Competition #2 Volume and Density

Student Name: **Date:**

Purpose: To learn and practice measuring volume in a graduated cylinder and mass using manual weigh scales. With the mass and volume density should be calculated.

Hypothesis: First pick up the sample and estimate the mass and volume will be quite different than making proper quantitative measurement with equipment such as the scales.

Materials:

Pencil	manual weigh scale	100 ml graduated cylinder
Various samples	calculator	

Procedure:

a. *Estimate the mass of each object in grams. Record your estimates in a table like the one below.
b. *Use the formal weigh scale to determine the actual mass of each object in grams. Record results in your table, under the heading “Actual mass”.
c. Now estimate the volume in cm^3 of each sample. Using a graduated cylinder to determine the volume in mls using displacement. ***Do not forget to dry the samples after they are used****
d. Answer the questions below.
e. Mr. C has 4 mystery liquids...you are to accurately measure the volume of each.

*Do not forget to properly dry each sample before returning them!

Mystery Samples: What is the accurate volumes of each sample?

Sample	Volume(ml)
orange	
blue	
green	
red	
clear	

Nearly Draw a manual weigh scale and a graduated cylinder in the space provided.

Observations & Data:

Sample Identity	**Estimated mass(g)**	**Actual Mass (g)**	**Estimated Volume(ml)**	**Actual Volume(cm^3 or ml) (subtract displacement)**	**Density mass/volume**
A red dice					
B green dice					
C white dice					
D Copper					
E Aluminum					
F Brass					
G Lead					
H penny					

Analyze and Evaluate(questions pg. 105 questions 1 - 3b)

1. Which masses and volumes did you estimate most accurately? Why do you think?(explain)

2. Which masses and volumes did you seem to estimate least accurately? Why do you think?(explain)

3. You used the displacement of water to measure the volumes of irregular solids.

a. Explain why “displacement of water” is an appropriate name for this method.

b. Why is this method an example of indirect measurement?

4. A. Why did you slide each object into the graduated cylinder rather than dropping it in? (2 marks)

   B. Would your results have changed if you had not slid all the objects into the cylinder in the same way...would you have still obtained fair measurements? Explain please.(2 marks)

Conclusions:

What did you learn after doing this experiment using mass and volume? Neatly list and explain below.(5 marks)