Nonmetal -3-2-1 18 8A Periodic Table of the Elements 2 He 14 15 Н 16 1 13 2A 3A 5A 6A **7**A 1.008 4.0026 10 4 9 3 2 Be Ne 15.999 18.998 9.0122 14.007 12.011 20.180 6.94 3+ 13 12 11 14 15 16 17 18 12 Si Mg 11 S CI Ar Na 6 7 8 9 10 22.990 | 24.305 4B 7B 8B 8B 11B 12B 26.982 28.085 30.974 32.06 35.45 39.95 3B 5B 6B 8B 2, 30 21 22 23 24 25 26 27 29 32 34 35 36 20 28 31 33 19 Sc V Cu Zn Se Ca Mn Fe Co Ni Ga Ge 4 Cr Kr K Br 39.098 | 40.078 | 44.956 | 47.867 | 50.942 | 51.996 | 54.938 55.845 58.933 | 58.693 | 63.546 65.38 69.723 72.630 74.922 78.971 79.904 83.798 39 47 🝾 48 51 52 54 37 38 40 41 42 43 44 45 49 50 53 46 5 Sr Tc Rh Cd Sn Sb Xe Rb Y Zr Nb Mo Ru Pd Ag Te In 87.62 | 88.906 | 91.224 | 92.906 121.76 127.60 102.91 107.87 | 112.41 | 114.82 | 118.71 | 126.90 | 131.29 95.95 (98)101.07 106.42 85.468 75 84 < 72 77 55 56 57 73 74 76 78 79 80 81 82 83 85 86 Re Au La Hf Ta W Os Pt Hg Pb Bi Po 6 Cs Ba TI At Rn 183.84 195.08 196.97 | 200.59 | 204.38 | 137.33 138.91 178.49 180.95 186.21 190.23 192.22 207.2 208.98 (209)(210)(222)132.91 112 113 87 88 89 105 106 107 108 109 110 111 115 104 114 116 117 118 Ac Bh 7 Ra Rf Db Sg Mt Rg Og Fr Hs Cn Nh FΙ Mc Lv Ts Ds (223)(227)(265)(268)(271)(272)(270)(276)(281)(280)(285)(284)(289)(288)(293)(292)(226)(294)71 58 59 60 61 62 63 64 65 67 68 69 70 66 Pr Eu Yb Tb Er Dy Но Tm Ce Nd Pm Sm Gd Lu 140.91 144.24 151.96 | 157.25 158.93 162.50 164.93 167.26 168.93 173.04 (145)150.36 174.97 140.12 90 102 103 91 92 93 94 95 96 97 98 99 100 101 Es Pa Am Bk Cf Md No Lr U Np Pu Cm Fm

Avogadro's number (N_A) = $6.022142 \times 10^{23} \text{ mol}^{-1}$ ideal gas constant (R) = $0.08206 \text{ L} \cdot \text{atm/mol} \cdot \text{K} = 8.3145 \text{ J/mol} \cdot \text{K}$ Faraday constant (F) = $96,485 \text{ C/mol} \text{ e}^{-}$ or $\text{J/V} \cdot \text{mol} \text{ e}^{-}$ Boltzmann's constant (k_B) = $1.380649 \times 10^{-23} \text{ J/K}$ speed of light (c) = $2.9979 \times 10^8 \text{ m/s}$ Planck's constant (h) = $6.62607 \times 10^{-34} \text{ J} \cdot \text{s}$

(237)

(244)

(243)

(247)

232.04 | 231.04 | 238.03

electron mass $(m_e) = 5.4858 \times 10^{-4} \text{ u}$ neutron mass $(m_n) = 1.008665 \text{ u}$ proton mass $(m_p) = 1.007276 \text{ u}$ 1 atomic mass unit $(u) = 1.6605 \times 10^{-27} \text{ kg}$ elementary charge $(q_e) = 1.602177 \times 10^{-19} \text{ C}$ 1 atm = 760 mm Hg = 760 torr = 1.01325 bar

(252)

(257)

(258)

(251)

(247)

1 joule (J) = $1 \text{ kg} \cdot \text{m}^2/\text{s}^2 = 1 \text{ C} \cdot \text{V}$ 1 calorie = 4.184 J1 L·atm = 101.325 J1 MeV = $1.602177 \times 10^{-13} \text{ J}$ 1 ampere (A) = 1 C/s1 angstrom (Å) = $1 \times 10^{-10} \text{ m}$

(262)

(259)