

1 kg = 2.2 lbs
1 mile = 1.61 km

Name: _____

Chemistry: Density Practice #2

Make sure to **SHOW ALL WORK**, include units, and watch sig figs!!!

1) $D = 4.55 \text{ g/mL}$, $M = 210 \text{ g}$, $V = ? \text{ mL}$

2) $D = 0.21 \text{ kg/mL}$, $M = ? \text{ g}$, $V = 35.9 \text{ cm}^3$

$V =$ _____

$M =$ _____

3) $D = ? \text{ g/mL}$, $M = 0.345 \text{ kg}$, $V = 1.2 \text{ L}$

4) $D = 2 \times 10^4 \text{ mg/cm}^3$, $M = ? \text{ g}$, $V = 3.55 \times 10^{-3} \text{ L}$

$D =$ _____

$M =$ _____

5) A **10 mL** graduated cylinder is filled with water to a volume of **3.75 mL**. A small paperclip is then submerged in the graduated cylinder and the volume is read to be **4.21 mL**. If the mass of the paperclip is measured to be **2.45 grams**, what is the density of the object (in **g/mL**)?

6) A cup of gold colored metal beads was measured to have a mass **425 grams**. By water displacement, the volume of the beads was calculated to be **48.0 cm³**. Given the following densities, identify the metal.

Gold: 19.3 g/mL

Copper: 8.86 g/mL

Bronze: 9.87 g/mL

7) The length, width, and height of an irregularly shaped piece of metal are measured to be **1.55 cm** x **3.41 cm** x **4.22 cm** respectively. The mass of the metal cube is then measured to be **46.18 g**. What is the density of the metal (in **g/mL**)?

8) The density of a marble is known to be **3.50 g/mL**. A student places the marble on a scale and measures its mass as **27.91 g**. If the marble is then placed in a 100 mL graduated cylinder at a volume of **31.00 mL**, what will the final volume in the graduated cylinder be measured as (in **mL**)?

9) A student uses a graduated cylinder and water to determine the density of an unknown solid object. They collected data and recorded it in the table below. Assume the **density of water** is **1.00 g/mL**.

Mass of Empty Graduated Cylinder	50.25 g
Mas of Graduated Cylinder and Water	65.90 g
Mass of Graduated Cylinder, Water, and Object	85.55 g
Initial Volume of Water in Graduated Cylinder	20.10 mL
Final Volume of Water in Graduated Cylinder with Object	44.70 mL

What is the **density** of the object in **g/mL**?

9) _____

10) A cube made of an unknown material has a height of **9.00 cm**. The mass of this cube is measured to be **3.1 kg**. Calculate the density of the cube (in **g/mL**).

11) The density of ethyl alcohol is **0.789 g/mL**. What is the mass of ethyl alcohol that will completely fill a **0.20 L** container?

12) 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 is found to be **703.55 g**. Calculate the density of carbon tetrachloride (in **g/mL**).

13) The hydrogen stored inside a large weather balloon has a mass of **13.558 g**. What is the volume of this balloon (in **mL**) if the density of hydrogen is **0.089 g/L**?

14) A cruise ship is known to have a volume of **4.85 x 10⁸ m³**. If the cruise ship is known to float in seawater that has a density of **1.025 g/mL**, what is the maximum mass of the cruise ship (in **kg**)?

15) A little aluminum boat (with a mass of **14.50 g**) has a volume of **450.00 cm³**. The boat is placed in a small pool of water and carefully filled with pennies. If each penny has a mass of **2.50 g**, how many pennies can be added to the boat before it sinks?
