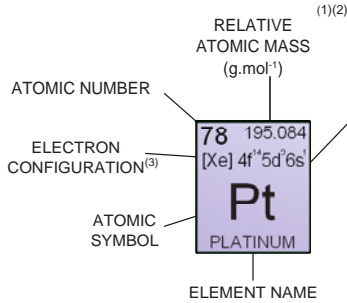


# PERIODIC TABLE OF THE ELEMENTS

GROUP

1	IA																18	VIIIA						
1	1.0079 1s <sup>1</sup> <b>H</b> HYDROGEN																	2	4.0026 1s <sup>2</sup> <b>He</b> HELIUM					
2	3 6.941(2) [He] 2s <sup>1</sup> <b>Li</b> LITHIUM	4 9.0122 [He] 2s <sup>2</sup> <b>Be</b> BERYLLIUM																	5 10.811 [He] 2s <sup>2</sup> 2p <sup>1</sup> <b>B</b> BORON	6 12.011 [He] 2s <sup>2</sup> 2p <sup>2</sup> <b>C</b> CARBON	7 14.007 [He] 2s <sup>2</sup> 2p <sup>3</sup> <b>N</b> NITROGEN	8 15.999 [He] 2s <sup>2</sup> 2p <sup>4</sup> <b>O</b> OXYGEN	9 18.998 [He] 2s <sup>2</sup> 2p <sup>5</sup> <b>F</b> FLUORINE	10 20.180 [He] 2s <sup>2</sup> 2p <sup>6</sup> <b>Ne</b> NEON
3	11 22.990 [Ne] 3s <sup>1</sup> <b>Na</b> SODIUM	12 24.305 [Ne] 3s <sup>2</sup> <b>Mg</b> MAGNESIUM																	13 26.982 [Ne] 3s <sup>2</sup> 3p <sup>1</sup> <b>Al</b> ALUMINIUM	14 28.086 [Ne] 3s <sup>2</sup> 3p <sup>2</sup> <b>Si</b> SILICON	15 30.974 [Ne] 3s <sup>2</sup> 3p <sup>3</sup> <b>P</b> PHOSPHORUS	16 32.065 [Ne] 3s <sup>2</sup> 3p <sup>4</sup> <b>S</b> SULFUR	17 35.453 [Ne] 3s <sup>2</sup> 3p <sup>5</sup> <b>Cl</b> CHLORINE	18 39.948 [Ne] 3s <sup>2</sup> 3p <sup>6</sup> <b>Ar</b> ARGON
4	19 39.098 [Ar] 4s <sup>1</sup> <b>K</b> POTASSIUM	20 40.078 [Ar] 4s <sup>2</sup> <b>Ca</b> CALCIUM	3 3d <sup>1</sup> 4s <sup>2</sup> <b>Sc</b> SCANDIUM	4 3d <sup>2</sup> 4s <sup>2</sup> <b>Ti</b> TITANIUM	5 3d <sup>3</sup> 4s <sup>2</sup> <b>V</b> VANADIUM	6 3d <sup>4</sup> 4s <sup>1</sup> <b>Cr</b> CHROMIUM	7 3d <sup>5</sup> 4s <sup>1</sup> <b>Mn</b> MANGANESE	8 3d <sup>6</sup> 4s <sup>2</sup> <b>Fe</b> IRON	9 3d <sup>7</sup> 4s <sup>2</sup> <b>Co</b> COBALT	10 3d <sup>8</sup> 4s <sup>2</sup> <b>Ni</b> NICKEL	11 3d <sup>9</sup> 4s <sup>1</sup> <b>Cu</b> COPPER	12 3d <sup>10</sup> 4s <sup>2</sup> <b>Zn</b> ZINC	13 3d <sup>10</sup> 