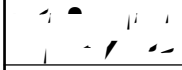
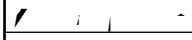
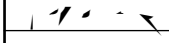
Ions That Form *Soluble* Compounds	Exceptions
	
	
	

Table H
Vapor Pressure of Four Liquids

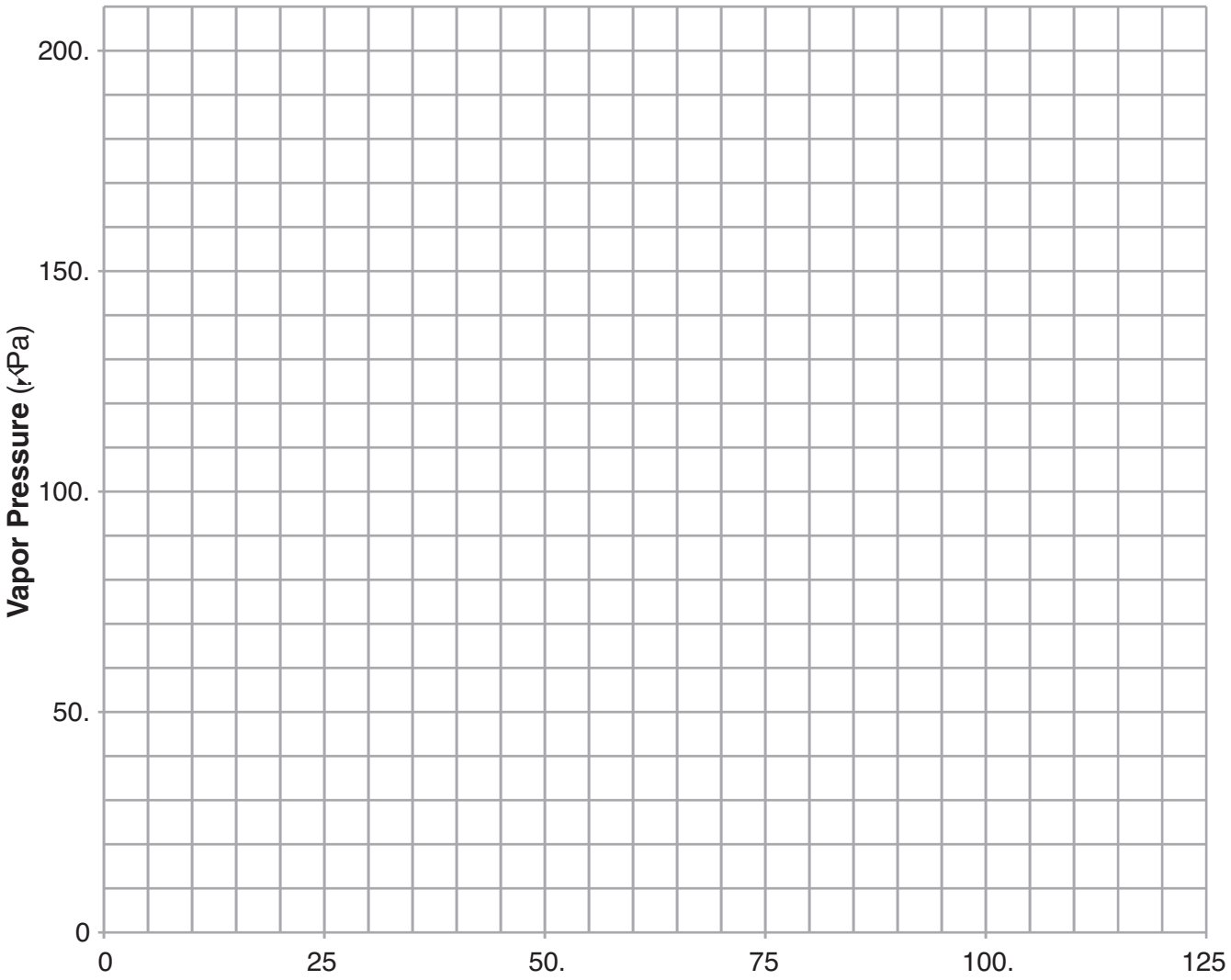


Table I
Heats of Reaction at 101.3 kPa and 298 K

Reaction	ΔH (kJ)*

Table J
Activity Series**

Table K
Common Acids

Table N

Table L
Common Bases

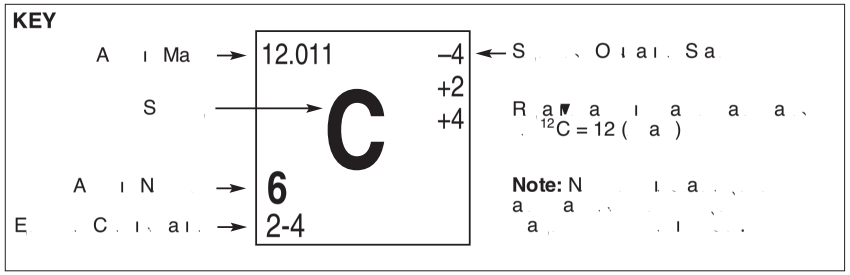
Table O

Name	General Formula	Examples	
		Name	Structural Formula

Table R
Organic Functional Groups

Class of Compound	Functional Group	General Formula	Example
		R	
		R	
		R R'	
		R R'	

Periodic Table of the Elements



Period	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	1.00794 +1 −1 **H** 1 1																	4.00260 0 **He** 2 2
2	6.941 +1 **Li** 3 2-1	9.01218 +2 **Be** 4 2-2											10.81 +3 **B** 5 2-3	12.011 −4 +2 +4 **C** 6 2-4	14.0067 −3 −2 −1 +1 +2 +3 +4 +5 **N** 7 2-5	15.9994 −2 **O** 8 2-6	18.9984 −1 **F** 9 2-7	20.180 0 **Ne** 10 2-8
3	22.98977 +1 **Na** 11 2-8-1	24.305 +2 **Mg** 12 2-8-2											26.98154 +3 **Al** 13 2-8-3	28.0855 −4 +2 +4 **Si** 14 2-8-4	30.97376 −3 +3 +5 **P** 15 2-8-5	32.065 −2 +4 +6 **S** 16 2-8-6	35.453 −1 +1 +5 +7 **Cl** 17 2-8-7	39.948 0 **Ar** 18 2-8-8
4	39.0983 +1 **K** 19 2-8-8-1	40.08 +2 **Ca** 20 2-8-8-2	44.9559 +3 **Sc** 21 2-8-9-2	47.867 +2 +3 +4 **Ti** 22 2-8-10-2	50.9415 +2 +3 +4 +5 **V** 23 2-8-11-2	51.996 +2 +3 +6 **Cr** 24 2-8-13-1	54.9380 +2 +3 +4 +7 **Mn** 25 2-8-13-2	55.845 +2 +3 **Fe** 26 2-8-14-2	58.9332 +2 +3 **Co** 27 2-8-15-2	58.693 +2 +3 **Ni** 28 2-8-16-2	63.546 +1 +2 **Cu** 29 2-8-18-1	65.409 +2 **Zn** 30 2-8-18-2	69.723 +3 **Ga** 31 2-8-18-3	72.64 +2 +4 **Ge** 32 2-8-18-4	74.9216 −3 +3 +5 **As** 33 2-8-18-5	78.96 −2 +4 +6 **Se** 34 2-8-18-6	79.904 −1 +1 +5 **Br** 35 2-8-18-7	83.798 0 +2 **Kr** 36 2-8-18-8
