**Chemistry Formula Sheet**

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| D =  % yield = × 100  % error = × 100 | 1 mole = “molar mass” (g)  1 mole = 6.02 x 1023 particles  1 mole = 22.4 L  D = density  m = mass  V = volume |
| **Atomic Structure**  E = hν  C = λν | E = energy ν = frequency λ = wavelength  h = Planck’s Constant = 6.626 x 10-34 J⋅s  c = speed of light = 3.00 x 108 m/s |
| **Gases**  K = °C + 273  = PV = nRT  Ptotal = PA + PB + PC + …  n = | n = moles  P = pressure  V = volume  T = temperature  m = mass  MM = molar mass  Gas Constant R = 62.4 mmHg⋅L/mol⋅K  1 atm = 760 mmHg= 101.325 kPa  STP = 0°C or 273K and 1 atm, 760 mmHg, 101.325 kPa |
| **Liquids and Solutions**  M = *m* =  ΔTb = Kb*m*i ΔTf = Kf*m*i | M = Molarity  *m* = Molality  Kb = Boiling Point Elevation Constant  Kb(H2O) = 0.512 °C/*m*  Kf = Freezing Point Depression Constant  Kf (H2O) = 1.86 °C/*m*  i = number of particles |
| **Thermochemistry**  H = mCΔT | H = heat m = mass  C = specific heat capacity C H2O(l) = 4.184 J/g°C  T = temperature |
| **Acid/Base**  Kw = [H+][OH-] = 1.00 x 10-14 at 25°C  pH + pOH = 14  [H+] = 10-pH  [OH-] = 10-pOH | Kw (water) |

Carbonate – CO32- Sulfate – SO42-

Chromate – CrO42- Silicate – SiO32-

Dichromate – Cr2O72- Sulfite – SO32-

Oxalate – C2O42- Thiosulfate – S2O32-

Peroxide – O22-

**Common 2- Ions**

Acetate – C2H3O2-1 Hydroxide – OH-1

Bromate – BrO3-1 Nitrate – NO3-1

Chlorate – ClO3-1 Nitrite – NO2-1

Chlorite – ClO2-1 Permanganate – MnO4-1

Cyanide – CN-1 Thiocyanate – SCN-1

Hydrogen Carbonate – HCO3-1

(bicarbonate)

**Common 1- Ions**

**Common Positive Ions**

Ammonium – NH41+ Silver – Ag1+

Aluminum - Al3+ Zinc – Zn2+

**Common 3- Ions**

Phosphate – PO43- Phosphite – PO33-