Directions: *Complete each transformation using the GeoGebra activity. Label the vertices of the image figures using the prime symbol. For example, the image of vertex A should be labeled A'.*

1. **Reflection 1.** Input the coordinates for ABC and A'B'C'D'

$$A (\ ,) \quad A' (\ ,)$$
$$B (\ ,) \quad B' (\ ,)$$
$$C (\ ,) \quad C' (\ ,)$$
$$D (\ ,) \quad D' (\ ,)$$

a) What is the relationship between the coordinates of the vertices of the preimage and its image?_____

b) In general, what is the relationship between the coordinates of a point and its image after a reflection across _____? Rule: (x, y) (,)

2. **Reflection 2.** Input the coordinates for ABCD and $A'^1 B'^1 C'^1 D'^1$

$$A (\ , \ ) \quad A'^1 (\ , \ )$$
$$B (\ , \ ) \quad B'^1 (\ , \ )$$
$$C (\ , \ ) \quad C'^1 (\ , \ )$$
$$D (\ , \ ) \quad D'^1 (\ , \ )$$

c) What is the relationship between the coordinates of the vertices of the preimage and its image? _____

d) In general, what is the relationship between the coordinates of a point and its image after a reflection across _____? Rule: (x, y) (,)

3. **Reflection 3.** Input the coordinates for ABCD and $A'^2 B'^2 C'^2 D'^2$

$$A (\ , \ ) \quad A'^2 (\ , \ )$$
$$B (\ , \ ) \quad B'^2 (\ , \ )$$
$$C (\ , \ ) \quad C'^2 (\ , \ )$$
$$D (\ , \ ) \quad D'^2 (\ , \ )$$

e) What is the relationship between the coordinates of the vertices of the preimage and its image?_____

f) In general, what is the relationship between the coordinates of a point and its image after a reflection across _____? Rule: (x, y) (,)
(Compare and discuss your responses to #3 with your group.)

4. **Reflection 4.** Input the coordinates for ABCD and A'³B'³C'³D'³

$$A (,) A'^3 (,)$$
$$B (,) B'^3 (,)$$
$$C (,) C'^3 (,)$$
$$D (,) D'^3 (,)$$

g) What is the relationship between the coordinates of the vertices of the preimage and its image?

h) In general, what is the relationship between the coordinates of a point and its image after a reflection across _____? Rule: (x, y) (,)

Challenge

Identify the line of reflection for each challenge. (Hint: Graph at least 3 points located on the line of reflection and look at the patterns you see).

1. What is the line of reflection for challenge 1?_____

2. What is the line of reflection for challenge 2?_____