4s <sup>2</sup> 4p <sup>1</sup> <b>Ga</b> GALLIUM	14 3d <sup>10</sup> 4s <sup>2</sup> 4p <sup>2</sup> <b>Ge</b> GERMANIUM	15 3d <sup>10</sup> 4s <sup>2</sup> 4p <sup>3</sup> <b>As</b> ARSENIC	16 3d <sup>10</sup> 4s <sup>2</sup> 4p <sup>4</sup> <b>Se</b> SELENIUM	17 3d <sup>10</sup> 4s <sup>2</sup> 4p <sup>5</sup> <b>Br</b> BROMINE	18 3d <sup>10</sup> 4s <sup>2</sup> 4p <sup>6</sup> <b>Kr</b> KRYPTON						
5	37 85.468 [Kr] 5s <sup>1</sup> <b>Rb</b> RUBIDIUM	38 87.62(1) [Kr] 5s <sup>2</sup> <b>Sr</b> STRONTIUM	39 88.906 [Kr] 4d <sup>1</sup> 5s <sup>2</sup> <b>Y</b> YTRIUM	40 91.224 [Kr] 4d <sup>2</sup> 5s <sup>2</sup> <b>Zr</b> ZIRCONIUM	41 92.906 [Kr] 4d <sup>4</sup> 5s <sup>1</sup> <b>Nb</b> NIObIUM	42 95.94(2) [Kr] 4d <sup>4</sup> 5s <sup>1</sup> <b>Mo</b> MOLYBDENUM	43 (98) [Kr] 4d <sup>5</sup> 5s <sup>1</sup> <b>Tc</b> TECHNETIUM	44 101.07(2) [Kr] 4d <sup>5</sup> 5s <sup>1</sup> <b>Ru</b> RUTHENIUM	45 102.906 [Kr] 4d <sup>7</sup> 5s <sup>1</sup> <b>Rh</b> RHODIUM	46 106.42(1) [Kr] 4d <sup>8</sup> <b>Pd</b> PALLADIUM	47 107.868 [Kr] 4d <sup>9</sup> 5s <sup>1</sup> <b>Ag</b> SILVER	48 112.411 [Kr] 4d <sup>10</sup> 5s <sup>1</sup> <b>Cd</b> CADMIUM	49 114.818 [Kr] 4d <sup>10</sup> 5s <sup>2</sup> 5p <sup>1</sup> <b>In</b> INDIUM	50 118.710 [Kr] 4d <sup>10</sup> 5s <sup>2</sup> 5p <sup>2</sup> <b>Sn</b> TIN	51 121.760 [Kr] 4d <sup>10</sup> 5s <sup>2</sup> 5p <sup>3</sup> <b>Sb</b> ANTIMONY	52 127.60(3) [Kr] 4d <sup>10</sup> 5s <sup>2</sup> 5p <sup>4</sup> <b>Te</b> TELLURIUM	53 126.904 [Kr] 4d <sup>10</sup> 5s <sup>2</sup> 5p <sup>5</sup> <b>I</b> IODINE	54 131.293 [Kr] 4d <sup>10</sup> 5s <sup>2</sup> 5p <sup>6</sup> <b>Xe</b> XENON						
