**General Physics eJournal 5**

**Conservation of Energy**

**Instructions:**

Follow the Writeup and fill out the eJournal as you complete the lab activities. Submit your eJournal report by uploading the completed WORD or PDF document to our class Learninghub site. If the Learninghub site is down, email the completed report file directly to a lab TA.

**Preliminaries:**

* Title:
* Name(s):
* Date:
* Time In & Out:

**Plan:**

**Hypothesis**

Sketch hypothetical graphs of KE, PE and E vs. time for a ball in flight. All three should be on the same x-y plot. Formulate a conservation of energy hypothesis for this lab.

*Insert image of your graphs*

**Experiment Outline**

Briefly describe your plan for testing your hypothesis.

**Equipment List**

* List
* Equipment
* Here

**Action:**

Describe the techniques used to collect data by responding to the bullet point questions:

* How did you measure mass of the ball?
* What items are in the video?
* Why is the measuring tape included?
* What did you do with the ball?

*Insert labeled image of your apparatus*

**Results:**

Record the mass of the ball in kg.

Mass of Ball: m = \_\_\_\_\_\_\_\_\_\_\_\_ kg

After you have marked the path of the ball in Tracker, insert an image from Tracker showing the ball and tracking marks.

*Insert Tracker image of the ball’s trajectory*

**Analysis:**

Insert a graph with KE, PE, and E (all on the same vertical axis) vs. t (on the horizontal axis).

*Insert graph of KE, PE, and E vs time*

Calculate the mean (average) and standard deviation of the total energy, E.
Calculate the relative error from the standard deviation over the mean.
Record these results in Table I.

**Table I: (Write appropriate title)**

|  |  |  |
| --- | --- | --- |
| **Mean** | **Standard Deviation** | **%Error = Std Dev / Mean x 100%** |
|  |  |  |

**Conclusion:**

Interpret your results in light of your hypothetical predictions. Discuss possible sources of error. What effect would a large, non-conservative drag force, such as air resistance, have on your plot of total energy vs. time? How might you improve this experiment or explore it further?