

## Solutions.

1. A piece of tin has a mass of 16.52 g and a volume of 2.26 cm<sup>3</sup>. What is the density of tin?

$$d = 7.319/\text{cm}^3$$

2. A man has a 50.0 cm<sup>3</sup> bottle completely filled with 163 g of a slimy green liquid. What is the density of the liquid?

$$d = 3.269/\text{cm}^3$$

3. A sealed 2500 cm<sup>3</sup> flask is full to capacity with 0.36 g of a substance. Determine the density of the substance. Guess if the substance is a gas, a liquid, or a solid.

$$d = 0.0001449/\text{cm}^3 = 1.44 \times 10^{-4} \text{g}/\text{cm}^3 \text{ (gas)}$$

4. Different kinds of wood have different densities. The density of oak wood is generally 0.7 g/cm<sup>3</sup>. If a 35 cm<sup>3</sup> piece of wood has a mass of 25 g, is the wood likely to be oak?

$$d = 0.719/\text{cm}^3 \Rightarrow \text{yes, likely oak (same density)}$$

5. The density of pine is generally about 0.5 g/cm<sup>3</sup>. What is the mass of a 800 cm<sup>3</sup> piece of pine?

$$m = 400\text{g}$$

6. What is the volume of 325 g of metal with a density of 9.0 g/cm<sup>3</sup>?

$$V = 36\text{cm}^3$$

7. Diamonds have a density of 3.5 g/cm<sup>3</sup>. How big is a diamond that has a mass of 0.10 g?

$$V = 0.029\text{cm}^3$$

8. What mass of water in grams will fill a fish tank 100 cm long, 50 cm wide, and 30 cm high?

$$m = 150000\text{g}$$

9. Air has a density of 1.29g/L. Calculate the mass of air in a room 5.0m x 10.m x 4.0m. 1m<sup>3</sup> =1000.L.

$$m = 260000\text{g}$$

10. A graduated cylinder is filled with water to a level of 40.0 mL. When a piece of copper is lowered into the cylinder, the water level rises to 63.4 mL. Find the volume of the copper sample. If the density of the copper is 8.9 g/cm<sup>3</sup>, what is its mass?

$$m = 210\text{g}$$