**AP Physics – Gravity Force Lab**

Today, you will use the Gravity Force Lab PhET Simulation to investigate what the gravitational force between two objects depends on and experimentally determine the Universal Gravitational constant, G.

**PreLab and Beginning Observations**

1) Write the formula for the force of gravity (Law of Universal Gravitation). Label each variable and constant and include its units.

2) Open the Gravity Force PhET Simulation. What can you change about the simulation?

**Part 1 – Qualitative Observations**

3) Look at the formula above. What three things can you change in the formula that you can also change in the simulation?

4) Change each variable and record what happens to the gravitational force as you change it. Be specific with your language (i.e. use terms like increase, decrease, remains constant).

**Part 2 – Quantitative Measurements**

In this section of the lab, you will develop your own method for determining the gravitational constant G in the formula for gravity using the simulation and Excel.

Possible ideas

* Change mass 1 and keep mass 2 and the distance constant and record gravitational force.
* Change distance and keep mass 1 and 2 constant and record gravitational force.

In both of these examples, think about what you would graph and how it would allow you to determine the constant G. Will your slope represent G only? How much data should you collect given your time constraints?

You will turn in your procedure, data, graph and value for G.