The Metric System

Chem20, Elementary Chemistry

- Prefix multipliers change by magnitudes of (times multiplied by) ten.
- To write the desired unit:
  - (prefix) + base unit
    - (milli) + meter = millimeter
    - (kilo) + gram = kilogram
    - (nano) + second = nanoosecond
    - (Mega) + liter = Megaliter
  - (prefix symbol) + base unit symbol
    - (m) + m = mm
    - (k) + g = kg
    - (n) + s = ns
    - (M) + L = ML

Prefix	Scientific Notation	1 (prefix) unit = __ unit	Symbol
Giga -	10^{9}	1×10^{9}	G
Mega -	10^{6}	1×10^{6}	M
kilo -	10^{3}	1×10^{3}	k
BASE UNIT	1	1	(m, g, s, K)
deci -	10^{-1}	1×10^{-1}	d
centi -	10^{-2}	1×10^{-2}	c
milli -	10^{-3}	1×10^{-3}	m
micro -	10^{-6}	1×10^{-6}	μ
nano -	10^{-9}	1×10^{-9}	n
pico -	10^{-12}	1×10^{-12}	p

- To convert, replace the prefix with its worth in scientific notation.

  1 (prefix)unit = 1 × (scientific notation) unit

  1 Gigameter = 1×10^{9} meters

  1 nanogram = 1×10^{-9} grams

  # (prefix)unit = # × (scientific notation) unit

  1.24 picoseconds = 1.24×10^{-12} seconds

  6.238×10^{-2} kiloKelvins = $6.238 \times 10^{-2} \times 10^{3}$ Kelvins = 6.238×10^{1} Kelvins