

## SI Units and Conversion Factors

<b>Length</b>	
<i>SI unit: meter (m)</i>	
1 meter	= 1.0936 yards
1 centimeter	= 0.39370 inch
1 inch	= 2.54 centimeters (exactly)
1 foot	= 12 inches (exactly)
1 yard	= 3 feet (exactly)
1 kilometer	= 0.621 mile
1 mile	= 5280 feet = 1.61 kilometers
1 angstrom	= $10^{-10}$ meter = 100 picometers

<b>Mass</b>	
<i>SI unit: kilogram (kg)</i>	
1 kilogram	= 1000 g = 2.2046 lbs
1 pound	= 454 g = 0.454 kg = 16 ounces
1 ton	= 2000 pounds = 907.185 kilograms
1 metric ton	= 1000 kg = 2204.6 lbs
1 atomic mass unit (amu)	= $1.66056 \times 10^{-27}$ kg

<b>Volume</b>	
<i>SI unit: cubic meter (m<sup>3</sup>)</i>	
1 liter (L)	= $10^{-3}$ m <sup>3</sup> = 1 dm <sup>3</sup> = 1.0567 quarts = 1000 mL
1 mL	= 1 cm <sup>3</sup> = 1 cc (cubic cm)
1 gallon	= 4 quarts = 8 pints = 3.7854 liters
1 quart	= 32 fluid ounces = 0.94633 liter

<b>Temperature</b>	
<i>SI unit: kelvin (K)</i>	
0 K	= -273 °C
K	= -459.67 °F = °C + 273
°C	= $\frac{5}{9} (\text{°F} - 32)$
°F	= $\frac{9}{5} \text{°C} + 32$

<b>Counting</b>	
<i>SI unit: mole (mol)</i>	
1 mole	= $6.02 \times 10^{23}$ units
1 gross	= 144 units
1 dozen	= 12 units

<b>Energy</b>	
<i>SI unit: joule (J)</i>	
1 joule	= 1kg · m <sup>2</sup> /s <sup>2</sup> = 0.23901 calorie (cal) = $9.4781 \times 10^{-4}$ btu (British thermal unit)
1 calorie	= 4.184 joules = $3.965 \times 10^{-3}$ btu
1 Calorie (nutritional)	= 1000 calories
1 btu	= 1055.06 joules = 252.2 calories

<b>Pressure</b>	
<i>SI unit: pascal (Pa)</i>	
1 pascal	= 1 N/m <sup>2</sup> = 1 kg/m · s <sup>2</sup>
1 atm (atmospheres)	= 101.3 KPa (kilopascals) = 760 torr = 760 mm Hg = 14.70 psi (pounds per square inch)
1 bar	= $10^5$ pascals

## Honors Chemistry 1

Factor	Prefix	Symbol
$1 \times 10^{12}$	tera-	T
$1 \times 10^9$	giga-	G
$1 \times 10^6$	mega-	M
$1 \times 10^3$	kilo-	k
$1 \times 10^2$	hecto-	h
$1 \times 10^1$	deca-	D
$1 \times 10^0$	base unit	---
$1 \times 10^{-1}$	deci-	d
$1 \times 10^{-2}$	centi-	c
$1 \times 10^{-3}$	milli-	m
$1 \times 10^{-6}$	micro-	$\mu$
$1 \times 10^{-9}$	nano-	n
$1 \times 10^{-10}$	angstrom	$\text{\AA}$
$1 \times 10^{-12}$	pico-	p