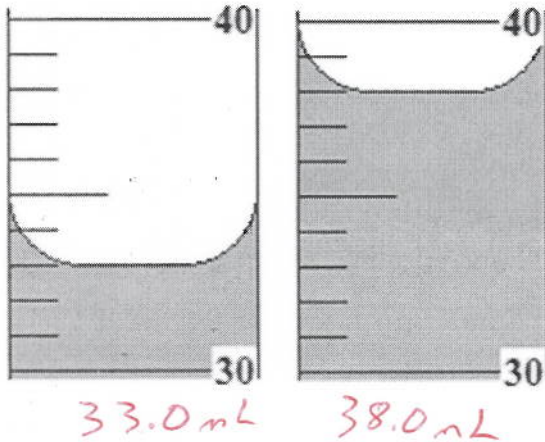


1. A student finds the mass of a solid object to be **24.026** grams. The student places some water in a graduated cylinder. After adding the solid object the water level rises as shown below.

What is the density of the object? Density =  g/cm<sup>3</sup>



$$\frac{24.026 \text{ g}}{5.0 \text{ mL}}$$

$$\begin{array}{r} 38.0 \\ - 33.0 \\ \hline = 5.0 \text{ mL} \end{array}$$

2. A solid metal cylinder has a diameter of 6.0 cm, and a height of 12.0 cm. If it has a mass of 4.12 Kg, what is the density of the cylinder in g/cm<sup>3</sup>?

$$\frac{4120 \text{ g}}{339.29 \text{ cm}^3}$$

$$\pi (3.0 \text{ cm})^2 12.0 \text{ cm}$$

g/cm<sup>3</sup>

3. A cylinder with a diameter of 8.00 cm and a mass of 60.50 grams has a density of 2.24 g/cm<sup>3</sup>. What is the **height** of the cylinder?

$$h = \frac{V}{\pi r^2} = \frac{27.0089 \dots \text{ cm}^3}{\pi (4.00 \text{ cm})^2}$$

$$V = \frac{m}{d} = \frac{60.50 \text{ g}}{2.24 \text{ g/cm}^3}$$

$$.53732 \dots$$

cm

$$\text{or } .538$$

# Form B

4. A beaker holds one liter when full. You place 333 ml of water in the beaker and submerge a solid steel cylinder in the water. If the cylinder has a diameter of 8.00 cm and a height of 8.00 cm, what is the level of the water in the beaker when the cylinder is completely submerged?

$$\pi (4.0 \text{ cm})^2 8 \text{ cm}$$

$$= 402.1238 \text{ cm}^3$$

$$+ 333 \text{ mL}$$

$$\boxed{735} \text{ mL}$$

$$1 \text{ cm}^3 = 1 \text{ mL}$$

5. A liquid has a density of 2.88 g/mL. What is the **mass** of 424 ml of this liquid? Answer in kilograms.

$$m = dV$$

$$2.88 \frac{\text{g}}{\text{mL}} \times 424 \text{ mL}$$

$$\boxed{1.22} \text{ kilograms}$$

$$= 1221.12 \text{ g}$$

$$= 1.22 \text{ kg}$$

6. A metal ball has a density of 8.76 g/cm<sup>3</sup>, and a mass of 0.444 Kilograms. If it is placed in a graduated cylinder that already contains 40.0 mL of water, what will be the final water level reading on the graduated cylinder?

$$V = \frac{m}{d} = \frac{444 \text{ g}}{8.76 \frac{\text{g}}{\text{cm}^3}} = 50.6849 \text{ cm}^3 + 40.0 \text{ mL}$$

$$= 90.68 \text{ mL}$$

$$\boxed{90.7} \text{ mL}$$

$$1 \text{ cm}^3 = 1 \text{ mL}$$