

# Periodic Table of the Elements

|                                                                                                      |                                 |                                |                                     |                                 |                                  |                                  |                                 |                                  |                                    |                                   |                                   |                                 |                                 |                                 |                                   |                                  |                                 |
|------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------|-------------------------------------|---------------------------------|----------------------------------|----------------------------------|---------------------------------|----------------------------------|------------------------------------|-----------------------------------|-----------------------------------|---------------------------------|---------------------------------|---------------------------------|-----------------------------------|----------------------------------|---------------------------------|
| <div>Atomic Number</div> <div>Valence</div> <div>Symbol</div> <div>Name</div> <div>Atomic Mass</div> |                                 |                                |                                     |                                 |                                  |                                  |                                 |                                  |                                    |                                   |                                   |                                 |                                 |                                 |                                   |                                  |                                 |
| 1<br>1A<br>1A                                                                                        |                                 |                                |                                     |                                 |                                  |                                  |                                 |                                  |                                    |                                   |                                   |                                 |                                 |                                 |                                   |                                  | 18<br>VIIIA<br>8A               |
| 1<br>H<br>Hydrogen<br>1.008                                                                          |                                 | 2<br>He<br>Helium<br>4.003     |                                     |                                 |                                  |                                  |                                 |                                  |                                    |                                   |                                   |                                 |                                 |                                 |                                   |                                  |                                 |
| 3<br>Li<br>Lithium<br>6.941                                                                          | 4<br>Be<br>Beryllium<br>9.012   |                                |                                     |                                 |                                  |                                  |                                 |                                  |                                    |                                   |                                   | 5<br>B<br>Boron<br>10.811       | 6<br>C<br>Carbon<br>12.011      | 7<br>N<br>Nitrogen<br>14.007    | 8<br>O<br>Oxygen<br>15.999        | 9<br>F<br>Fluorine<br>18.998     | 10<br>Ne<br>Neon<br>20.180      |
| 11<br>Na<br>Sodium<br>22.990                                                                         | 12<br>Mg<br>Magnesium<br>24.305 |                                |                                     |                                 |                                  |                                  |                                 |                                  |                                    |                                   |                                   | 13<br>Al<br>Aluminum<br>26.982  | 14<br>Si<br>Silicon<br>28.086   | 15<br>P<br>Phosphorus<br>30.974 | 16<br>S<br>Sulfur<br>32.066       | 17<br>Cl<br>Chlorine<br>35.453   | 18<br>Ar<br>Argon<br>39.948     |
| 19<br>K<br>Potassium<br>39.098                                                                       | 20<br>Ca<br>Calcium<br>40.078   | 21<br>Sc<br>Scandium<br>44.956 | 22<br>Ti<br>Titanium<br>47.88       | 23<br>V<br>Vanadium<br>50.942   | 24<br>Cr<br>Chromium<br>51.996   | 25<br>Mn<br>Manganese<br>54.938  | 26<br>Fe<br>Iron<br>55.845      | 27<br>Co<br>Cobalt<br>58.933     | 28<br>Ni<br>Nickel<br>58.693       | 29<br>Cu<br>Copper<br>63.546      | 30<br>Zn<br>Zinc<br>65.38         | 31<br>Ga<br>Gallium<br>69.723   | 32<br>Ge<br>Germanium<br>72.631 | 33<br>As<br>Arsenic<br>74.922   | 34<br>Se<br>Selenium<br>78.971    | 35<br>Br<br>Bromine<br>79.904    | 36<br>Kr<br>Krypton<br>84.798   |
| 37<br>Rb<br>Rubidium<br>85.468                                                                       | 38<br>Sr<br>Strontium<br>87.62  | 39<br>Y<br>Yttrium<br>88.906   | 40<br>Zr<br>Zirconium<br>91.224     | 41<br>Nb<br>Niobium<br>92.906   | 42<br>Mo<br>Molybdenum<br>95.95  | 43<br>Tc<br>Technetium<br>98.907 | 44<br>Ru<br>Ruthenium<br>101.07 | 45<br>Rh<br>Rhodium<br>102.906   | 46<br>Pd<br>Palladium<br>106.42    | 47<br>Ag<br>Silver<br>107.868     | 48<br>Cd<br>Cadmium<br>112.414    | 49<br>In<br>Indium<br>114.818   | 50<br>Sn<br>Tin<br>118.711      | 51<br>Sb<br>Antimony<br>121.760 | 52<br>Te<br>Tellurium<br>127.6    | 53<br>I<br>Iodine<br>126.904     | 54<br>Xe<br>Xenon<br>131.294    |
| 55<br>Cs<br>Cesium<br>132.905                                                                        | 56<br>Ba<br>Barium<br>137.328   | 57-71<br>Lanthanides           | 72<br>Hf<br>Hafnium<br>178.49       | 73<br>Ta<br>Tantalum<br>180.948 | 74<br>W<br>Tungsten<br>183.85    | 75<br>Re<br>Rhenium<br>186.207   | 76<br>Os<br>Osmium<br>190.23    | 77<br>Ir<br>Iridium<br>192.22    | 78<br>Pt<br>Platinum<br>195.08     | 79<br>Au<br>Gold<br>196.967       | 80<br>Hg<br>Mercury<br>200.59     | 81<br>Tl<br>Thallium<br>204.383 | 82<br>Pb<br>Lead<br>207.2       | 83<br>Bi<br>Bismuth<br>208.980  | 84<br>Po<br>Polonium<br>209       | 85<br>At<br>Astatine<br>209      | 86<br>Rn<br>Radon<br>222.018    |
| 87<br>Fr<br>Francium<br>223.020                                                                      | 88<br>Ra<br>Radium<br>226.025   | 89-103<br>Actinides            | 104<br>Rf<br>Rutherfordium<br>(216) | 105<br>Db<br>Dubnium<br>(262)   | 106<br>Sg<br>Seaborgium<br>(266) | 107<br>Bh<br>Bohrium<br>(264)    | 108<br>Hs<br>Hassium<br>(269)   | 109<br>Mt<br>Meitnerium<br>(278) | 110<br>Ds<br>Darmstadtium<br>(281) | 111<br>Rg<br>Roentgenium<br>(280) | 112<br>Cn<br>Copernicium<br>(285) | 113<br>Nh<br>Nihonium<br>(286)  | 114<br>Fl<br>Flerovium<br>(289) | 115<br>Mc<br>Moscovium<br>(289) | 116<br>Lv<br>Livermorium<br>(293) | 117<br>Ts<br>Tennessine<br>(294) | 118<br>Og<br>Oganesson<br>(294) |