6	55 132.905 [Xe] 6s <sup>1</sup> <b>Cs</b> CESIUM	56 137.327 [Xe] 6s <sup>2</sup> <b>Ba</b> BARIUM	57-71 Lanthanides	72 178.49(2) [Xe] 4f <sup>14</sup> 5d <sup>2</sup> 6s <sup>2</sup> <b>Hf</b> HAFNIUM	73 180.947 [Xe] 4f <sup>14</sup> 5d <sup>3</sup> 6s <sup>2</sup> <b>Ta</b> TANTALUM	74 183.84(1) [Xe] 4f <sup>14</sup> 5d <sup>4</sup> 6s <sup>2</sup> <b>W</b> TUNGSTEN	75 186.207 [Xe] 4f <sup>14</sup> 5d <sup>5</sup> 6s <sup>2</sup> <b>Re</b> RHENIUM	76 190.23(3) [Xe] 4f <sup>14</sup> 5d <sup>6</sup> 6s <sup>2</sup> <b>Os</b> OSMIUM	77 192.217 [Xe] 4f <sup>14</sup> 5d <sup>7</sup> 6s <sup>2</sup> <b>Ir</b> IRIDIUM	78 195.084 [Xe] 4f <sup>14</sup> 5d <sup>8</sup> 6s <sup>2</sup> <b>Pt</b> PLATINUM	79 196.967 [Xe] 4f <sup>14</sup> 5d <sup>9</sup> 6s <sup>1</sup> <b>Au</b> GOLD	80 200.59(2) [Xe] 4f <sup>14</sup> 5d <sup>10</sup> 6s <sup>2</sup> <b>Hg</b> MERCURY	81 204.383 [Xe] 4f <sup>14</sup> 5d <sup>10</sup> 6s <sup>2</sup> 6p <sup>1</sup> <b>Tl</b> THALLIUM	82 207.2(1) [Xe] 4f <sup>14</sup> 5d <sup>10</sup> 6s <sup>2</sup> 6p <sup>2</sup> <b>Pb</b> LEAD	83 208.980 [Xe] 4f <sup>14</sup> 5d <sup>10</sup> 6s <sup>2</sup> 6p <sup>3</sup> <b>Bi</b> BISMUTH	84 (209) [Xe] 4f <sup>14</sup> 5d <sup>10</sup> 6s <sup>2</sup> 6p <sup>4</sup> <b>Po</b> POLONIUM	85 (210) [Xe] 4f <sup>14</sup> 5d <sup>10</sup> 6s <sup>2</sup> 6p <sup>5</sup> <b>At</b> ASTATINE	86 (222) [Xe] 4f <sup>14</sup> 5d <sup>10</sup> 6s <sup>2</sup> 6p <sup>6</sup> <b>Rn</b> RADON						
7	87 (223) [Rn] 7s <sup>1</sup> <b>Fr</b> FRANCIUM	88 (226) [Rn] 7s <sup>2</sup> <b>Ra</b> RADIUM	89-103 Actinides	104 (261) <b>Rf</b> RUTHERFORDIUM	105 (262) <b>Db</b> DUBNIUM	106 (266) <b>Sg</b> SEABORGIUM	107 (264) <b>Bh</b> BOHRINIUM	108 (277) <b>Hs</b> HASSIUM	109 (268) <b>Mt</b> MEITNERIUM	110 (281) <b>Ds</b> DARMSTADIUM	111 (272) <b>Rg</b> ROENTGENIUM	112 (285) <b>Cn</b> COPERNICIUM	113 (284) <b>Uut</b> UNUNTRIUM	114 (289) <b>Uuq</b> UNUNQUADIUM	115 (288) <b>Uup</b> UNUNPENTIUM	116 (292) <b>Uuh</b> UNUNHEXIUM	117 <b>Uus*</b> UNUNSEPTIUM	118 (294) <b>Uuo</b> UNUNOCTIUM						

