Gravitational Force Lab

**Purpose:** To determine the relationship between Force and Mass.

**Apparatus:** Force sensor set on 10 N setting (with hook and bar), weight hanger, masses (100 g), ring stand, and clamp

**Procedure:**

All groups will set up the above equipment. Start Logger Pro/Probes and Sensors/Dual Range/ 10 N. Insert meter. Zero probe with empty hanger. Add mass in 50 g or 100 g increments. Record force. Continue adding mass and recording force until you reach 10 trials.

After collecting your data, your group will enter their data into the computer on Graphical Analysis. Have one group member log in and start the program called Graphical Analysis under programs/science. Once in the program follow the steps for making a graph outlined on the card you were given at the start of the year. Be sure to include labels and units for each column of data and also title your graph.

Next you will analyze your graph. In order to analyze your graph you must first make sure it is linear. If your graph is not linear straighten it by using the techniques outlined on the card and in the reading. Once you have a straight graph, you need to create a mathematical expression or equation or what is called a model. The model is really just the equation for a line: y = mx + b, but it gives more information since it replaces y and x with the actual variables, it replaces m with the actual slope with units, and it replaces b with the actual y-intercept with units.

Lastly, you will produce a white board to present your results. The white board is a 2 ft by 3 ft dry erase board. On here you will include your group number, names, purpose, graph, straightened graph (if necessary), math model, and a conclusion that states the relationship of two variables.