# PERIODIC TABLE OF THE ELEMENTS

Atomic number → 1
Symbol → H
Name → Hydrogen
Atomic mass → 1.01
Possible ion charges → +1 or -1

| IA | IIA | | | | | | | | | | | IIIA | IVA | VA | VIA | VIIA | VIIIA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 H Hydrogen 1.01 +1 or -1 | | | | | | | | | | | | | | | | | 2 He Helium 4.00 |
| 3 Li Lithium 6.94 +1 | 4 Be Beryllium 9.01 +2 | | | | | | | | | | | 5 B Boron 10.81 +3 | 6 C Carbon 12.01 | 7 N Nitrogen 14.01 -3 | 8 O Oxygen 16.00 -2 | 9 F Fluorine 19.00 -1 | 10 Ne Neon 20.18 |
| 11 Na Sodium 22.99 +1 | 12 Mg Magnesium 24.31 +2 | | | | | | | | | | | 13 Al Aluminum 26.98 +3 | 14 Si Silicon 28.09 | 15 P Phosphorus 30.97 | 16 S Sulfur 32.06 -2 | 17 Cl Chlorine 35.45 -1 | 18 Ar Argon 39.95 |
| 19 K Potassium 39.10 +1 | 20 Ca Calcium 40.08 +2 | 21 Sc Scandium 44.96 +3 | 22 Ti Titanium 47.88 +4 +3 | 23 V Vanadium 50.94 +5 +4 | 24 Cr Chromium 52.00 +3 +2 | 25 Mn Manganese 54.94 +2 +4 | 26 Fe Iron 55.85 +3 +2 | 27 Co Cobalt 58.93 +2 +3 | 28 Ni Nickel 58.69 +2 +3 | 29 Cu Copper 63.55 +2 +1 | 30 Zn Zinc 65.38 +2 | 31 Ga Gallium 69.72 +3 | 32 Ge Germanium 72.61 +4 | 33 As Arsenic 74.92 | 34 Se Selenium 78.96 | 35 Br Bromine 79.90 -1 | 36 Kr Krypton 83.80 |
| 37 Rb Rubidium 85.47 +1 | 38 Sr Strontium 87.62 +2 | 39 Y Yttrium 88.91 +3 | 40 Zr Zirconium 91.22 +4 | 41 Nb Niobium 92.91 +5 +3 | 42 Mo Molybdenum 95.94 +6 | 43 Tc Technetium 98.91 +7 | 44 Ru Ruthenium 101.07 +3 +4 | 45 Rh Rhodium 102.91 +3 | 46 Pd Palladium 106.42 +2 +4 | 47 Ag Silver 107.87 +1 | 48 Cd Cadmium 112.41 +2 | 49 In Indium 114.82 +3 | 50 Sn Tin 118.69 +4 +2 | 51 Sb Antimony 121.75 +3 +5 | 52 Te Tellurium 127.60 | 53 I Iodine 126.90 -1 | 54 Xe Xenon 131.29 |
| 55 Cs Cesium 132.91 +1 | 56 Ba Barium 137.33 +2 | 57 La Lanthanum 138.91 +3 | 72 Hf Hafnium 178.49 +4 | 73 Ta Tantalum 180.95 +5 | 74 W Tungsten 183.85 +6 | 75 Re Rhenium 186.21 +7 | 76 Os Osmium 190.2 +4 | 77 Ir Iridium 192.22 +4 | 78 Pt Platinum 195.08 +4 +2 | 79 Au Gold 196.97 +3 +1 | 80 Hg Mercury 200.59 +2 +1 | 81 Tl Thallium 204.38 +1 +3 | 82 Pb Lead 207.20 +2 +4 | 83 Bi Bismuth 208.98 +3 +5 | 84 Po Polonium (209) +2 +4 | 85 At Astatine (210) -1 | 86 Rn Radon (222) |
| 87 Fr Francium (223) +1 | 88 Ra Radium 226.03 +2 | 89 Ac Actinium 227.03 +3 | 104 Rf Rutherfordium (261) | 105 Ha Hahnium (262) | 106 Sg Seaborgium (263) | 107 Uns Unnilseptium (262) | 108 Uno Unniloctium (265) | 109 Une Unnilennium (266) | 110 Uun Ununnilium (269) | 111 Uuu Unununium (272) | 112 Uub Ununbiium (277) | | | | | | |

TRANSITION METALS

| 58 Ce Cerium 140.12 +3 | 59 Pr Praseodymium 140.91 +3 | 60 Nd Neodymium 144.24 +3 | 61 Pm Promethium (145) +3 | 62 Sm Samarium 150.4 +3 +2 | 63 Eu Europium 151.97 +3 +2 | 64 Gd Gadolinium 157.25 +3 | 65 Tb Terbium 158.93 +3 | 66 Dy Dysprosium 162.50 +3 | 67 Ho Holmium 164.93 +3 | 68 Er Erbium 167.26 +3 | 69 Tm Thulium 168.94 +3 | 70 Yb Ytterbium 173.04 +3 +2 | 71 Lu Lutetium 174.97 +3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90 Th Thorium 232.04 +4 | 91 Pa Protactinium 231.04 +5 +4 | 92 U Uranium 238.03 +6 +4 | 93 Np Neptunium 237.05 +5 | 94 Pu Plutonium (244) +4 +6 | 95 Am Americium (243) +3 +4 | 96 Cm Curium (247) +3 | 97 Bk Berkelium (247) +3 +4 | 98 Cf Californium (251) +3 | 99 Es Einsteinium (252) +3 | 100 Fm Fermium (257) +3 | 101 Md Mendelevium (258) +2 +3 | 102 No Nobelium (259) +2 +3 | 103 Lr Lawrencium (260) +3 |

Masses are based on mass of $C^{12}$ at 12.00.

Values in parenthesis are the masses of the most stable or best known isotopes for elements which do not occur naturally.

## Polyatomic Ions

| | |
|---|---|
| $NH_4^+$ | ammonium |
| $CH_3COO^-$ or $C_2H_3O_2^-$ | acetate |
| $ClO_3^-$ | chlorate |
| $ClO_2^-$ | chlorite |
| $H_2PO_4^-$ | dihydrogen phosphate |
| $HCO_3^-$ | hydrogen carbonate or bicarbonate |
| $OH^-$ | hydroxide |
| $ClO^-$ | hypochlorite |
| $NO_3^-$ | nitrate |
| $NO_2^-$ | nitrite |
| $ClO_4^-$ | perchlorate |
| $MnO_4^-$ | permanganate |
| $SCN^-$ | thiocyanate |
| $CO_3^{-2}$ | carbonate |
| $CrO_4^{-2}$ | chromate |
| $Cr_2O_7^{-2}$ | dichromate |
| $C_2O_4^{-2}$ | oxalate |
| $SO_4^{-2}$ | sulphate |
| $SO_3^{-2}$ | sulphite |
| $S_2O_3^{-2}$ | thiosulphite |
| $BO_3^{-3}$ | borate |
| $PO_4^{-3}$ | phosphate |