S.I. Units and Dimensional Analysis

Unit 7: The Mole

S.I. Units

In 1960 an international committee of scientists revised the metric system of measurements...

"Système Internationale d'Unités"

S.I. Base Units

Quantity	Unit	Symbol
time	second	s
length	meter	m
mass	kilogram	kg
temperature	Kelvin	K
amount	mole	mol

Derived Units
(a combination of base units)

Quantity	Unit	Symbol
speed	$\frac{\text{meters}}{\text{second}}$	$\frac{\text{m}}{\text{s}}$
volume**	cubic meter or cubic centimeter	m^3 or cm^3
density	$\frac{\text{grams}}{\text{cubic centimeter}}$	$\frac{\text{g}}{cm^3}$

****note: 1 cm^3 = 1 mL**

Metric Prefixes

larger than base unit

smaller than base unit

prefix	symbol	10^x	conversion factor (ex: g)
giga	G	10^9	10^9 g = 1 Gg
mega	M	10^6	10^6 g = 1 Mg
kilo	k	10^3	1000 g = 1 kg
deci	d	10^{-1}	1 g = 10 dg
centi	c	10^{-2}	1 g = 100 cg
milli	m	10^{-3}	1 g = 1000 mg
micro	μ	10^{-6}	1 g = 10^6 μg
nano	n	10^{-9}	1 g = 10^9 ng
pico	p	10^{-12}	1 g = 10^{12} pg

Practice

1. 4.9 mg = ? g

2. 6 s = ? μs

To be completed in class!
(leave 1-2 lines under each)

3. 8.8 km = ? nm

4. 3.7×10^5 pg = ? cg