FORMULAS

Thermochemistry

Temperature Conversion	$°C = K - 273$ $K = °C + 273$
Heat transfer	$Q = mc\Delta T$
Hess's Law (Enthalpy)	$\Delta H = \sum\Delta H_{products} - \sum\Delta H_{reactants}$
Hess's Law (Entropy)	$\Delta S = \Sigma S_{products} - \Sigma S_{reactants}$
Hess's Law (Gibbs Free Energy)	$\Delta G = \Sigma\Delta G°_{products} - \Sigma\Delta G°_{reactants}$
Gibbs Free Energy	$\Delta G = \Delta H - T\Delta S$

Chemical Equilibrium

Equilibrium Constant, K_{eq} $aA + bB \rightleftharpoons cC + dD$	$K_{eq} = \frac{[C]^c[D]^d}{[A]^a[B]^b}$

Solutions

Molarity, M	$M = \frac{\text{moles solute}}{\text{litres solution}}$
parts per million, ppm	$ppm = \frac{\text{mass solute}}{\text{mass solution}} \times 10^6$
dilutions	$M_1V_1 = M_2V_2$
Solubility product constant, K_{sp} $A_bX_{y\,(s)} \rightleftharpoons bA^+_{(aq)} + yX^-_{(aq)}$	$Keq = [A^+]^b [X^-]^y$

Acids and Bases

K_a and K_b $H_bX_{y\,(s)} \rightleftharpoons bH^+_{(aq)} + yX^-_{(aq)}$	$K_a = [H^+]^b [X^-]^y$
K_w $H_2O_{(l)} \rightleftharpoons H^+_{(aq)} + OH^-_{(aq)}$	$K_w = [H^+][OH^-] = 1.0 \times 10^{-14}$
pH, pOH	$pH = -\log[H^+]$ $pOH = -\log[OH^-]$
pH and pOH , and $[OH^-]$	$pH + pOH = 14$ $[OH^-] = \frac{1\times10^{-14}}{[H^+]}$
Titration (for 1:1 Acid:Base ratio)	$M_AV_A = M_BV_B$