Ew! The Cartesian Plane is SO scaly!!

Plot this points (3,1) and (6,1).

Draw the line that connects these points.

How long is the line?

Now multiple all of the coordinates by 2.

Plot your new points and draw your new line.

How long is the new line?

Huh.

Let’s try a vertical one!

Plot the points (2,3) and (2,6).

Draw the line that connects these 2 points.

How long is the line?

Now multiply all of the coordinates by 2.

Plot your new points and draw your new line.

How long is the new line?

Huh.

What do you notice?

Does this work with lines that aren’t horizontal or vertical?

Plot any two points.

Draw the line that connects them.

How long is the line? (use a ruler)

Now multiply all the by 2.

Plot your new points and draw your new line.

How long is your new line?

Huh.

What if you multiply the coordinates by 3? Or four? Or by .5?

Investigate. Experiment.

Write a rule.

Let’s go into the next dimension!

Plot the points (1,1), (4,1) (1,5) and (4,5). Connect them to make a shape.

What is the shape?

What is the area of this shape?

What is the perimeter?

Multiply all the coordinates by 3 and plot your new points.

Connect them in the same manner as before.

What is the new shape?

What is the area of this shape?

What is the perimeter?

Try this again with a rectangle and multiplier YOU choose.

How did the areas compare?

How did the perimeters compare.

What about other shapes? Investigate with a polygon that is NOT a rectangle. Plot your original shape, record its area and perimeter. Multiply the coordinates by a value. Plot the new points. Calculate the area and perimeter.

Are you ready to make a hypothesis?

Test your hypothesis by drawing a new shape, choosing a multiplier, and predicting the outcomes. Then test it.