

18.27. Solve: (a) For a monatomic gas,

$$\Delta E_{\text{th}} = nC_v \Delta T = 1.0 \text{ J} = (1.0 \text{ mol})(12.5 \text{ J/mol K})\Delta T \Rightarrow \Delta T = 0.0800^\circ\text{C} \text{ or } 0.0800 \text{ K}$$

(b) For a diatomic gas,

$$1.0 \text{ J} = (1.0 \text{ mol})(20.8 \text{ J/mol K})\Delta T \Rightarrow \Delta T = 0.0481^\circ\text{C} \text{ or K}$$

(c) For a solid,

$$1.0 \text{ J} = (1.0 \text{ mol})(25.0 \text{ J/mol K}) \Delta T \Rightarrow \Delta T = 0.0400^\circ\text{C} \text{ or K}$$