The Value of the Acceleration of Gravity, **g**

Pre-Lab

Cart Motion

1. Tape an index card to the back end of a cart. The card will give the motion detector a flat surface to detect, giving you better data.
2. Position the cart at least 0.25 m from the motion detector, facing away from the detector in a straight line.
3. Start data collection. You'll notice a clicking sound from the motion detector. Wait about a second, then flip the ON switch on your cart. Allow the cart to travel about 3 meters.
4. Examine the position vs. time graph. Repeat step 3 if your graph does not show an area of smoothly changing distance.

Pre-Lab Analysis

1. Sketch the position vs. time graph in your lab notebook.
    a. Are there areas of bad data? Mark those areas.
    b. Determine the velocity from the graph using the areas of good data. Show your calculations.
2. Sketch the velocity vs. time graph in your lab notebook.
    a. Does the velocity you calculated from your position vs. time graph match what is displayed in the velocity vs. time graph? If there are discrepancies, what are they, and can you account for them?
3. Your PalmQuest should generate the position vs. time and the velocity vs. time graphs for you. Sketch an acceleration vs. time graph that would match your data.

Lab Proposal

Purpose: Given a ball, a shelving track, some books, motion detector, and PalmQuest, find the value for the acceleration of gravity, g.

Write a lab proposal in your lab notebook. Remember to use the format discussed earlier. When you have completed your lab proposals, show the proposal to Ms. Carlson to be reviewed and approved.