Enthalpy of Reaction

1) (10 pts) Consider the following reaction:

\[ 2\text{Al}(s) + \text{Fe}_2\text{O}_3(s) \rightarrow 2\text{Fe}(s) + \text{Al}_2\text{O}_3 \quad \Delta H = -851.5 \text{ kJ} \]

Atomic weights: \( \text{Al} = 26.98154 \quad \text{Fe} = 55.847 \)

Molecular weights: \( \text{Fe}_2\text{O}_3 = 159.692 \quad \text{Al}_2\text{O}_3 = 101.9613 \)

23.3g of Al are reacted with excess \( \text{Fe}_2\text{O}_3 \). How much heat is absorbed or released by the reaction? (Please be sure to put your answer in the space provided and circle one of the two choices.)

\[
\text{The heat is related to amount of Al reacted by:}
\]

\[
23.3\text{g Al} \left( \frac{1\text{ mol Al}}{26.98154\text{g Al}} \right) \left( \frac{-851.5 \text{ kJ}}{2\text{ mol Al}} \right) = -368 \text{ kJ}
\]

The magnitude of the heat is \( \frac{368}{368} \text{ kJ} \) 7 pts
The heat is released absorbed by the reaction 3 pts