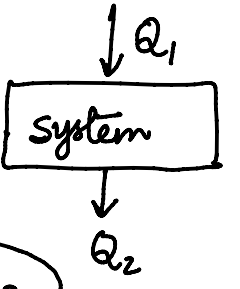
EXAMPLE: 1000 cal of heat was given to a system. 418 J work was done by the system and 100 cal heat was destroyed. What was the change in internal energy of the system?

$\Delta Q = Q_1 - Q_2 = 900 cal$

$= 900 \times 4.18 J$

$= 3762 J$



$\Delta Q = Q_1 - Q_2$

$\Delta Q = \Delta U + \Delta W$

$3762 = \Delta U + 418$

$\Delta U = 3762 - 418 = 3344 J.$

$\Delta U = U_f - U_i$