

## Conversions

**Do the following conversions:** (first, determine the given and desired units, write a roadmap, write equivalences, and then write conversion factors from the equivalences)

Convert 25.2 in to cm

$$25.2 \text{ in} \times \frac{2.54 \text{ cm}}{1 \text{ in}} = \mathbf{64.0 \text{ cm}}$$

Convert 0.644 mm to  $\mu\text{m}$

$$0.644 \text{ mm} \times \frac{10^3 \mu\text{m}}{1 \text{ mm}} = \mathbf{644 \mu\text{m}}$$

Convert 726 mL to L

$$726 \text{ mL} \times \frac{1 \text{ L}}{1000 \text{ mL}} = \mathbf{0.726 \text{ L}}$$

Convert 10.9 g to mg

$$10.9 \text{ g} \times \frac{1000 \text{ mg}}{1 \text{ g}} = \mathbf{1.09 \times 10^4 \text{ mg}}$$

Convert 6.2 cm to m

$$6.2 \text{ cm} \times \frac{1 \text{ m}}{100 \text{ cm}} = \mathbf{0.062 \text{ m}}$$

Convert 325 s to min

$$325 \text{ s} \times \frac{1 \text{ min}}{60 \text{ s}} = \mathbf{5.42 \text{ min}}$$

A rectangular piece of gold leaf has a length of 8.65 cm, a width of 3.82 cm and a thickness of 0.14 cm. What is the volume in mL?

$V = \text{length} \times \text{width} \times \text{thickness}$

$$V = 8.65 \text{ cm} \times 3.82 \text{ cm} \times 0.14 \text{ cm} = 4.63 \text{ cm}^3$$

$$1 \text{ cm}^3 = 1 \text{ mL} \quad \mathbf{V = 4.63 \text{ mL}}$$

If the diameter of a red blood cell is  $6.3 \times 10^{-6} \text{ m}$ , how many red blood cells are needed to make a line that is 2.5 inches long?

G: in D: # Blood Cells

In  $\rightarrow$  cm  $\rightarrow$  m  $\rightarrow$  #cells

Equivalences: 1 in = 2.54 cm, 100 cm = 1 m,  $6.3 \times 10^{-6} \text{ m} = \# \text{ of cells}$

$$2.5 \text{ in} \times \frac{2.54 \text{ cm}}{1 \text{ in}} \times \frac{1 \text{ m}}{100 \text{ cm}} \times \frac{1 \text{ blood cell}}{6.3 \times 10^{-6} \text{ m}} = \mathbf{1.0 \times 10^4 \text{ blood cells}}$$

A piece of metal is 13.8 in long and 20.5 in wide. The thickness of the metal is 2.8 in. What is the volume in  $\text{cm}^3$ ?

$$V = 13.8 \text{ in} \times 20.5 \text{ in} \times 2.8 \text{ in} = 792 \text{ in}^3$$

$$792 \text{ in}^3 \times \left( \frac{2.54 \text{ cm}}{1 \text{ in}} \right)^3 = \mathbf{1.3 \times 10^4 \text{ cm}^3}$$

A cylindrical tube is 9.3 cm high and 0.75 cm in diameter. What is the volume in  $\text{dm}^3$ ? (Circumference =  $2\pi r$ , and  $V_{\text{cylinder}} = \pi r^2 h$ )

$$R = \frac{1}{2} d = \frac{1}{2} \times 0.75 \text{ cm} = 0.375 \text{ cm}$$

$$V = \pi \times r^2 \times h = \pi \times (0.375 \text{ cm})^2 \times 9.3 \text{ cm} = 4.11 \text{ cm}^3$$

$$1 \text{ cm} = 0.1 \text{ dm}$$

$$4.11 \text{ cm}^3 \times \left( \frac{0.1 \text{ dm}}{1 \text{ cm}} \right)^3 = \mathbf{0.0041 \text{ dm}^3}$$