Chemistry Formula Sheet

Stoichiometry:

$$\% \text{ yield} = \frac{\text{actual mass of product}}{\text{theoretical mass of product}} \times 100$$

$$\% \text{ error} = \frac{|\text{actual} - \text{theoretical}|}{\text{theoretical}} \times 100$$

Gas Laws:

Ideal Gas Law: $PV = nRT$

$R = 0.0821$ L*atm/mol*K

Combined Gas Law: $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$

Dalton's Law of Partial Pressures: $P_{tot} = P_a + P_b + P_c \ldots$

Graham's Law: $\frac{\text{Rate for A}}{\text{Rate for B}} = \sqrt{\frac{\text{M of B}}{\text{M of A}}}$

Solutions:

$$\text{Molarity} = \frac{\text{mol solute}}{\text{L solution}} \qquad \text{Molality} = \frac{\text{mol solute}}{\text{kg solvent}} \qquad \% \text{ mass} = \frac{\text{g solute}}{\text{g solution}}$$

Freezing point change: $\Delta T = K_f * m * i$
Boiling point change: $\Delta T = K_b * m * i$

Dilution/Titration formula: $M_1V_1 = M_2V_2$

Acids/Bases:

$pH = -\log [H^+]$
$pOH = -\log [OH^-]$

$pH + pOH = 14$

Stoichiometry