KEY

Dimensional Analysis Practice Problems

1) 0.56kg = ? mg

$$0.56\text{ kg} \times \frac{1000\text{ g}}{1\text{ kg}} \times \frac{1\text{ mg}}{0.001\text{ g}} = 560{,}000\text{ mg}$$

2) 1.2ng = ? g

$$1.2\text{ ng} \times \frac{10^{-9}\text{ g}}{1\text{ ng}} = 1.2\times10^{-9}\text{ g}$$

3) 2.0 in = ? mm (1in = 2.54 cm)

$$2.0\text{ in} \times \frac{2.54\text{ cm}}{1\text{ in}} \times \frac{0.01\text{ m}}{1\text{ cm}} \times \frac{1\text{ mm}}{0.001\text{ m}} = 51\text{ mm}$$

4) 500ft = ? m

$$500\text{ ft} \times \frac{12\text{ in}}{1\text{ ft}} \times \frac{2.54\text{ cm}}{1\text{ in}} \times \frac{0.01\text{ m}}{1\text{ cm}} = 12.7\text{ m} \rightarrow 10\text{ m}$$

5) 10μL = ? cc (1mL = 1cm^3 = 1 cc)

$$10\mu\text{L} \times \frac{10^{-6}\text{ L}}{1\ \mu\text{L}} \times \frac{1\text{ mL}}{0.001\text{ L}} \times \frac{1\text{ cc}}{1\text{ mL}} = 0.01\text{ cc}$$

6) 3 wk = ? min

$$3\text{ wk} \times \frac{7\text{ day}}{1\text{ wk}} \times \frac{24\text{ hr}}{1\text{ day}} \times \frac{60\text{ min}}{1\text{ hr}} = \underset{30{,}000}{30240}\text{ min}$$

7) 50mL = ? cups (1L = 4.226cups)

$$50\text{mL} \times \frac{.001\text{ L}}{1\text{ mL}} \times \frac{4.226\text{ cups}}{1\text{ L}} = \underset{0.2\cancel{22}}{0.2113}\text{ cups}$$

8) 5.33km = ? dm

$$5.33\text{ km} \times \frac{1000\text{ m}}{1\text{ Km}} \times \frac{1\text{ dm}}{.1\text{ m}} = 53300\text{ dm}$$

9) 123.0 ng = ? Mg

$$123.0\text{ng} \times \frac{10^{-9}\text{ g}}{1\text{ ng}} \times \frac{1\text{ Mg}}{10^{6}\text{ g}} = 1.23\times10^{-13}\text{ Mg}$$

10) 3yds = ? in (1 yd = 3ft)

$$3\text{ yds} \times \frac{3\text{ ft}}{1\text{ yd}} \times \frac{12\text{ in}}{1\text{ ft}} = \underset{100\text{ in rounded}}{108}\text{ in}$$