Unit 2 Formulae

1) $q = mc\Delta T$ q = heat (J); m = mass (g); c = specific heat capacity in J/(g·°C); ΔT (°C)

2) $\Delta H = n\,\Delta H_x$ ΔH = enthalpy change (kJ); n = moles (mol); ΔH_x = molar enthalpy (kJ)

3) $n\Delta H_x = mc\Delta T$ n = moles (mol); ΔH_x = molar enthalpy (J); m = mass (g); c = specific heat capacity in J/(g·°C); ΔT = temperature change (°C)

4) $\Delta H = \sum(n\Delta H^\circ_{f\,(products)}) - \sum(n\Delta H^\circ_{f\,(reactants)})$ ΔH = enthalpy change (kJ); Σ = represents sum; n = moles (mol); ΔH°_f = standard enthalpy of formation (kJ/mol)

5) $r = \Delta c/\Delta t$ r = rate in mol/(L·min); Δc = change in concentration (mol/L); Δt = change in time (min)

6) $r = k\,[X]^m[Y]^n$ r = rate of reaction in mol/L·s; *k* = rate constant; [X] = concenctration of reactant X (mol/L); [Y] = concentration of reactant Y (mol/L); m & n = order of reaction

7) $\ln \dfrac{[A]_0}{[A]_t} = kt$ and $[A]_t = [A]_0\, e^{-kt}$

ln & e (see calculator); $[A]_0$ = initial concentration (mol/L); $[A]_t$ = concentration at designated time; k = rate constant; t = time

8) $kt_{1/2} = 0.693$ k = rate constant; $t_{1/2}$ = half-life