Formula Sheet

Mass % = (mass solute / mass solution) x 100

Mole Fraction = $moles_i$ / total moles

Molarity = moles solute / L solution

Molality = moles solute / kg solvent

Vapor Pressure Lowering = $X_A P_A^\circ$ P° = VP pure solvent

Boiling Point Elevation = $\triangle T_B = k_b m$ k_b = BP elevation constant

Freezing Point Depression = $\triangle T_f = k_f m$

Osmotic Pressure = MRT R = 0.0821 L x atm / mole x K

Rate = - $\triangle$ [reactants] / $\triangle$t

$K_p = k\,(RT)^{\triangle n}$

PV = nRT

$\ln [A]/[A]_0 = -kt$ First Order Integrated Rate Law

k = rate / [A][B]

$$\ln (k_1 / k_2) = (E_a / R) (1/T_2 - 1/T_1)$$