

Objective: To learn to accurately measure lengths and volumes using the metric system; and to learn how to determine percent error, and to measure density.

Write the formula for measuring the volume of regular solid objects: _____

Write the formula for % Error: _____

Procedure: VOLUME - Part A: To measure volumes of three regular solid objects, those being your chemistry text book, your agenda (but not the spirals) and the black top portion of the lab tables in the rear of the room. Finally, using the actual volumes, to determine your percent errors for each of these calculations. Use the chart to record your data.

data table A	Measured (cm)	Measured Volume	Actual Volume	Percent Error
table L			121,600 cm ³	
table W				
table H				
text L			2405 cm ³	
text W				
text H				
agenda L			291 cm ³	
agenda W				
agenda H				

Procedure: DENSITY - Part B

Using the data in Table B, determine the density for each of the four metals listed. Use the displacement method to measure the volumes (to the nearest 10th mL)

This low point in a column of liquid in a graduated cylinder is called the _____.

Do the calculations on loose leaf paper, be neat. Only answers go below. Write the formula for density once here:

Metal	measured mass (grams)	measured volume (mL)	measured density g/mL or g/cm ³	Element Symbol measured	Element Symbol actual	Your % Error + or -
A						
B						
C						
D						

Lab Questions to be done on loose leaf paper, spread out, show all work, don't hide units, watch SF ALWAYS.

1. What is the density of pure water?
2. What is the mass of one mL of pure water?
3. The units for density can be g/mL or g/cm³, explain.
4. Does ice sink in water? Is the density of ice more or less than that of water? Explain.
5. Assuming your text has a mass of 2350 grams, use your measured volume, would it float on water? Use math to compare/prove your thoughts.
6. Would a penny float in water? Use the word density in your explanation.
7. Why was your measured volume different that the actual volume for the textbook?

Continued on next page...

LAB QUESTIONS CONTINUED.

8. What is the density of one of your favorite elements from the Periodic Table?
Tell what element it is.
9. Would H₂O float on Hg? Why or why not? Would Cu float on Hg? Why or why not?
10. Oil floats on vinegar. How is this possible?
11. 275 g Pb has what volume? Show work, formula, use correct SF.
12. You measure 235.0 g of Cu. What is volume? Show work, formula, use correct SF.
13. Skip this one, of course
14. What metal could have a volume of 60.0 cm³ & mass of 428 g? Show work, formula, use proper SF. Paper is CHEAP. Don't squeeze these problems in anywhere!
15. Calculate the volume of 462 grams of liquid mercury.

This Lab Report	INCLUDES THIS:	POINTS
Cover	Science title, (fun title optional), your name, class period, and a well worded complete sentence stating the objectives of this lab.	1
2	This lab handout, formulas, data tables	4
3	14 questions above	14
4	Writing Assignment/Conclusion: Start with the general plan of the lab: what was it that we were trying to learn about? Then, what did you do - what did you measure and what did you calculate? What did you learn? Then summarize the science in a few sentences A conclusion should summarize what you did, and show that you grasp the overall meaning of what you did.	6
deduct 5 points for lateness this lab due date is: _____		25