PERIODIC TABLE OF ELEMENTS

	1 IA	2 IIA	3 IIIB	4 IVB	5 VB	6 VIB	7 VIIB	8	9 VIIIB	10	11 IB	12 IIB	13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA	18 VIIIA
1	1 **H** Hydrogen 1.00794																	2 **He** Helium 4.00262
2	3 **Li** Lithium 6.941	4 **Be** Beryllium 9.012182											5 **B** Boron 10.811	6 **C** Carbon 12.011	7 **N** Nitrogen 14.00674	8 **O** Oxygen 15.9994	9 **F** Fluorine 18.9984032	10 **Ne** Neon 20.1797
3	11 **Na** Sodium 22.989768	12 **Mg** Magnesium 24.3050											13 **Al** Aluminum 26.981539	14 **Si** Silicon 28.0855	15 **P** Phosphorus 30.973762	16 **S** Sulfur 32.066	17 **Cl** Chlorine 35.4527	18 **Ar** Argon 39.948
4	19 **K** Potassium 39.0983	20 **Ca** Calcium 40.078	21 **Sc** Scandium 44.955910	22 **Ti** Titanium 47.88	23 **V** Vanadium 50.9415	24 **Cr** Chromium 51.9961	25 **Mn** Manganese 54.93805	26 **Fe** Iron 55.847	27 **Co** Cobalt 58.93320	28 **Ni** Nickel 58.6934	29 **Cu** Copper 63.546	30 **Zn** Zinc 65.39	31 **Ga** Gallium 69.723	32 **Ge** Germanium 72.61	33 **As** Arsenic 74.92159	34 **Se** Selenium 78.96	35 **Br** Bromine 79.904	36 **Kr** Krypton 83.80
5	37 **Rb** Rubidium 85.4678	38 **Sr** Strontium 87.62	39 **Y** Yttrium 88.90585	40 **Zr** Zirconium 91.224	41 **Nb** Niobium 92.90638	42 **Mo** Molybdenum 95.94	43 **Tc** Technetium 97.9072	44 **Ru** Ruthenium 101.07	45 **Rh** Rhodium 102.90550	46 **Pd** Palladium 106.42	47 **Ag** Silver 107.8682	48 **Cd** Cadmium 112.411	49 **In** Indium 114.82	50 **Sn** Tin 118.710	51 **Sb** Antimony 121.757	52 **Te** Tellurium 127.60	53 **I** Iodine 126.90447	54 **Xe** Xenon 131.290
6	55 **Cs** Cesium 132.90543	56 **Ba** Barium 137.327	71 **Lu** Lutetium 174.967	72 **Hf** Hafnium 178.49	73 **Ta** Tantalum 180.9479	74 **W** Tungsten 183.85	75 **Re** Rhenium 186.207	76 **Os** Osmium 190.2	77 **Ir** Iridium 192.22	78 **Pt** Platinum 195.08	79 **Au** Gold 196.96654	80 **Hg** Mercury 200.59	81 **Tl** Thallium 204.3833	82 **Pb** Lead 207.2	83 **Bi** Bismuth 208.98037	84 **Po** Polonium 208.9824	85 **At** Astatine 209.9871	86 **Rn** Radon 222.0176
7	87 **Fr** Francium 223.0197	88 **Ra** Radium 226.0254	103 **Lr** Lawrencium 260.1054	104 **Rf** Rutherfordium (261)	105 **Db** Dubnium (262)	106 **Sg** Seaborgium (263)	107 **Bh** Borhium (262)	108 **Hs** Hassium (265)	109 **Mt** Meitnerium (266)	110 (269)	111 (272)	112 (277)	113	114				

57 **La** Lanthanum 138.9055	58 **Ce** Cerium 140.115	59 **Pr** Praseodymium 140.90765	60 **Nd** Neodymium 144.24	61 **Pm** Promethium 144.9128	62 **Sm** Samarium 150.36	63 **Eu** Europium 151.965	64 **Gd** Gadolinium 157.25	65 **Tb** Terbium 158.92534	66 **Dy** Dysprosium 162.50	67 **Ho** Holmium 164.93032	68 **Er** Erbium 167.26	69 **Tm** Thulium 168.93421	70 **Yb** Ytterbium 173.04
89 **Ac** Actinium 227.0278	90 **Th** Thorium 232.0381	91 **Pa** Protactinium 231.03588	92 **U** Uranium 238.0289	93 **Np** Neptunium 237.0482	94 **Pu** Plutonium 244.0642	95 **Am** Americium 243.0614	96 **Cm** Curium 247.0703	97 **Bk** Berkelium 247.0703	98 **Cf** Californium 251.0796	99 **Es** Einsteinium 252.0828	100 **Fm** Fermium 257.0951	101 **Md** Mendelevium 258.0986	102 **No** Nobelium 259.1009

