P1310L, Conservation of Energy
Lab 6, Raw Data Sheet

Submitted by: _____ Experiment's date: _____

Team members:

1.- _____ 2.- _____

3.- _____ 4.- _____

Instructor must initial:_____

Introduction

Write a short paragraph about the purpose of this lab.

Analysis

Instructions: Follow the steps on this worksheet, using your lab manual as a guide, unless directed to do otherwise by your lab instructor. Show at least one sample calculation for each result requested. The results must include appropriate SI units. If a table is used, then it must have headers (for rows or columns) that include units

Energy

1. Assume that there is no friction on the ramp and use energy conservation, $E_i = E_f$, to derive, in detail, a formula for the car's exit speed. This formula, must predict the car's exit speed given your measurements of the ramp, and gravity.

2. Use your formula for the exit speed, and the units in your measurements to determine the exit speed SI units. Does your formula produce the expected SI units?

3. Plug you measurements in your formula and make a prediction for the magnitude of exit speed. Include its units.

4. Calculate the actual exit speed from the photogate time, including its SI units.

5. Determine the frictional loss of energy over the ramp.

Projectile Motion

6. Show, in detail, the projectile motion analysis that leads to a formula for the prediction of distance X in Figure 6.1 of the lab manual. Wait until you have the formula to plug in numbers. Note: use the actual exit speed obtained from the photogate time and car length. Enclose your numerical value with the appropriate units.

Conclusion

Summarize your results and write a brief reflection on the experiment; in particular, comment on whether the theory makes reasonable predictions despite the observed variability.