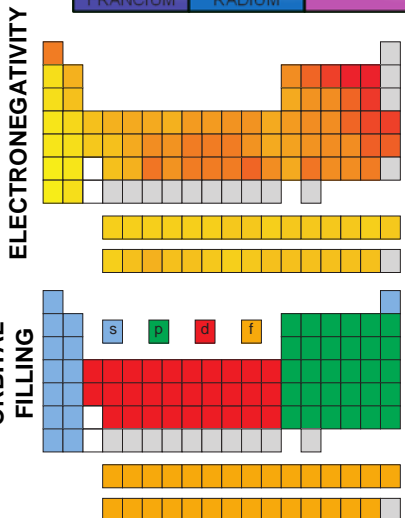


FAMILY

- Metal
- Alkaline metals
- Alkaline earth metals
- Transition metals
- Lanthanides
- Actinides
- Metalloids
- Chalcogens
- Halogens
- Noble gases

Physical State (25°C, 1 atm)

- Ne - gas
- Hg - liquid
- Fe - solid
- Tc - Man-made



## LANTHANIDES

57 138.905 [Xe] 5d <sup>1</sup> 6s <sup>2</sup> <b>La</b> LANTHANUM	58 140.116 [Xe] 4f <sup>1</sup> 5d <sup>1</sup> 6s <sup>2</sup> <b>Ce</b> CERIUM	59 140.908 [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Pr</b> PRASEODYMIUM	60 144.242 [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Nd</b> NEODYMIUM	61 (145) [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Pm</b> PROMETHIUM	62 150.36(2) [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Sm</b> SAMARIUM	63 151.964 [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Eu</b> EUROPIUM	64 157.25(3) [Xe] 4f <sup>1</sup> 5d <sup>1</sup> 6s <sup>2</sup> <b>Gd</b> GADOLINIUM	65 158.925 [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Tb</b> TERBIUM	66 162.500 [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Dy</b> DYSPROSIUM	67 164.930 [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Ho</b> HOLMIUM	68 167.259 [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Er</b> ERBIUM	69 168.934 [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Tm</b> THULIUM	70 173.04(3) [Xe] 4f <sup>1</sup> 6s <sup>2</sup> <b>Yb</b> YTTERIUM	71 174.967 [Xe] 4f <sup>1</sup> 5d <sup>1</sup> 6s <sup>2</sup> <b>Lu</b> LUTETIUM
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## ACTINIDES

89 (227) [Rn] 6d <sup>1</sup> 7s <sup>2</sup> <b>Ac</b> ACTINIUM	90 232.038 [Rn] 6d <sup>2</sup> 7s <sup>2</sup> <b>Th</b> THORIUM	91 231.036 [Rn] 5f <sup>2</sup> 6d <sup>1</sup> 7s <sup>2</sup> <b>Pa</b> PROTACTINIUM	92 238.029 [Rn] 5f <sup>3</sup> 6d <sup>1</sup> 7s <sup>2</sup> <b>U</b> URANIUM	93 (237) [Rn] 5f <sup>3</sup> 6d <sup>1</sup> 7s <sup>2</sup> <b>Np</b> NEPTUNIUM	94 (244) [Rn] 5f <sup>6</sup> 7s <sup>2</sup> <b>Pu</b> PLUTONIUM	95 (243) [Rn] 5f <sup>7</sup> 7s <sup>2</sup> <b>Am</b> AMERICIUM	96 (247) [Rn] 5f <sup>7</sup> 6d <sup>1</sup> 7s <sup>2</sup> <b>Cm</b> CURIUM	97 (247) [Rn] 5f <sup>7</sup> 7s <sup>2</sup> <b>Bk</b> BERKELIUM	98 (251) [Rn] 5f <sup>10</sup> 7s <sup>2</sup> <b>Cf</b> CALIFORNIUM	99 (252) [Rn] 5f <sup>11</sup> 7s <sup>2</sup> <b>Es</b> EINSTEINIUM	100 (257) [Rn] 5f <sup>12</sup> 7s <sup>2</sup> <b>Fm</b> FERMIUM	101 (258) [Rn] 5f <sup>13</sup> 7s <sup>2</sup> <b>Md</b> MENDELEVIUM	102 (259) [Rn] 5f <sup>14</sup> 7s <sup>2</sup> <b>No</b> NOBELIUM	103 (262) <b>Lr</b> LAWRENCIUM
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(2) The relative atomic mass is given with five significant digits. For items that do not have a stable radionuclide, the value in parentheses indicates the mass number of the isotope of the element with the longest half-life. However, the three elements Th, Pa and Pu which have a characteristic terrestrial isotopic composition, an atomic weight is indicated.

(3) The electronic configurations for which there is doubt are not given.

(1) Pure & Applied Chemistry, Vol. 78, No. 11, pp. 2051–2066 (2006)

<http://www.iupac.org/publications/pac/2006/pdf/7811x2051.pdf>