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| Lanthanide Series | 57<br>La<br>Lanthanum<br>138.905 | 58<br>Ce<br>Cerium<br>140.116  | 59<br>Pr<br>Praseodymium<br>140.908 | 60<br>Nd<br>Neodymium<br>144.243 | 61<br>Pm<br>Promethium<br>144.913 | 62<br>Sm<br>Samarium<br>150.36   | 63<br>Eu<br>Europium<br>151.964  | 64<br>Gd<br>Gadolinium<br>157.25 | 65<br>Tb<br>Terbium<br>158.925   | 66<br>Dy<br>Dysprosium<br>162.500  | 67<br>Ho<br>Holmium<br>164.930   | 68<br>Er<br>Erbium<br>167.259   | 69<br>Tm<br>Thulium<br>168.93      | 70<br>Yb<br>Ytterbium<br>173.055 | 71<br>Lu<br>Lutetium<br>174.967  |
|                   | 89<br>Ac<br>Actinium<br>227.028  | 90<br>Th<br>Thorium<br>232.038 | 91<br>Pa<br>Protactinium<br>231.036 | 92<br>U<br>Uranium<br>238.029    | 93<br>Np<br>Neptunium<br>237.048  | 94<br>Pu<br>Plutonium<br>244.064 | 95<br>Am<br>Americium<br>243.061 | 96<br>Cm<br>Curium<br>247.070    | 97<br>Bk<br>Berkelium<br>247.070 | 98<br>Cf<br>Californium<br>251.080 | 99<br>Es<br>Einsteinium<br>(254) | 100<br>Fm<br>Fermium<br>257.085 | 101<br>Md<br>Mendelevium<br>258.10 | 102<br>No<br>Nobelium<br>259.101 | 103<br>Lr<br>Lawrencium<br>(262) |

- Alkali Metal
- Alkaline Earth
- Transition Metal
- Basic Metal
- Metalloid
- Nonmetal
- Halogen
- Noble Gas
- Lanthanide
- Actinide