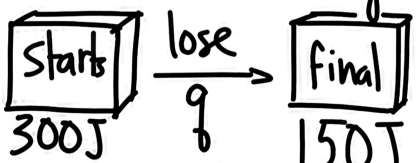
Exo and Endothermic Heat Flow

Exothermic (−q)

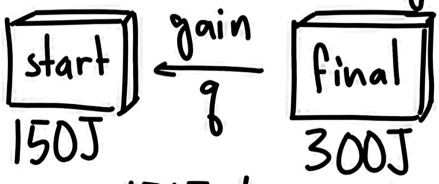
- Heat flows out of a system



lost 150J (−150J) from system to surroundings

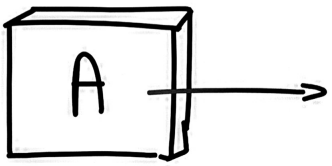
Endothermic (+q)

Heat flows into the system



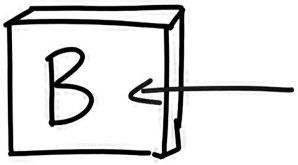
gain 150J (+150J) from surroundings to system

Examples from assignment



$q_o = 92\,J$ (start)
$q_f = 12\,J$ (final)

Heat of system (q) = going down
Heat of surround. (q) = going up
Type: Exothermic (lose q, q = −)



$q_o = 10\,J$ (start)
$q_f = 85\,J$ (final)

Heat of system (q) = going up
Heat of surround. (q) = going down
Type: Endothermic (gain q, q = +)

Heat Capacity (C)

Amount of heat required to raise the temp of a form of matter 1°C.
($\Delta T = +1°C$)

$$C = \frac{q \leftarrow \text{heat}}{\Delta T \leftarrow \text{change in temp.}}$$

$$q = C \cdot \Delta T \leftarrow \text{change in temp}$$
(heat capacity)

$$\Delta T = \frac{C \leftarrow \text{heat cap.}}{q \leftarrow \text{heat}}$$

Heat Capacity Examples

$C_{Al} = \_\_\_ J/°C$ $q = 1800J$

$T_{ini} = 12.5°C$ $T_{final} = 21.6°C$

$\Delta T = 21.6°C - 12.5°C$

$= 9.1°C$

$$C_{Al} = \frac{1800J}{9.1°C} = 197.80 J/°C$$

$C_{Al} = 26.1 J/°C$ $q = \_\_\_ J$

$T_{ini} = 36.1°C$ $T_{final} = 45.2°C$

$\Delta T = 45.2°C - 36.1°C$

$= 9.1°C$

$q = 26.1 J/°C \cdot 9.1°C$

$= 237.51J$