

| Periodic Table                       |                                       |                                      |                                            |                                       |                                           |                                        |                                        |                                         |                                           |                                          |                                          |                                         |                                         |                                           |                                          |                                           |                                          |
|--------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------------|---------------------------------------|-------------------------------------------|----------------------------------------|----------------------------------------|-----------------------------------------|-------------------------------------------|------------------------------------------|------------------------------------------|-----------------------------------------|-----------------------------------------|-------------------------------------------|------------------------------------------|-------------------------------------------|------------------------------------------|
| 1<br><b>H</b><br>Hydrogen<br>1.01    |                                       |                                      |                                            |                                       |                                           |                                        |                                        |                                         |                                           |                                          |                                          |                                         |                                         |                                           |                                          |                                           | 18<br><b>He</b><br>Helium<br>4.00        |
| 3<br><b>Li</b><br>Lithium<br>6.94    | 4<br><b>Be</b><br>Beryllium<br>9.01   |                                      |                                            |                                       |                                           |                                        |                                        |                                         |                                           |                                          |                                          | 5<br><b>B</b><br>Boron<br>10.81         | 6<br><b>C</b><br>Carbon<br>12.01        | 7<br><b>N</b><br>Nitrogen<br>14.01        | 8<br><b>O</b><br>Oxygen<br>16.00         | 9<br><b>F</b><br>Fluorine<br>19.00        | 10<br><b>Ne</b><br>Neon<br>20.18         |
| 11<br><b>Na</b><br>Sodium<br>22.99   | 12<br><b>Mg</b><br>Magnesium<br>24.31 |                                      |                                            |                                       |                                           |                                        |                                        |                                         |                                           |                                          |                                          | 13<br><b>Al</b><br>Aluminum<br>26.98    | 14<br><b>Si</b><br>Silicon<br>28.09     | 15<br><b>P</b><br>Phosphorus<br>30.97     | 16<br><b>S</b><br>Sulfur<br>32.07        | 17<br><b>Cl</b><br>Chlorine<br>35.45      | 18<br><b>Ar</b><br>Argon<br>39.95        |
| 19<br><b>K</b><br>Potassium<br>39.10 | 20<br><b>Ca</b><br>Calcium<br>40.08   | 21<br><b>Sc</b><br>Scandium<br>44.96 | 22<br><b>Ti</b><br>Titanium<br>47.87       | 23<br><b>V</b><br>Vanadium<br>50.94   | 24<br><b>Cr</b><br>Chromium<br>52.00      | 25<br><b>Mn</b><br>Manganese<br>54.94  | 26<br><b>Fe</b><br>Iron<br>55.85       | 27<br><b>Co</b><br>Cobalt<br>58.93      | 28<br><b>Ni</b><br>Nickel<br>58.69        | 29<br><b>Cu</b><br>Copper<br>63.55       | 30<br><b>Zn</b><br>Zinc<br>65.39         | 31<br><b>Ga</b><br>Gallium<br>69.72     | 32<br><b>Ge</b><br>Germanium<br>72.61   | 33<br><b>As</b><br>Arsenic<br>74.92       | 34<br><b>Se</b><br>Selenium<br>78.96     | 35<br><b>Br</b><br>Bromine<br>79.90       | 36<br><b>Kr</b><br>Krypton<br>83.80      |
