

**This lab report counts as a test grade.**

Name: \_\_\_\_\_ Group \_\_\_\_\_ Date: \_\_\_\_\_ Class: \_\_\_\_\_ Seat: \_\_\_\_\_

4 points  
(1 point  
each)

Title: **Mass and Volume Lab Report**

100 points total including the Logger Pro graph, 10 points.

1. Purpose: The purpose of this investigation was to \_\_\_\_\_

4 points

Attach your Logger Pro graph showing the red & silver metal lines (2 pt. each = 4 pt.s). Graphs must be properly labeled including units (4 points) & short names (1 point for red & 1 point for silver). Total points for graph = 10 pt.s

2. Variables:

IV: 1 point

DV 1 point

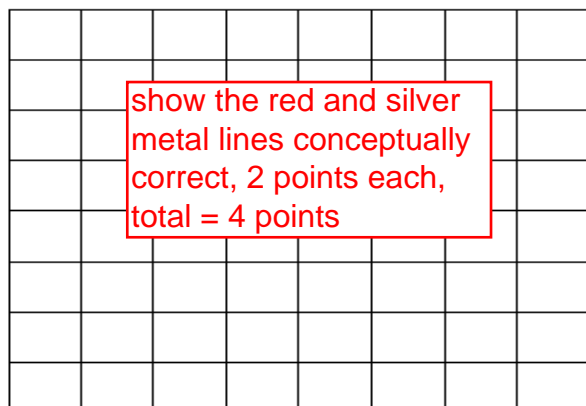
Calculated Value: 1 point

Constant (s): Minimum of two constants listed, 2 points

4 State any errors you observed during the experiment. 2 points

If your % error > 10% or the red metal has a density value < 8.0 or > 9.0 and/or the silver metal density < 2.3 or > 3.0, you have an error > 10% and your results are not accurate. You must explain the errors that caused this or I will subtract up to 10 points.

5. Graph (show red and silver metal lines) and correctly label the x & y axes including units in parenthesis. 1 point each for x & y axis label, 1 pt each for x & y units in parentheses = total of 4 points



3.Data Table

Sample	Mass (g)	Volume of sample (mL)	Density (g/mL)
Red 1			
Red 2			
Red 3			
		Average:	
Sliver 1			
Sliver 2			
Sliver 3			
		Average:	

10 pt.s: Each sample = 1pt, each average = 2 pt.s

6. Math model equations – report slopes & y-intercepts as a numbers with units in the form of  $y = mx + b$

Red metal: 4 points

Silver metal: 4 points

Substitute names of variables for x & y, use values and units for the constants m & b. 1 point for each item (x, y, m, b).

7. Does the y-intercept make sense for the red metal? Explain

Yes or no, 1 point. Explanation 2 pt.s.

8. Does the y-intercept make sense for the silver metal? Explain

3 points

Yes or no, 1 point. Explanation 2 pt.s.

9. What is the physical meaning of the slope for this graph?

2 points

10. According to **your experimental values** for density and the accepted values given in the handout, the red metal is \_\_\_\_\_ 1 point. Does this agree with the class value for density? Explain 2 points

11. According to **your experimental values for density** and the accepted values given in the handout, the silver metal is \_\_\_\_\_ 1 point. Does this agree with the class value for density? Explain 2 points

12. Use the following equation to calculate the percent error in your measurement for the average density value you calculated and the accepted value provided. Report your percent error to three significant figures. The percent error measures the accuracy of your results. **Consider your results accurate if the percent error is equal or less than 10%. Show your work.**

$$\text{Percent error} = \frac{|\text{accepted value} - \text{measured value}|}{\text{Accepted value}} \times 100$$

Red metal:

Show work: 2 points

Silver metal:

Show work: 2 points

13. Red: Were your results accurate? (Yes?/no?) 1 point Why? 2 points

14. Silver: Were your results accurate? (Yes?/no?) 1 point Why? 2 points

15. Use the formula below to calculate the range of **your values** for density. **Show your work. Consider your values precise if the range is less than or equal to 20%.** Report three significant figures.

$$\% \text{ range} = \frac{|\text{highest value} - \text{lowest value}|}{\text{lowest value}} \times 100$$

Red metal:

Show work: 2 points

Silver Metal:

Show work: 2 points

16. Red metal: Were **your results** precise? (Yes?/no?) 1 point Why? 2 points

17. Silver metal: Were your results precise? (Yes?/no?) 1 point Why? 2 points

18. Did the mass of the sample significantly change the density or was the density about the same for all samples? 2 points

19. The density of the red metal is different than the density of the silver metal. Why? 2 points

20. Should the density value for the three samples of red metal or the three samples of the silver metal be approximately the same or different? Why?

Yes or no, 1 point. Explanation 2 points.

21. **Short** conclusion. (Hint: What is the purpose of the experiment? Address each purpose in your answer.)

You only need to include the results: the density of each metal, the identity of each metal according to the lab handout, whether the result is accurate according to your percent error calculations, and whether your data for the red metal is precise and if the data for the silver metal is precise according to the percent range calculations.