First Law of Thermodynamics

- $\Delta U = Q + W$

where $\Delta U \rightarrow$ change in internal energy

$Q \rightarrow$ Heat added to the system

$W \rightarrow$ Work done on the system

- Internal energy change of a reaction (ΔU):

Heat absorbed or evolved by the system at constant volume.

$\rightarrow \Delta U = q_v = mC_v\Delta T$

- Enthalpy change of a reactant (ΔH):

Heat absorbed (+ive) or evolved (-ive) by the system at constant pressure

$\rightarrow \Delta H = q_p = mC_p\Delta T$

- $\Delta_r H = [(\text{sum of enthalpies of products}) - (\text{sum of enthalpies of reactants})]$