Pre-Lab Questions

1. What is the formula that will relate constant velocity to distance and time? Do we need to account for the difference between distance and displacement, velocity and speed?
2. What are three different methods for measuring constant velocity? Be creative? Rank in order of least to most difficult for you to measure and justify.
3. What are some variables that you cannot control that may play a roll in this lab?
4. How many trials do you think are necessary and why?

AP Physics Unit 2: Kinematics—Linear Motion

Lab 2-1: Constant Velocity Crash Course

**Purpose:**

You will show your understanding of constant velocity motion using battery-operated vehicles. Using two vehicles, you will first devise a method to find their respective velocities. Then you will be expected to predict when and where the two vehicles will meet when sent toward each other from a specified distance.

**Materials:**

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

Stopwatches

Photogates

Motion Detector

Tape

**Procedure:**

You are not allowed to run dry tests prior to making measurements! Record a brief description of your procedure describing how you found the cars respective velocities and how you determined when/where they would collide.

**Data:**

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

**Data Analysis:**

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

Velocity of Car 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Velocity of Car 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Conclusions:**

Predicted time (after release) for collision: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Measured time (after release) for collision: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

Predicted position for collision: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Measured position for collision: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

Discussion of Error: