LAB 7.1 - FLOATING OBJECTS

BACKGROUND
We have explored the relationship between the submerged volume of an object (that part of an object that is under the surface of the water) and the displaced water (water that is pushed out of the way by that object). Our data suggests a specific relationship that exists between floating objects of the same mass.

Restate that relationship here:

Floating objects of the same mass . . . _____

_____

_____

Using that relationship, we should be able to make predictions about objects and how they float or sink.

PROBLEM
For a *floating* object, what is the relationship between the *mass* of that object and the *volume of water displaced* while that object is *floating*?

HYPOTHESIS

_____ _____
independent variable dependent variable

The predicted relationship between the variables is:

_____

_____

MATERIALS
- floating objects
- triple-beam balance
- beaker (250mL, 600mL)
- graduated cylinder (100mL)
- overflow container
- water
- apron & goggles

PROCEDURE
1. Use the balance to determine the mass of a floating object. Record the mass of the object in table 7.1-1.
   a. You will first need to create table 7.1-1 in the space provided on the next page. Use a ruler to make straight edges. It can be helpful to make a rough draft of the table on a piece of scratch paper first.

2. Measure and record the volume of water displaced by the object as it floats in the water.

3. Predict the volume of water that will be displaced by other floating objects with different masses. Record your predictions, then repeat steps 1 & 2.
4. Clean up your lab station and copy your data to the class data sheet. Then copy the class data into your notes.

DATA

RESULTS

Write a four to six sentence paragraph that answers the PROBLEM statement above. Be sure to either re-write the problem or restate it in your own words in the results paragraph.

SUMMARY

Summary and Challenge Questions must be typed on a separate piece of paper.

1. Graph the class data of the mass of floating objects and the volume of water displaced by the objects. Use a computer to graph the data and make sure the graph takes up an entire page. Draw a best-fit line for any set of data that shows a relationship.

2. Describe the relationship between the mass of a floating object and the volume of water displaced by that object. Use both quantitative and qualitative descriptions. *Hint: Try to use the word "ratio" in your quantitative explanation."*

CHALLENGE

1. How would the mass of a sinking object compare to the volume of water displaced by that object?

2. Imagine you have already collected the data for Lab 7.2, "Sinking Objects." On the graph created in Summary Question one, lightly sketch where you think the best fit line that compares the mass of sinking objects to the volume of water displaced by those objects will be.