Experiment 2: Density Report Sheet

Part 1. Density of a Solid

Method A: Measuring the volume with a ruler

Assigned metal: (circle one) A B C D

Mass (measured)	g	**Volume Calculation:**
Length (measured)	cm	
Width (measured)	cm	
Height (measured)	cm	**Density Calculation:**
Volume (calculated)	cm^3	
Density (calculated)	g/cm^3	

Method B: Measuring the volume by displacement

Initial Volume of water (measured)	mL	**Volume Calculation:**
Final volume of water (measured)	mL	
$V_f - V_i = V_{metal}$ (calculated)	mL	**Density Calculation:**
Density (calculated) Use the Mass in Method A, above	g/mL	

Reflection

My metal is _____________ with an accepted (literature) density of __________ g / mL.
Method _____ gave a value closer to the true value because:

Part 2: Density of a Prepared Solution

Assigned concentration of NaCl solution: ________________ % by mass

To prepare the solution, I would use ______________ g NaCl and ______________ g H_2O.

Density calculations for the four data points that were given in the procedure:

1)	2)
3)	4)

	(x) Concentration - % by mass	(y) Density – g/mL
1		
2		
3		
4		

Plot the four data points from the chart above on a graph of density vs. concentration. (Give it a better name than that though!) You can print this graph paper if you don't have any. Graphs need to be plotted by hand and handwritten, like everything else in this class. Label your axes and don't forget units. Be sure that you cover an appropriate range on both the x and y axes. The range of concentration should cover from 0-15%. The range of density should cover 0.95 – 1.12 g/ml. Make a best fit STRAIGHT line, and give your graph an appropriate title.

Use points **on the line** to calculate the slope of the line. DO NOT USE DATA POINTS!

Slope Calculation: $(y_2 - y_1) / (x_2 - x_1)$

Slope:____________________________

Why is it important to use points from a straight best fit line instead of data points to calculate the slope? (One sentence is fine)

Density for your assigned solution using the graph to extrapolate (show extrapolation lines on the graph.) Don't forget units!

____

Based on the graph, what is the density of a 0% by mass NaCl solution? (Look at the graph – what is the density when the concentration is 0%?)

____

Check that your graph is complete:

- Appropriate title
- Correct variable on the correct axis
- Axes labeled with measurement and units
- Appropriate range so there is no excessive empty space in either direction
- Data points (you don't have to specify value of points on the data points)
- Best fit STRAIGHT line made with a straight edge
- Extrapolation line used to identify density of assigned solution
- (Optional but preferred) Circle the two points on the line used to determine slope

This is essentially what all graphs will be graded against for this class, and what will be looked for when graphing in future classes, so keep this list handy when you are making graphs. Graphs need to be made by hand, and are worth a good deal of points towards the experiment.

Once your graph is complete and your report sheets are completely filled out, turn all pages into a pdf with the graph as the last page.