

Name:

Period:

## LAB 7.2 - SINKING OBJECTS

### BACKGROUND

There is a strong relationship between the mass of a floating object and the volume of water that is displaced by that object. Restate that quantitative relationship here.

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It remains to be seen, however, whether or not this relationship persists when the object sinks rather than floats.

### PROBLEM

Can the volume of displaced water be predicted if the mass of a **sinking** object is known?

### HYPOTHESIS

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independent variable

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dependent variable

The predicted relationship between the variables is:

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### MATERIALS

- ◆ sinking 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 sinking object. Record the mass of the object in table 7.2-1.
  - a. You will first need to create table 7.2-1 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 when you place it in the water.
3. Predict the volume of water that will be displaced by other sinking objects with different masses. Record your predictions, then repeat steps 1 & 2.
4. Get data for two to three objects, then clean up your lab station and copy your data to the class data table. The data table will be available online and outside my door.

## DATA

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## SUMMARY

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

1. Graph the class data on mass and volume of water displaced for sinking objects. **Only computer generated graphs will receive full credit.**
  - a. If there is a pattern in the data, draw a best-fit line. If there is no pattern then write “no relationship.” *Be prepared to defend your choice.*
2. Lightly sketch where the best-fit line would be for **floating** objects?
3. Assume two objects, one floating and one sinking, have the same mass. What can you say about the volume of water displaced by both objects?

## CHALLENGE

1. How does the submerged volume of a floating object compare with the total volume of the floating object?
2. How does the submerged volume of a sinking object compare with the total volume of the sinking object?