## Honors Math 2 Unit 2 Transformations Review

For each problem, you will complete the following parts:
I) Graph and label pre-image on graph paper.
II) Write the algebraic rule or transformation description (whichever is missing in the problem)
III) Graph and label the image on the same graph. Also, mark the image with the problem letter (a, b, etc.)
IV) Write coordinates of the image on the side of the graph. Label appropriately.

1) Translations
G (1, 3)
E (-1, 1)
O (4, -3)

Task: Perform the following translations of triangle GEO on the same graph.
a) Translate triangle GEO left 2 , up 1
b) Transform triangle GEO according to the rule ( $x, y$ ) $\rightarrow(x+1, y-3)$
2) Reflections
G $(1,3)$
E (-1, 1)
O (4, -3)

Task: Perform the following reflections of triangle GEO on the same graph.
a) Reflect triangle GEO over the $x$-axis
b) Transform triangle GEO according to the rule $(x, y) \rightarrow(-y,-x)$
c) Reflect triangle GEO over the line $y=-x$
d) Transform triangle GEO according to the rule $(x, y) \rightarrow(-x, y)$
3) Rotations
G $(1,3)$
E (-1, 1)
O (4, -3)

Task: Perform the following rotations of triangle GEO on the same graph.
a) Rotate triangle GEO 90 degrees
b) Rotate triangle GEO 90 degrees clockwise
c) Transform triangle GEO according to the rule $(\mathrm{x}, \mathrm{y}) \rightarrow(-\mathrm{x},-\mathrm{y})$
4) Dilations
G $(1,3)$
E (-1, 1)
O (4, -3)

Task: Perform the following dilations of triangle GEO on the same graph.
a) Dilate triangle GEO with a scale factor of $\mathbf{1 / 2}$.
b) Transform triangle GEO according to the rule ( $\mathrm{x}, \mathrm{y}$ ) $\rightarrow(2 \mathrm{x}, 2 \mathrm{y})$
5) Compositions
G $(1,3)$
E (-1, 1)
O (4, -3)

Task: Perform the following transformations of triangle GEO on the same graph.
a) Translate triangle GEO right 2, down 1 THEN dilate by scale factor of 3
b) Transform triangle GEO according to the rule $(x, y) \rightarrow(-y-5,-x+2)$
c) If $f(x)$ represents triangle GEO, find $f(-x)+2$
d) If $f(x)$ represents triangle GEO, find $-3 f(x+4)-1$
6) Domain and Range
G $(1,3)$
E (-1, 1)
O (4, -3)

Task: Perform the following based on triangle GEO on the same graph.
a) Graph and label triangle GEO
b) Stretch triangle GEO vertically by a factor of 3 , then label appropriately.
I) What is the domain of the preimage?
II) What is the range of the preimage?
III) What is the domain of the image?
IV) What is the range of the image?
7) Matching (Match the description with the algebraic rule.)

| 1. Translation | A. $(x, y) \rightarrow(y, x)$ |
| :---: | :---: |
| 2. Reflection over $x$-axis | B. $(x, y) \rightarrow(-y, x)$ |
| 3. Reflection over $y$-axis | C. $(x, y) \rightarrow(a x, a y)$ |
| 4. Reflection over $y=x$ | D. $(x, y) \rightarrow(x,-y)$ |
| 5. Reflection over $y=-x$ | E. $(x, y) \rightarrow(-y,-x)$ |
| 6. Rotation 90 degrees <br> counter-clockwise | F. $(x, y) \rightarrow(x+a, y+b)$ |
| 7. Rotation 90 degrees <br> clockwise | G. $(x, y) \rightarrow(-x,-y)$ |
| 8. Rotation 180 degrees <br> (clockwise or counter- <br> clockwise) | H. $(x, y) \rightarrow(y,-x)$ |
| 9. Dilation | I. $(x, y) \rightarrow(-x, y)$ |

