Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Relating Mass and Volume Lab

**Purpose:**   
 To investigate the relationship between two properties of matter by interpreting data and to reinforce skills required to measure matter.   
To formulate a definition of density.

**Materials:**   
Beaker 100-mL Graduated Cylinder Triple beam Balance

**Procedure:**

1. Use the balance to record the mass of a dry empty beaker in the 3rd column of your data table for all six lines.
2. Measure 10mL of water with a graduated cylinder. Pour into beaker and find the mass of beaker + water. Record the new mass in column two.
3. Measure another 10mL water with the graduated cylinder. Add to beaker. Record the new mass.
4. Repeat until you have a total of 60mL in beaker.
5. Empty your graduated cylinder and beaker. Return all equipment to their original place.

|  |  |  |  |
| --- | --- | --- | --- |
| Volume of Water (mL) | Mass of Beaker + Liquid (Grams) | Mass of Beaker (stays the same) | Mass of Liquid  (grams) |
| 10 |  |  |  |
| 20 |  |  |  |
| 30 |  |  |  |
| 40 |  |  |  |
| 50 |  |  |  |
| 60 |  |  |  |

**Questions:**

1. Compare your results with those of another two teams. Is the mass of water a repeatable measurement? (can more than one person get nearly the same results).
2. Plot the mass of water (on x axis) against volume of water (y axis) on the graph provided. **Label the x and y axis.**
3. Looking at your graph, complete the following statements:   
   a. As mass increased, what happened to the volume?
   1. For every 10mL increase in the volume of water, the mass changes by about \_\_\_\_\_g.

c. 100mL of water should be about \_\_\_\_\_g**.**

**I can safely say this because:**

1. Under normal circumstances would you expect your classmates to get similar results?

1. What is the relationship between mass and volume?
2. Using the data from the table, calculate the density of water by **dividing the mass by the volume**.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Volume (ml) | 10 | 20 | 30 | 40 | 50 | 60 |
| Mass (g) |  |  |  |  |  |  |
| Density |  |  |  |  |  |  |

1. Was there a significant difference in all of your calculations?
2. As the mass increased what happened to the density?
3. Conclusion: What is the relationship between mass, volume and density?