5	85.4678 +1 **Rb** 37 2-8-18-8-1	87.62 +2 **Sr** 38 2-8-18-8-2	88.9059 +3 **Y** 39 2-8-18-9-2	91.224 +4 **Zr** 40 2-8-18-10-2	92.9064 +3 +5 **Nb** 41 2-8-18-12-1	95.94 +6 **Mo** 42 2-8-18-13-1	(98) +4 +6 +7 **Tc** 43 2-8-18-13-2	101.07 +3 **Ru** 44 2-8-18-15-1	102.906 +3 **Rh** 45 2-8-18-16-1	106.42 +2 +4 **Pd** 46 2-8-18-18	107.868 +1 **Ag** 47 2-8-18-18-1	112.41 +2 **Cd** 48 2-8-18-18-2	114.818 +3 **In** 49 2-8-18-18-3	118.71 +2 +4 **Sn** 50 2-8-18-18-4	121.760 −3 +3 +5 **Sb** 51 2-8-18-18-5	127.60 −2 +4 +6 **Te** 52 2-8-18-18-6	126.904 −1 +1 +5 +7 **I** 53 2-8-18-18-7	131.29 0 +2 +4 +6 **Xe** 54 2-8-18-18-8
6	132.905 +1 **Cs** 55 2-8-18-18-8-1	137.33 +2 **Ba** 56 2-8-18-18-8-2	138.9055 +3 **La** 57 2-8-18-18-9-2	178.49 +4 **Hf** 72 *18-32-10-2	180.948 +5 **Ta** 73 -18-32-11-2	183.84 +6 **W** 74 -18-32-12-2	186.207 +4 +6 +7 **Re** 75 -18-32-13-2	190.23 +3 +4 **Os** 76 -18-32-14-2	192.217 +3 +4 **Ir** 77 -18-32-15-2	195.08 +2 +4 **Pt** 78 -18-32-17-1	196.967 +1 +3 **Au** 79 -18-32-18-1	200.59 +1 +2 **Hg** 80 -18-32-18-2	204.383 +1 +3 **Tl** 81 -18-32-18-3	207.2 +2 +4 **Pb** 82 -18-32-18-4	208.980 +3 +5 **Bi** 83 -18-32-18-5	(209) +2 +4 **Po** 84 -18-32-18-6	(210) **At** 85 -18-32-18-7	(222) 0 **Rn** 86 -18-32-18-8
7	(223) +1 **Fr** 87 -18-32-18-8-1	(226) +2 **Ra** 88 -18-32-18-8-2	(227) +3 **Ac** 89 -18-32-18-9-2	(261) +4 **Rf** 104	(262) **Db** 105	(266) **Sg** 106	(272) **Bh** 107	(277) **Hs** 108	(276) **Mt** 109	(281) **Ds** 110	(280) **Rg** 111	(285) **Cn** 112	(284) **Uut** 113**	(289) **Uuq** 114	(288) **Uup** 115	(292) **Uuh** 116	(?) **Uus** 117	(294) **Uuo** 118

