Density Study Guide

1. What is density?
    a. Explain what mass is.
    b. Explain what volume is.

2. What are the units for density?

3. What is the formula for density?

4. How do you determine the density of a solid?
    a. Regular Shaped Objects
    b. Irregular Shaped Objects

5. Be able to find the density of regular and irregular shaped objects, you will have to do this on your quest.

6. In general, which is the most dense – solids, liquids, or gases? In general which is the least dense – solids, liquids, or gases?

7. What is the density of water?
    a. How do you know if an object will float or sink in water?

8. What can be said about the densities of a 10 g piece of lead and a 50 g piece of lead?

9. Explain how you would know if two objects are made of the same material.

Solve the problems below. Make sure to SHOW ALL YOUR WORK, use sig figs, and box your answer.

1. A platinum bar measures 5.0 cm long, 0.040 m wide, and 150 mm thick. It has a mass of 7000. grams. Calculate the density of the bar. Does the bar float or sink in water??

2. A cork has a density of 0.1875 g/cm^3 and a volume of 16 cm^3. Calculate the mass of the cork.

3. A student performs an experiment to find the density of a gas, her data is below:

    Mass of solid, test tube, and water before reaction…….. 40.24 g
    Mass of test tube and contents after reaction……39.67 g
    Volume of gas collected……..444 cm^3

    Determine the density of the gas.

4. A graduated cylinder was filled with 8.90 mL of water. A piece of metal was dropped in the cylinder and the water level rose 7.5 mL. If the mass of the metal was 50.3 g, what is the density of the metal? Does the metal float or sink in water?

5. A pencil has a density of .875 g/ml. It has a mass of 3.5 grams. What is the volume?

6. Calculate the mass of a piece of metal that has a density of 1.13 lbs/cm^3 and a volume of 140.5 cm^3.

    a. If the price of the metal costs $150.00 per gram, how much would you get for your piece of metal?

7. Use the data in the table below to answer the following questions:

Trial	Volume (mL)	Mass (g)
1	7	36
2	21	54
3	37	72
4	51	80
5	67	102

    a. Draw a graph of the data.
    b. Draw a best-fit line for the data.
    c. What would the volume be if the mass of the liquid and graduated cylinder is 60 g?
    d. What would the mass of the liquid and graduated cylinder be if the volume was 25 mL?
    e. What amount of volume would be needed to make the mass 95 g?
    f. What amount of mass would the graduated cylinder be if there was no liquid in the graduated cylinder?
    g. Find the slope of your best-fit line.
    h. What is the density of the liquid?