

Density Worksheet (challenge)

1. What is density?
2. A copper penny has a mass of 3.1 g and a volume of 0.35 mL. What is the density of copper?
3. The density of silver is 10.5 g/mL. What is the volume of a solid silver bar that weighs 68 g?
4. A student finds a piece of metal that she thinks is aluminum. In the lab, she determines that the metal has a volume of $2.45 \times 10^{-4} \text{ m}^3$ and a mass of 612 g.
 - a. Calculate the density in g/mL (remember $1 \text{ cm}^3 = 1 \text{ mL}$).
 - b. Is the metal aluminum (density = 2.7 g/mL)?
5. A plastic ball has a volume of 19.7 cm^3 and a mass of 0.0158 kg.
 - a. Calculate the density of this ball in g/mL.
 - b. Would this ball sink or float in water (density = 1.00 g/mL)?
 - c. Would this ball sink or float in gasoline (density = 0.66 g/mL)?
6. A balloon is inflated with helium. The mass of this helium is 0.0374 kg and the volume is $2.2 \times 10^9 \text{ mL}$. What is the density of helium in g/L?

7. A piece of lead has a volume of 19.84 mL. The density of lead is 11.4 g/mL. What is the mass of this lead in kg?
8. What is the volume (in microliters) of cough syrup that has a mass of 5.00×10^{-5} g? The density of the cough syrup is 0.950 g/mL. ($1 \mu\text{L} = 1 \times 10^{-6}$ L)
9. What is the mass of a pure silver coin that has a volume of 1.3×10^{-3} L? The density of silver is 10.5 g/mL.
10. Circle the one with the highest density:
- a. Water or Oil
 - b. Air or Gold
 - c. Helium or Air
11. What should Indiana Jones have done to safely steal the gold?

Challenge problem

The gold idol in "Indiana Jones" has a volume of approximately 1.5 L. If the density of gold is $19\,320 \text{ kg/m}^3$, what is the mass of the solid gold idol in pounds? ($1 \text{ lb} = 454 \text{ g}$, $1 \text{ cm}^3 = 1 \text{ mL}$)