

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:

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

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

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 ΔE_H in (2):

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

1000 J of energy is transferred from the system.