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		
length		
mass*		
temperature		
amount		

To be completed in class!
(one word will go in each box)

*Note: gram (g) is used as base unit for conversions

Temperature Conversions
Kelvin

$$K = {}^{o}C + 273$$

Convert 38°C to Kelvin.

To be completed in class!
(leave 1 line)

Temperature Conversions
Fahrenheit

$$^{o}F = (^{o}C \times 1.8) + 32$$

Convert 62°C to Fahrenheit.

To be completed in class!
(leave 1 line)

Derived Units
(a combination of base units)

quantity	unit	symbol
speed	meters/second	m/s
volume*	cubic meter or cubic centimeter	m^3 cm^3
density	grams/cubic centimeter	g/cm^3

*Note: 1 cm^3 = 1 mL

Metric Prefixes

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

Metric Conversions

Converting a measurement from one metric unit to another metric unit.

Use conversion factors from metric prefixes table (always convert to base unit).

Practice

1. 4.9 mg = ? g

2. 6 s = ? μs

3. 8.8 km = ? nm

4. 3.7×10^5 pg = ? cg

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

Conversion Factors

How many inches are in one foot?

How many feet are in 12 inches?

$12 \text{ in} = 1 \text{ ft}$

$1 \text{ ft} = 12 \text{ in}$

$$\frac{12 \text{ in}}{1 \text{ ft}}$$

top and bottom of conversion factor are equal

$$\frac{1 \text{ ft}}{12 \text{ in}}$$

conversion factors have infinite sig figs

How many inches are in 4.0 feet?

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

How many feet are in 96 inches?

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

Dimensional Analysis

Converting a measurement from one set of units to another set of units by using conversion factors.

1. What is the problem asking?
2. What number(s) are given?
3. What conversion factors are needed?
4. Start with the unit(s) most related to what you want
5. Set up dimensional analysis (cancel units)
6. Multiply top numbers, divide bottom numbers
7. Sig figs in answer should match number(s) given

Practice

1. 98.0 min = ? days

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

2. 57.3 miles/hour = ? km/min

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