

Name _____ Period _____

Lab 3 – Graphing in Science – Density

Introduction

In this lab we will be practicing graphing in science by graphing the volume (independent, x-axis) vs. the mass (dependent, y-axis) for two liquids to find the liquids density.

Density and Graphing

Density (*the mass of an object as a direct relationship to volume*) can be measured directly by measuring the mass of a solid or liquid and comparing the mass of the volume as a ratio of mass to volume (m/v). The average density of the liquids can also be found as the slope of a graph of mass (y-axis) and volume (x-axis).

$$\text{Density.} = \frac{(y_2 - y_1)}{(x_2 - x_1)} = \frac{(\text{mass}_2 - \text{mass}_1)}{(\text{volume}_2 - \text{volume}_1)} \quad \text{Given: } \begin{matrix} (v_1, m_1) & \text{and} & (v_2, m_2) \\ (x_1, y_1) & & (x_2, y_2) \end{matrix}$$

Lab Procedure

Mass and Volume data collection

1. Measure the mass of a 100mL graduated cylinder on the laboratory balance and tare (zero) the mass on the scale;
2. Add 20mL of solution A to the graduated cylinder and record the mass on data table;
3. Continue adding 20mL of solution A and recording mass until the volume reaches 100mL in the graduated cylinder (recording mass on data table);
4. Pour solution A back in the stock container, rinse the graduated cylinder, then repeat data collection with solution B.

Graphing the Data

1. Title the graph and label each axis (x-axis, volume of liquid (A or B), y-axis, mass of liquid (A or B);
2. Graph the data of A or B using a standard x-y linear plot, drawing a line of best fit through the data on the graph;
3. Calculate the slope (density) for each graph (A and B)

Data Tables

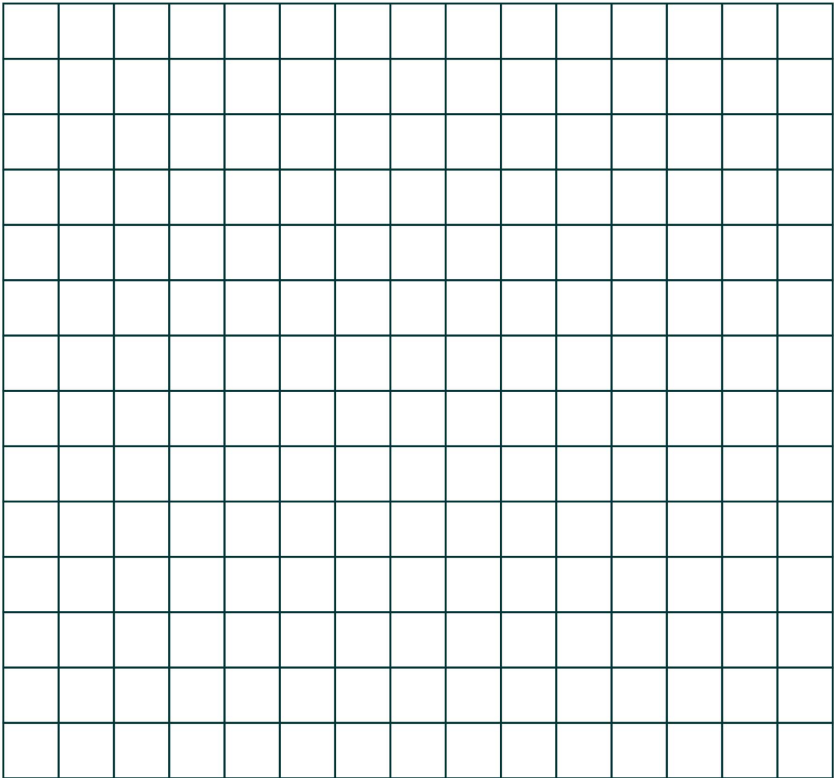
Solution A		Solution B	
Volume (mL)	Mass (g)	Volume (mL)	Mass (g)
20mL		20mL	
40mL		40mL	
60mL		60mL	
80mL		80mL	
100mL		100mL	

Calculations
Solution A

Data Points (*graph*)
(x_1, y_1)

(x_2, y_2)

Slope (m)



Solution A
Data Points (*graph*)
(x_1, y_1)

(x_2, y_2)

Slope (m)

