Name _____ Date_____

Introduction to Polygons – Part 2
Compositions of Transformations of Polygons – Part 2
Independent Practice

1. Consider the polygon $GEOM$ with coordinate $G(0,-2)$, $E(-1,2)$, $O(-5,1)$, $M(-5,-6)$. If we rotate $GEOM$ 90° clockwise about the origin, then reflect over the y-axis, what are the coordinates of $G''E''O''M''$?

$$G(0,-2) \rightarrow G'(\_\_\_\_,\_\_\_\_) \rightarrow G''(\_\_\_\_,\_\_\_\_)$$

$$E(-1,2) \rightarrow E'(\_\_\_\_,\_\_\_\_) \rightarrow E''(\_\_\_\_,\_\_\_\_)$$

$$O(-5,1) \rightarrow O'(\_\_\_\_,\_\_\_\_) \rightarrow O''(\_\_\_\_,\_\_\_\_)$$

$$M(-5,-6) \rightarrow M'(\_\_\_\_,\_\_\_\_) \rightarrow M''(\_\_\_\_,\_\_\_\_)$$

2. Consider polygon $ABCD$ with coordinates $A(8,12), B(10,4), C(4,4), D(2,8)$.

   Part A: What are the coordinates of $A''B''C''D''$ if we reflect it over the line $y = 2$, then dilate by a scale factor of $\frac{1}{2}$ centered at the origin?

$$A(8,12) \rightarrow A'(\_\_\_\_,\_\_\_\_) \rightarrow A''(\_\_\_\_,\_\_\_\_)$$

$$B(10,4) \rightarrow B'(\_\_\_\_,\_\_\_\_) \rightarrow B''(\_\_\_\_,\_\_\_\_)$$

$$C(4,4) \rightarrow C'(\_\_\_\_,\_\_\_\_) \rightarrow C''(\_\_\_\_,\_\_\_\_)$$

$$D(2,8) \rightarrow D'(\_\_\_\_,\_\_\_\_) \rightarrow D''(\_\_\_\_,\_\_\_\_)$$
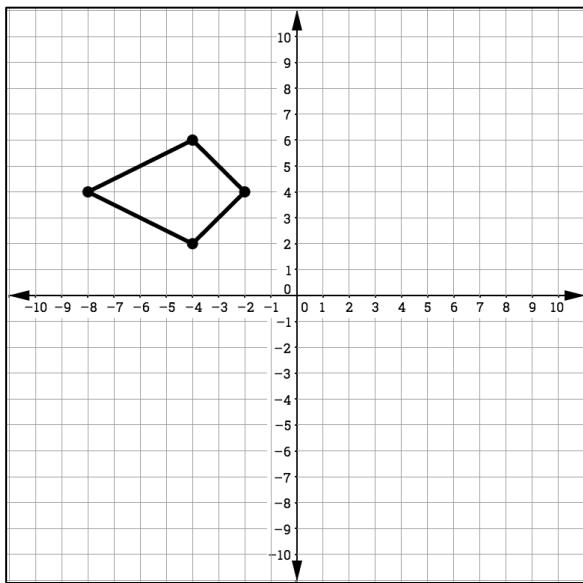
   Part B: If polygon $A''B''C''D''$ is now reflected back over the line $y = 2$, what are the coordinates of the new polygon $A'''B'''C'''D'''$? Justify your answer.

3. The polygon below is rotated 270° counterclockwise about the origin, then reflected over the x-axis. What transformation will map the polygon back to its original image?

4. The polygon $WXYZ$ is translated by $(x + 1, y + 5)$, then reflected over the line $y = x$. The resulting polygon $W''X''Y''Z''$ has coordinates $W''(-4, 5)$, $X''(-1, 5)$, $Y''(-1, 1), Z''(-4, 1)$. What are the coordinates of the original polygon $WXYZ$?