

Formula's	
C	is the speed of light, 3.00×10^8 m/s
h	is Plank's constant, 6.626×10^{-34} joule-seconds (Jxs)
λ	Wavelength is usually expressed in nanometers
F	frequency is given in cycles per second (1/s) or Hertz (Hz)
E	is energy is in joules
$c = \lambda f$ $E = hf$	$E = hc/\lambda$
Density = M/V	Average Mass = $\Sigma(\text{Fraction abundance} * \text{isotopic mass})$
Formula Charge	# of valence electrons - # of lone pairs - $1/2$ # of bonding electrons
Bond order	$(\text{\# of bonding atoms}) - (\text{\# of antibonding electrons})/2$
Percent comp	$\%H = \text{mass of H} / \text{mass of compound} * 100\%$
Mass Percent	$M/M = \text{Mass of Solute} / \text{Mass of solute (g) + solvent} * 100\%$
	$\text{Mass of Solute} / \text{Mass of solution} * 100\%$
Concentration of solute	Amount of solute/amount of solution
M=moles of solute/liters of solute	
Volume percent	$V/V = \text{Volume of solute} / \text{volume of solution} * 100\%$
Mass/Volume percent	$M/V = \text{Mass of solute} / \text{Volume of solution} * 100\%$

Formula's (cont)	
PPM	Mass of solute/Mass of solution $* 10^6$
PPB	Mass of solute/Mass solution $* 10^9$
Percentage yield	Actual yield/theoretical yield $* 100$

constants	
Avogadro's	6.02×10^{23} moles
R (Pv=nRT)	0.08206 Lmol/katm
Volume of Gas	22.4L

General	
Diatomic Elements: N ₂ , H ₂ , O ₂ , F ₂ , Cl ₂ , Br ₂ , I ₂	
Molecular compound: Non-metal + Non-metal (Should use prefixes)	
Ionic compound: Metal + Non-metal (Should not use prefixes)	
Oxidation = loss of electrons	
Reduction = Gain of electrons	
Aufbau - the ground state of an atom or ion, electrons fill subshells the lowest energy level	

STP's	
Atmosphere	ATM
Millimeters of mercury	mm Hg
Pascal	Pa
Inches of mercury	in Hg
Pounds per square inch	PSI
1 Atm = 760 mm Hg = 760 torr	
1 Atm = 1.013×10^5 Pa = 101.3 kPa	
1 Atm = 29.92 in Hg = 14.69 psi	
Pv=nRT	P=Pressure
	v=volume
	n=Number of moles

STP's (cont)	
R=0.08206 L.mol/k.atm	
T=Temperature	

Boyle's, Charles, Daltons Law	
Boyle's law equation	$P_1V_1 = P_2V_2$
Charles law equation	$V_1/T_1 = V_2/T_2$ (Cross multiply)
Daltons law equation	$P = (\text{Sum of partial pressures}) = P_1 + P_2 \dots$
Modern atomic theory	

Boyles law -The volume of gas varies inversely with pressure
Charles law - The volume of gas is directly proportional to its temperature in kelvins
Daltons law - That in a mixture of non-reacting gases, the total pressure exerted is equal to the sum of the partial pressures of the individual gases
Modern atomic theory - Describes an electron as not occupying a circular orbit at a fixed distance

Ions	
An Ion with a positive charge has more protons than electrons	

Polyatomic Ions	
C ₂ H ₃ O ₂ ⁻ Acetate	OH ⁻ Hydroxide
NH ₄ ⁺ Ammonium	ClO ⁻ Hypochlorite
CO ₃ ²⁻ Carbonate	NO ₃ ⁻ Nitrate
ClO ₃ ⁻ Chlorate	NO ₂ ⁻ Nitrite
ClO ₂ ⁻ Chlorite	C ₂ O ₄ ²⁻ Oxalate
CrO ₄ ²⁻ Chromate	ClO ₄ ⁻ Perchlorate
CN ⁻ Cyanide	MnO ₄ ⁻ Permanganate
Cr ₂ O ₇ ²⁻ Dichromate	PO ₄ ³⁻ Phosphate
HCO ₃ ⁻ Bicarbonate	SO ₄ ²⁻ Sulfate
	SO ₃ ²⁻ Sulfite



Unit Conversion

Kilo	10^3
Hecto	10^2
Deca	10^1
Base Unit	10^0
Deci	10^{-1}
Centi	10^{-2}
Milli	10^{-3}
Meter	0.01

1000m are in 1km
1000g are in 1kg
2.54cm are in 1in
1000mL are in 1L

Naming conventions

ite only used with oxygen (lower # of oxygen)

ate only used with oxygen (higher # of oxygen)

ide when the non metal is the second compound

ous polyatomic ions ending in ite

ic polyatomic ions ending in ate

Acids are only with anions and polyatomic ions

HCl, which contains the anion chloride, is called hydrochloric acid.

HCN, which contains the anion cyanide, is called hydrocyanic acid.

HNO₃, which contains the polyatomic ion nitrate, is called nitric acid.

HNO₂, which contains the polyatomic ion nitrite, is called nitrous acid.



By **zrockout**
cheatography.com/zrockout/

Not published yet.
Last updated 8th May, 2023.
Page 2 of 2.

Sponsored by **Readable.com**
Measure your website readability!
<https://readable.com>