

CHE 103 & 104 Equation Sheet

$$^{\circ}\text{F} = 1.8^{\circ}\text{C} + 32$$

$$\text{K} = ^{\circ}\text{C} + 273$$

$$q = mC\Delta T$$

$$d = \frac{m}{V}$$

$$K_{\text{eq}} = \frac{[\text{Products}]^x}{[\text{Reactants}]^y}$$

$$M = \frac{\text{mol solute}}{L \text{ solution}}$$

$$\% \text{ composition of an element} = \frac{n \times \text{molar mass element}}{\text{molar mass compound}} \cdot 100$$

$$q = \Delta Hm$$

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

$$\chi = \frac{\text{mol solute}}{\text{mol solution} + \text{solvent}}$$

$$\text{percent by mass} = \frac{\text{mass solute}}{\text{mass solution}} \times 100$$

$$\text{ppm} = \frac{\text{mass solute}}{\text{mass solution}} \times 10^6$$

$$\text{ppb} = \frac{\text{mass solute}}{\text{mass solution}} \times 10^9$$

$$M_1V_1 = M_2V_2$$

$$PV = nRT$$

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

$$\text{average atomic mass} = \sum (\text{mass}_i)(\text{abundance}_i)$$

$$\text{pH} = -\log [H^+]$$

$$\text{pOH} = -\log [OH^-]$$

$$K_w = [H^+][OH^-]$$

$$[H^+] = 10^{-\text{pH}}$$

$$[OH^-] = 10^{-\text{pOH}}$$

$$14 = \text{pH} + \text{pOH}$$

$$\text{pH} = \text{pK}_a + \log \frac{[\text{base}]}{[\text{acid}]}$$