

Chemistry 101L

Second Class Meeting
Experiment #1

PURPOSE OF EXPERIMENT

- Understand how measurements are made and the utility of basic and derived units of measurement.
- Identify the different kinds of errors that can be present in measurements.
- Display random measurement variations in a histogram that approximates the Gaussian normal distribution.
- Calculate the standard deviation for a set of randomly distributed measurements.
- Express the uncertainty of a measured quantity by using the appropriate number of significant figures.
- Learn how errors propagate when quantities are derived from measurements that are multiplied and divided or added and subtracted.
- Present the data obtained from measurements visually, by using graphs.
- Practice making measurements of mass, length, and volume and graphing the results.

Measurements

Pennies

- * Please make sure that you are using the balance that has FOUR decimal points. X.XXXX
- * If you use three or less you will need to repeat the experiment

Volume

- * I am so sorry but I do not have any meter sticks. Please use the rulers in your locker.

General Notes

Reports to hand in

- * Due one week after finishing the experiment. So, this experiment is due Thursday September

Additional Questions

- * #1, #5, #6

Sample Calculations

Penny 1	3.1222	Deviation 1	-0.0017	Square Deviation 1	0.0000027
Penny 2	3.1233	Deviation 2	-0.0006	Square Deviation 2	0.0000003
Penny 3	3.1244	Deviation 3	0.0006	Square Deviation 3	0.0000003
Penny 4	3.1255	Deviation 4	0.0017	Square Deviation 4	0.0000027
Sum	12.4954	Sum	0.0000	Sum	0.0000061
Average	3.12385			Sum / (N-1)	0.0000020
				square root (Sum / (N-1))	0.0014
				Std Dev	0.0014