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Prelab 2

Preliminary Questions

1. Define "heat of reaction". The heat of reaction is the total energy change in the reaction's system.
2. If 150 grams of water changes temperatures by 7.2°C, how much energy flows?

$$q_{\text{water}} = mc\Delta T = (150g)(4.184J/g^{\circ}C)(7.2^{\circ}C) = 4500J$$

3. Describe how you would make 150 mL of 1.0 M HCl solution starting with 2.0 M HCl. Combine 75 mL of 2.0 M HCl with 75 mL of water.
4. Use Hess's Law to calculate the heat of formation of CO(g) given the following information:

$$(1) \qquad C(s) + O_2(g) \rightarrow CO_2(g) \Delta H = -393.5kJ$$
$$(2) \qquad CO(g) + \frac{1}{2}O_2(g) \rightarrow CO_2(g) \Delta H = -283.5kJ$$

Find ΔH° for the reaction: $C(s) + \frac{1}{2}O_2(g) \rightarrow CO(g)$

$$\Delta H = \Delta H_{(1)} - \Delta H_{(2)} = (-393.5kJ) - (-283.5kJ) = -100kJ$$