Worksheet

By Jack Schmidt

Name: _____

MA111-00[6,7]
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Part I: Vocabulary

Consider the capital letter E and the following rigid motions.
Match the rigid motion to the closest description of the result:

1. Reflect over a vertical line.
2. Reflect over a horizontal line.
3. Rotate 90 degrees clockwise.
4. Rotate 90 degrees counterclockwise.

(a) The letter E

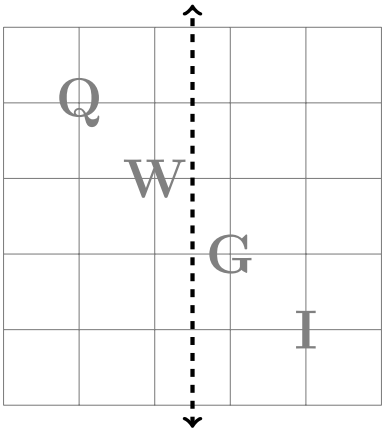
(b) The letter M

(c) The letter W

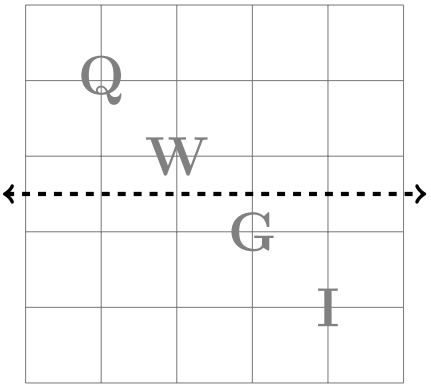
(d) The number 3

Draw the results of the indicated rigid motions:

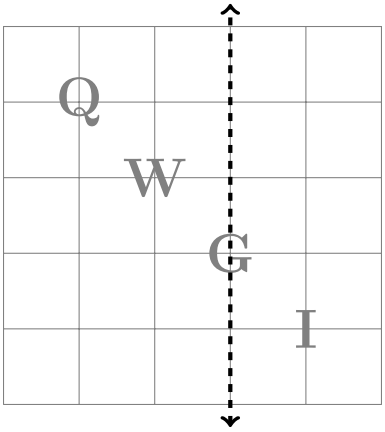
Reflect over the vertical line:



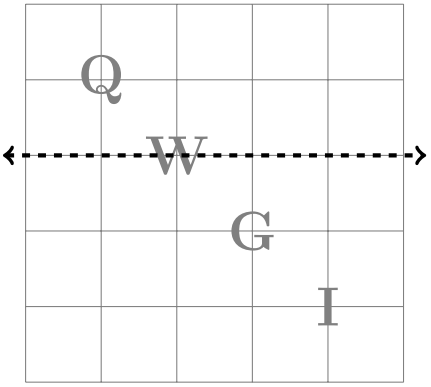
Reflect over the horizontal line:



Reflect over the vertical line:



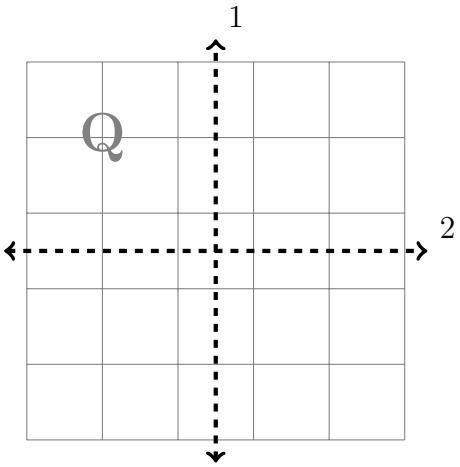
Reflect over the horizontal line:



