

# Density Worksheet

Express your answers in the correct units with the appropriate number of significant figures.

1. What is the density of an element if a sample having a mass of 43.2 g has a volume of 96.5 mL?
2. A sample of a gas has a volume of 4.0 L and a mass of 4.922 g. What is its density in g/L?
3. Mercury has a density of 13.6 g/mL. What is the volume of a sample of mercury that has a mass of 224 g?
4. If a liquid has a density of 0.880 g/cm<sup>3</sup>, what volume of liquid would have a mass of 54 g?
5. What is the mass of 84 ml of a liquid if its density is 1.25 g/mL?
6. What is the mass in g of 25 ml of oxygen gas if it's density is 1.43 g/L?
7. A student determines the mass and volume of three samples of a liquid to be:

	<u>Volume</u>	<u>Mass</u>
A	116 ml	85 g
B	168 ml	101 g
C	158 ml	115 g

Could all of these be samples of the same substance? If not, which could be?
8. A gas is confined in a rectangular tank 25.0 cm long, 8.0 cm high and 10.4 cm wide. If the density of the gas is 19.3 g/L, what is the mass of the gas?
9. The density of an acid is 1.85 g/mL. What volume of the acid would have a mass of 64 g?
10. If 40.0 ml of a liquid with a mass of 44.8 g was mixed with 50.0 mL of a liquid having a mass of 48.0 g, what would the density of the resulting liquid be?
11. A student measures the mass and volume of samples of three liquids to be:

<u>Liquid</u>	<u>Volume</u>	<u>Mass</u>
A	48.5 mL	37.2 g
B	12.8 mL	174.1 g
C	64.7 mL	71.2 g

  - a. What is the density of each liquid?
  - b. These liquids do not mix, sketch the position of each if placed in a graduated cylinder.
12. Two liquids are mixed together. The mass and volume of the first liquid are 72.7 g and 68.7 cm<sup>3</sup>, respectively. The mass and volume of the second liquid are 44.3 g and 57.5 cm<sup>3</sup>, respectively. Calculate the overall density of these when combined.
13. 49.65 g of Au is lowered into a graduated cylinder containing 25.0ml of water. What new level will the water rise to in the cylinder?  $D_{Au} = 19.3 \text{ g/ml}$
14. How many liters of water are needed to balance (equal) the mass of 500. Liters of aluminum?  $D_{Al} = 2.70 \text{ g/ml}$
15. How many pounds does a cubic foot of water weigh? (This requires ALL of your knowledge thus far; i.e dimensional analysis, conversions, and density) Express your answer in 2 sig figs. *Yes, the water is at 20 °C. 454g= 1 lbs.*