Name _____

Date _____ Block _____

Density of Water Lab

Purpose: To practice graphing and measurement

Problem: How are the volume and mass of a substance related?

Background Information:
The density of a substance is an intensive property. An intensive property is one that does not change based on the size of the sample. Water, for example, has a density of approximately 1.0 g/mL. This density should be the same for any size sample, whether 10.2 mL or 1,200 L. Some other intensive properties are color, texture, flammability, and melting point.

The Task: To measure the volume and mass of various samples of water in order to find the density. We will compare the density to the known value to determine the error or our measurements.

Graduated cylinder	Weigh boat
Water	Scale

Step One: Identify Variables

Independent Variables [what you will change, or the difference between the groups]: Volume

Dependent Variable [what you will observe and measure, the data that you will collect] In this lab, our dependent variable will be the mass of the water we measured into our graduated cylinder.

Step Two: Write a Hypothesis

Write a **HYPOTHESIS** that shows the expected relationship between the variables. Use an **IF, THEN** statement.

If _____ and _____ are related,

then the _____ should be constant throughout the experiment.

Step Three: Procedure

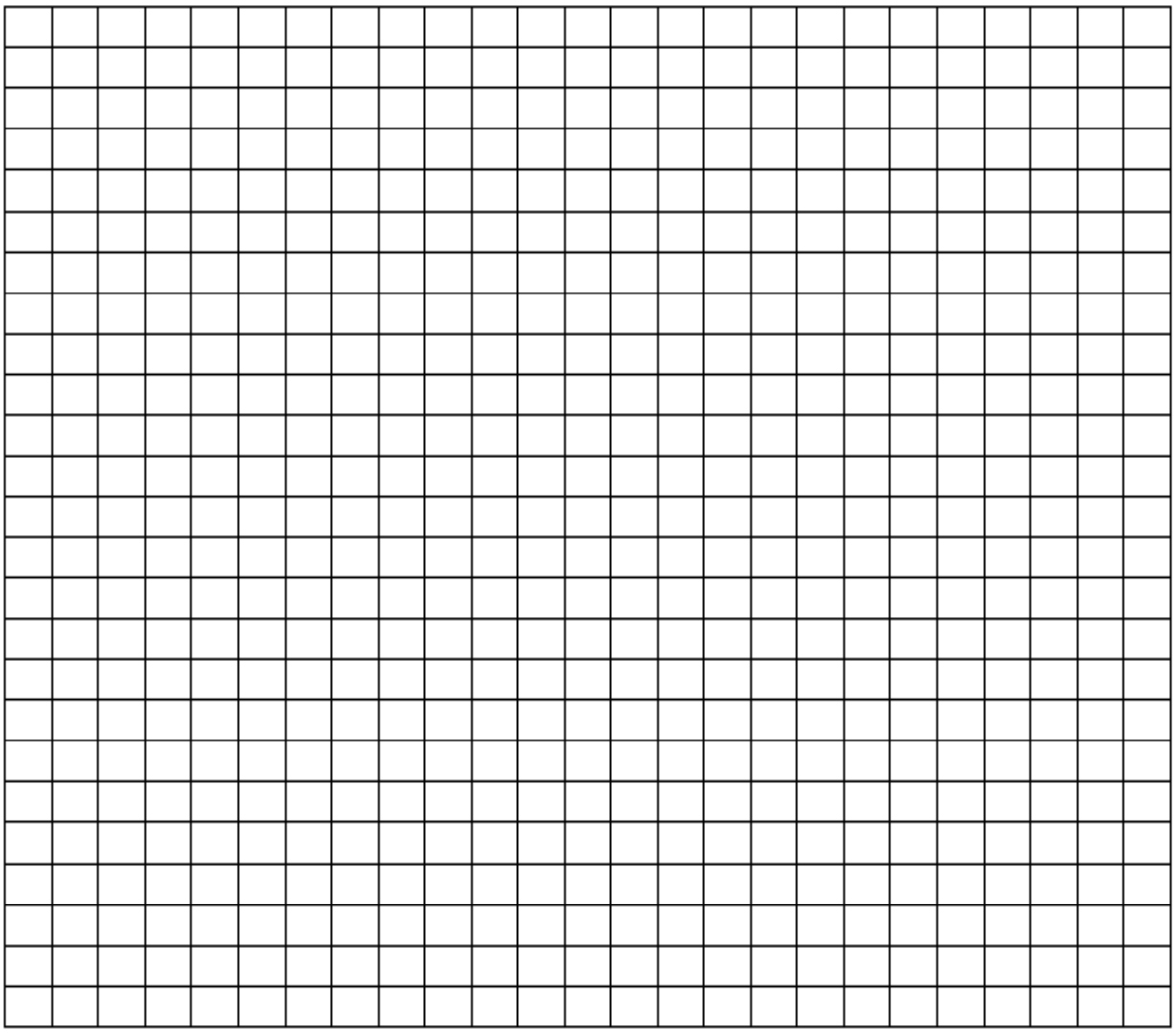
1. Place 10 mL of water in a graduated cylinder.
2. Record the volume.
3. Place a weigh boat on the scale and press the button to zero the scale.
4. Pour the water into the weigh boat and record the mass.
5. Repeat steps 1-4 with 6 more volumes which you choose.

Step Four: Record your data

	Volume of water (_____)	Mass (_____)
Trial 1		
Trial 2		
Trial 3		
Trial 4		
Trial 5		
Trial 6		
Trial 7		

Step Five: Graph your data.

Create a scatter plot of your data.



Step 6: **ANALYZE** your data: What story does the graph tell? What do you know about the effect of the independent variable on the dependent variable? Do you see a relationship?

Step 7: Write a **CONCLUSION**. Answer you original question. (How are the volume and mass of a substance related?) Accept or reject your hypothesis. Use actual data [real numbers] to provide evidence for what you say. Identify any sources of error.