

## Density Worksheet

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?  
**8.9 g/mL**
3. The density of silver is 10.5 g/mL. What is the volume of a solid silver bar that weighs 68 g?  
**6.5 g/mL**
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  $1 \text{ cm}^3 = 1 \text{ mL}$ ).  
**2.50 g/mL**
  - b. Is the metal aluminum (density = 2.7 g/mL)?
5. A plastic ball has a volume of  $19.7 \text{ cm}^3$  and a mass of 0.0158 kg.
  - a. Calculate the density of this ball in g/mL.  
**0.802 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?  
 **$1.7 \times 10^{-5} \text{ g/mL}$**

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?

.226 kg

8. What is the volume (in microliters) of cough syrup that has a mass of  $5.00 \times 10^{-5}$  g? The density of the cough syrup is 0.950 g/mL. ( $1 \mu\text{L} = 1 \times 10^{-6}$  L)

0.0526  $\mu\text{L}$

9. What is the mass of a pure silver coin that has a volume of  $1.3 \times 10^{-3}$  L? The density of silver is 10.5 g/mL.

14 g

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  $19320 \text{ kg/m}^3$ , what is the mass of the solid gold idol in pounds? ( $1 \text{ lb} = 454 \text{ g}$ )

64 lbs