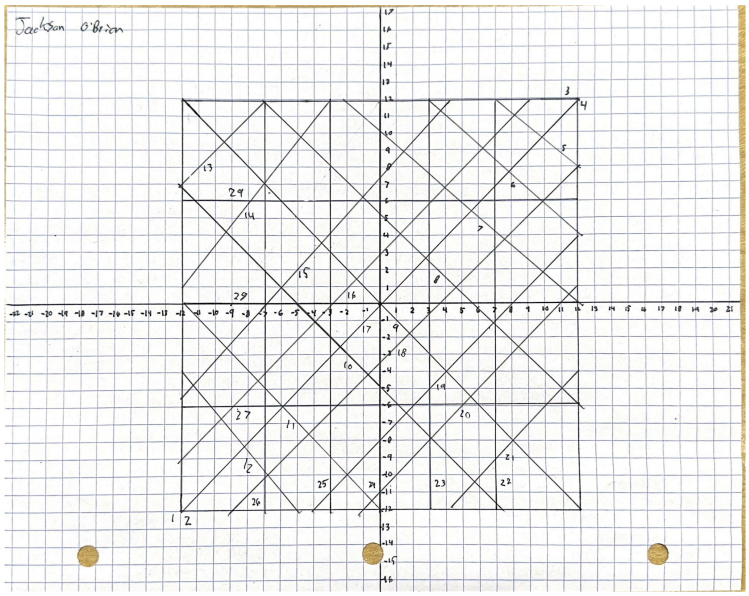
Jackson O'Brien

Teacher's Name: Ms. Gasser

Algebra 1, C Band
x2

Algebra 1, Quarter 3 Benchmark

<u>Introduction</u>: This project was inspired by reflections. You are able to reflect any side and it will still be the same. This is because each quadrant has the same pattern. The left side is the opposite of the right side and the top is the opposite of the bottom.



<u>Tutorial on Finding Equations of Lines</u>

Slope-intercept form

To find the slope of a line using slope intercept form you must first pick two points on the line. Once you find the two points you need to find the rise and run the rise is how many times you need to go up or down to reach the other point and the run is the number of times you need to move left or right to reach the other point. The equation is, rise over run, and once you simplify it that is your slope or m. Next, you

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need to find the Y-Intercept, Y-Intercept is where the line touches the Y-axis with the X-axis being equal to zero. Finally, you input the slope and Y-intercept into the equation, Y=MX+B the slope is M, and the Y-Intercept is B.

1. **Point-slope form**

   To find the equation of a line in Point-Slope form you first need to find the slope by finding rise over run. The rise is how many times you need to go up or down to reach the other point and the run is the number of times you need to move left or right to reach the other point. Once you simplify you have your slope. Next, you need to find a point on the line. Then you can fill in the equation Y=M(X-X1)+Y. M is the slope, X1 is the x of the point and Y is the y of the point.

   If you have a point of the line and the slope you can fill out the equation by replacing the M with the slope, the x1 with the x of the point, and the y1 with the y of the point.

2. **Horizontal lines**

   To find the equation of a horizontal line you just need to look at the Y-Intercept and whatever that number is you replace the M in the equation of Y=M

   You look for the number in the equation and put a point at the Y-Intercept and anywhere else along that Y point because the equation is Y=m

3. **Vertical lines**

   To find an equation for a vertical line you need to find where it reaches the X-axis

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and whatever that number is you replace the M in the equation of X=M

You first need to put a point at the X-axis and then you can put another point anywhere along that line as long as the x-value is the same.

4. **Parallel lines**

   Parallel lines have to have the same slope but can have different Y-Intercepts.

5. **Perpendicular lines**

   Perpendicular lines can have different Y-Intercepts but they need to have opposite reciprocals for their slope.

