**Fathom Activity Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Modeling Functions \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Getting Started:**

1. Open Fathom. It should be in your dock. If not, check Applications.
2. Plug in your motion detector.
3. Notice a rectangle titled “Distance” pops up in the upper corner.
4. Click on “Collection” in the tool bar. Drag down a Collection into the white space.
5. Hover over the Distance box, and you will see an icon that looks like a plug pop up in the corner. Drag and drop that plug into your collection box in the white space. A box called “Inspect Experiment with Distance” will pop up. Move it to the side. (If you accidentally get rid of it, double click the Collection box to bring it back.)
6. Click on the Collection Box so that it is highlighted, then click on Table in the tool bar and drag down a table.
7. Click on the table so it is highlighted, then click on Graph in the tool bar and drag down a graph.
8. Click on the heading “Time” in the table and drag and drop it to the independent axis on the graph, where it says “Drop an attribute here”.
9. Click on the heading “Distance” in the table and drag it to the dependent axis on the graph, where it says “Drop an attribute here.”
10. You are ready to do your experiments. In your “Inspect” box, you can change your cases per minute to be something different as you conduct your experiments if you would like. You can also change the length of your experiments.
11. One person will need to click the “Turn Experiment On” button. The motion detector will start to click. One person will need to hold the motion detector. One person will need to walk towards or away from the motion detector. Once the experiment is complete, you can press the “Trigger” button on the motion detector to make it stop clicking.
12. Once you do an experiment, you will look at your graph. If you do not like the data, you can repeat the experiment again by clicking the Turn Experiment On button again. It will automatically graph over your previous data. You can do the experiments as many times as you need until you get the graph you want.
13. Once you have the graph you want, you can eliminate any points that are irregular by clicking and dragging a box around the points you do not want, then click Edit/Delete Cases.
14. After you have a graph illustrating what you want, you can make your table and graph small. You can click on your Collection Box, then on Collection at the very top of the page, and Rename Collection. Please name the collection according to the number of the problem (i.e. Problem 4). Minimize the collection, table, and graph to be as small as possible, and then move them out of the way.
15. When you have finished all problems, save and name your Fathom page with the first names of the participants of the group. Let me know when you are complete and you can AirDrop the file to me.

**Experiment:**

**Use your motion detector to create graphs that illustrate the following:**

1. A linear graph with a negative slope.
2. A linear graph with a positive slope.
3. A linear graph with a higher slope value than Problem
4. A linear graph with slope value of 0.
5. A linear graph with slope value of undefined.
6. A quadratic graph that has a minimum.
7. A quadratic graph that has a maximum.
8. An exponential graph that is increasing.
9. An exponential graph that is decreasing.
10. A linear graph that has a positive slope for 2 seconds, then a slope of 0 for 2 seconds, then a negative slope for 2 seconds.

**When you are finished with the experiment**, save your Fathom activity as stated in Step 15 and AirDrop it to me.

**After the experiment**, answer all of the following questions as a group. Write your responses using complete sentences with correct spelling, grammar, and punctuation.

1. What did you have to take into consideration when making your graphs, meaning how did you decide what needed to be done to achieve the requested graph?
2. What problems did you have creating the graphs?

1. Which graph was not possible to construct and why?