Week 2: Analysis of Motion

In this lab, you'll experiment with the PascoCars and design your own experiments using the the laser gate that is interfaced with the computer– our high tech equipment that can give you very accurate measurements of speeds and times! You also have an incline available to let the cars run down. ***(CAUTION: make sure you prevent the PascoCars from falling off the table!)***

1. Familiarize yourselves with the computer-interfaced laser gate. Single-click on the program "**gdrop**" on the desktop. It records the time the light detector is blocked by the little metal strips that can be attached to the PascoCars.
2. Calibrate the laser gate.

car rolls down the ramp

3. Your task is to determine what type of motion a car performs when it rolls down the incline. Using the program "**gdrop**" determine the
    a. Velocity as a function of time
4. Make a graph (by hand) of
    a. Velocity vs. time
5. From your graph determine the acceleration of the car. Is the acceleration changing as the car rolls down the ramp? Explain.
6. Press "g" to see a computer graph of the results and discuss.

car going up the ramp

Your task is to determine what type of motion a car performs when it rolls up the incline.

7. Make a prediction: How will the acceleration of the car when it goes up compare with the acceleration of the car when it goes down?
8. Roll the car up and repeat step 6.

A heavier car rolls down the ramp

Your task is to determine what type of motion a heavier car perform when it roll down the incline.

9. Make a prediction: How will the acceleration of the heavier car compare with the acceleration of the lighter car when it goes down the ramp.

10. Roll the heavier car down and repeat step 6.

Other experiments:

11. Vary the angle of the incline, describe the motion now.
12. There is a ladder available in the lab. Use it to determine whether the acceleration is constant and if so measure the acceleration?