Create Your Own Lab

You will have the next 2 weeks of school to complete this assignment. This assignment has 5 sections called “phases.” Each correctly completed phase is worth 5 points toward your final grade.

Think about the experiments we have done in class that you could adapt, or an experiment that you could do on your own using materials in the classroom.

Then use that experiment to answer the questions in this packet.

Good luck and have fun!

Phase One: Variables Involved in Change

Learning Target: I can identify variables in a given situation.

CCSSM

6EE-9 – Use variables to represent two quantities in a real-world problem that change in relationship to one another

FIF-5 – Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

Questions

1. What is the name of the experiment you will be using for this project?
2. Please describe the experiment in one sentence. Include the two things being compared and how they affect each other.
3. What is the independent variable in this experiment?
4. What is the dependent variable in this experiment?
5. What is the domain for this experiment?
6. What is the range for this experiment?

Phase Two: Multiple Representations

Learning Target: I can represent the relationship between two variables in a table, graph and function.

CCSSM

FBF-1 – Write a function that describes a relationship between two quantities.

SID-6 – Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

AREI-11 – Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales

Question

1. Conduct the experiment and collect data. In the space below, please make a table of the data. Sketch a graph that shows the scatterplot and the graph of the regression equation. Include labels and scales. Then write the regression equation under the graph.

Phase Three: Relationships Between Variables

Learning Target: I can describe the relationship between variables.

CCSSM

6EE-9 – Analyze the relationship between the dependent and independent variables.

Question

1. Which function family do you think this experiment fits? Why?

Phase Four: Model Real World Situations

Learning Target: I can explain what real world things are happening at key points in the table and graph of a function.

CCSSM

FIF-4 – For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities and sketch graphs showing key features given a verbal description of the relationship.

Questions

1. Look at your table. What happened in real life when x = 0?
2. Look at your table. What happened in real life when y = 0?
3. Look at your graph. What happened in real life when the graph crossed the x axis?
4. Look at your graph. What happened in real life when the graph crossed the y axis?
5. Look at your graph. Does the direction of the line change? Why or why not?

Phase Five: Analyze Functions in the Real World

Learning Target: I can explain numerical relationships and make predictions using data from functions in the real world.

CCSSM

6EE9 – Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

Questions

1. Look at your table and graph. Describe how the values change. (hint: does it increase or decrease; does it change quickly, slowly, by the same amount, by different amounts?) Then describe how that matches what happened in real life.
2. What is one way you could change the conditions of the experiment? How would changing that variable affect the results of the experiment?