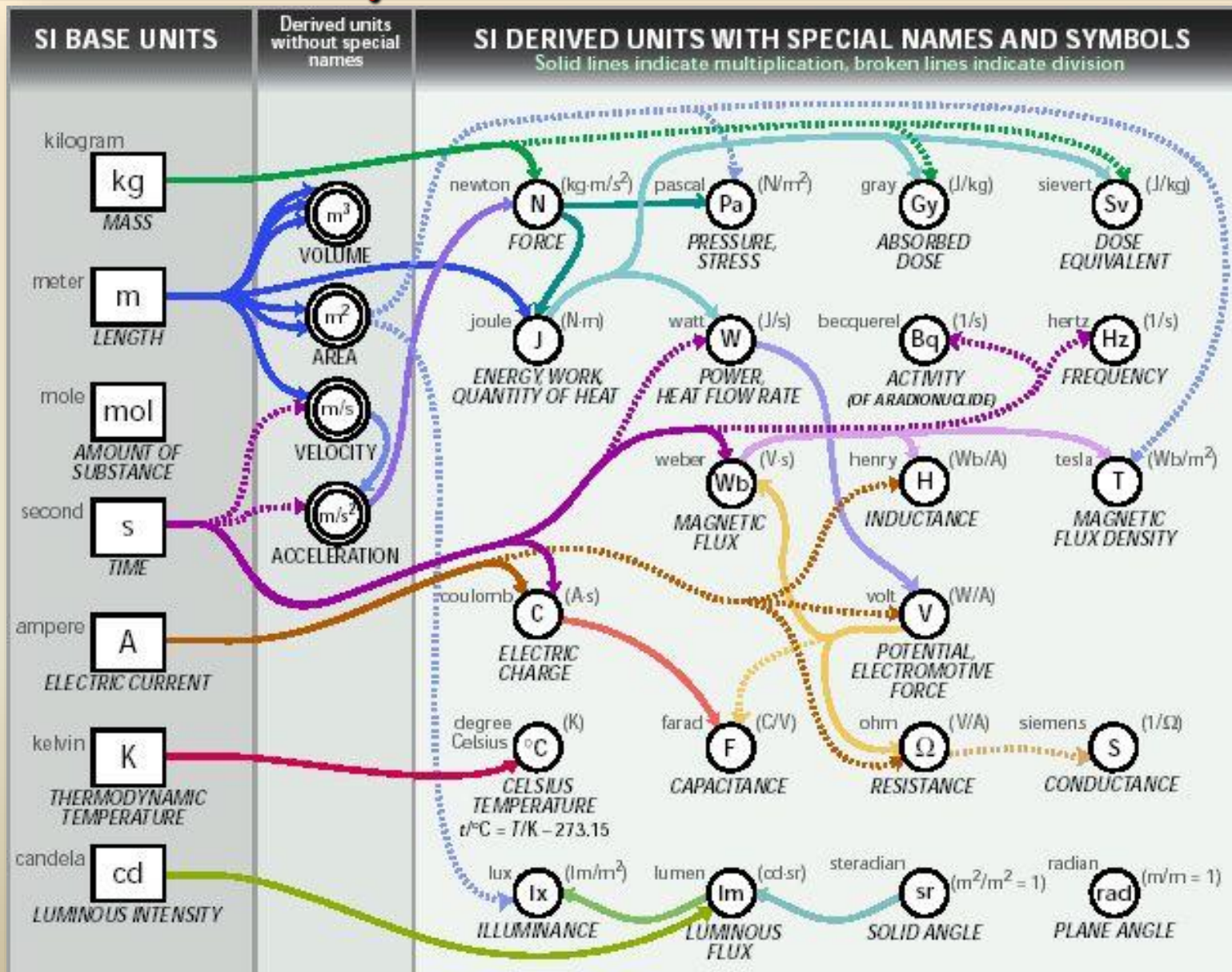


The SI System of Measurement



The Nature of Measurement

A Measurement is a quantitative observation consisting of **TWO** parts

Part 1 - number

Part 2 - scale (unit)

Examples:

