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Class: Physics II

Period: 7

Group #: 9

Lab # and Title: Lab 01 - Mass vs. Volume

Laboratory Report

Purpose

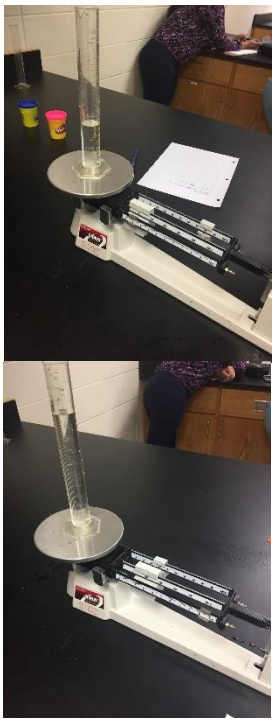
This lab is to find the mathematical relationship between mass and volume. To find this out, both mass and volume will be measured. This lab will see if mass and volume are directly proportional.

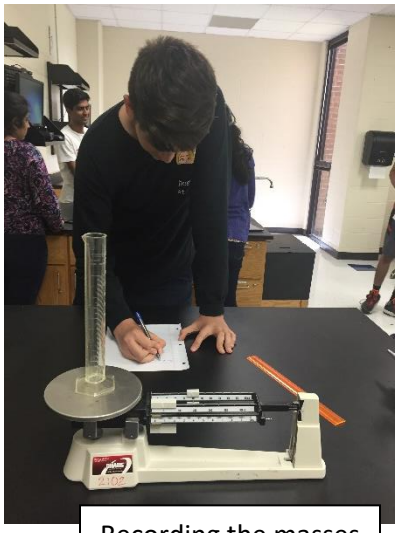
Equipment Used

Graduated cylinder, water, and triple beam balance.

Procedure

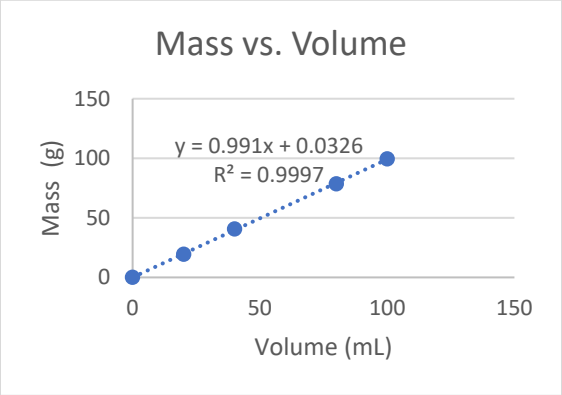
To find the relationship between mass and volume, you must first weigh the graduated cylinder on the triple beam balance to figure out its mass and then record it. Once you have recorded it, measure a volume of water and then add it to the graduated cylinder. Record the mass of the graduated cylinder plus the water. Repeat this for five or more volumes of water. The pictures on the left depict how it should be arranged and the different volumes. To get the set of all masses of water, take the set of masses and subtract the mass of the graduated cylinder from each point in the set and record it. You must then perform a regression on the set of data points of the volume of water and the mass of the water.





Recording the masses

Data



Volume (mL)	Mass (g)
0	0
20	19.3
40	40.7
80	78.6
100	99.4

Conclusion

My data supports the idea of a linear relationship between mass and density. The results were fairly accurate as the R^2 value is near 1. Sources of error could be found in the accuracy of the graduated cylinder and triple beam balance. To minimize error, we used the tools to best of their capability, but there is little to do besides that.