

48. (a) Since work is done *on* the system (perhaps to compress it) we write  $W = -200 \text{ J}$ .  
(b) Since heat leaves the system, we have  $Q = -70.0 \text{ cal} = -293 \text{ J}$ .  
(c) The change in internal energy is  $\Delta E_{\text{int}} = Q - W = -293 \text{ J} - (-200 \text{ J}) = -93 \text{ J}$ .