Physics Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lab: Projectile Motion Inquiry Lab

This is an inquiry based lab using two pieces of equipment. The first launches a single ball and we will call this one the CANNON. The other releases two balls at the same time; one straight down and the other one being pushed out. We will call this one the LAUNCHER.

You will be given time to gather data. Record anything you think is needed. Here are some clues.

LAUNCHER: Don’t focus on the distance out that the balls travel from the LAUNCHER. That is not the most important value for us. Some of the best information for this lab will be through observation.

CANNON: This part is much more mathematical. You will need more measurements and more graphs.

Directions: LAUNCHER

We will gather data from two different heights, one from a table in the room and another from around the school at a much higher elevation. You need to do enough trials to make observations, see relationships and to gather enough data to feel confident that you have an accurate description of what is going on.

DIRECTIONS: CANNON

Due to the distance the ball might travel, we will do this outside. Since this is much more mathematical, remember to record anything that you think applies to the motion of the ball. Record your data.

Lab Write Up: LAUNCHER

The key value here is the time it takes for each ball to land. You do have some other information available. You should know the acceleration, initial velocity and height. Assume that all the balls were of equal weight. You are to write up an explanation on your observation about the balls being dropped, backing it up with mathematical proof (that means formulas). After you have done this, you need to graph some other variable that was not at first observable and graph it. Follow good graphing practices detailed in class.

Lab Write Up: CANNON

You will need to create two graphs of the data you collect. One by hand and one using some electronic graphing program. Your choice as far as which program you use. Follow good graphing practices.

You need to graph the calculated distance that the objects should have traveled and include that.

Include a data table along with the % difference for each trial (Set of angles). Solve for true values.

You also need to calculate one additional value. You have enough information to solve for it.

Graph this value on a separate graph and include a data table.

Each person has to do the graphs individually though you can work in your groups.

Remember that this is an inquiry lab which means the main goal was to have you look and observe. Make sure your write up shows this.

The lab needs the following:

1. Well made graphs, complete with data tables
2. Calculations Page. Show all work.
3. Sources of Error
4. Summary page which needs to be a bit longer than normal. I want it typed and attached. Make sure to include complete explanations of what you observed. Also, make sure you include the information from the other calculations you performed. Think of it as 2 summaries: Launcher and Cannon.