Density Lab Name: Hr:

Pre-Lab:

1.a. Find the mass of an empty graduated cylinder: _____(g)

b. Add 37 milliliters of water to the graduated cylinder. (measure to the bottom of the *meniscus*, the curved part at the top of the water)

c. Find the mass of the graduated cylinder with water: _____(g)

d. Subtract to find the mass of the water: _____(g)

3a. Divide the mass of water by its volume to get its density in grams / milliliter. **Show your work**:

Show your teacher the work and your answer.

3b. Predict what the mass of 4 milliliters of water will be, based on your answer to 3a.

4. If an object has a density of 0.97g/cm3, what will it do when placed in water / why?

5. For a balloon to float in air, its overall density must be (greater than / less than) regular air (circle one)

Use this table to record your measurements of the items available to you.

Item Description	**Measurements/Calculations**	**Density/ unit**
Ex: Clear block	____ cm * _____cm *_____ cm = _____, _____g	

When you have measured all items, you may double check your answers by dunking items in a tub of water to determine if they are more or less dense than water.

6. How could you tell if they are WAY more or less dense than water? _____

_____

After cleaning up your materials and table, **complete the post lab questions on the back side of this page.**

Post-Lab: (Quality answers expected)
1. Which items would you expect to float in vegetable oil (density = 0.894 g/mL)

2a. Salt has a density of 1.38 g/cm3. Find the mass of 50 cm3 of salt. Show work.

2b. 50 cm3 (mL) of salt are mixed with 50 mL of water, the resulting mixture has a volume of 95 mL. Find its: Mass

AND
2c. Density

2d. Would it be easier or harder (for you) to float in this water than fresh water? (the ocean isn't nearly this salty, but some places are close!)

3. If you were to graph the results from this lab, what type of graph would be most appropriate? EXPLAIN why.

4. You have been offered the chance to buy some "gold" bars at a great discount. (you can use Freeman's if you like, OR the following: The bars are (roughly) 10cm wide, 8cm tall, and 22 cm long. They weigh exactly 20kg each. Should you buy these? (**What material are they???**) Use the attached table, and show your work.

Gold 19.3 g/cm3	Copper 8.92 g/cm3	Iron 7.86 g/cm3	Mercury 13.6 g/cm3
Silver 10.5 g/cm3	Lead 11.3 g/cm3	Aluminum 2.70 g/cm3	Water 1.0 g/cm3