Periodic Table

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 **H** 1.008																	2 **He** 4.003
3 **Li** 6.941	4 **Be** 9.012											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** 32.07	17 **Cl** 35.45	18 **Ar** 39.95
19 **K** 39.10	20 **Ca** 40.08	21 **Sc** 44.96	22 **Ti** 47.88	23 **V** 50.94	24 **Cr** 52.00	25 **Mn** 54.94	26 **Fe** 55.85	27 **Co** 58.93	28 **Ni** 58.69	29 **Cu** 63.55	30 **Zn** 65.39	31 **Ga** 69.72	32 **Ge** 72.61	33 **As** 74.92	34 **Se** 78.96	35 **Br** 79.90	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 **La** 138.9	72 **Hf** 178.5	73 **Ta** 181.0	74 **W** 183.8	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** (209)	85 **At** (210)	86 **Rn** (222)
87 **Fr** (223)	88 **Ra** 226.0	89 **Ac** 227.0	104 **Rf** (265)	105 **Db** (268)	106 **Sg** (271)	107 **Bh** (270)	108 **Hs** (277)	109 **Mt** (276)	110 **Ds** (281)	111 **Rg** (280)	112 **Cn** (285)	113 **Nh** (284)	114 **Fl** (289)	115 **Mc** (288)	116 **Lv** (293)	117 **Ts** (294)	118 **Og** (294)

58 **Ce** 140.1	59 **Pr** 140.9	60 **Nd** 144.2	61 **Pm** (145)	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
90 **Th** 232.0	91 **Pa** 231.0	92 **U** 238.0	93 **Np** 237.0	94 **Pu** (244)	95 **Am** (243)	96 **Cm** (247)	97 **Bk** (247)	98 **Cf** (251)	99 **Es** (252)	100 **Fm** (257)	101 **Md** (258)	102 **No** (259)	103 **Lr** (262)

Source: Los Alamos National Laboratory's Periodic Table of the Elements, http://periodic.lanl.gov/index.shtml, visited January 22, 2016.

ABBREVIATIONS AND SYMBOLS						CONSTANTS
amount in moles	n	free energy	G	molar mass	M	R = 8.314 J·mol^{-1}·K^{-1}
ampere	A	frequency	ν	mole	mol	R = 0.0821 L·atm·mol^{-1}·K^{-1}
atmosphere	atm	gas constant	R	mole fraction	χ	1 F = 96,500 J·V^{-1}
atomic mass unit	u	gram	g	Planck's constant	h	1 F = 96,500 C
Avogadro's number	N_A	hour	h	pressure	P	N_A = 6.022 x 10^{23} mol^{-1}
Celsius temperature	°C	joule	J	rate constant	k	h = 6.626 x 10^{-34} J·s
coulomb	C	kelvin	K	reaction quotient	Q	c = 2.998 x 10^{8} m·s^{-1}
electromotive force	E	kilopascal	kPa	second	s	1 atm = 760 mmHg = 101.3 kPa
energy of activation	E_a	liter	L	speed of light	c	V (ideal gas) at STP = 22.4 L·mol^{-1}
enthalpy	H	measure of pressure	mmHg	temperature, K	T	
entropy	S	minute	min	time	t	
equilibrium constant	K	molal	m	volt	V	
Faraday constant	F	molar	M	volume	V	

Equations and Formulae

$$pV = nRT$$

$$\left(p + a\left(\frac{n}{V}\right)^2\right)(V - nb) = nRT$$

$$q = n \cdot \Delta H$$

$$q = C \cdot m \cdot \Delta T$$

$$\Delta G = \Delta H - T\Delta S \text{ (at constant pressure)}$$

$$\frac{d \ln K}{dT} = \frac{\Delta H}{RT^2}$$

$$K_p = K_c(RT)^{\Delta n}$$

$$\Delta G = -RT \ln K$$

$$\Delta G = \Delta G^0 + RT \ln Q$$

$$\Delta G = -n \cdot F \cdot E$$

$$E = E^0 - \frac{RT}{nF}\ln(Q)$$

$$pH = pK_a + \log\left(\frac{[base]}{[acid]}\right)$$

$$[R]_t - [R]_0 = -kt$$

$$\ln[R]_t - \ln[R]_0 = -kt$$

$$\frac{1}{[R]_t} - \frac{1}{[R]_0} = kt$$

$$k = A \cdot e^{-E_a / RT}$$

$$\lambda \cdot \upsilon = c$$

$$E = h \cdot \upsilon$$

$$\Delta T = K_b \cdot m_{solute}$$

$$\Delta T = K_f \cdot m_{solute}$$

$$\Pi = M \cdot R \cdot T$$

For an equation in the form $ax^2 + bx + c = 0$, $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$