

1.3.3 Alphabet Rotations, Reflections, & Symmetry Date: _____ Period: _____

Have you ever noticed how some letters look the same, even when you rotate or reflect them? That is because of **symmetry**, from the Greek words for “measure together.” Some letters have rotational symmetry, some have reflection symmetry, some have both, and some have none!

Which of the letters in the word AMBULANCE have symmetry?

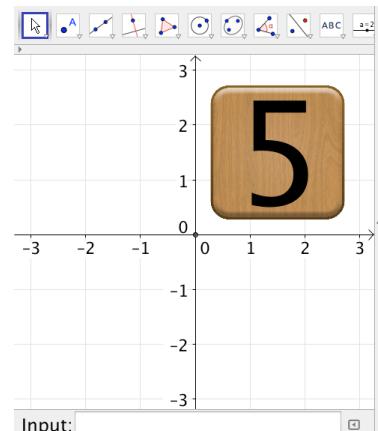
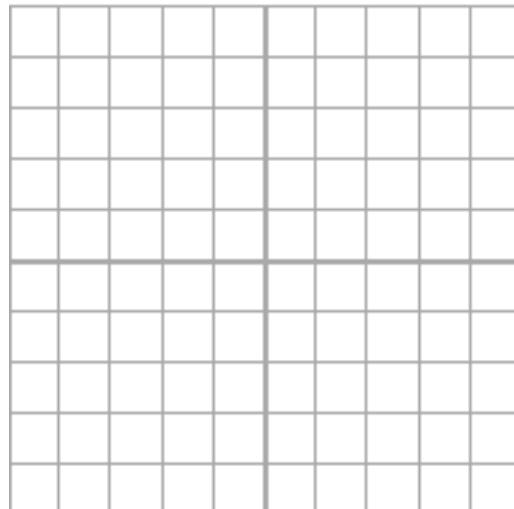
Why is the word written backwards on the front of the ambulance?

As a class, use GeoGebra to determine how the uppercase letters appear when reflected or rotated. Each of you will be assigned 2 letters to explore; yours are _____ and _____.

Open the collection, <http://bit.ly/19YUZQ7>, in GeoGebraTube and find the first letter you were assigned. Open the file, and you should see a screen like this. Use the reflection tool to create a reflected image in each quadrant. *Be careful to choose a part of the axis beyond the position of the letter tile, otherwise the axis may not be selected. Record the images below.

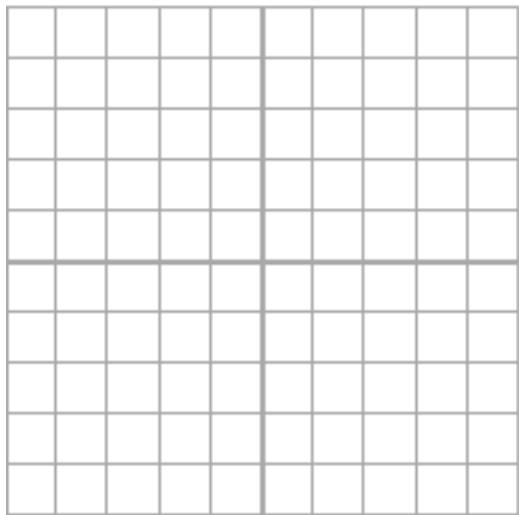
Use the back button to undo the reflections. Now rotate the letter 90° counter-clockwise three times and record the images below.

My first letter: _____.

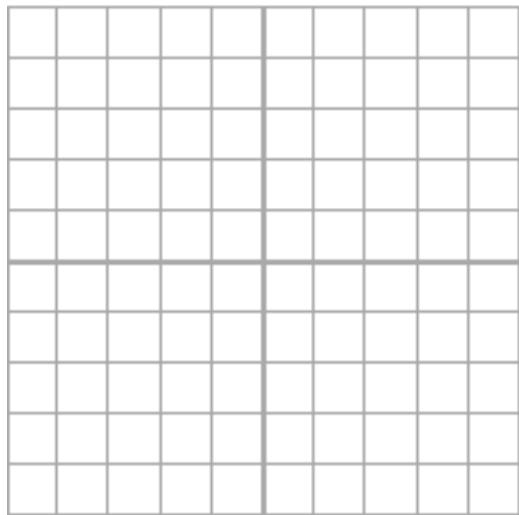
**Reflections****Rotations**

My second letter: _____.

Rotations



Reflections



What do you notice? Write down all of your observations.

Choose one and convince me that it works!