

Density Practice

Name: _____

Chemistry

Date: _____ Hour _____

Directions: Complete answers will show all work, include units, and be rounded according to rules of sig figs.

$$d = \frac{m}{v}$$

$$1 \text{ mL} = 1 \text{ cm}^3$$

- 1) A block of aluminum occupies a volume of 15.0 mL and has a mass of 40.5 g. What is its density?
- 2) What is the mass of the ethyl alcohol that exactly fills a 200.0 mL container? The density of ethyl alcohol is 0.789 g/mL. 2.70 g/mL
- 3) The density of sulfuric acid is 1.840 g/mL. If a vial contains 65.14 g of the acid, what is its volume? 158 g
- 4) What volume of silver metal will have a mass of exactly 2500.0 g. The density of silver is 10.5 g/cm³. 35.40 mL
- 5) Find the mass of 250.0 mL of benzene. The density of benzene is 0.8765 g/mL. 238 cm³
- 6) Mercury metal is poured into a graduated cylinder that holds exactly 22.5 mL. The mercury used to fill the cylinder has a mass of 306.0 g. From this information, calculate the density of mercury. 219.1 g
- 7) A rectangular block of copper metal has a mass of 1896 g. The dimensions of the block are 8.4 cm by 5.5 cm by 4.6 cm. From this data, what is the density of copper? 13.6 g/mL
- 8) A flask that has a mass of 345.8 g is filled with 225 mL of carbon tetrachloride. The mass of the flask and carbon tetrachloride together is found to be 703.55 g. From this information, calculate the density of carbon tetrachloride. 8.9 g/cm³
- 9) CHALLENGE! Eugene P. Picadilly has a sample of iron shot (7.92 g/mL). He uses the water displacement method to determine its volume. He dumps the iron shot into a graduated cylinder containing 45.50 mL of water. The water level rises to the 49.10 mL mark. From this information, calculate the mass of iron shot used. 1.59 g/mL

28.5 g

Use the [Density Slides](http://bit.ly/LemensDensitySlides) (bit.ly/LemensDensitySlides) to fill in the notes below, or follow along with [this video](http://bit.ly/LemensDensityGraph): bit.ly/LemensDensityGraph

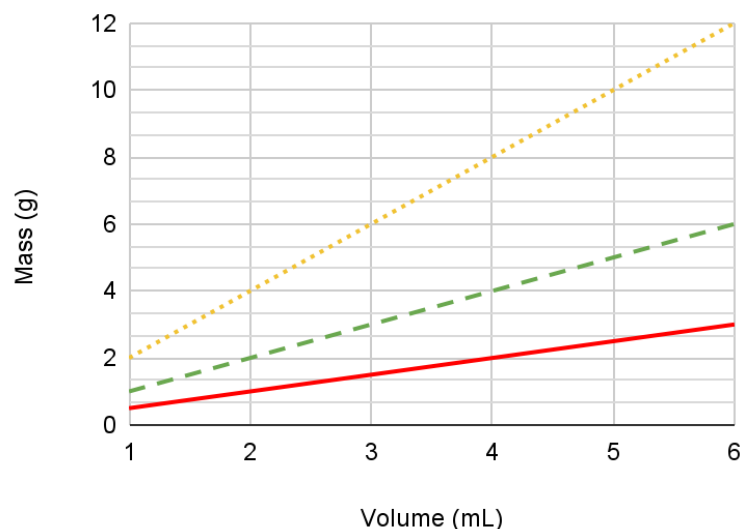
Density Graphs

- How to Interpolate a Density Graph
 - Volume (mL) is on the ____ axis.
 - Mass (g) is on the ____ axis.
 - Density is the _____ of the line.
 - The _____ the slope, the _____ the density.
 - Same slope? _____!
- How to Calculate Density Using a Graph
 - The slope of the line is calculated using the slope formula: _____ OR _____
 - Think about it... $d = \frac{m}{v}$ Rise = _____
Run = _____
- Pick two points on the _____ and use the ordered pairs to calculate the slope.

10) Use the graph to the right for the following questions:

Density of Unknown Substances

— Green Substance — Yellow Substance
— Red Substance



- Calculate the density of the red substance. Show all work
- Sketch a line on the graph that would represent a substance with a larger density than any of the unknown substances already represented in the graph.

- The following data was collected for several objects made of an unknown blue substance:

Calculate the density of this substance. Show all work.

Add the blue substance's data to the graph.

Blue Substance	Volume	Mass
Object 1: Ball	6 mL	9 g
Object 2: Bar	4 mL	6 g
Object 3: Thin sheet	1 mL	1.5 g