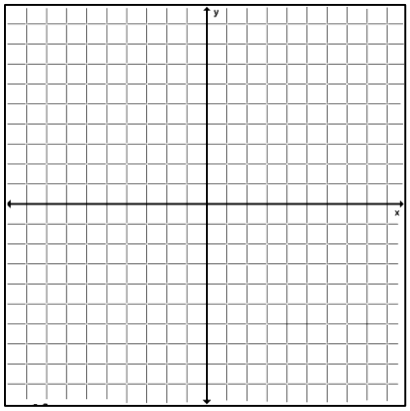
9) POINT A(1, 4)
Dilate by factor of 2 centered at the origin.
Then translate by $(x, y) \rightarrow (x - 3, y - 2)$
Find the sum of image coordinates.

SUM = _____



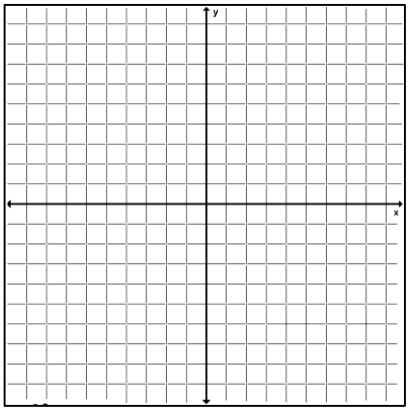
10) POINT A(3, 2)
Rotate 90° CW about the point (1,-3).
Dilate by factor of 0.5 centered at the origin.
Find the sum of image coordinates.

SUM = _____



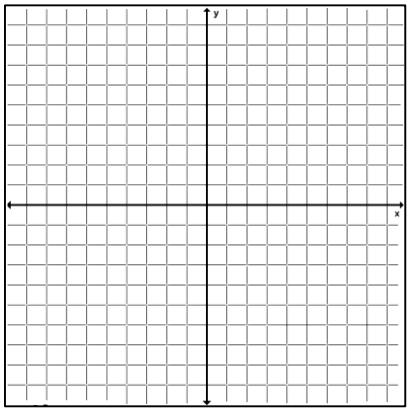
11) POINT A(4, 2)
Reflect over the x-axis.
Dilate by a factor of $\frac{1}{3}$ centered at the point (-5,-8). Find the sum of image coordinates.

SUM = _____



12) POINT A(3,-5)
Dilate by factor of 2 centered at the point (7,7). Then translate by $(x, y) \rightarrow (x - 4, y - 6)$
Find the sum of image coordinates.

SUM = _____



13) POINT A(-8,-4)
Rotate 180° CCW about the point (-5,1).
Dilate by a factor of $\frac{1}{4}$ centered at the point (6,2). Find the sum of image coordinates

SUM = _____