

1 kg = 2.2 lbs  
1 mile = 1.61 km

Name: \_\_\_\_\_

**Density Practice #2**

(solve the following – show all work 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)?

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6) A cruise ship is known to have a volume of  $4.85 \times 10^8 \text{ m}^3$ . If the cruise ship is known to float in seawater that has a density of  $1.025 \text{ g/mL}$ , what is the maximum mass of the cruise ship (in kg)?

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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)?

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8) The density of a marble is known to be  $3.50 \text{ g/mL}$ . 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 31.0 mL, what will the final volume in the graduated cylinder be measured as (in mL)?

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9) A Styrofoam ball is measured to have a diameter of 3.45 cm. If the density of Styrofoam is known to be  $8 \times 10^{-2} \text{ g/mL}$ , what is the mass of the Styrofoam ball (in g)? (Hint: Volume of sphere =  $\frac{4}{3}\pi r^3$ )

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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).

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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?

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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).

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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?

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14) 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 cm<sup>3</sup>. Given the following densities, identify the metal.

Gold: 19.3 g/mL

Copper: 8.86 g/mL

Bronze: 9.87 g/mL

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15) A little aluminum boat (mass of 14.50 g) has a volume of 450.00 cm<sup>3</sup>. The boat is placed in a small pool of water (Density of Water = 1.00 g/mL) 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?

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