**General Physics eJournal 0**

**Introduction to Lab Tools**

**Instructions:**

Watch the tutorial videos, follow along with the activities, and record the necessary pictures and data in your eJournal Report. 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.

**Note:** This lab report will NOT follow the grading rubric for a typical lab report. The purpose of this lab is simply to familiarize you with the software and hardware tools that you will be using in the coming labs. Just follow along with the videos, complete the activities, and record the requested information. The rubric will be used starting with lab 1.

**Preliminaries:**

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

**Measurement Tools:**

**Measure App/Level App**

Measure the angle of something and take a screenshot on your phone to show the angle. Include the screenshot here.

*Insert screenshot of your measured angle*

**Phyphox App**

**?**

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**?**

Accelerometer

Using the accelerometer tool, identify the x, y, & z axes for your phone. Fill in the axis labels in the following diagram to match your phone.

Take a screenshot of the accelerometer data you collected and insert the image here.

*Insert screenshot of your accelerometer data*

Acoustic Stopwatch

Follow the instructions to check if the acoustic stopwatch works with your phone. If it works, use this for the experiments. If it does not work, use a normal stopwatch or stopwatch app instead.

Does the acoustic stopwatch tool work on your phone? (yes/no)

Take a screenshot showing the threshold and delay. Insert the screenshot here.

*Insert screenshot of the acoustic stopwatch*

Audio Spectrum

Record a sound frequency and use the pick data tool to identify the frequency. Take a screenshot and insert it here.

*Insert screenshot of your audio spectrum graph*

**Spring Balance**

Set up and zero your spring balance. Then weigh a Hot Wheels car and a ball from your lab kit. Record the masses in Table I below.

**Table I - Recorded Masses**

|  |  |
| --- | --- |
| **Mass of Hot Wheels Car (g)** |  |
| **Mass of Ball (g)** |  |

**Sample Experiment**

After watching the rolling ball experiment in the tutorial video, describe the techniques used to collect data by responding to the bullet point questions:

* What was the purpose of the ruler and where was it placed?
* How was the motion of the rolling ball captured/recorded?

**Analysis Tools:**

**Google Drive, Docs, and Sheets**

You do not need to record anything for this section, just follow along with the tutorial video. In the next sections, you will use these tools to complete other tasks.

**Tracker**

Follow the video and Writeup instructions to track the rolling ball’s position and export the data as a CSV file. Back up the video in Tracker to show the ball and the tracking marks. Then export a “Thumbnail Image” of the “Entire Frame” or “Main View”. Insert this image below.

*Insert Tracker thumbnail image*

**Google Sheets and Graphical Analysis**

Follow the Writeup instructions to import the CSV file data and generate a graph. Insert the graph here.

*Insert Google Sheets position vs time graph*

Continue following the instructions to generate the labeled graphs in Graphical Analysis. Export the graph images and insert here.

*Insert Graphical Analysis position and velocity graphs*

After completing the analysis in Google Sheets and Graphical Analysis, record the experiment results in Table II and Table III below.

**Table II - Velocity Analysis Results**

|  |  |  |
| --- | --- | --- |
| **v (m/s) from position graph** | **v (m/s) from velocity graph** | **%Difference** |
|  |  |  |

**Table III - Mean and Standard Deviation**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **v (m/s)** | **a (m/s2)** | **KET (J)** |
| **Mean** |  |  |  |
| **Standard Deviation** |  |  |  |