# Lab 3: Acceleration of Gravity and Measurement Statistics

Experiment for Physics 225 Lab at CSUF

## What You Need to Know:

## What You Need to Do:

### Part 1: Initial software setup and hardware test

### Part 2: Obtain a good value of g and compare.

|  |  |  |  |
| --- | --- | --- | --- |
| Value From: | Distance Graph FitTable – Initial point data | Velocity Graph Fit | Acceleration Graph Statistics |
| $$g $$ |  |  |  |
| $$v\_{0}$$ |  |  | X |

Completed table of 35 values (Can break the columns up a few times so you paste 10 rows and take up a bit less space, or just paste the whole thing its fine.)

### Part 3: Generate two histograms, one for g and one for v0.

$v\_{0}$ Histogram Screenshot with drawn lines

$g$ Histogram Screenshot with drawn lines

1.
2. Calculate the acceleration value for just the first five trials. How does this value compare with the value you obtained for the entire 35 trials?
3. In which average do you have greater confidence? Why?
4.

For your histogram of g, estimate by counting: (Note excel automatically counts when you highlight cells down at the bottom)

1. in what range (minimum to maximum values of g) do the middle 2/3 of your values fall?
2. In what range do roughly 90% of the values closest to your average fall?
3.

One way to report the precision of your values is to take half the difference between the minimum and maximum values and use this result as the uncertainty in the measurement. Determine the uncertainty in this way for each range of values you determined Question 2.

1.
2. In what place (tenths, hundreds, thousandths) does the uncertainty begin to appear?
3. Is it reasonable to report values in your average beyond the place in which the uncertainty begins to appear? Explain your answer.
4. Round your average value of *g*to the appropriate number of digits and report that value plus the uncertainty.

## Conclusion

Follow the lab report guide to write a conclusion on this lab.

Submit any excel or graphical analysis data your instructor requests along with your report.

Conclusion