

# PERIODIC TABLE OF ELEMENTS

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18

|                                |                                 |                                 |                                     |                                |                                  |                                 |                                 |                                  |                                    |                                   |                                   |                                |                                 |                                 |                                   |                                  |                                 |
|--------------------------------|---------------------------------|---------------------------------|-------------------------------------|--------------------------------|----------------------------------|---------------------------------|---------------------------------|----------------------------------|------------------------------------|-----------------------------------|-----------------------------------|--------------------------------|---------------------------------|---------------------------------|-----------------------------------|----------------------------------|---------------------------------|
| 1<br>H<br>Hydrogen<br>1.008    |                                 |                                 |                                     |                                |                                  |                                 |                                 |                                  |                                    |                                   |                                   |                                |                                 |                                 |                                   |                                  | 2<br>He<br>Helium<br>4.0026     |
| 3<br>Li<br>Lithium<br>6.94     | 4<br>Be<br>Beryllium<br>9.0122  |                                 |                                     |                                |                                  |                                 |                                 |                                  |                                    |                                   |                                   |                                |                                 |                                 |                                   |                                  |                                 |
| 5<br>B<br>Boron<br>10.81       | 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>28.085   | 15<br>P<br>Phosphorus<br>30.974 | 16<br>S<br>Sulfur<br>32.06          | 17<br>Cl<br>Chlorine<br>35.45  | 18<br>Ar<br>Argon<br>36.940      |                                 |                                 |                                  |                                    |                                   |                                   |                                |                                 |                                 |                                   |                                  |                                 |
| 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>47.867      | 23<br>V<br>Vanadium<br>50.942  | 24<br>Cr<br>Chromium<br>51.995   | 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>72.630 | 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>83.798   |
| 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>95.94  | 43<br>Tc<br>Technetium<br>(98)  | 44<br>Ru<br>Ruthenium<br>101.07 | 45<br>Rh<br>Rhodium<br>102.91    | 46<br>Pd<br>Palladium<br>106.42    | 47<br>Ag<br>Silver<br>107.87      | 48<br>Cd<br>Cadmium<br>112.41     | 49<br>In<br>Indium<br>114.82   | 50<br>Sn<br>Tin<br>118.71       | 51<br>Sb<br>Antimony<br>121.75  | 52<br>Te<br>Tellurium<br>127.60   | 53<br>I<br>Iodine<br>126.90      | 54<br>Xe<br>Xenon<br>131.29     |
| 55<br>Cs<br>Caesium<br>132.91  | 56<br>Ba<br>Barium<br>137.33    | 57-71<br>Lanthanoids            | 72<br>Hf<br>Hafnium<br>178.49       | 73<br>Ta<br>Tantalum<br>180.95 | 74<br>W<br>Tungsten<br>183.84    | 75<br>Re<br>Rhenium<br>186.21   | 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>196.97        | 80<br>Hg<br>Mercury<br>200.59     | 81<br>Tl<br>Thallium<br>204.38 | 82<br>Pb<br>Lead<br>207.2       | 83<br>Bi<br>Bismuth<br>208.98   | 84<br>Po<br>Polonium<br>(209)     | 85<br>At<br>Astatine<br>(210)    | 86<br>Rn<br>Radon<br>(222)      |
| 87<br>Fr<br>Francium<br>(223)  | 88<br>Ra<br>Radium<br>(226)     | 89-103<br>Actinoids             | 104<br>Rf<br>Rutherfordium<br>(261) | 105<br>Db<br>Dubnium<br>(268)  | 106<br>Sg<br>Seaborgium<br>(266) | 107<br>Bh<br>Bohrium<br>(270)   | 108<br>Hs<br>Hassium<br>(277)   | 109<br>Mt<br>Meitnerium<br>(278) | 110<br>Ds<br>Darmstadtium<br>(281) | 111<br>Rg<br>Roentgenium<br>(282) | 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>(290) | 116<br>Lv<br>Livermorium<br>(293) | 117<br>Ts<br>Tennessine<br>(294) | 118<br>Og<br>Oganesson<br>(294) |

Atomic #

Symbol

Name

Weight

C Solid

Hg Liquid

H Gas

Rf Unknown

Metals

Alkaline earth metals

Alkali metals

Lanthanoids (Lanthanides)

Actinoids (Actinides)

Transition metals

Post-transition metals

Metalloids

Nonmetals

Other nonmetals

Noble gases

Periodic

Chalcogens

Halogens

For elements with no stable isotopes, the mass number of the isotope with the longest half-life is in parentheses.

|                                 |                               |                                    |                                 |                                 |                                |                                |                                  |                                |                                  |                                  |                               |                                   |                                 |                                  |  |  |  |
|---------------------------------|-------------------------------|------------------------------------|---------------------------------|---------------------------------|--------------------------------|--------------------------------|----------------------------------|--------------------------------|----------------------------------|----------------------------------|-------------------------------|-----------------------------------|---------------------------------|----------------------------------|--|--|--|
| 57<br>La<br>Lanthanum<br>138.91 | 58<br>Ce<br>Cerium<br>140.12  | 59<br>Pr<br>Praseodymium<br>140.91 | 60<br>Nd<br>Neodymium<br>144.24 | 61<br>Pm<br>Promethium<br>(145) | 62<br>Sm<br>Samarium<br>150.36 | 63<br>Eu<br>Europium<br>151.96 | 64<br>Gd<br>Gadolinium<br>157.25 | 65<br>Tb<br>Terbium<br>158.93  | 66<br>Dy<br>Dysprosium<br>162.50 | 67<br>Ho<br>Holmium<br>164.93    | 68<br>Er<br>Erbium<br>167.26  | 69<br>Tm<br>Thulium<br>168.93     | 70<br>Yb<br>Ytterbium<br>173.05 | 71<br>Lu<br>Lutetium<br>174.97   |  |  |  |
| 89<br>Ac<br>Actinium<br>(227)   | 90<br>Th<br>Thorium<br>232.04 | 91<br>Pa<br>Protactinium<br>231.04 | 92<br>U<br>Uranium<br>238.03    | 93<br>Np<br>Neptunium<br>(237)  | 94<br>Pu<br>Plutonium<br>(244) | 95<br>Am<br>Americium<br>(243) | 96<br>Cm<br>Curium<br>(247)      | 97<br>Bk<br>Berkelium<br>(247) | 98<br>Cf<br>Californium<br>(251) | 99<br>Es<br>Einsteinium<br>(262) | 100<br>Fm<br>Fermium<br>(267) | 101<br>Md<br>Mendelevium<br>(268) | 102<br>No<br>Nobelium<br>(269)  | 103<br>Lr<br>Lawrencium<br>(262) |  |  |  |

Periodic

Chalcogens

Halogens

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| Name      | Symbol | Atomic Number | Atomic Mass/Mass Number | # of Protons | # of Electrons | # of Neutrons |
|-----------|--------|---------------|-------------------------|--------------|----------------|---------------|
| Manganese |        |               |                         |              |                |               |
|           | Co     |               |                         |              |                |               |
| Chromium  |        |               |                         |              |                |               |
|           | O      |               |                         |              |                |               |
| Nitrogen  |        |               |                         |              |                |               |
|           | Ne     |               |                         |              |                |               |
| Caesium   |        |               |                         |              |                |               |
|           | In     |               |                         |              |                |               |
| Tungsten  |        |               |                         |              |                |               |
|           | Sn     |               |                         |              |                |               |