20 grams

6.63×10^{-34} Joule · seconds

The Fundamental SI Units

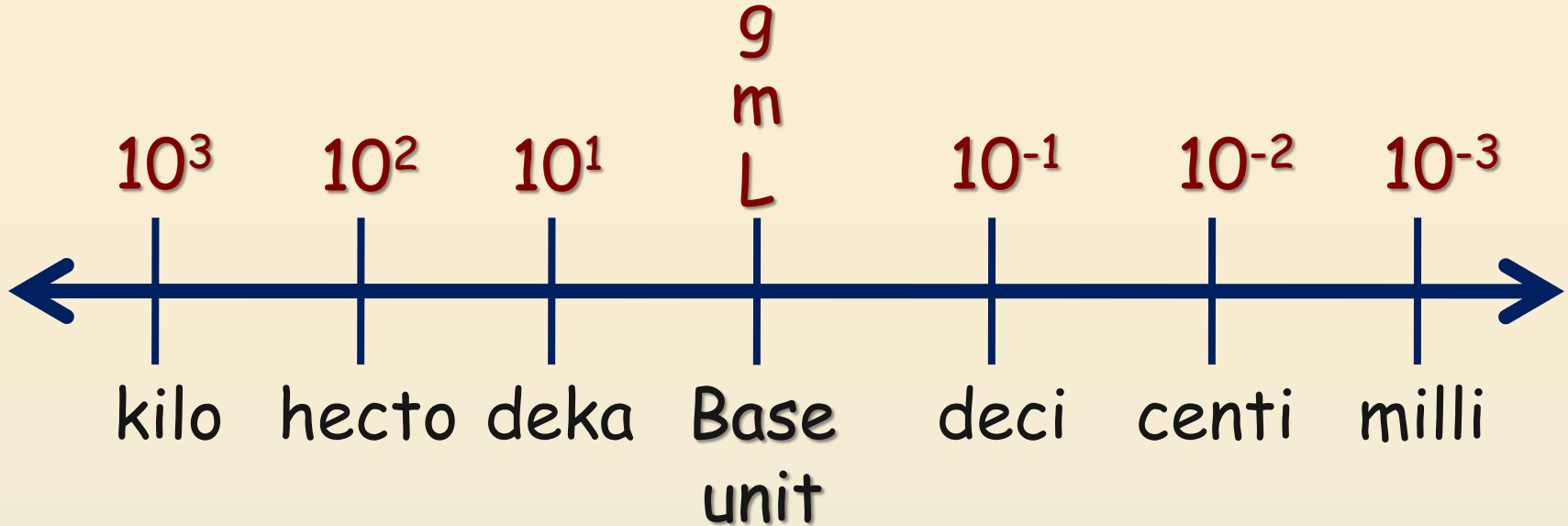
(le Système International, SI)

<u>Physical Quantity</u>	<u>Name</u>	<u>Abbreviation</u>
Mass	kilogram	kg
Length	meter	m
Time	second	s
Temperature	Kelvin	K
Electric Current	Ampere	A
Amount of Substance	mole	mol
Luminous Intensity	candela	cd

