Periodic Table of the Elements

Period	GROUP 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1 1.01 **H** 2.2 Hydrogen +1, -1																	2 4.00 **He** - Helium
2	3 6.94 **Li** 0.98 Lithium +1	4 9.01 **Be** 1.57 Beryllium +2											5 10.81 **B** 2.04 Boron +3	6 12.01 **C** 2.55 Carbon	7 14.01 **N** 3.04 Nitrogen -3	8 16.00 **O** 3.44 Oxygen -2	9 19.00 **F** 3.98 Fluorine -1	10 20.18 **Ne** - Neon
3	11 22.99 **Na** 0.93 Sodium +1	12 24.31 **Mg** 1.31 Magnesium +2											13 26.98 **Al** 1.61 Aluminum +3	14 28.09 **Si** 1.90 Silicon	15 30.97 **P** 2.19 Phosphorus -3	16 32.07 **S** 2.58 Sulfur -2	17 35.45 **Cl** 3.16 Chlorine -1	18 39.95 **Ar** - Argon
4	19 39.10 **K** 0.82 Potassium +1	20 40.08 **Ca** 1.00 Calcium +2	21 44.96 **Sc** 1.36 Scandium +3	22 47.87 **Ti** 1.54 Titanium +4, +3	23 50.94 **V** 1.63 Vanadium +5, +4	24 52.00 **Cr** 1.66 Chromium +3, +2	25 54.94 **Mn** 1.55 Manganese +2, +4	26 55.85 **Fe** 1.83 Iron +3, +2	27 58.93 **Co** 1.88 Cobalt +2, +3	28 58.69 **Ni** 1.91 Nickel +2, +3	29 63.55 **Cu** 1.90 Copper +2, +1	30 65.41 **Zn** 1.65 Zinc +2	31 69.72 **Ga** 1.81 Gallium +3	32 72.64 **Ge** 2.01 Germanium +4	33 74.92 **As** 2.18 Arsenic -3	34 78.96 **Se** 2.55 Selenium -2	35 79.90 **Br** 2.96 Bromine -1	36 83.80 **Kr** 3 Krypton
5	37 85.47 **Rb** 0.82 Rubidium +1	38 87.62 **Sr** 0.95 Strontium +2	39 88.91 **Y** 1.22 Yttrium +3	40 91.22 **Zr** 1.33 Zirconium +4	41 92.91 **Nb** 1.60 Niobium +5, +3	42 95.94 **Mo** 2.16 Molybdenum +6	43 ☢ (98) **Tc** 1.9 Technetium +7	44 101.07 **Ru** 2.20 Ruthenium +3	45 102.91 **Rh** 2.28 Rhodium +3	46 106.42 **Pd** 2.20 Palladium +2, +4	47 107.87 **Ag** 1.93 Silver +1	48 112.41 **Cd** 1.69 Cadmium +2	49 114.82 **In** 1.78 Indium +3	50 118.71 **Sn** 1.96 Tin +4, +2	51 121.76 **Sb** 2.05 Antimony +3, +5	52 127.60 **Te** 2.10 Tellurium -2	53 126.90 **I** 2.66 Iodine -1	54 131.29 **Xe** 2.60 Xenon
6	55 132.91 **Cs** 0.79 Cesium +1	56 137.33 **Ba** 0.89 Barium +2	Lanthanide Series	72 178.49 **Hf** 1.3 Hafnium +4	73 180.95 **Ta** 1.5 Tantalum +5	74 183.84 **W** 2.36 Tungsten +6	75 186.21 **Re** 1.9 Rhenium +7	76 190.23 **Os** 2.2 Osmium +4	77 192.22 **Ir** 2.2 Iridium +4	78 195.08 **Pt** 2.28 Platinum +4, +2	79 196.97 **Au** 2.54 Gold +3, +1	80 200.59 **Hg** 2 Mercury +2, +1	81 204.38 **Tl** 1.62 Thallium +1, +3	82 207.2 **Pb** 2.33 Lead +2, +4	83 208.98 **Bi** 2.02 Bismuth +3, +5	84 ☢ (209) **Po** 2.0 Polonium +2, +4	85 ☢ (210) **At** 2.2 Astatine -1	86 ☢ (222) **Rn** - Radon
7	87 ☢ (223) **Fr** 0.7 Francium +1	88 ☢ (226) **Ra** 0.9 Radium +2	Actinide Series	104 ☢ (261) **Rf** Rutherfordium +4	105 ☢ (262) **Db** Dubnium	106 ☢ (266) **Sg** Seaborgium	107 ☢ (264) **Bh** Bohrium	108 ☢ (277) **Hs** Hassium	109 ☢ (268) **Mt** Meitnerium	110 ☢ (281) **Ds** Darmstadtium	111 ☢ (272) **Rg** Roentgenium	112 ☢ (285) **Cn** Copernicium	113 ☢ (286) **Nh** Nihonium	114 ☢ (289) **Fl** Flerovium	115 ☢ (290) **Mc** Moscovium	116 ☢ (292) **Lv** Livermorium	117 ☢ (294) **Ts** Tennessine	118 ☢ (294) **Og** Oganesson ☢

