

DENSITY OF LIQUIDS LAB

INTRODUCTION: During this lab, you will collect mass and volume for several samples of three different liquids. You will use the data to determine the graphic relationship between mass and volume for the liquids. From the graphic relationship, you will use the slope method to determine each fluid's density.

OBJECTIVES:

1. Use the slope method to determine density.
2. Measure with accuracy the mass of a liquid sample,
3. Measure with accuracy the volume of a liquid sample,
4. Determine with accuracy the density of a substance from a graph using the slope method.
5. Describe the relationship between the mass and volume of different samples of the same substance.
6. Determine percentage error.

MATERIALS:

- | | |
|---|---------------------------------|
| - samples of fluids (each sample/ 2 people) | - eye dropper (2/sample) |
| - balance (1/2 people) | - graduated cylinder (1/person) |

PROCEDURES:

1. Mass a graduated cylinder. **Record your mass.**
2. Using a balance and graduated cylinder, determine the mass of 2, 4, 6, 8, 10 mL of sample liquid. **Record your results** on the data table.
3. Clean the graduated cylinder with soap and water. Dry the graduated cylinder as best as possible.
4. Clean the graduated cylinder with soap and water. Dry the graduated cylinder as best as possible (shake-no paper towels inside).
5. Repeat step 2-4 with liquid B. Dry the graduated cylinder as best as possible.
6. Repeat step 2-4 with liquid C.
7. Calculate the mass of each liquid without graduated cylinder by subtracting "graduated cylinder" from the "GC & liquid" mass. No plastic/glass in this measurement.
8. Use the mass and volume (for 2, 4, 6,8,10 mL) as coordinates and construct a graph. (Mass on the y-axis and Volume on the x-axis.)
9. Find the densities using the formula method ($D=M/V$). Be sure to write formula and show work. Use calculator for answer.
10. Find the densities using the slope method. $Slope = \Delta Y / \Delta X$.
11. Get Accepted Values from teacher and calculate Percentage Error. $(AV-EV)/AV \times 100 = \%$ (be sure to write formula, show work, and use calculator).
12. Identify the samples.
13. Write a results paragraph, conclusion paragraph, and application sentence. See Scientific Method Notes to learn how to write these 3 sections.

Data Table

Volume (mL)	Mass of Empty GC (g)	Sample A Mass w/GC (g)	Sample A Mass w/o GC (g)	Density-show formula & work	Percentage of Error-show work
2					
4					
6					
8					
10					
Volume (mL)	Mass of Empty GC (g)	Sample B Mass w/GC (g)	Sample B Mass w/o GC (g)	Density-show formula & work	Percentage of Error-show work
2					
4					
6					
8					
10					

