**Introduction -** In this lab we timed the period of a pendulum at several known lengths. We used a ruler to find the length of the pendulum from the point at which it was held to the center of the mass. Most of the lengths were about 5 cm apart. We then used the data collected on time and length to try to estimate a value for gravity.

*Introduce your lab by stating what you did and how. You may merge theory and introductions together or you may separate them. What you write depends on the lab itself.*

**Theory -** the period of a pendulum depends on length and time. The equation is :

*If there are equations that are faster to just write by hand, write them by hand. This should be a time saver. Make sure it is.*

We modified this equation to look more like a line with a slope we could use to find gravity:

If we plot the period of a pendulum vs. square root of length of the pendulum , the slope of the graph should be:

We intend to plot values, find the slope and derive a value for gravity.

*Results are often data points. Sometimes a table, sometimes a graph. You will have to judge what is best. If you have only one thing measured, a data table might be silly. If is graph will help you to make a conclusion, draw it. If it is just average of the values you measured, don’t draw one.*

**Results**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| trial  | period 10 swings | period | length | sqrt length |
| 1 | 4.50 | 0.45 | 5 | 2.24 |
| 2 | 6.40 | 0.64 | 10 | 3.16 |
| 3 | 7.60 | 0.76 | 15 | 3.87 |
| 4 | 9.10 | 0.91 | 20 | 4.47 |
| 5 | 9.90 | 0.99 | 25 | 5.00 |
| 6 | 10.60 | 1.06 | 30 | 5.48 |
| 7 | 11.50 | 1.15 | 35 | 5.92 |
| 8 | 12.50 | 1.25 | 40 | 6.32 |
| 9 | 13.30 | 1.33 | 45 | 6.71 |
| 10 | 14.10 | 1.41 | 50 | 7.07 |

**Conclusions:**

The slope of the line is about with only minor variation in the data points. This is a very strong trend and I have a good deal of certainty about the results