Formula's

C	is the speed of light, 3.00x10^8 m/s
h	is Plank's constant, 6.626x10^-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=Λf E=hf	E=hc/Λ
Density = M/V	Average Mass= Σ(Fraction abundance * isotopic mass)
Formula Charge	# of valence electrons - # of lone pairs - 1/2 # of bonding electrons
Bond order	(# of bonding atoms) - (# of antibonding electrons)/2
Percent comp	%H=mass of H/mass of compound *100%
Mass Percent	M/M=Mass of Solute/Mass of solute (g) + solvent *100%
	Mass of Solute/Mass of solution *100%
Concentration of solute	Amount of solute/amount of solution
M=moles of solute/liters of solute	
Volume percent	V/V=Volume of solute/volume of solution * 100%
Mass/Volume percent	M/V= Mass of solute/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	6.02x10^23 moles
R (Pv=nRT)	0.08206 L*mol/k*atm
Volume of Gas	22.4L

General

Diatomic Elements: N2, H2, O2, F2, Cl2, Br2, I2

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= 1.013x10^5Pa = 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	P1*V1=P2*V2
Charles law equation	V1/T1=V2/T2 (Cross multiply)
Daltons law equation	P=(Sum of partial pressures)=P1+P2...

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

C2H3O2- Acetate	OH- Hydroxide
NH4+ Ammonium	ClO- Hypochlorite
CO3^2- Carbonate	NO3- Nitrate
ClO3- Chlorate	NO2- Nitrite
ClO2- Chlorite	C2O4^2- Oxalate
CrO4^2- Chromate	ClO4- Perchlorate
CN- Cyanide	MnO4- Permanganate
Cr2O7^2- Dichromate	PO4^3- Phospate
HCO3- Bicarbonate	SO4^2- Sulfate
	SO3^2- 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.