

1 / 2.1 H Hydrogen 1.008	Atomic Number Elemental Symbol Element Name Atomic Weight	# of Protons / Electronegativity(EN) - Power of Atom to attract other electrons from other elements # of Protons and Neutrons
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2 He Helium 4

3 / 1.0 Li Lithium 6.941	4 / 1.5 Be Beryllium 9.012
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Metals Semimetals Nonmetals

1 amu = 1.66 x 10⁻²⁴g 1 mole = 6.022 x 10²³
mass of H = 1.008amu and 1 mole of H = 1.008g
mass of O = 15.999amu and 1 mole of O = 15.999g
symbols: (s) solid (l) liquid (g) gas (aq) aqueous - dissolved in water

5 / 2.0 B Boron 10.811	6 / 2.5 C Carbon 12.0107	7 / 3.0 N Nitrogen 14.006	8 / 3.5 O Oxygen 15.999	9 / 4.0 F Fluorine 18.998	10 Ne Neon 20.179
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11 / 0.9 Na Sodium 22.989	12 / 1.2 Mg Magnesium 24.305
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group #'s indicate # of electrons in valence shells

13 / 1.5 Al Aluminum 26.981	14 / 1.8 Si Silicon 28.085	15 / 2.1 P Phosphorus 28.085	16 / 2.5 S Sulfur 32.066	17 / 3.0 Cl Chlorine 35.452	18 Ar Argon 32.948
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1A	2A											3A	4A	5A	6A	7A	8A
19 / 0.8 K Potassium 39.098	20 / 1.0 Ca Calcium 40.078	21 / 1.3 Sc Scandium 44.955	22 / 1.5 Ti Titanium 47.867	23 / 1.6 V Vanadium 50.941	24 / 1.6 Cr Chromium 51.996	25 / 1.5 Mn Manganese 54.938	26 / 1.8 Fe Iron 55.845	27 / 1.9 Co Cobalt 58.933	28 / 1.9 Ni Nickel 58.693	29 / 1.9 Cu Copper 63.546	30 / 1.6 Zn Zinc 65.39	31 / 1.6 Ga Gallium 69.723	32 / 1.8 Ge Germanium 72.61	33 / 2.0 As Arsenic 74.921	34 / 2.4 Se Selenium 78.96	35 / 2.8 Br Bromine 79.904	36 Kr Krypton 83.8

[--- S shells ---]				[----- D shells -----]										[----- P shells -----]			
37 / 0.8 Rb Rubidium 85.467	38 / 1.0 Sr Strontium 87.62	39 / 1.2 Y Yttrium 88.905	40 / 1.4 Zr Zirconium 91.224	41 / 1.6 Nb Niobium 92.906	42 / 1.8 Mo Molybdenum 95.94	43 / 1.9 Tc Technetium 98	44 / 2.2 Ru Ruthenium 101.07	45 / 2.2 Rh Rhodium 102.905	46 / 2.2 Pd Palladium 106.42	47 / 1.9 Ag Silver 107.868	48 / 1.7 Cd Cadmium 112.411	49 / 1.7 In Indium 114.818	50 / 1.8 Sn Tin 118.71	51 / 2.1 Sb Antimony 121.76	52 / 2.1 Te Tellurium 127.6	53 / 2.5 I Iodine 126.904	54 Xe Xenon 131.29

55 / 0.7 Cs Cesium 132.905	56 / 0.9 Ba Barium 137.327	71 / 1.2 Lu Lutetium 174.967	72 / 1.3 Hf Hafnium 178.49	73 / 1.5 Ta Tantalum 180.947	74 / 1.7 W Tungsten 183.84	75 / 1.9 Re Rhenium 186.207	76 / 2.2 Os Osmium 190.23	77 / 2.2 Ir Iridium 192.217	78 / 2.2 Pt Platinum 195.078	79 / 2.4 Au Gold 196.966	80 / 1.9 Hg Mercury 200.59	81 / 1.8 Tl Thallium 204.383	82 / 1.9 Pb Lead 207.2	83 / 1.9 Bi Bismuth 208.98	84 / 2.0 Po Polonium 209	85 / 2.2 At Astatine 210	86 Rn Radon 222
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87 / 0.7 Fr Francium 223	88 / 0.9 Ra Radium 226	103 Lr Lawrencium 262	104 Rf Rutherfordium 261	105 Db Dubnium 262	106 Sg Seaborgium 266	107 Bh Bohrium 264	108 Hs Hassium 269	109 Mt Meitnerium 268	110 Uun Ununnilium 269	111 Uuu Unununium 272	112 Uub Ununbium 277
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[----- 4f shells / EN=1.0-1.2 -----]													
57 La Lanthanum 138.905	58 Ce Cerium 140.116	59 Pr Praseodymium 140.907	60 Nd Neodymium 144.24	61 Pm Promethium 145	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.925	66 Dy Dysprosium 162.5	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.934	70 Yb Ytterbium 173.04

Lanthanide series

[----- 5f shells / EN=1.1-1.3 -----]													
89 / 1.1 Ac Actinium 227	90 / 1.3 Th Thorium 232.038	91 / 1.4 Pa Protactinium 231.035	92 / 1.4 U Uranium 238.028	93 / 1.4 Np Neptunium 237	94 Pu Plutonium 244	95 Am Americium 243	96 Cm Curium 247	97 Bk Berkelium 247	98 Cf Californium 251	99 Es Einsteinium 252	100 Fm Fermium 257	101 Md Mendelevium 258	102 No Nobelium 259

Actinide Series

State	Color	State	Color	State	Color
1	Gas	none	41	Solid	gray metallic
2	Gas	none	42	Solid	gray metallic
3	Solid	silver-white	43	Solid	silver-gray metallic
4	Solid	lead gray	44	Solid	silver-white metallic
5	Solid	black	45	Solid	silver-white metallic
6	Solid	black or none	46	Solid	silver-white metallic
7	Gas	none	47	Solid	silver
8	Gas	liquid is blue, gas is none	48	Solid	silver-gray metallic
9	Gas	light yellow	49	Solid	silver gray
10	Gas	none	50	Solid	silvery gray
11	Solid	silver-white	51	Solid	silvery gray
12	Solid	silver-white	52	Solid	silvery gray
13	Solid	silver	53	Solid	violet gray
14	Solid	dark blue-gray	54	Gas	none
15	Solid	white or yellow	55	Solid	silver-white
16	Solid	yellow	56	Solid	silver-white
17	Gas	yellow green	57	Solid	silver-white
18	Gas	none	58	Solid	silver-white
19	Solid	silver-white	59	Solid	silver-white
20	Solid	silver-white	60	Solid	silver-white
21	Solid	silver-white	61	Solid	metallic
22	Solid	metallic silver	62	Solid	silver-white
23	Solid	silver-gray metallic	63	Solid	silver-white
24	Solid	metallic silver	64	Solid	silver-white
25	Solid	metallic silver	65	Solid	silver-white
26	Solid	lustrous, metallic-gray	66	Solid	silver-white
27	Solid	lustrous, metallic-gray	67	Solid	silver-white
28	Solid	lustrous, metallic-silver	68	Solid	silver-white
29	Solid	copper, metallic	69	Solid	silver-white
30	Solid	light gray	70	Solid	silver-white
31	Solid	silver-white	71	Solid	silver-white
32	Solid	gray	72	Solid	gray
33	Solid	metallic gray	73	Solid	blue-gray
34	Solid	gray, metallic	74	Solid	light gray
35	Liquid	brown	75	Solid	light gray
36	Gas	none	76	Solid	blue-gray
37	Solid	silver-white	77	Solid	silver-white
38	Solid	silver-white	78	Solid	light gray
39	Solid	silver-white	79	Solid	gold
40	Solid	silver-white	80	liquid	silver-white
			81	Solid	silver-white
			82	Solid	bluish white
			83	Solid	reddish white
			84	Solid	silvery
			85	Solid	metallic
			86	Gas	none
			87	Solid	metallic
			88	Solid	metallic
			89	Solid	silvery
			90	Solid	silver-white
			91	Solid	metallic silver
			92	Solid	metallic gray
			93	Solid	metallic silver
			94	Solid	silver-white
			95	Solid	silver-white
			96	Solid	silver
			97	Solid	unknown
			98	Solid	unknown
			99	Solid	unknown
			100	Solid	unknown
			101	Solid	unknown
			102	Solid	unknown
			103	Solid	unknown
			104	Solid	unknown
			105	Solid	unknown
			106	Solid	unknown
			107	Solid	unknown
			108	Solid	unknown
			109	Solid	unknown
			110	Solid	unknown
			111	Solid	unknown
			112	presumably liquid	unknown

Shells: K L M N O
 2 8 18 32 32
 K = 1 subshell 2 electrons
 L = 2 subshells: 2 and 6 for 8
 M = 3 subshells: 2 and 6 and 10 for 18
 N = 4 subshells: 2 and 6 and 10 and 14 for 32
 O = same as N