

700 J of work is done on a system. The process decreases the thermal energy of the system by 300 J. How much energy is transferred to or from the system?

Given:

Work done on the system:  $W = 700 \text{ J}$

Change in thermal energy of the system:  $\Delta E_H = - 300 \text{ J}$

To determine: Energy transfer to or from the system:  $Q$

Use Formula:

$$\Delta E_H = W + Q \text{ -----(1)}$$

Rearranging (1):

$$Q = \Delta E_H - W \text{ ----- (2)}$$

Substituting for  $W$  and  $\Delta E_H$  in (2):

$$Q = - 300 - 700 = - 1000 \text{ J}$$

**1000 J of energy is transferred from the system.**