SI Prefixes Common to Chemistry

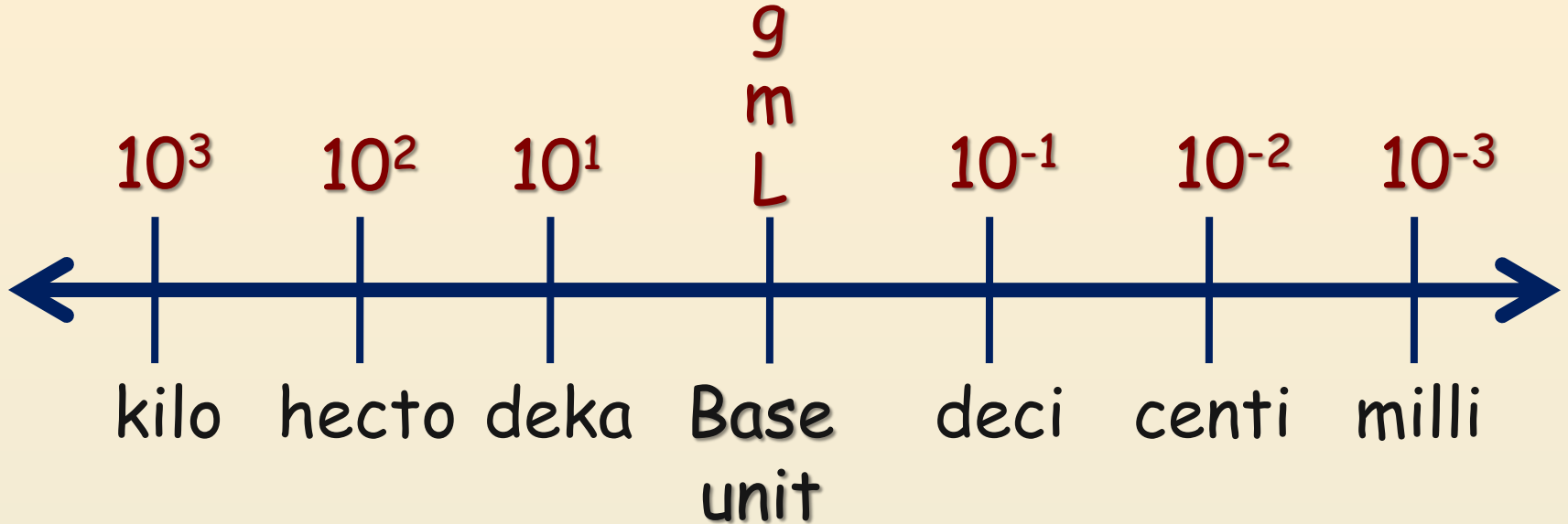
Prefix	Unit Abbr.	Exponent
Kilo	k	10^3
Deci	d	10^{-1}
Centi	c	10^{-2}
Milli	m	10^{-3}
Micro	μ	10^{-6}

Metric Conversions



Conversions in the metric system are merely a matter of moving a decimal point. The "base unit" means the you have a quantity (**g**rams, **m**eters, **L**iters, etc without a prefix.