140.116 +3 +4 **Ce** 58	140.908 +3 **Pr** 59	144.24 +3 **Nd** 60	(145) +3 **Pm** 61	150.36 +2 +3 **Sm** 62	151.964 +2 +3 **Eu** 63	157.25 +3 **Gd** 64	158.925 +3 **Tb** 65	162.500 +3 **Dy** 66	164.930 +3 **Ho** 67	167.259 +3 **Er** 68	168.934 +3 **Tm** 69	173.04 +2 +3 **Yb** 70	174.9668 +3 **Lu** 71
232.038 +4 **Th** 90	231.036 +4 +5 **Pa** 91	238.029 +3 +4 +5 +6 **U** 92	(237) +3 +4 +5 +6 **Np** 93	(244) +3 +4 +5 +6 **Pu** 94	(243) +3 +4 +5 +6 **Am** 95	(247) +3 **Cm** 96	(247) +3 +4 **Bk** 97	(251) +3 **Cf** 98	(252) +3 **Es** 99	(257) +3 **Fm** 100	(258) +2 +3 **Md** 101	(259) +2 +3 **No** 102	(262) +3 **Lr** 103

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Sources: CRC Handbook of Chemistry and Physics, 91st ed., 2010–2011, CRC Press

Table S
Properties of Selected Elements

Atomic Number	Symbol	Name	First Ionization Energy	Electro-negativity	Melting Point	Boiling* Point	Density**	Atomic Radius
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								

Atomic Number	Symbol	Name	First Ionization Energy	Electro-negativity	Melting Point	Boiling* Point	Density**	Atomic Radius
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
Elements 58–71 have been omitted.								
72								
73								
74								
75								
76								
77								
78								
79								
80								
81								
82								
83								
84								
85								
86								
87								
88								
89								
Elements 90 and above have been omitted.								

*

**

S : C CH C m P , 91 ., 2010 2011, CRC P

Table T
Important Formulas and Equations

Density	—
Mole Calculations	
Percent Error	×
Percent Composition	×
Concentration	×
Combined Gas Law	$\frac{P}{T}$ $\frac{P}{T}$ P T
Titration	M_A M_B M_A $_A = M_B$ $_B$ A B
Heat	$C\Delta T$ H H H H $C =$ $\Delta T =$
Temperature	