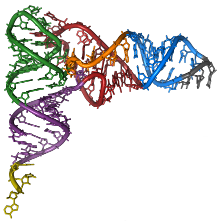
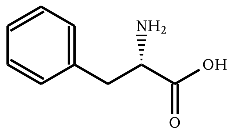
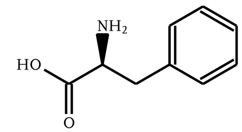
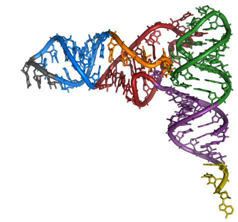




Periodic Table of the Elements





Z
Sy
element
saw

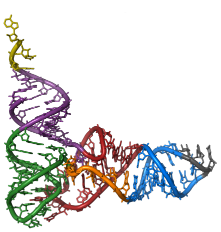
Z: atomic number
χ: Pauling electronegativity
ss: last occupied subshell

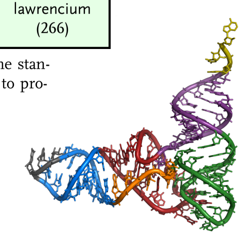
Sy: symbol
element: element name
saw: standard atomic weight†

	Group 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1 H hydrogen 1.008																	2 He helium 4.0026
2	3 Li lithium 6.9675	4 Be beryllium 9.0122											5 B boron 10.8135	6 C carbon 12.0105	7 N nitrogen 14.007	8 O oxygen 15.9995	9 F fluorine 18.998	10 Ne neon 20.18
3	11 Na sodium 22.99	12 Mg magnesium 24.3055											13 Al aluminium 26.982	14 Si silicon 28.085	15 P phosphorus 30.974	16 S sulfur 32.0675	17 Cl chlorine 35.4515	18 Ar argon 39.8775
4	19 K potassium 39.098	20 Ca calcium 40.078	21 Sc scandium 44.956	22 Ti titanium 47.867	23 V vanadium 50.942	24 Cr chromium 51.996	25 Mn manganese 54.938	26 Fe iron 55.845	27 Co cobalt 58.933	28 Ni nickel 58.693	29 Cu copper 63.546	30 Zn zinc 65.38	31 Ga gallium 69.723	32 Ge germanium 72.63	33 As arsenic 74.922	34 Se selenium 78.971	35 Br bromine 79.904	36 Kr krypton 83.798
5	37 Rb rubidium 85.468	38 Sr strontium 87.62	39 Y yttrium 88.906	40 Zr zirconium 91.224	41 Nb niobium 92.906	42 Mo molybdenum 95.95	43 Tc technetium (97)	44 Ru ruthenium 101.07	45 Rh rhodium 102.91	46 Pd palladium 106.42	47 Ag silver 107.87	48 Cd cadmium 112.41	49 In indium 114.82	50 Sn tin 118.71	51 Sb antimony 121.76	52 Te tellurium 127.6	53 I iodine 126.9	54 Xe xenon 131.29
6	55 Cs caesium 132.91	56 Ba barium 137.33	* lanthanides	72 Hf hafnium 178.49	73 Ta tantalum 180.95	74 W tungsten 183.84	75 Re rhenium 186.21	76 Os osmium 190.23	77 Ir iridium 192.22	78 Pt platinum 195.08	79 Au gold 196.97	80 Hg mercury 200.59	81 Tl thallium 204.385	82 Pb lead 207.2	83 Bi bismuth 208.98	84 Po polonium (209)	85 At astatine (210)	86 Rn radon (222)
7	87 Fr francium (223)	88 Ra radium (226)	** actinides	104 Rf rutherfordium (267)	105 Db dubnium (268)	106 Sg seaborgium (269)	107 Bh bohrium (270)	108 Hs hassium (269)	109 Mt meitnerium (278)	110 Ds darmstadtium (281)	111 Rg roentgenium (282)	112 Cn copernicium (285)	113 Nh nihonium (286)	114 Fl flerovium (289)	115 Mc moscovium (290)	116 Lv livermorium (293)	117 Ts tennessine (294)	118 Og oganesson (294)

