

Data and Calculations for Experiment 2

Data Sheet for Density of an Element sample

Name of Element: _____

Using Microsoft Excel®, graph the following:

Sample #	Object Mass (g)	Initial mL H ₂ O	mL H ₂ O w/ Object	Volume object (mL)	Density (g / mL)	Cumulative Sample #s	Cumulative volume (mL) (x-axis)	Cumulative object mass (g) (y-axis)
1	_____	_____	_____	_____	_____	1	_____	_____
2	_____	_____	_____	_____	_____	1 + 2	_____	_____
3	_____	_____	_____	_____	_____	1 + 2 + 3	_____	_____
4	_____	_____	_____	_____	_____	1 + 2 + 3 + 4	_____	_____
5	_____	_____	_____	_____	_____	1 + 2 + 3 + 4 + 5	_____	_____

Average Density from Table = _____

Average Density from Graph (slope of line) = _____

Be sure to show your properly formatted graph on the laptop or your device to your instructor to receive credit for this part of the experiment OR they may instruct you to take a photo of your graph to submit with this report to Canvas.

Questions

1. Which would work better in this experiment as an unknown solid whose density is to be determined, wood chips or small quartz rocks? Explain your choice.
2. Why is it best to use a smaller graduated cylinder as opposed to a larger graduated cylinder for this experiment?
3. How well does the average density from the table and density from the slope of the graph compare? Which value is closer to the accepted density of your metal in the table below (from the *CRC Handbook of Chemistry and Physics*)? Calculate the percent error between your better value and the accepted value.

Element	Accepted Density (g/mL)
Aluminum, Al	2.70
Copper, Cu	8.96
Lead, Pb	11.34
Zinc, Zn	7.14

4. What is the density of a 9.343 gram piece of metal that causes the level of water in a graduated cylinder to rise from 5.1 to 8.1 mL when the metal is submerged in the water? Consider significant figures when doing the calculation.