THE PERIODIC TABLE

1 H Hydrogen 1.01																	2 He Helium 4.00
3 Li Lithium 6.94	4 Be Beryllium 9.01											5 B Boron 10.81	6 C Carbon 12.01	7 N Nitrogen 14.01	8 O Oxygen 16.00	9 F Fluorine 19.00	10 Ne Neon 20.18
11 Na Sodium 22.99	12 Mg Magnesium 24.31											13 Al Aluminum 26.98	14 Si Silicon 28.09	15 P Phosphorus 30.97	16 S Sulfur 32.06	17 Cl Chlorine 35.45	18 Ar Argon 39.95
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.90	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.93	26 Fe Iron 55.85	27 Co Cobalt 58.93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.39	31 Ga Gallium 69.74	32 Ge Germanium 72.59	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.90
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium 97.91	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.69	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90	54 Xe Xenon 131.30
55 Cs Cesium 132.91	56 Ba Barium 137.33	71 Lu Lutetium 174.97	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.85	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.09	79 Au Gold 196.97	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.20	83 Bi Bismuth 208.98	84 Po Polonium 208.98	85 At Astatine 209.99	86 Rn Radon 222.02
87 Fr Francium 223.02	88 Ra Radium 226.02	103 Lr Lawrencium 256.11	104 Rf Rutherfordium 261.11	105 Db Dubnium 262.11	106 Sg Seaborgium 263.12	107 Bh Bohrium 264.12	108 Hs Hassium 265.13	109 Mt Meitnerium 268									

57 La Lanthanum 138.91	58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium 144.91	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25	65 Tb Terbium 158.93	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.93	70 Yb Ytterbium 173.04
89 Ac Actinium 227.03	90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	93 Np Neptunium 237.05	94 Pu Plutonium 244.06	95 Am Americium 243.06	96 Cm Curium 247.07	97 Bk Berkelium 247.07	98 Cf Californium 251.08	99 Es Einsteinium 254.08	100 Fm Fermium 257.10	101 Md Mendelevium 258.10	102 No Nobelium 259.10

SOLUBILITY TABLE

Group IA all
H^{+1} are
NH_4^{+1} soluble

NO_3^{-1} all
ClO_3^{-1} are
$C_2H_3O_2^{-1}$ soluble

OH^{-1} are all insoluble except for K, Na, NH_4^{+1}, Mg, Ca, and Ba

SO_4^{-2} are all soluble except Ba, Ca, Sr, Hg_2^{+2}, Pb, Ag

Cl^{-1} all are soluble
Br^{-1} except Pb, Ag,
I^{-1} and Hg_2^{+2}

S^{-2} are all insoluble except for Ba, Ca, H, K, Mg, Na, and NH_4^{+1}

CO_3^{-2} all are
PO_4^{-3} insoluble
BO_3^{-3} except
SO_3^{-2} Group IA,
CrO_4^{-2} H, and NH_4^{+1}
AsO_4^{-3}
O^{-2}

REFERENCE SHEET

ELECTRONEGATIVITIES

H 2.20																
Li 0.98	Be 1.57											B 2.04	C 2.55	N 3.04	O 3.44	F 3.98
Na 0.93	Mg 1.31											Al 1.61	Si 1.90	P 2.19	S 2.58	Cl 3.16
K 0.82	Ca 1.00	Sc 1.60	Ti 1.54	V 1.63	Cr 1.66	Mn 1.55	Fe 1.83	Co 1.88	Ni 1.91	Cu 1.90	Zn 1.65	Ga 1.81	Ge 2.01	As 2.18	Se 2.55	Br 2.96
Rb 0.82	Sr 0.95	Y 1.22	Zr 1.33	Nb 1.60	Mo 2.16	Tc 2.10	Ru 2.20	Rh 2.28	Pd 2.20	Ag 1.93	Cd 1.69	In 1.78	Sn 1.96	Sb 2.05	Te 2.10	I 2.66
Cs 0.79	Ba 0.89	La 1.10	Hf 1.30	Ta 1.50	W 1.70	Re 1.90	Os 2.20	Ir 2.20	Pt 2.20	Au 2.40	Hg 1.90	Tl 1.80	Pb 1.80	Bi 1.90	Po 2.00	At 2.20
Fr 0.70	Ra 0.90	Ac 1.10														

Ce 1.12	Pr 1.13	Nd 1.14	Pm	Sm 1.17	Eu	Gd 1.20	Tb	Dy 1.22	No 1.23	Er 1.24	Tm 1.25	Yb	Lu
Th 1.30	Pa 1.50	U 1.70	Np 1.30	Pu 1.30									

from *Solving Problems, A Chemistry Handbook*

CATIONS

aluminum Al^{+3}
ammonium NH_4^{+1}
antimony (III) Sb^{+3}
antimony (IV) Sb^{+5}
barium Ba^{+2}
bismuth (III) Bi^{+3}
bismuth (V) Bi^{+5}
calcium Ca^{+2}
cadmium Cd^{+2}
chromium (II) Cr^{+2}
chromium (III) Cr^{+3}
cobalt (II) Co^{+2}
cobalt (III) Co^{+3}
copper (I) Cu^{+1}
copper (II) Cu^{+2}
hydrogen H^{+1}
iron (II) Fe^{+2}
iron (III) Fe^{+3}
lead (II) Pb^{+2}
lead (IV) Pb^{+4}
lithium Li^{+1}
magnesium Mg^{+2}
manganese (II) Mn^{+2}
manganese (IV) Mn^{+4}
mercury (I) Hg_2^{+2}
mercury (II) Hg^{+2}
nickel (II) Ni^{+2}
nickel (III) Ni^{+3}
potassium K^{+1}
silver Ag^{+1}
sodium Na^{+1}
strontium Sr^{+2}
tin (II) Sn^{+2}
tin (IV) Sn^{+4}
zinc Zn^{+2}

ANIONS

acetate $C_2H_3O_2^{-1}$
arsenate AsO_4^{-3}
bicarbonate HCO_3^{-1}
binoxalate $HC_2O_4^{-1}$
biphosphate HPO_4^{-2}
bisulfate HSO_4^{-1}
bisulfide HS^{-1}
bisulfite HSO_3^{-1}
borate BO_3^{-3}
bromide Br^{-1}
carbonate CO_3^{-2}
chlorate ClO_3^{-1}
chloride Cl^{-1}
chlorite ClO_2^{-1}
chromate CrO_4^{-2}
citrate $C_6H_5O_7^{-3}$
cyanide CN^{-1}
dichromate $Cr_2O_7^{-2}$
dihydrogen phosphate $H_2PO_4^{-1}$
ferrocyanide $Fe(CN)_6^{-4}$
ferricyanide $Fe(CN)_6^{-3}$
fluoride F^{-1}
hydroxide OH^{-1}
hypochlorite ClO^{-1}
iodate IO_3^{-1}
iodide I^{-1}
molybdate MoO_4^{-2}
nitride N^{-3}
nitrate NO_3^{-1}
nitrite NO_2^{-1}
oxalate $C_2O_4^{-2}$
oxide O^{-2}
perchlorate ClO_4^{-1}
permanganate MnO_4^{-1}
peroxide O_2^{-2}
phosphate PO_4^{-3}
phosphide P^{-3}
silicate SiO_3^{-2}
sulfate SO_4^{-2}
sulfide S^{-2}
sulfite SO_3^{-2}
tartrate $C_4H_4O_6^{-2}$
thiocyanite SCN^{-1}

ACTIVITY SERIES

metals	nonmetals
Li	F
K	O
Ba	Cl
Sr	Br
Na	I
Ca	
Mg	
Al	
Mn	
Zn	
Cr	
Fe	
Cd	
Co	
Ni	
Sn	
Pb	
H	
Sb	
As	
Bi	
Cu	
Hg	
Ag	
Au	