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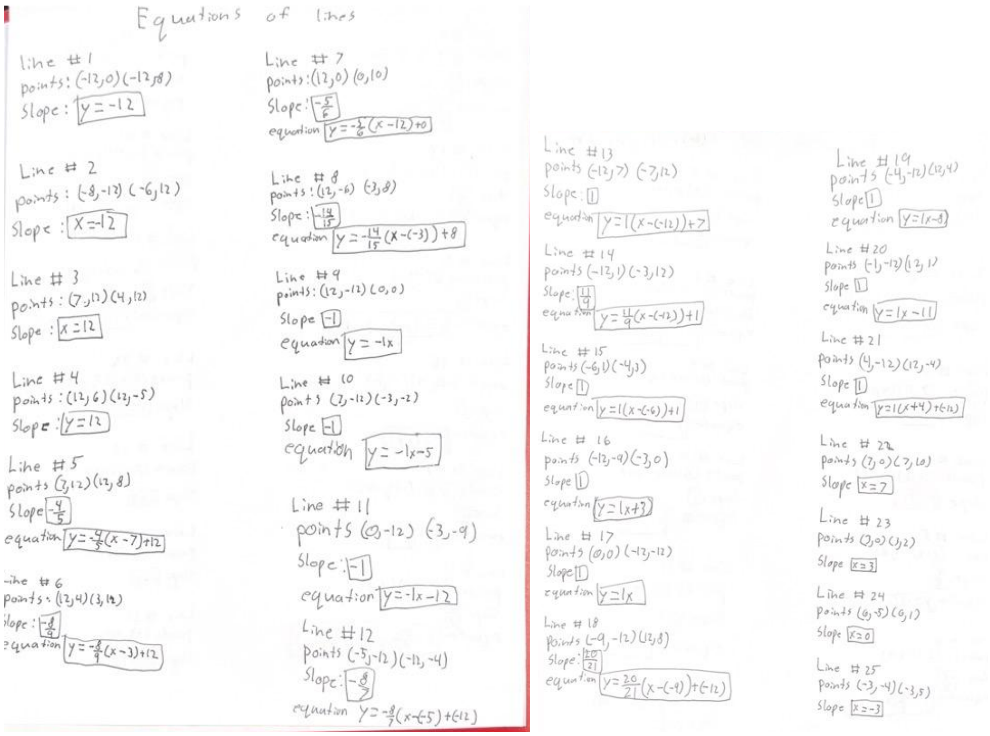
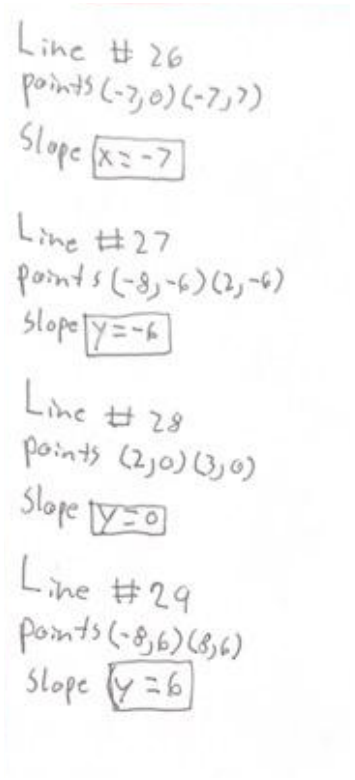
These are the equations for the lines





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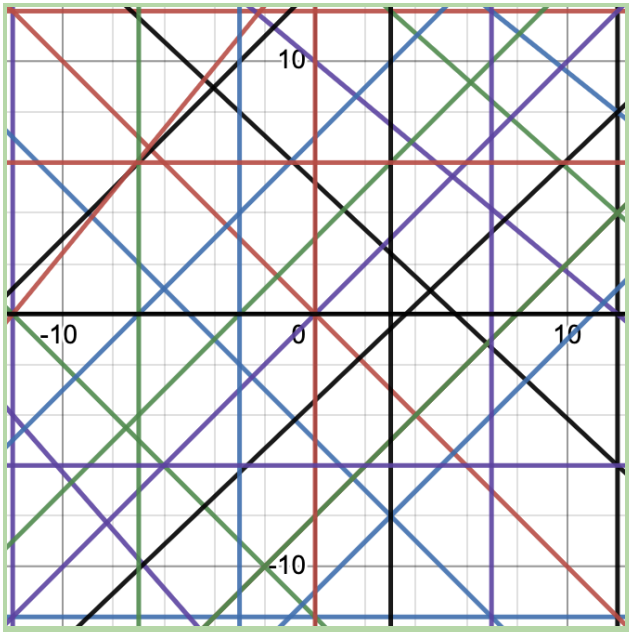
This is the desmos version of the lines.



Reflection

They were many problems with this project but the things that worked well were making sure that all the checkpoints were completed on time and making sure that I used all the time in class to work on the project. I was able to improve this project by using the information that I learned from the last one by making sure to follow all of the checkpoints and instructions which made time management much easier. I learned that I should double-check everything so that I won't have to fix a mistake right before I turn something in.