Atomic Number / Symbol / Name — 1 1.01 **H** 2.2 Hydrogen +1,-1 — Atomic Weight; *Electronegativity; Possible Ionic Charges (First charge is more stable)

Lanthanides	57 138.91 **La** 1.10 Lanthanum +3	58 140.12 **Ce** 1.12 Cerium +3	59 140.91 **Pr** 1.13 Praseodymium +3	60 144.24 **Nd** 1.14 Neodymium +3	61 ☢ (145) **Pm** - Promethium +3	62 150.36 **Sm** 1.17 Samarium +3, +2	63 151.96 **Eu** - Europium +3, +2	64 157.25 **Gd** 1.20 Gadolinium +3	65 158.93 **Tb** - Terbium +3	66 162.50 **Dy** 1.22 Dysprosium +3	67 164.93 **Ho** 1.23 Holmium +3	68 167.26 **Er** 1.24 Erbium +3	69 168.93 **Tm** 1.25 Thulium +3	70 173.04 **Yb** - Ytterbium +3, +2	71 174.97 **Lu** 1.27 Lutetium +3
Actinides	89 ☢ (227) **Ac** 1.1 Actinium +3	90 ☢ 232.04 **Th** 1.3 Thorium +4	91 ☢ 231.04 **Pa** 1.5 Protactinium +5, +4	92 ☢ 238.03 **U** 1.38 Uranium +6, +4	93 ☢ (237) **Np** 1.36 Neptunium +5	94 ☢ (244) **Pu** 1.28 Plutonium +4, +6	95 ☢ (243) **Am** 1.3 Americium +3, +4	96 ☢ (247) **Cm** 1.3 Curium +3	97 ☢ (247) **Bk** 1.3 Berkelium +3,4	98 ☢ (251) **Cf** 1.3 Californium +3	99 ☢ (252) **Es** 1.3 Einsteinium +3	100 ☢ (257) **Fm** 1.3 Fermium +3	101 ☢ (258) **Md** 1.3 Mendelevium +2, +3	102 ☢ (259) **No** 1.3 Nobelium +2, +3	103 ☢ (262) **Lr** - Lawrencium +3

Table 3.4 Names and Valences of Some Common Ions

Valence = –1			
Ion	Name	Ion	Name
CN^-	cyanide	$H_2PO_3^-$	dihydrogen phosphite
CH_3COO^-	acetate	$H_2PO_4^-$	dihydrogen phosphate
ClO^-	hypochlorite	MnO_4^-	permanganate
ClO_2^-	chlorite	NO_2^-	nitrite
ClO_3^-	chlorate	NO_3^-	nitrate
ClO_4^-	perchlorate	OCN^-	cyanate
HCO_3^-	hydrogen carbonate	HS^-	hydrogen sulfide
HSO_3^-	hydrogen sulfite	OH^-	hydroxide
HSO_4^-	hydrogen sulfate	SCN^-	thiocyanate

Valence = –2			
Ion	Name	Ion	Name
CO_3^{2-}	carbonate	O_2^{2-}	peroxide
$C_2O_4^{2-}$	oxalate	SiO_3^{2-}	silicate
CrO_4^{2-}	chromate	SO_3^{2-}	sulfite
$Cr_2O_7^{2-}$	dichromate	SO_4^{2-}	sulfate
HPO_3^{2-}	hydrogen phosphite	$S_2O_3^{2-}$	thiosulfate
HPO_4^{2-}	hydrogen phosphate		

Valence = –3			
Ion	Name	Ion	Name
AsO_3^{3-}	arsenite	PO_3^{3-}	phosphite
AsO_4^{3-}	arsenate	PO_4^{3-}	phosphate

NH_3	Ammonia
NH_4^+	Ammonium
IO_3^{-1}	Iodate
FO_3^{-1}	Fluorate
BrO_3^{-1}	Bromate