Density Lab

Purpose: 1) To experimentally determine the density of several specimens by dimensional measurement and calculation of volume, and 2) express the results in a bar graph.

Introduction: In this lab, you will be determining the density of several objects. In this lab, you will not be able to use displacement to find the volume. You will need to determine the volume using the following relations:

$$\text{Volume of a box} = \text{length x width x height}$$
$$\text{Volume of a cylinder} = \pi\, r^2\, h$$
$$\text{Volume of a sphere} = 4/3\ \pi\, r^3$$

You will then be comparing the densities/specific gravities of the objects. According to the definition of specific gravity, objects that have a density less than the liquid is placed in will "float" on top of the liquid. Objects with a density greater than the liquid will sink. For this lab, we will be comparing densities to that of water.

Procedure:
1) Determine the mass of each specimen. Record in the data table.
2) Determine the volume of each specimen, filling in the spaces required only. Record in the data table.

Table:

Name	Initial Mass (g)	Final Mass (g)	Length (cm)	Width (cm)	Height (cm)	Radius (cm)	Initial Volume (cm³)	Final Volume (cm³)
Aluminum								
Brass								
Copper								
Lead								
Plastic								
Steel								
Glass								
Golf Ball								
Wood								
Water								
Alcohol								
Antifreeze								
Air								

Calculations:

1) Determine the density of each specimen, calculating in the proper number of significant figures.

2) Using google spreadsheet, Excel or graph paper, create a bar graph, in which each specimen is listed with the appropriate density. Make sure that each axis is labeled. Insert the graph in your lab book.

Questions:

1) According to your graph, which objects should "float" on water? Which objects should "sink"?

2) Describe how water displacement can be used to tell the volume of an object.

3) Why is it impossible to use water displacement to determine the volume of some of the objects tested?

4) Corn syrup has a density of 2.5 g/cm^3. What objects would "float" on top of the corn syrup?

Conclusion: