

50. Referring to Table 20-3, Eq. 20-45 and Eq. 20-46, we have

$$\begin{aligned}\Delta E_{\text{int}} &= nC_V\Delta T = \frac{5}{2}nR\Delta T \\ \text{and} \quad Q &= nC_p\Delta T = \frac{7}{2}nR\Delta T .\end{aligned}$$

Dividing the equations, we obtain

$$\frac{\Delta E_{\text{int}}}{Q} = \frac{5}{7} .$$

Thus, the given value  $Q = 70 \text{ J}$  leads to

$$\Delta E_{\text{int}} = 50 \text{ J} .$$