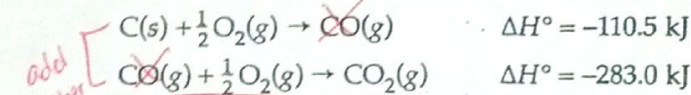


Hess's Law Practice Problems

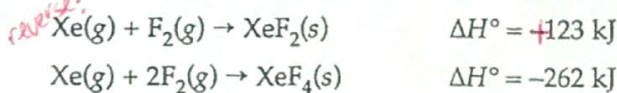
1. From the following enthalpy changes,



calculate the value of ΔH° for the reaction $\text{C(s)} + \text{O}_2\text{(g)} \rightarrow \text{CO}_2\text{(g)}$.

$$\Delta H^\circ = -110.5 + -283.0 = \boxed{-393.5 \text{ kJ}}$$

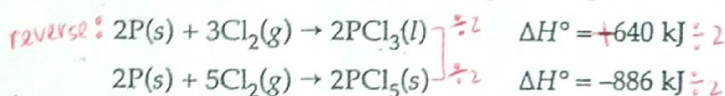
6. From the following enthalpy changes,



calculate the value of ΔH° for the reaction $\text{XeF}_2\text{(s)} + \text{F}_2\text{(g)} \rightarrow \text{XeF}_4\text{(s)}$.

$$\Delta H^\circ = 123 + -262 = \boxed{-139 \text{ kJ}}$$

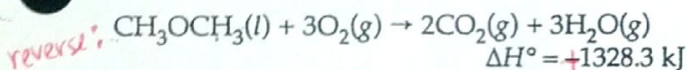
2. From the following enthalpy changes,



calculate the value of ΔH° for the reaction $\text{PCl}_3\text{(l)} + \text{Cl}_2\text{(g)} \rightarrow \text{PCl}_5\text{(s)}$.

$$\Delta H^\circ = \frac{640}{2} + \frac{-886}{2} = \frac{-246}{2} = \boxed{-123 \text{ kJ}}$$

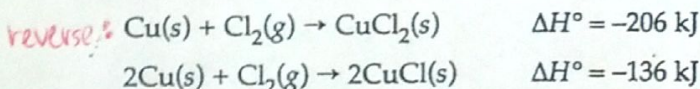
3. From the following enthalpy changes,



calculate the value of ΔH° for the reaction $\text{C}_2\text{H}_5\text{OH(l)} \rightarrow \text{CH}_3\text{OCH}_3\text{(l)}$.

$$\Delta H^\circ = -1234.7 + 1328.3 = \boxed{93.6 \text{ kJ}}$$

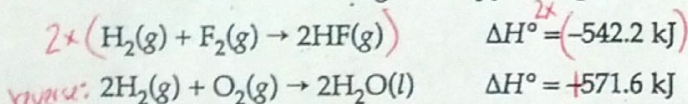
4. From the following enthalpy changes,



calculate the value of ΔH° for the reaction $\text{CuCl}_2\text{(s)} + \text{Cu(s)} \rightarrow 2\text{CuCl(s)}$.

$$\Delta H^\circ = 206 + -136 = \boxed{70 \text{ kJ}}$$

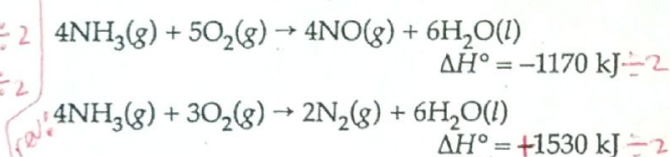
5. From the following enthalpy changes,



calculate the value of ΔH° for the reaction $2\text{F}_2\text{(g)} + 2\text{H}_2\text{O(l)} \rightarrow 4\text{HF(g)} + \text{O}_2\text{(g)}$.

$$\Delta H = 2(-542.2) + 571.6 = \boxed{-512.8 \text{ kJ}}$$

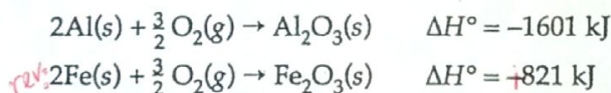
7. From the following enthalpy changes,



calculate the value of ΔH° for the reaction $\text{N}_2\text{(g)} + \text{O}_2\text{(g)} \rightarrow 2\text{NO(g)}$.

$$\frac{-1170}{2} + \frac{1530}{2} = \frac{360}{2} = \boxed{180 \text{ kJ}}$$

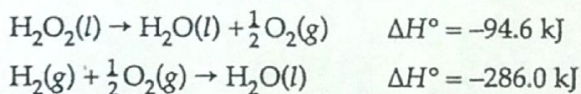
8. From the following enthalpy changes,



calculate the value of ΔH° for the reaction $2\text{Al(s)} + \text{Fe}_2\text{O}_3\text{(s)} \rightarrow 2\text{Fe(s)} + \text{Al}_2\text{O}_3\text{(s)}$.

$$\Delta H = -1601 + 821 = \boxed{-780 \text{ kJ}}$$

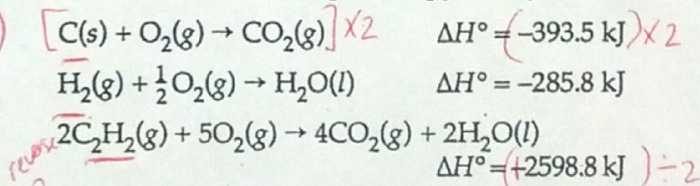
9. From the following enthalpy changes,



calculate the value of ΔH° for the reaction $\text{H}_2\text{(g)} + \text{H}_2\text{O}_2\text{(l)} \rightarrow 2\text{H}_2\text{O(l)}$.

$$\Delta H = -94.6 + -286.0 = \boxed{-380.6 \text{ kJ}}$$

10. From the following enthalpy changes,



calculate the value of ΔH° for the reaction $2\text{C(s)} + \text{H}_2\text{(g)} \rightarrow \text{C}_2\text{H}_2\text{(g)}$.

$$2(-393.5) + \frac{2598.8}{2} + -285.8 = \boxed{226.6 \text{ kJ}}$$