Solubility Rules of Compounds in Aqueous Solution

1. Nitrate (NO_3^{-1}) and Acetate ($C_2H_3O_2^{-1}$) salts are soluble.
2. Group IA (alkali metals) and Ammonium (NH_4^{+1}) salts are soluble.
3. Most Halides (Chlorides, Fluorides, Bromides and Iodides) are soluble except when Ag^{+1}, Pb^{+2}, Hg_2^{+2}, are the cations.
4. Most Sulfates (SO_4^{-2}) are soluble except: $BaSO_4$, $PbSO_4$, $CaSO_4$, and Hg_2SO_4.
5. Most Hydroxides (OH^{-1}) are insoluble except: $Ca(OH)_2$ and Rule #2.
6. Sulfides (S^{-2}), Carbonates (CO_3^{-2}), Chromates (CrO_4^{-2}), and Phosphates (PO_4^{-3}) are not soluble expect: Rule #2.

Metric System			
Prefix	Symbol	Multiplier	
mega	M	10^6	1,000,000
kilo	k	10^3	1,000
hecto	h	10^2	100
deca	da	10^1	10
Base Units: g, m, L, etc…			
deci	d	10^{-1}	0.1
centi	c	10^{-2}	0.01
milli	m	10^{-3}	0.001
micro	μ	10^{-6}	0.000001

	Name	Symbol
Most	potassium	K
	barium	Ba
	sodium	Na
	lithium	Li
	calcium	Ca
	magnesium	Mg
	aluminum	Al
	(carbon)	(C)
	zinc	Zn
	iron	Fe
	nickel	Ni
	tin	Sn
	lead	Pb
	(hydrogen)	(H)
	copper	Cu
	mercury	Hg
	silver	Ag
Least	platinum	Pt
	gold	Au

-1 charge		***-2 charge***		***-3 charge***	
Formula	*Name*	*Formula*	*Name*	*Formula*	*Name*
$H_2PO_4^-$	dihydrogen phosphate	HPO_4^{-2}	hydrogen phosphate	PO_4^{-3}	phosphate
$C_2H_3O_2^-$	acetate	$C_2O_4^{-2}$	oxalate	PO_3^{-3}	phosphite
HSO_3^-	hydrogen sulfite (bisulfite)	SO_3^{-2}	sulfite	AsO_4^{-3}	arsenate
		SO_4^{-2}	sulfate	AsO_3^{-3}	arsenite
HSO_4^-	hydrogen sulfate (bisulfate)	CO_3^{-2}	carbonate	BO_3^{-3}	borate
		CrO_4^{-2}	chromate	$C_6H_5O_7^{-3}$	citrate
HCO_3^-	hydrogen carbonate (bicarbonate)	$Cr_2O_7^{-2}$	dichromate		
		SiO_3^{-2}	silicate	***+1 charge***	
NO_2^-	nitrite	O_2^{-2}	peroxide	*Formula*	*Name*
NO_3^-	nitrate	$C_4H_4O_6^{-2}$	tartrate	NH_4^+	ammonium
CN^-	cyanide	$B_4O_7^{-2}$	tetraborate	H_3O^+	hydronium
OH^-	hydroxide	$S_2O_3^{-2}$	thiosulfate		
MnO_4^-	permanganate	$C_2O_4^{-2}$	oxalate		
ClO^-	hypochlorite	SeO_4^{-2}	selenate		
ClO_2^-	chlorite	SeO_3^{-2}	selenite		
ClO_3^-	chlorate	TeO_4^{-2}	tellurate		
ClO_4^-	perchlorate	TeO_3^{-2}	tellurite		
IO_3^-	iodate				
NH_2^-	amide				
N_3^-	azide				
SCN^-	thiocyanate				

BrO_3^-	bromate