

Conversion practice:

How many ml are there in 5 L?

$$5L \times \frac{1000mL}{1L} = 5000mL$$

How many inches are in 3 cm? (1in=2.54cm)

$$3cm \times \frac{1in}{2.54} = 1.18 \text{ sig figs? } 1in.$$

How many ng are there in 2 mg?

$$2mg \times \frac{1g}{1000mg} \times \frac{10^9ng}{1g} = 2 \times 10^6$$

How many m are in 5 μ m?

$$5\mu m \times \frac{10^{-6}m}{1\mu m} = 5 \times 10^{-6}m$$

How many μ m are in 5 m?

$$5m \times \frac{10^6\mu m}{1m} = 5 \times 10^6\mu m$$

Convert 1×10^9 ppm to ppb

$$\frac{1 \times 10^9}{10^6} = \frac{x}{10^9} \quad x = 1 \times 10^6 \text{ ppb}$$

Sig. fig practice:

$$12.11 + 18.0 - 1.013 = 2.9097 \times 10^1 = 29.097 \rightarrow 29.1$$

$$7.23 \times 12.5 \times 10. = 903.75 = 900 \text{ or } 9.0 \times 10^2$$

(0.102 x 0.01004)/ 3 (3 is an exact number).

$$3.4136 \times 10^{-4} \quad 3.41 \times 10^{-4}$$

Percentage and ppm:

In a very small portion of an air mixture, there are 100 molecules of O₂, 800 molecules of N₂, 6 atoms of Argon, and 94 atoms of He. What is the percentage of each gas? What is the concentration in ppm?

$$\begin{aligned} \text{Total parts} &= 100 + 800 + 6 + 94 = 1000 \\ O_2\% &= 10\% \\ N_2 &= 80\% \\ Ar &= 0.6\% \\ He &= 0.6\% \end{aligned}$$