Chemistry

Specific Heat:
$q = sm\Delta t$
Internal Energy:
$\Delta E = q + w$
Definition of Density:
$d = \frac{m}{V}$
Definition of Pressure:
$P = \frac{\vec{F}}{A}$
Boyle's Law:
$V_1P_1 = V_2P_2$
Charles's Law:
$\frac{V_1}{T_1} = \frac{V_2}{V_2}$
Gay-Lussac's Law:
$\frac{P_1}{T_1} = \frac{P_2}{T_2}$
Combined Gas Law:
$\frac{V_1P_1}{T_1} = \frac{V_2P_2}{T_2}$
Ideal Gas Law:
$PV = nRT = \frac{mRT}{MM}$
Dalton's Law:
$P_{total} = \sum P_i$
Definition of Molarity:
$M = \frac{n_{solute}}{V_{solution}}$
Definition of Molality:
$\bar{m} = \frac{n_{solute}}{m_{solvent}}$
Dilution:
$M_1V_1 = M_2V_2$
Neutralization:
$N_AV_A = N_BV_B$
Definition of pH and pOH:
$pH = -log_{10}H^+$
$pOH = -log_{10}OH^-$
Enthalpy of Formation:
$\Delta H^\circ = \sum nH_f^\circ - \sum mH_f^\circ$
Effective Nuclear Charge:
$Z_{eff} = Z - S$
Graham's Law of Effusion:
$\frac{r_1}{r_2} = \frac{\sqrt{M_2}}{\sqrt{M_1}}$
Rydberg Formula:
$E = \frac{hc}{\lambda}$
Plank's Equation:
$E = h\nu$
Wavelength-Frequency Equation:
$c = \nu\lambda$
Raoult's Law:
$P_{solution} = \chi_{solvent} \cdot P_{solvent}$
Boiling Point Elevation:
$\Delta T_{bp} = k_b\bar{m}i$
Freezing Point Depression:
$\Delta T_{fp} = k_f\bar{m}i$
Osmotic Pressure:
$\pi = iMRT$
Average Reaction Rate:
$\text{Rate} = \frac{-\Delta[R]}{\Delta t} = \frac{\Delta[P]}{\Delta t}$
Reaction Rate Law:
$\text{Rate} = k[A]^m[B]^n$
Integrated Rate Law of a Zero or First Order Reaction:
$\ln[A]_t = -kt + \ln[A]_0$
Integrated Rate Law of a Second or Higher Orde
$\frac{1}{[A]_t} = kt + \frac{1}{[A]_0}$
Activation Energy of a Reverse Reaction:
$E_{a\text{ (Reverse)}} = \Delta E_{\text{(Reverse)}} + E_{a\text{ (Forward)}}$
Arrhenius Equation:
$k = Ae^{\frac{-E_a}{RT}}$
Half Life of a First Order Reaction:
$t_{\frac{1}{2}} = \frac{\ln 2}{k}$
Half Life of a Second or Higher Order Reaction:
$t_{\frac{1}{2}} = \frac{1}{k[A]_0}$
Reaction Catalysis:
$\ln\left(\frac{k_1}{k_2}\right) = \frac{E_a}{R}\left[\frac{1}{T_2} - \frac{1}{T_1}\right]$
Equilibrium Constant in Terms of Concentration:
$K_c = \frac{[\text{Products}]^{\text{Coefficient}}}{[\text{Reactants}]^{\text{Coefficient}}}$
Equilibrium Constant in Terms of Pressure:
$K_P = \frac{(P_{\text{products}})^{\text{Coefficient}}}{(P_{\text{reactants}})^{\text{Coefficient}}}$

The Relationship between the two Equilibrium Constants:

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