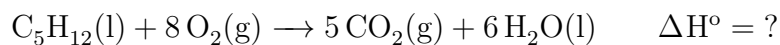
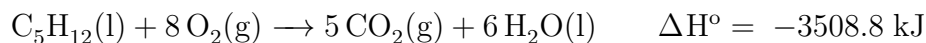


WORKSHEET 2 - QUESTION 4



$$\begin{aligned}\Delta\text{H}^\circ &= [5\Delta\text{H}_{\text{CO}_2(\text{g})}^\circ + 6\Delta\text{H}_{\text{H}_2\text{O}(\text{l})}^\circ] - [\Delta\text{H}_{\text{C}_5\text{H}_{12}(\text{g})}^\circ + 8\Delta\text{H}_{\text{O}_2(\text{g})}^\circ] \\ \Delta\text{H}^\circ &= [5(-393.5 \text{ kJ}) + 6(-285.8 \text{ kJ})] - [(-173.5 \text{ kJ}) - 8(0)] \\ \Delta\text{H}^\circ &= -3508.8 \text{ kJ}\end{aligned}$$



$$Q = -\Delta\text{H}$$

$$Q = 3508.8 \text{ kJ/mol C}_5\text{H}_{12}$$

$$50.0 \text{ g C}_5\text{H}_{12} \times \frac{1 \text{ mol C}_5\text{H}_{12}}{72.17 \text{ g C}_5\text{H}_{12}} \times \frac{3508.8 \text{ kJ}}{1 \text{ mol C}_5\text{H}_{12}} \times \frac{1000 \text{ J}}{1 \text{ kJ}} = 2430926.98 \text{ J}$$

$$Q = 2430926.98 \text{ J}$$

$$m = 80.0 \text{ L} \Rightarrow 80\,000 \text{ mL} \Rightarrow 80\,000 \text{ g}$$

$$c = 4.184 \frac{\text{J}}{\text{g}^\circ\text{C}}$$

$$\Delta\text{T} = ?$$

$$\Delta\text{T} = \frac{Q}{mc}$$

$$\Delta\text{T} = \frac{2430926.98 \text{ J}}{80\,000 \text{ g} \times 4.184 \frac{\text{J}}{\text{g}^\circ\text{C}}}$$

$$\Delta\text{T} = 7.263 \text{ }^\circ\text{C}$$

$$T_f = \Delta\text{T} + T_i$$

$$T_f = 7.263 \text{ }^\circ\text{C} + 25.000 \text{ }^\circ\text{C}$$

$$T_f = 32.263 \text{ }^\circ\text{C}$$
