

## Measurement

**Targets: Scientific Notation, SI Units, Prefixes, Significant Figures, Dimensional Analysis**

❑ **Number Trivia (PowerPoint)**



Mind Bender to introduce chemistry as a problem solving course:

4 books are resting on a shelf. Volumes I, II, III, IV. Each book is 2 inches wide, the binding is 1/6" of an inch. If a bookworm is to eat from volume I, page one to volume IV, last page, how many inches must it eat? (A: 5 inches)

**Math Toolbox 1.1, 1.2, and 1.3, SI Units, Prefixes and Scientific Notation:** Expressing large or small numbers as a product of a number between 1 and 10 and the appropriate power of 10.

Ex.  $125 = 1.25 \times 100 = 1.25 \times 10^2$

Ex. 90 000 000 000 \$ (Bill Gates worth) =  $9 \times 10^{10}$  \$

Calculator Usage (Entering and Interpreting display)

**Units and Prefix Conversions:**

SI (International System) of units. 1960, Standard units for measurements:

Quantity	Name	Abbreviation
Mass	kilogram	kg
Length	meter	m
Time	second	s
Temperature	Kelvin	K (upper case)
Amount of substance	mole	mol

**Powers of 10 and Prefix ruler:**

$10^9$	$10^6$	$10^3$	$10^0$	$10^{-1}$	$10^{-2}$	$10^{-3}$	$10^{-6}$	$10^{-9}$
Giga	Mega	kilo	1	deci	centi	milli	micro	nano
G	M	k	Base Unit	d	c	m	$\mu$	n

**Video: Powers of 10 ([Eames, Power of 10 Video](#))**

In practice: Give prefix and unit for:

$1/10^{\text{th}}$  base SI unit of time                       $1/1\ 000\ 000$  of SI unit of length

$10^3$  times SI unit of length                       $1\ 000\ 000\ 000$  times SI unit of amount of substance

$10^{-3}$  of SI base unit of mass                       $10^6$  times SI unit of temperature

Practice calculator usage with scientific notation.

Ex.  $4.5 \times 10^5$  kg = \_\_\_\_\_ g

$60 \times 10^3$  Mg = \_\_\_\_\_ mg

**Homework: Practice Worksheet (Scientific Notation and Conversions)**