

Notes - Units & Measurements

①

Metric System - based on intervals of 10^s (multiples) (see pg 33)

* most common prefixes used in Chem =

milli = $\frac{1}{1,000}$

centi = $\frac{1}{100}$

base = 1

kilo = 1,000

ex) 1 mg = $\frac{1}{1,000}$ g

1 cg = $\frac{1}{100}$ g

1 kg = 1,000 g

* If unit gets bigger, # gets smaller

Q1) How many mg are in 41.3 g?

3 → = 41,300 mg

g → mg

KHD & dcm

Q2) How many L (liters) are in 200 cl?

← 2

2 L

SI units (see pg 33)

* International system of Units

* Most common ways data is represented in science

- Time = sec. (s)

- Length = meters (m)

- Mass = Kilograms (Kg) & grams (g)

- Temp = Kelvin (K)

- Vol. = cubic meters (m^3) and liters (L)

Converting between Units

- using the "slide" method

* remember - metric system is based on intervals of 10 between each step (up & down)

← ÷

→ ×

* You may remember King Henry Died by drinking choc. milk (2)

- Each of the 1st letters of mnemonic device represents a metric unit
(base)
g, L, m
- on this scale K = biggest, m = smallest

To convert between units, move the decimal towards the new unit, counting each unit in between.

ex) 100 mg \rightarrow g, requires 3 places to the left.

* move decimal 3 places to left

$$\begin{array}{r} 100. \\ \leftarrow \leftarrow \leftarrow \\ \hline 0.1 \\ \text{3 2 1} \end{array} = 0.1$$

$$100 \text{ mg} = \boxed{0.1 \text{ g}}$$

ex) 5.2 Kl \rightarrow Liters, requires 3 places to right

* move decimal 3 places right

* Add zeros @ end of number

$$\begin{array}{r} 5.200 \\ \leftarrow \leftarrow \leftarrow \\ \hline 5,200 \\ \text{1 2 3} \end{array} = 5,200$$

$$5.2 \text{ Kl} = \boxed{5,200 \text{ L}}$$

practice probs

K H D by d c m
(g, L, m)

$$25.1 \text{ cL} = \text{--- ml}$$

$$\boxed{251 \text{ ml}}$$

$$0.65 \text{ km} = \boxed{650 \text{ m (meters)}}$$

$$32.5 \text{ g} = \boxed{0.0325 \text{ Kg}}$$

$$355 \text{ ml} = \boxed{0.000355 \text{ KL}}$$

$\leftarrow 6$