Enthalpy Stoichiometry Worksheet

1. How much heat will be released when 6.44 g of sulfur reacts with excess O₂ according to the following equation?

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2 \text{ S} + 3 \text{ O}_2 \rightarrow 2 \text{ SO}_3 \Delta \text{H} = -791.4 \text{ kJ}
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2. How much heat will be released when 4.72 g of carbon reacts with excess O₂ according to the following equation?

 $C + O_2 \rightarrow CO_2$ $\Delta H = -393.5 \text{ kJ}$

How much heat will be absorbed when 38.2 g of bromine reacts with excess H₂ according to the following equation?
 H₂ + Br₂ → 2 HBr
 ΔH = 72.80 kJ

4. How much heat will be released when 1.48 g of chlorine reacts with excess phosphorus according to the following equation?
2 P + 5 Cl₂ → 2 PCl₅ ΔH = -886 kJ

5. How much heat will be released when 4.77 g of ethanol (C₂H₅OH) reacts with excess O₂ according to the following equation? $C_2H_5OH + 3 O_2 \rightarrow 2 CO_2 + 3 H_2O$ $\Delta H = -1366.7 kJ$

- 6. How much heat will be absorbed when 13.7 g of nitrogen reacts with excess oxygen according to the following equation? $\Delta H = 180 \text{ kJ}$
 - $N_2 + O_2 \rightarrow 2 NO$

- 7. How much heat will be released when 11.8 g of iron reacts with excess oxygen according to the following equation?
 - $3 \text{ Fe} + 2 \text{ O}_2 \rightarrow \text{Fe}_3\text{O}_4$ ∆H = -1120.48 kJ

8. How much heat will be released when 18.6 g of hydrogen reacts with excess O₂ according to the following equation?

$2 H_2 + O_2 \rightarrow 2 H_2 O \qquad \Delta H = -5$
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9. How much heat will be transferred when 14.9 g of ammonia reacts with excess O₂ according to the following equation? Is this reaction endothermic or exothermic? $4 \text{ NH}_3 + O_2 \rightarrow 4 \text{ NO} + 6 \text{ H}_2\text{O}$ ΔH = -1170 kJ

10. How much heat will be transferred when 5.81 g of graphite reacts with excess hydrogen according to the following reaction? Is this reaction endothermic or exothermic? 6 C (graphite) + 3 $H_2 \rightarrow C_6 H_6$ ∆H = 49.03 kJ