Metric Conversions

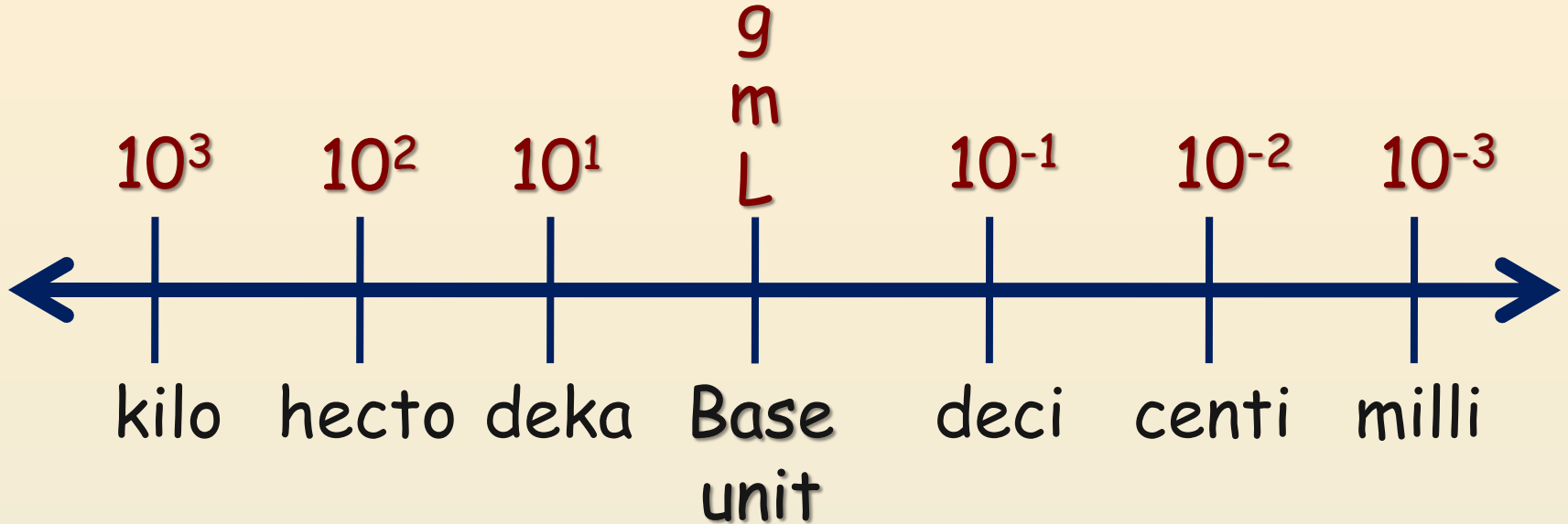


18 L $\xrightarrow{1}$ $\xrightarrow{2}$ $\xrightarrow{3}$

18 liters = 18 000 milliliters

Example #1: Convert 18 liters to milliliters

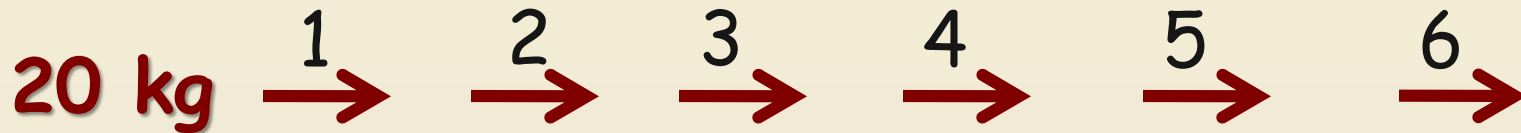
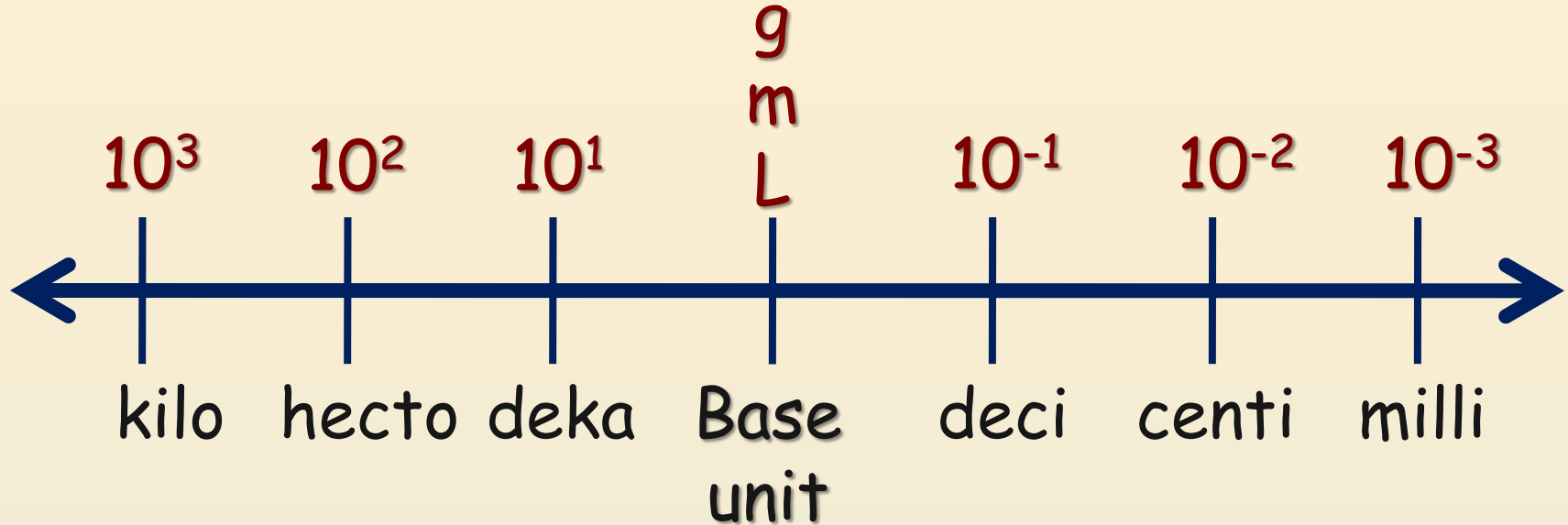
Metric Conversions



$$450 \text{ mg} = 0.450 \text{ g} \quad \xleftarrow{3} \quad \xleftarrow{2} \quad \xleftarrow{1} \quad 450 \text{ mg}$$

Example #2: Convert 450 milligrams to grams

Metric Conversions



$$20 \text{ kg} = 20\,000\,000 \text{ mg}$$

Example #3: Convert 20 kilograms to milligrams