12. Complete combustion of 1.00 mol of acetone (C_3H_6O) liberates 1790. kJ of heat (the reaction is shown below). Given that $\Delta H°_f$ (CO_2) = –393.5 kJ/mol and $\Delta H°_f$ (H_2O) = –285.8 kJ/mol, calculate the standard enthalpy of formation of acetone. *Make sure to balance the reaction!*

$$C_3H_6O_{(l)} + 4O_{2(g)} \rightarrow 3H_2O_{(l)} + 3CO_{2(g)}$$

$$\Delta H_{rxn} = \sum \Delta H_f \text{ prod.} - \sum \Delta H_f \text{ reactants}$$

$$-1790 = [3(-285.8) + 3(-393.5)] - [\Delta H_f\ C_3H_6O + 0]$$

$$\Delta H_f\ C_3H_6O = -248 \text{ KJ/mol}$$