| 37<br><b>Rb</b><br>Rubidium<br>85.47 | 38<br><b>Sr</b><br>Strontium<br>87.62 | 39<br><b>Y</b><br>Yttrium<br>88.91   | 40<br><b>Zr</b><br>Zirconium<br>91.22      | 41<br><b>Nb</b><br>Niobium<br>92.91   | 42<br><b>Mo</b><br>Molybdenum<br>95.94    | 43<br><b>Tc</b><br>Technetium<br>(98)  | 44<br><b>Ru</b><br>Ruthenium<br>101.07 | 45<br><b>Rh</b><br>Rhodium<br>102.91    | 46<br><b>Pd</b><br>Palladium<br>106.42    | 47<br><b>Ag</b><br>Silver<br>107.87      | 48<br><b>Cd</b><br>Cadmium<br>112.41     | 49<br><b>In</b><br>Indium<br>114.82     | 50<br><b>Sn</b><br>Tin<br>118.71        | 51<br><b>Sb</b><br>Antimony<br>121.76     | 52<br><b>Te</b><br>Tellurium<br>127.60   | 53<br><b>I</b><br>Iodine<br>126.90        | 54<br><b>Xe</b><br>Xenon<br>131.29       |
| 55<br><b>Cs</b><br>Cesium<br>132.91  | 56<br><b>Ba</b><br>Barium<br>137.33   | 57-71<br>★                           | 72<br><b>Hf</b><br>Hafnium<br>178.49       | 73<br><b>Ta</b><br>Tantalum<br>180.95 | 74<br><b>W</b><br>Tungsten<br>183.84      | 75<br><b>Re</b><br>Rhenium<br>186.21   | 76<br><b>Os</b><br>Osmium<br>190.23    | 77<br><b>Ir</b><br>Iridium<br>192.22    | 78<br><b>Pt</b><br>Platinum<br>195.08     | 79<br><b>Au</b><br>Gold<br>196.97        | 80<br><b>Hg</b><br>Mercury<br>200.59     | 81<br><b>Tl</b><br>Thallium<br>204.38   | 82<br><b>Pb</b><br>Lead<br>207.2        | 83<br><b>Bi</b><br>Bismuth<br>208.98      | 84<br><b>Po</b><br>Polonium<br>(209)     | 85<br><b>At</b><br>Astatine<br>(210)      | 86<br><b>Rn</b><br>Radon<br>(222)        |
| 87<br><b>Fr</b><br>Francium<br>(223) | 88<br><b>Ra</b><br>Radium<br>(226)    | 89-103<br>★★                         | 104<br><b>Rf</b><br>Rutherfordium<br>(261) | 105<br><b>Db</b><br>Dubnium<br>(262)  | 106<br><b>Sg</b><br>Seaborgium<br>(266)   | 107<br><b>Bh</b><br>Bohrium<br>(264)   | 108<br><b>Hs</b><br>Hassium<br>(269)   | 109<br><b>Mt</b><br>Meitnerium<br>(268) | 110<br><b>Ds</b><br>Darmstadtium<br>(281) | 111<br><b>Rg</b><br>Roentgenium<br>(272) | 112<br><b>Cn</b><br>Copernicium<br>(285) | 113<br><b>Uut</b><br>Ununtrium<br>(284) | 114<br><b>Fl</b><br>Flerovium<br>(289)  | 115<br><b>Uup</b><br>Ununpentium<br>(288) | 116<br><b>Lv</b><br>Livermorium<br>(293) | 117<br><b>Uus</b><br>Ununseptium<br>(294) | 118<br><b>Uuo</b><br>Ununoctium<br>(294) |
| ★ Lanthanide series                  |                                       |                                      | 57<br><b>La</b><br>Lanthanum<br>138.91     | 58<br><b>Ce</b><br>Cerium<br>140.12   | 59<br><b>Pr</b><br>Praseodymium<br>140.91 | 60<br><b>Nd</b><br>Neodymium<br>144.24 | 61<br><b>Pm</b><br>Promethium<br>(145) | 62<br><b>Sm</b><br>Samarium<br>150.36   | 63<br><b>Eu</b><br>Europium<br>151.96     | 64<br><b>Gd</b><br>Gadolinium<br>157.25  | 65<br><b>Tb</b><br>Terbium<br>158.93     | 66<br><b>Dy</b><br>Dysprosium<br>162.50 | 67<br><b>Ho</b><br>Holmium<br>164.93    | 68<br><b>Er</b><br>Erbium<br>167.26       | 69<br><b>Tm</b><br>Thulium<br>168.93     | 70<br><b>Yb</b><br>Ytterbium<br>173.04    | 71<br><b>Lu</b><br>Lutetium<br>174.97    |
| ★★ Actinide series                   |                                       |                                      | 89<br><b>Ac</b><br>Actinium<br>(227)       | 90<br><b>Th</b><br>Thorium<br>232.04  | 91<br><b>Pa</b><br>Protactinium<br>231.04 | 92<br><b>U</b><br>Uranium<br>238.03    | 93<br><b>Np</b><br>Neptunium<br>(237)  | 94<br><b>Pu</b><br>Plutonium<br>(244)   | 95<br><b>Am</b><br>Americium<br>(243)     | 96<br><b>Cm</b><br>Curium<br>(247)       | 97<br><b>Bk</b><br>Berkelium<br>(247)    | 98<br><b>Cf</b><br>Californium<br>(251) | 99<br><b>Es</b><br>Einsteinium<br>(252) | 100<br><b>Fm</b><br>Fermium<br>(257)      | 101<br><b>Md</b><br>Mendelevium<br>(258) | 102<br><b>No</b><br>Nobelium<br>(259)     | 103<br><b>Lr</b><br>Lawrencium<br>(262)  |

| Key                 |        |  |  |
|---------------------|--------|--|--|
| Atomic number       | 29     |  |  |
| Element symbol      | Cu     |  |  |
| Element name        | Copper |  |  |
| Average atomic mass | 63.55  |  |  |