AP Physics Unit 2: Kinematics—Linear Motion

Lab 2-3: Free Fall Acceleration

**Purpose:**

You will show your understanding of accelerated motion to determine the acceleration due to gravity. Then you are to tie the nuts onto the string so that, when you hold the string up high and let it go into a metal pie dish, you hear the “rat-a-tat’s” evenly spaced. The distance between the first nut and the last must be between 1.5 - 2 meters (so that I can hold it up in the classroom when I test it).

**Materials:**

You have three meters of string and five nuts. You may use any of the following materials in your experiment. Requests for additional materials will be considered as well. Circle (or add) the items you use.

Metersticks

Rulers

Tape

High Frame Rate Camera

Stopwatches

Photogates

Motion Detector

Balls

Carts

Inclined Ramp

Picket Fences

**You will be writing a Formal Lab Report for this experiment.**

**Include the following and anything else needed:**

**Procedure:**

Record a description of the procedure you used to measure the acceleration due to gravity.

**Data:**

Create necessary data tables here. Be sure to label tables clearly.

**Data Analysis:**

Show calculations below. Print graphs and attach or sketch here.

Include work out of math determining placement of the nuts

**Conclusions:**

Measured value of acceleration due to gravity: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Accepted value of acceleration due to gravity: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Percent Error: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Discussion of Error: