

Periodic System of Elements

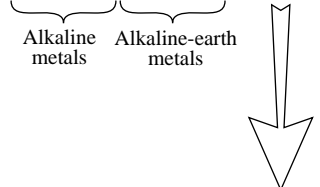
Dimitri Mendeleev (1869)

IA																				VIII																													
1 1.01 H Hydrogen 1s ¹	IIA																				2 4.00 He Helium 1s ²																												
3 6.94 Li Lithium 2s ¹	4 9.01 Be Beryllium 2s ²											5 10.8 B Boron 2p ¹	6 12.0 C Carbon 2p ²	7 14.0 N Nitrogen 2p ³	8 16.0 O Oxygen 2p ⁴	9 19.0 F Fluorine 2p ⁵	10 20.2 Ne Neon 2p ⁶																																
11 23.0 Na Sodium 3s ¹	12 24.3 Mg Magnesium 3s ²	IIIB										13 27.0 Al Aluminum 3p ¹	14 28.1 Si Silicon 3p ²	15 31.0 P Phosphorous 3p ³	16 32.1 S Sulfur 3p ⁴	17 35.5 Cl Chlorine 3p ⁵	18 40.0 Ar Argon 3p ⁶																																
										IIIB										IIB																													
19 39.1 K Potassium 4s ¹	20 40.1 Ca Calcium 4s ²	21 45.0 Sc Scandium 3d ¹ 4s ²	22 47.9 Ti Titanium 3d ² 4s ²	23 50.9 V Vanadium 3d ³ 4s ²	24 52.0 Cr Chromium 3d ⁵ 4s ¹	25 54.9 Mn Manganese 3d ⁵ 4s ²	26 55.9 Fe Iron 3d ⁶ 4s ²	27 58.9 Co Cobalt 3d ⁷ 4s ²	28 58.7 Ni Nickel 3d ⁸ 4s ²	29 63.5 Cu Copper 3d ¹⁰ 4s ¹	30 65.4 Zn Zinc 3d ¹⁰ 4s ²	31 69.7 Ga Gallium 4p ¹	32 72.6 Ge Germanium 4p ²	33 74.9 As Arsenic 4p ³	34 79.0 Se Selenium 4p ⁴	35 79.9 Br Bromine 4p ⁵	36 83.8 Kr Krypton 4p ⁶																																
37 85.5 Rb Rubidium 5s ¹	38 87.6 Sr Strontium 5s ²	39 88.9 Y Yttrium 4d ¹ 5s ²	40 91.2 Zr Zirconium 4d ² 5s ²	41 92.9 Nb Niobium 4d ⁴ 5s ¹	42 95.9 Mo Molybdenum 4d ⁵ 5s ¹	43 98 Tc Technetium 4d ⁵ 5s ²	44 101 Ru Ruthenium 4d ⁷ 5s ¹	45 103 Rh Rhodium 4d ⁸ 5s ¹	46 106 Pd Palladium 4d ¹⁰	47 108 Ag Silver 4d ¹⁰ 5s ¹	48 112 Cd Cadmium 4d ¹⁰ 5s ²	49 115 In Indium 5p ¹	50 119 Sn Tin 5p ²	51 122 Sb Antimony 5p ³	52 128 Te Tellurium 5p ⁴	53 127 I Iodine 5p ⁵	54 131 Xe Xenon 5p ⁶																																
55 133 Cs Cesium 6s ¹	56 137 Ba Barium 6s ²	57 139 La * Lanthanum 5d ¹ 6s ²	72 178 Hf Hafnium 5d ² 6s ²	73 181 Ta Tantalum 5d ³ 6s ²	74 184 W Tungsten 5d ⁴ 6s ²	75 186 Re Rhenium 5d ⁵ 6s ²	76 190 Os Osmium 5d ⁶ 6s ²	77 192 Ir Iridium 5d ⁷ 6s ²	78 195 Pt Platinum 5d ⁹ 6s ¹	79 197 Au Gold 5d ¹⁰ 6s ¹	80 201 Hg Mercury 5d ¹⁰ 6s ²	81 204 Tl Thallium 6p ¹	82 207 Pb Lead 6p ²	83 209 Bi Bismuth 6p ³	84 209 Po Polonium 6p ⁴	85 210 At Astatine 6p ⁵	86 222 Rn Radon 6p ⁶																																
87 223 Fr Francium 7s ¹	88 226 Ra Radium 7s ²	89 227 Ac ** Actinium 6d ¹ 7s ²																																															
Alkaline metals		Alkaline-earth metals																																															
										Coinage metals										Elemental semiconductors										Halogens										Noble gases									

Explanation

11	←	23.0	←
Na			
Sodium			
3s ¹	←		

Atomic weight
Atomic number (i. e. # of protons)
Outer shell electron configuration



Lanthanides*														Rare-earth elements													
58 140 Ce Cerium 4f ¹ 5d ¹ 6s ²	59 141 Pr Praseodymium 4f ³ 6s ²	60 144 Nd Neodymium 4f ⁴ 6s ²	61 145 Pm Promethium 4f ⁵ 6s ²	62 150 Sm Samarium 4f ⁶ 6s ²	63 152 Eu Europium 4f ⁷ 6s ²	64 157 Gd Gadolinium 4f ⁷ 5d ¹ 6s ²	65 159 Tb Terbium 4f ⁹ 6s ²	66 163 Dy Dysprosium 4f ¹⁰ 6s ²	67 157 Ho Holmium 4f ¹¹ 6s ²	68 167 Er Erbium 4f ¹² 6s ²	69 169 Tm Thulium 4f ¹³ 6s ²	70 173 Yb Ytterbium 4f ¹⁴ 6s ²	71 175 Lu Lutetium 5d ¹ 6s ²														
Actinides**																											
90 232 Th Thorium 6d ² 7s ²	91 231 Pa Protactinium 5f ¹ 6d ¹ 7s ²	92 238 U Uranium 5f ³ 6d ¹ 7s ²	93 237 Np Neptunium 5f ⁴ 6d ¹ 7s ²	94 244 Pu Plutonium 5f ⁶ 7s ²	95 243 Am Americium 5f ⁷ 7s ²	96 247 Cm Curium 5f ⁷ 6d ¹ 7s ²	97 247 Bk Berkelium 5f ⁹ 7s ²	98 251 Cf Californium 5f ¹⁰ 7s ²	99 252 Es Einsteinium 5f ¹¹ 7s ²	100 257 Fm Fermium 5f ¹¹ 7s ²	101 258 Md Mendelevium 5f ¹¹ 7s ²	102 259 No Nobelium 5f ¹¹ 7s ²	103 260 Lr Lawrencium 6d ¹ 7s ²														

Note: s-electron shell can be occupied by at most 2 electrons; p-electron shell by at most 6 electrons; d-electron shell by at most 10 electrons; f-electron shell by at most 14 electrons; Noble gases have 2 (He), 10 (Ne), 18 (Ar), 36 (Kr), 54 (Xe), and 86 (Rn) electrons