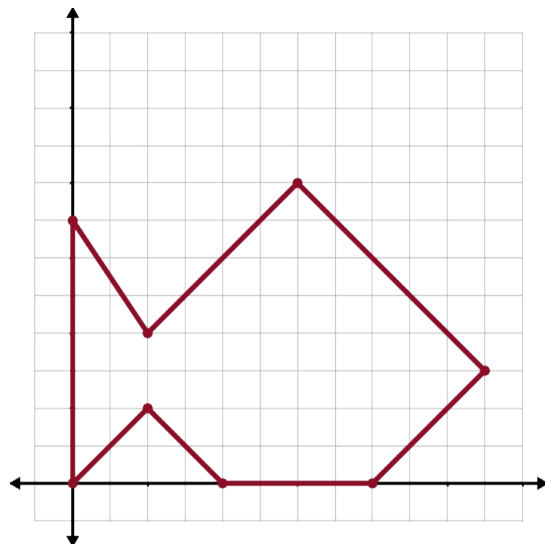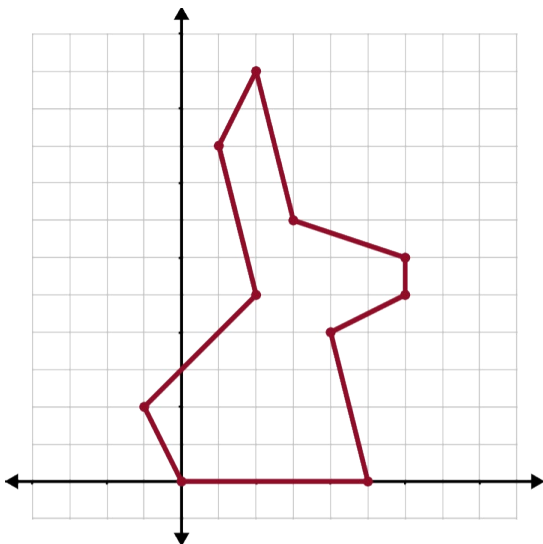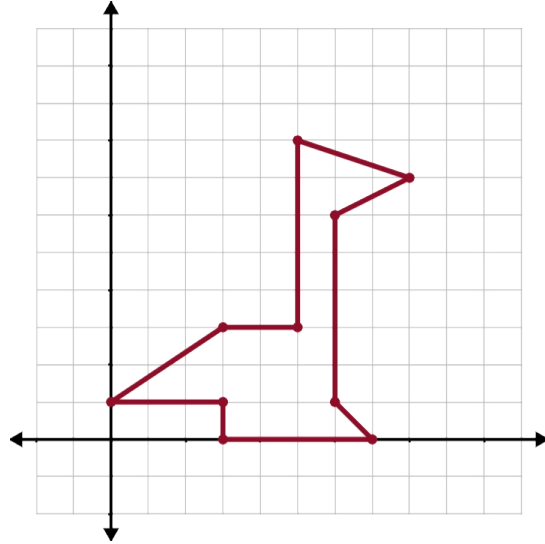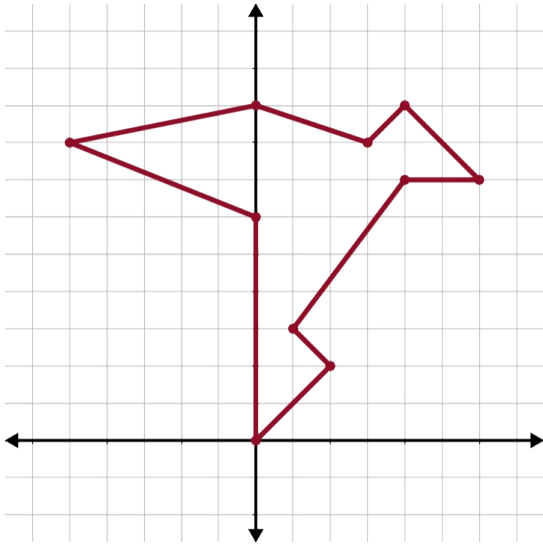# TRANSFORMATION MATRICES

Work with your group to take one of the figures below and use matrices to transform it. Follow the steps to complete the task.

1) Select and circle one of the figures below:

2) Select 4 of the transformation cards to apply to your selected figure.

The order of the transformations and the order of the matrix multiplication matters. For example, if you reflect your figure over the x-axis then rotate it 90° CCW about the origin, you will multiply: $Q \cdot M$. Now you will have a different result if you first rotate your figure then reflect it over the x-axis, and you will multiply: $M \cdot Q$. Transformation matrices apply from right to left.

3) Write your matrices below in the order needed to get your desired result:

4) Multiply your matrices and write your final transformation matrix (T) below.

$T =$

Make a Prediction: After applying your transformations, the face of your figure will be in which quadrant?

5) Multiply your transformation matrix to each of the vertices: $T \cdot \begin{bmatrix} x \\ y \\ 1 \end{bmatrix}$.

6) Get out a piece of graphing paper. Draw your original figure and your new figure. Be sure to label your corresponding points.