PHY221 Lab 4 Textbook problem

(To be completed during your regular lab section!)

No pre-lab this week!

Your activity this week will be quite different from previous weeks. Please see Knight ch. 2 problem 22. Of course, in our lab, we cannot safely use carts moving at 30 m/s; yours will have to move much slower.

Your mission is to do the experiment that this question describes, but launch the car with some unknown initial velocity $v_0$. Please experimentally determine $v_0$, the distance $s$ that the cart rolls up the ramp, and the final velocity $v_f$ at the location where you determined $v_0$. You need to determine which set of tools in your arsenal you are going to utilize.

Finally, calculate $v_f$ and $s$ based on your determination of $v_0$. Compare your calculated values to those which you experimentally obtained. I expect them to be different. Why are these numbers different?

Please describe with drawings and measurements, how you set your ramp to 10°.

How did you determine $v_0$? Where was the car when its speed was $v_0$?

What is your calculated value for the acceleration $a$? Your measured value? Are these values the same for the trip up the ramp and the trip down? If there are any differences, what might explain them?