# Creating Transformations

## M7G2.B Given a figure in the coordinate plane, determine the coordinates resulting from a translation, dilations, rotation, or reflection.

In this activity you will be creating a visual display to demonstrate your knowledge of transformations. Activity must be done on graph paper. You will begin by drawing a **polygon**.

## Polygon Guidelines:

- Must have four to six sides. (No rectangles or squares allowed). Can be regular or irregular
- Polygon must be colored or decorated using colored pencil or crayon- No marker please.
- All angles of your polygon must be labeled with a letter. Letter should correspond to an ordered pair that is labeled on your paper.

## Part 1: Reflections

**Steps:**

1. Separate your graph paper into four quadrants. (x axis and y axis should lie on the lines of graph paper)
2. Choose a quadrant to draw your polygon (**Be mindful of instructions in polygon guidelines**). Draw your polygon. Label the angels with letters.
3. Reflect your polygon across the x- axis. Label these points as primes. For example, if I reflect **point A**, the reflected point would be **A'**. Reflect all your points.
4. Go back to your **original image**. Reflect your **original** polygon across the y- axis. Label these points as double primes. For example, if I reflect **point A**, the reflected point would be **A''**. Reflect all your points.
5. In your empty quadrant, List out your **letters** with the corresponding **ordered pairs**. Next list out your **letters** of your **reflected image** across the x-axis with their **corresponding ordered pairs**. Lastly list out your **letters** of your **reflected image** across the y-axis with their **corresponding ordered pairs**
    a. **** This should be written neatly and orderly.
6. Lastly, record an explanation of what changes when a shape is reflected across the x axis and what happens when a shape is reflected across the y axis. Answer in complete sentences. **Grading Rubric**

| Requirements | Pt Possible | Pts Earned | Notes |
|---|---|---|---|
| **Original image drawn correctly** | 25 | | |
| **Correctly reflected across x axis** | 20 | | |
| **Correctly reflected across y axis** | 20 | | |
| **Ordered Pairs listed correctly (5 pts per set)** | 15 | | |
| **Explanation complete & easy to follow** | 10 | | |
| **Creativity and organization** | 10 | | |
| **Final Grade** | **100** | | |

# Part 2: Translations

## Steps:

1. Separate your graph paper into four quadrants. (x axis and y axis should lie on the lines of graph paper)
2. Choose a quadrant to draw your polygon (**Be mindful of instructions in polygon guidelines**). Draw your polygon. Label the angels with letters.
3. Translate your polygon. Your original polygon must move a minimum a 5 lines up or down **and** 5 lines left or right.
4. Label these translated points as primes. For example, if I translate **point A**, the translated point would be **A'**. Translate all your points.
5. In an empty area of your graph paper, list out your **letters** with their corresponding **ordered pairs**. Next list out your **letters** of your **translated image** with their **corresponding ordered pairs**.
    a. **** This should be written neatly and orderly.
6. Lastly, record your rule in the form of an ordered pair.
   For example; **RULE: (x + 12, y – 20) would mean your moved right 12 and down 20 with each point.**

**Grading Rubric**

| Requirements | Pt Possible | Pts Earned | Notes |
|---|---|---|---|
| **Original image drawn correctly** | 20 | | |
| **Correctly translate horizontally** | 20 | | |
| **Correctly translated vertically** | 20 | | |
| **Ordered Pairs listed correctly (5 pts per set)** | 10 | | |
| **Rule listed correctly** | 20 | | |
| **Creativity and organization** | 10 | | |
| **Final Grade** | **100** | | |

# Part 3: Rotations

## Steps:

1. Separate your graph paper into four quadrants. (x axis and y axis should lie on the lines of graph paper)
2. **Draw your polygon in quadrant I** (**Be mindful of instructions in polygon guidelines**). Label the angels with letters.
3. Rotate your polygon 90 degrees about the origin. Label the rotated polygon **with primes** ( ex. A')
4. Rotate your polygon 180 degrees about the origin. Label the rotated polygon **with double primes**. ( ex. A'')
5. Rotate your polygon 270 degrees about the origin. Label the rotated polygon **with triple primes**. ( ex. A''')
6. In an empty area of your graph paper, list out your **letters** with their corresponding **ordered pairs**. Next list out your **letters** of your **rotated images** with their **corresponding ordered pairs**.
    a. **** This should be written neatly and orderly.
7. Lastly, record an explanation of what changes when a shape is rotated 90 degrees. What happens when a shape is rotated 180 degrees? What happens when a shape is rotated 270 degrees? Answer in complete sentences.

**Grading Rubric**

| Requirements | Pt Possible | Pts Earned | Notes |
|---|---|---|---|
| **Original image drawn correctly** | 5 | | |
| **90 degree rotation** | 15 | | |
| **180 degree rotation** | 15 | | |
| **270 degree rotation** | 15 | | |
| **Ordered Pairs listed correctly (5 pts per set)** | 20 | | |
| **Explanation** | 20 | | |
| **Creativity and organization** | 10 | | |
| **Final Grade** | **100** | | |