

CHEMISTRY 6-12 REFERENCE SHEET

Periodic Table of the Elements

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10	Group 11	Group 12	Group 13	Group 14	Group 15	Group 16	Group 17	Group 18
1 H 1.01																	2 He 4.00
3 Li 6.94	4 Be 9.04											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
11 Na 22.99	12 Mg 24.31											13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.06	17 Cl 35.45	18 Ar 39.95
19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.90	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.7	29 Cu 63.54	30 Zn 65.37	31 Ga 69.72	32 Ge 72.59	33 As 74.92	34 Se 78.96	35 Br 79.91	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (98)	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
55 Cs 132.9	56 Ba 137.3	†57-71 lanthanoids	72 Hf 178.5	73 Ta 181.0	74 W 183.9	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po (210)	85 At (218)	86 Rn (222)
87 Fr (223)	88 Ra (226)	††89-103 actinoids	104 Rf (261)	105 Ha (262)	106 Sg (266)	107 Bh (264)	108 Hs (277)	109 Mt (268)	110 Ds (271)	111 Rg (272)							
			†57 La 138.9	58 Ce 140.1	59 Pr 140.9	60 Nd 144.2	61 Pm (147)	62 Sm 150.4	63 Eu 152.0	64 Gd 157.3	65 Tb 158.9	66 Dy 162.5	67 Ho 164.9	68 Er 167.3	69 Tm 168.9	70 Yb 173.0	71 Lu 175.0
			††89 Ac (227)	90 Th (232)	91 Pa (231)	92 U (238)	93 Np (239)	94 Pu (239)	95 Am (243)	96 Cm (245)	97 Bk (247)	98 Cf (249)	99 Es (254)	100 Fm (253)	101 Md (255)	102 No (255)	103 Lr (257)

Atomic mass values given are averaged over isotopes in percentages that occur in nature.
For an unstable element, mass number of the most stable known isotope is given in parentheses.

CONSTANTS

$$\begin{aligned} \text{Gas constant, } R &= 0.0821 \text{ L} \cdot \text{atm} \cdot \text{mol}^{-1} \cdot \text{K}^{-1} = 8.314 \text{ J} \cdot \text{mol}^{-1} \cdot \text{K}^{-1} \\ &= 8.31 \text{ volt} \cdot \text{coulomb} \cdot \text{mol}^{-1} \cdot \text{K}^{-1} = 62.4 \text{ L} \cdot \text{torr} \cdot \text{mol}^{-1} \cdot \text{K}^{-1} \\ &= 8.31 \times \text{L} \cdot \text{kPa} \cdot \text{mol}^{-1} \cdot \text{K}^{-1} \end{aligned}$$

$$\text{Speed of light, } c = 3.00 \times 10^8 \text{ m} \cdot \text{s}^{-1}$$

$$1 \text{ atm} = 760 \text{ mm Hg} = 760 \text{ torr} = 101 \text{ kPa}$$

$$\text{Planck's constant, } h = 6.63 \times 10^{-34} \text{ J} \cdot \text{s}$$

$$\text{Avogadro's number} = 6.022 \times 10^{23} \text{ molecule} \cdot \text{mol}^{-1}$$

$$\text{Electron charge, } e = -1.602 \times 10^{-19} \text{ coulomb}$$

$$1 \text{ faraday} = 9.65 \times 10^4 \text{ coulomb} \cdot \text{mol}^{-1}$$

$$1 \text{ calorie (cal)} = 4.184 \text{ J (exact)}$$

$$1 \text{ Cal} = 1 \text{ kcal}$$