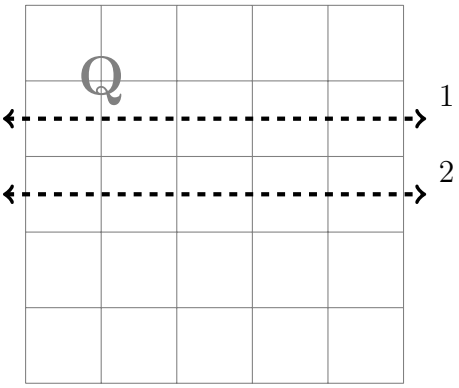
Part II: Composition

1. Apply the first rigid motion to the picture shown. Then apply the second rigid motion to the result of the first.

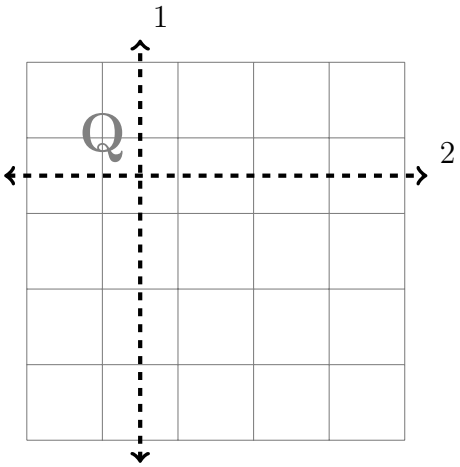
Reflect over the vertical line,
then reflect over the horizontal line.



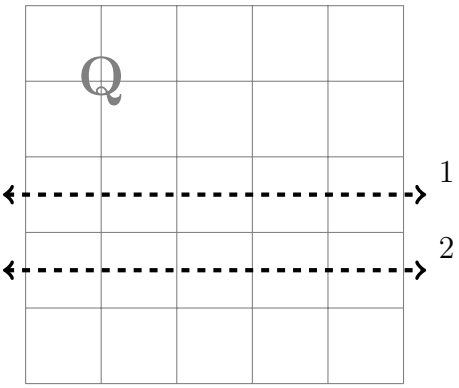
Reflect over the top horizontal line,
then reflect over the lower horizontal line.



Reflect over the vertical line,
then reflect over the horizontal line.



Reflect over the top horizontal line,
then reflect over the lower horizontal line.



2. Ignore the first reflected Q and only consider the original Q and the twice reflect Q. Describe in words what happens to the original Q to get it to the twice reflected Q.

(a)

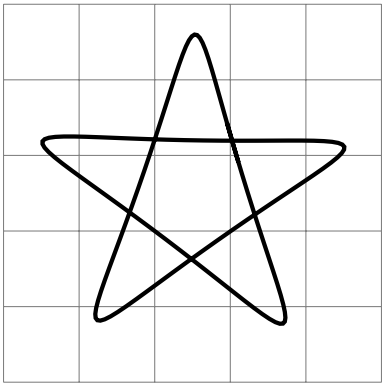
(b)

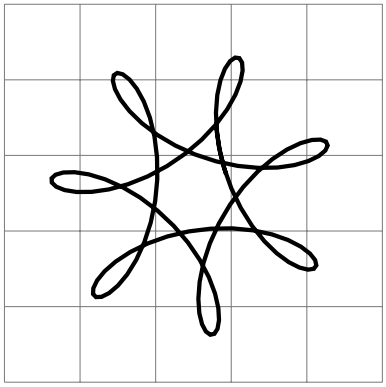
(c)

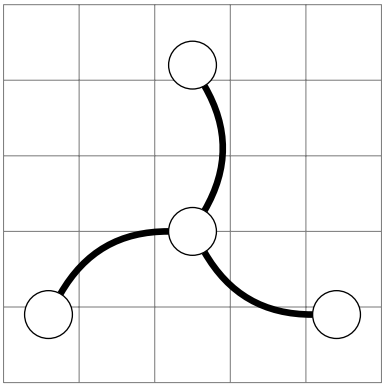
(d)