*	57 La lanthanum 138.91	58 Ce cerium 140.12	59 Pr praseodymium 140.91	60 Nd neodymium 144.24	61 Pm promethium (145)	62 Sm samarium 150.36	63 Eu europium 151.96	64 Gd gadolinium 157.25	65 Tb terbium 158.93	66 Dy dysprosium 162.5	67 Ho holmium 164.93	68 Er erbium 167.26	69 Tm thulium 168.93	70 Yb ytterbium 173.05	71 Lu lutetium 174.97
**	89 Ac actinium (227)	90 Th thorium 232.04	91 Pa protactinium 231.04	92 U uranium 238.03	93 Np neptunium (237)	94 Pu plutonium (244)	95 Am americium (243)	96 Cm curium (247)	97 Bk berkelium (247)	98 Cf californium (251)	99 Es einsteinium (252)	100 Fm fermium (257)	101 Md mendelevium (258)	102 No nobelium (259)	103 Lr lawrencium (266)

†Standard atomic weights (average terrestrial atomic weight) taken from the Commission on Isotopic Abundances and Atomic Weights (http://www.ciaaw.org/abridged-atomic-weights.htm). If CIAAW indicates a range for the standard atomic weight of an element, I used the arithmetic mean of the boundaries of the range. Elements with atomic weight in parentheses (e.g., Francium (223)) have no known stable isotopes and it is therefore impossible to provide a standard atomic weight. For these elements, the mass of a representative isotope is provided.
°Indicates an anomalous (Aufbau rule-breaking) ground state electron configuration.
Inspired by Ivan Griffin's LaTeX Periodic Table. LaTeXcode is released under the MIT open source license.





Abbreviations:

- **atm**: atmosphere
- **g, mg**: gram, milligram
- **K**: Kelvin
- **L, mL**: liter, milliliter
- **M**: Molar / molarity
- **mmHg**: millimeters of mercury
- **mol**: mole

Moles, conversion, pH, and other stuff :

- $1 \text{ mole} = 6.0221 \times 10^{23}$ things
- $\text{Kelvin} = {}^\circ\text{C} + 273.15$
- ${}^\circ\text{F} = 1.8 \times {}^\circ\text{C} + 32$
- ${}^\circ\text{C} = \dfrac{({}^\circ\text{F} - 32)}{1.8}$
- $\text{pH} = -1 \times \log[H_3O^+]$
- $1000\,\text{mL} = 1\,\text{L}$
- $1000\,\text{g} = 1\,\text{kg}$
- $1\,\text{mL} = 1\,\text{cm}^3$
- $1000\,\text{cal} = 1\,\text{kcal}$
- $\text{density} = \dfrac{\text{mass}}{\text{volume}}$

Concentration equations:

- $\%(\text{m/m}) = \dfrac{\text{mass of solute}}{\text{mass of solution}} \times 100$
- $\%(\text{v/v}) = \dfrac{\text{volume of solute}}{\text{volume of solution}} \times 100$
- $\%(\text{m/v}) = \dfrac{\text{mass of solute in grams}}{\text{volume of solution in mL}} \times 100$
- $\text{Molarity} = \dfrac{\text{number of moles of solute}}{\text{number of Liters of solution}}$

Gas equations:

- **Boyle's Law**: $P_1V_1 = P_2V_2$
- **Charles's Law**: $\dfrac{V_1}{T_1} = \dfrac{V_2}{T_2}$
- **Gay-Lussac's Law**: $\dfrac{P_1}{T_1} = \dfrac{P_2}{T_2}$
- **Combined gas Law**: $\dfrac{P_1V_1}{T_1} = \dfrac{P_2V_2}{T_2}$
- **Avogadro's Law**: $\dfrac{V_1}{n_1} = \dfrac{V_2}{n_2}$
- **Universal gas constant**: $R = \dfrac{0.0821\,\text{L atm}}{\text{mol K}}$
- **Ideal gas Law**: $PV = nRT$