

Table 4.1. Revised March 2024 by D.E. Groom (LBNL). The atomic number (top left) is the number of protons in the nucleus. The atomic masses (bottom) of stable elements are weighted by isotopic abundances in the Earth’s surface. Atomic masses are relative to the mass of ¹²C, defined to be exactly 12 unified atomic mass units (u). The exceptions are Th, Pa, and U, which have no stable isotopes but do have characteristic terrestrial compositions. Relative isotopic abundances often vary considerably, both in natural and commercial samples; this is reflected in the number of significant figures given for the mass. Masses may be found at <https://physics.nist.gov/cgi-bin/Compositions/stand.alone.pl>. If there is no stable isotope, the atomic mass of the most stable isotope known as of June 2019 is given in parentheses.

IUPAC announced verification of the discoveries of elements 113, 115, 117, and 118 in December 2015. The names were approved November 2016. The 7th period of the periodic table is now complete. Attempts to synthesize elements with *Z* > 118 are under way, but as of March 2024 no discoveries have been announced.

1 IA												18 VIIIA																																																																																																																																																																															
1 H hydrogen 1.008	2 IIA											13 IIIA											14 IVA											15 VA											16 VIA											17 VIIA											2 He helium 4.002602																																																																																																																								
3 Li lithium 6.94	4 Be beryllium 9.012182											5 B boron 10.81												6 C carbon 12.0107											7 N nitrogen 14.007											8 O oxygen 15.999											9 F fluorine 18.998403163											10 Ne neon 20.1797																																																																																																																							
11 Na sodium 22.98976928	12 Mg magnesium 24.305											3 IIIB												4 IVB											5 VB											6 VIB											7 VIIB											8 VIII											9 VIII											10 VIII											11 IB											12 IIB											13 Al aluminum 26.9815385	14 Si silicon 28.085											15 P phosphorus 30.973761998											16 S sulfur 32.06											17 Cl chlorine 35.45											18 Ar argon 39.948																			
19 K potassium 39.0983	20 Ca calcium 40.078											21 Sc scandium 44.955908											22 Ti titanium 47.867											23 V vanadium 50.9415											24 Cr chromium 51.9961											25 Mn manganese 54.938044											26 Fe iron 55.845											27 Co cobalt 58.933195											28 Ni nickel 58.6934											29 Cu copper 63.546											30 Zn zinc 65.38											31 Ga gallium 69.723											32 Ge germanium 72.630											33 As arsenic 74.921595											34 Se selenium 78.971											35 Br bromine 79.904											36 Kr krypton 83.798										
37 Rb rubidium 85.4678	38 Sr strontium 87.62											39 Y yttrium 88.90584											40 Zr zirconium 91.224											41 Nb niobium 92.90637											42 Mo molybdenum 95.95											43 Tc technetium (97.907212)											44 Ru ruthenium 101.07											45 Rh rhodium 102.90550											46 Pd palladium 106.42											47 Ag silver 107.8682											48 Cd cadmium 112.414											49 In indium 114.818											50 Sn tin 118.710											51 Sb antimony 121.760											52 Te tellurium 127.60											53 I iodine 126.90447											54 Xe xenon 131.293										
55 Cs caesium 132.90545196	56 Ba barium 137.327											57–71 LANTHANIDES											72 Hf hafnium 178.49											73 Ta tantalum 180.94788											74 W tungsten 183.84											75 Re rhenium 186.207											76 Os osmium 190.23											77 Ir iridium 192.217											78 Pt platinum 195.084											79 Au gold 196.966569											80 Hg mercury 200.592											81 Tl thallium 204.38											82 Pb lead 207.2											83 Bi bismuth 208.98040											84 Po polonium (208.98243)											85 At astatine (209.98715)											86 Rn radon (222.01758)										
87 Fr francium (223.01974)	88 Ra radium (226.02541)											89–103 ACTINIDES											104 Rf rutherford. (267.12169)											105 Db dubnium (268.12567)											106 Sg seaborgium (269.12863)											107 Bh bohrium (270.13336)											108 Hs hassium (269.13375)											109 Mt meitnerium (278.15631)											110 Ds darmstadt. (281.16451)											111 Rg roentgen. (282.16912)											112 Cn copernicium (285.17712)											113 Nh nihonium (286.18221)											114 Fl flerovium (289.19042)											115 Mc moscovium (290.19598)											116 Lv livermorium (293.20449)											117 Ts tennessine (294.21046)											118 Og oganesson (294.21392)										

Lanthanide series

57 La lanthanum 138.90547	58 Ce cerium 140.116	59 Pr praseodym. 140.90766	60 Nd neodymium 144.242	61 Pm promethium (144.91276)	62 Sm samarium 150.36	63 Eu europium 151.964	64 Gd gadolinum 157.25	65 Tb terbium 158.92535	66 Dy dysprosium 162.500	67 Ho holmium 164.93033	68 Er erbium 167.259	69 Tm thulium 168.93422	70 Yb ytterbium 173.054	71 Lu lutetium 174.9668
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Actinide series

89 Ac actinium (227.02775)	90 Th thorium 232.0377	91 Pa protactinium 231.03588	92 U uranium 238.02891	93 Np neptunium (237.04817)	94 Pu plutonium (244.06420)	95 Am americium (243.06138)	96 Cm curium (247.07035)	97 Bk berkelium (247.07031)	98 Cf californium (251.07959)	99 Es einsteinium (252.08298)	100 Fm fermium (257.09511)	101 Md mendelevium (258.09844)	102 No nobelium (259.10103)	103 Lr lawrencium (262.10961)
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