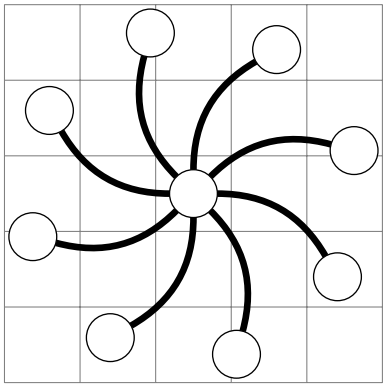
Part III: Symmetries of finite shapes

1. Draw the lines of reflectional symmetry and label the symmetry type of these 4 shapes.







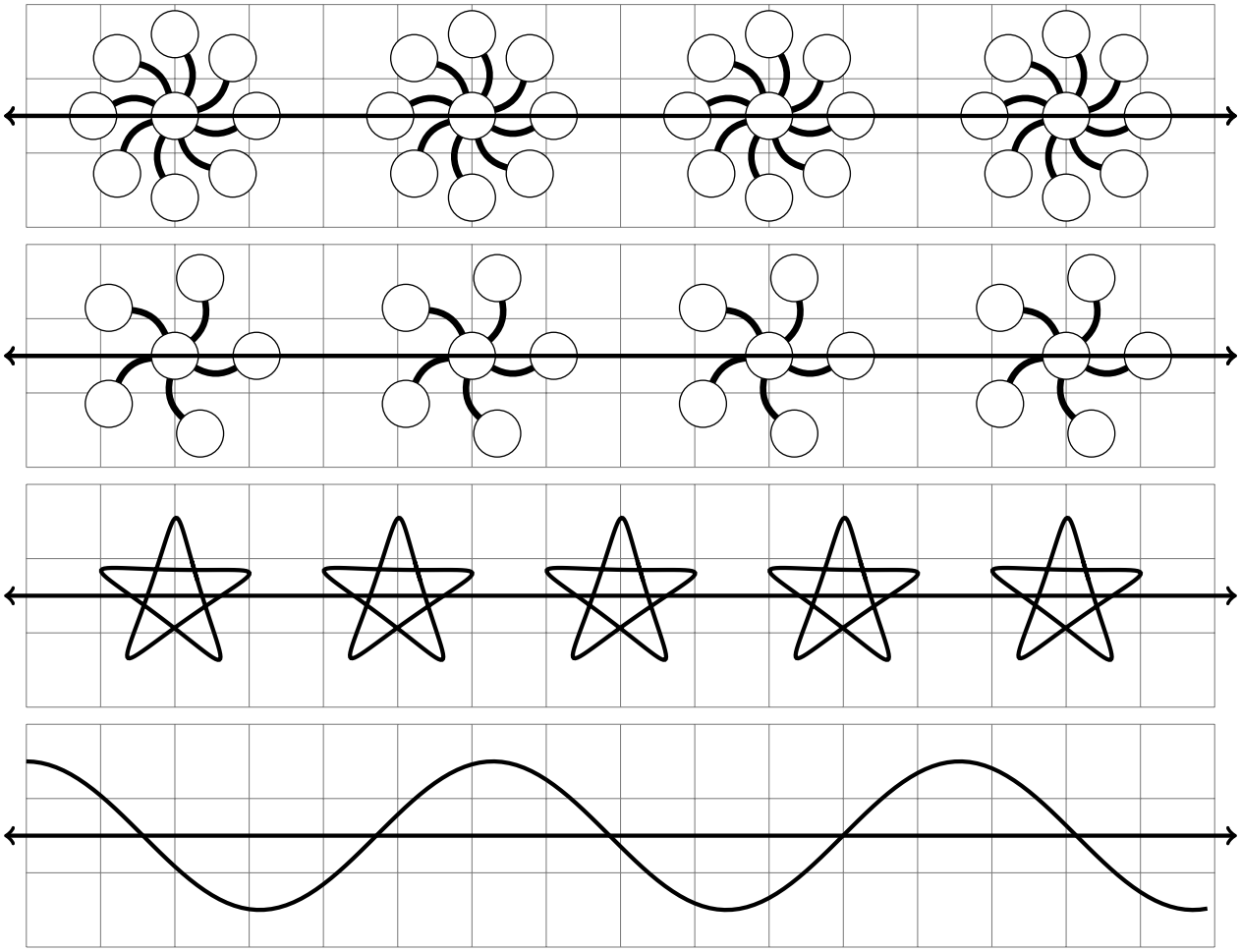


2. Draw a shape with Z_3 symmetry.

3. Draw a shape with D_3 symmetry.

Part IV: Symmetries of border patterns

1. Draw the lines of reflectional symmetry and centers of rotational symmetry. Label the centers with their order.



2. Draw a border pattern with jump type symmetry.

3. Draw a border pattern with step type symmetry.