



Organization of the Periodic Table

The periodic table organizes all known elements.

- Elements are listed in order by atomic number
- **Metals** are on the left (the **transition metals** range from group 3 to group 12), **non-metals** are on the right, and the **metalloids** form a "staircase" in the middle.
- Rows of elements (across) are called **periods**.
 - All elements in a period have their electrons in the same general area around their nucleus
- Columns of elements are called **groups, or families**
 - All elements in a family have similar properties, and bond with other elements in similar ways

- **Group 1 = alkali metals** 
 - Very reactive metals/unstable
- **Group 2 = alkaline earth metals**
 - Somewhat reactive metals
- **Group 17 = the halogens** 
 - Very reactive non-metals/ unstable
- **Group 18 = noble gases**
 - Gases, Not reactive at all, Very stable because they have a full outer shell of electrons



Periodic Table of the Elements

1 +
H
Hydrogen
1.0

1 +
H
Hydrogen
1.0

18 0
He
Helium
4.0

METALS ← → NON-METALS

Atomic Number	→	22	4+	←	Ion charge(s)
Symbol	→	Ti	3+		
Name	→	Titanium			
Atomic Mass	→	47.9			

1	2											13	14	15	16	17	18
3 + Li Lithium 6.9	4 2+ Be Beryllium 9.0											5 B Boron 10.8	6 C Carbon 12.0	7 3- N Nitrogen 14.0	8 2- O Oxygen 16.0	9 - F Fluorine 19.0	10 0 Ne Neon 20.2
11 + Na Sodium 23.0	12 2+ Mg Magnesium 24.3	3	4	5	6	7	8	9	10	11	12	13 3+ Al Aluminum 27.0	14 Si Silicon 28.1	15 3- P Phosphorus 31.0	16 2- S Sulphur 32.1	17 - Cl Chlorine 35.5	18 0 Ar Argon 39.9
19 + K Potassium 39.1	20 2+ Ca Calcium 40.1	21 3+ Sc Scandium 45.0	22 4+ Ti Titanium 47.9	23 5+ V Vanadium 50.9	24 3+ Cr Chromium 52.0	25 2+ Mn Manganese 54.9	26 3+ Fe Iron 55.8	27 2+ Co Cobalt 58.9	28 2+ Ni Nickel 58.7	29 2+ Cu Copper 63.5	30 2+ Zn Zinc 65.4	31 3+ Ga Gallium 69.7	32 4+ Ge Germanium 72.6	33 3- As Arsenic 74.9	34 2- Se Selenium 79.0	35 - Br Bromine 79.9	36 0 Kr Krypton 83.8
37 + Rb Rubidium 85.5	38 2+ Sr Strontium 87.6	39 3+ Y Yttrium 88.9	40 4+ Zr Zirconium 91.2	41 3+ Nb Niobium 92.9	42 2+ Mo Molybdenum 95.9	43 7+ Tc Technetium (98)	44 3+ Ru Ruthenium 101.1	45 3+ Rh Rhodium 102.9	46 2+ Pd Palladium 106.4	47 1+ Ag Silver 107.9	48 2+ Cd Cadmium 112.4	49 3+ In Indium 114.8	50 4+ Sn Tin 118.7	51 3+ Sb Antimony 121.8	52 2- Te Tellurium 127.6	53 - I Iodine 126.9	54 0 Xe Xenon 131.3
55 + Cs Cesium 132.9	56 2+ Ba Barium 137.3	57 3+ La Lanthanum 138.9	72 4+ Hf Hafnium 178.5	73 5+ Ta Tantalum 180.9	74 6+ W Tungsten 183.8	75 4+ Re Rhenium 186.2	76 3+ Os Osmium 190.2	77 3+ Ir Iridium 192.2	78 4+ Pt Platinum 195.1	79 3+ Au Gold 197.0	80 2+ Hg Mercury 200.6	81 1+ Tl Thallium 204.4	82 2+ Pb Lead 207.2	83 3+ Bi Bismuth 209.0	84 2+ Po Polonium (209)	85 - At Astatine (210)	86 0 Rn Radon (222)
87 + Fr Francium (223)	88 2+ Ra Radium (226)	89 3+ Ac Actinium (227)	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (263)	107 Bh Bohrium (262)	108 Hs Hassium (265)	109 Mt Meitnerium (266)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (272)	112 Uub Ununbium (285)	113 Uut Ununtrium (284)	114 Uuq Ununquadium (289)	115 Uup Ununpentium (288)	116 Uuh Ununhexium (292)	117 Uus Ununseptium (?)	118 Uuo Ununoctium (294)

Alkali Metals Alkaline Earth Metals

Halogens Noble Gases

Based on mass of C-12 at 12.00.

Any value in parentheses is the mass of the most stable or best known isotope for elements that do not occur naturally.

58 3+ Ce Cerium 140.1	59 3+ Pr Praseodymium 140.9	60 3+ Nd Neodymium 144.2	61 3+ Pm Promethium (145)	62 3+ Sm Samarium 150.4	63 3+ Eu Europium 152.0	64 3+ Gd Gadolinium 157.3	65 3+ Tb Terbium 158.9	66 3+ Dy Dysprosium 162.5	67 3+ Ho Holmium 164.9	68 3+ Er Erbium 167.3	69 3+ Tm Thulium 168.9	70 3+ Yb Ytterbium 173.0	71 3+ Lu Lutetium 175.0
90 4+ Th Thorium 232.0	91 5+ Pa Protactinium 231.0	92 6+ U Uranium 238.0	93 5+ Np Neptunium (237)	94 4+ Pu Plutonium (244)	95 3+ Am Americium (243)	96 3+ Cm Curium (247)	97 3+ Bk Berkelium (247)	98 3+ Cf Californium (251)	99 3+ Es Einsteinium (252)	100 3+ Fm Fermium (257)	101 2+ Md Mendelevium (258)	102 2+ No Nobelium (259)	103 3+ Lr Lawrencium (262)

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