

# Thermochemistry Continued

Enthalpy ( $H$ ) - measurement of the amount of energy produced or absorbed by a chemical reaction )  
exothermic      endothermic

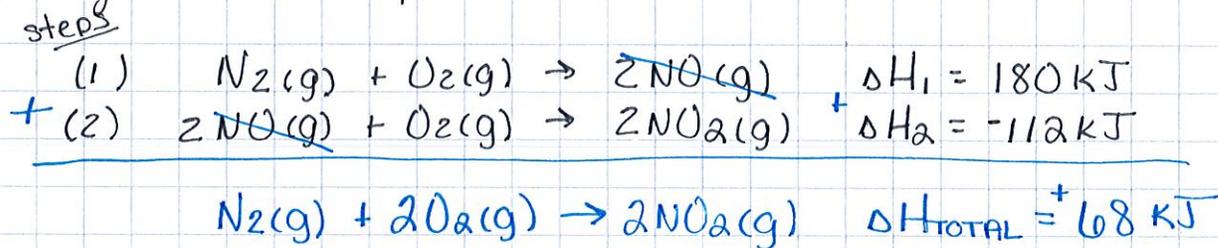
Heat ( $q$ ) - change in enthalpy @ constant pressure

Hess's Law -

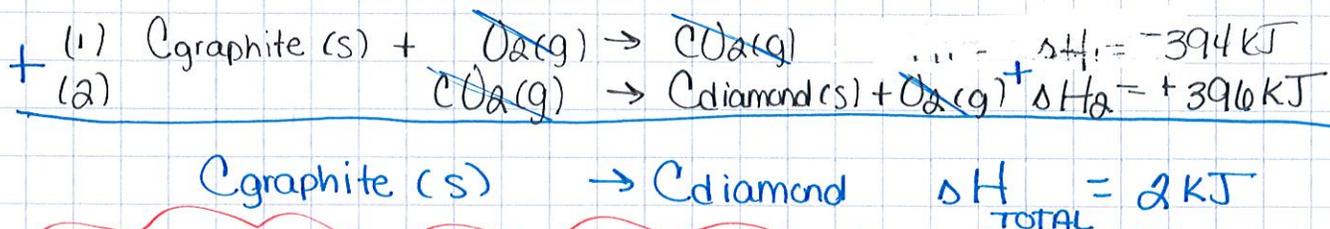
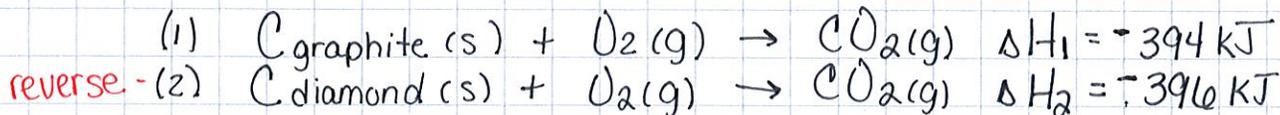
Regardless of the multiple steps of a reaction, the total change in enthalpy ( $\Delta H$ ) for a reaction is the sum of all the changes.

Ex) Calculate  $\Delta H$  for this overall reaction:  
 $N_2(g) + 2O_2(g) \rightarrow 2NO_2(g)$

given these steps:

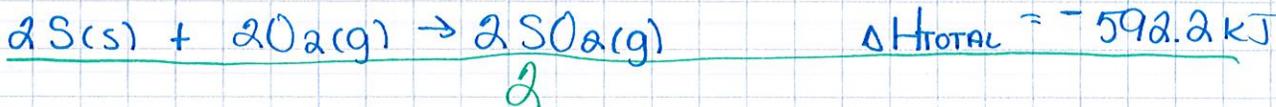
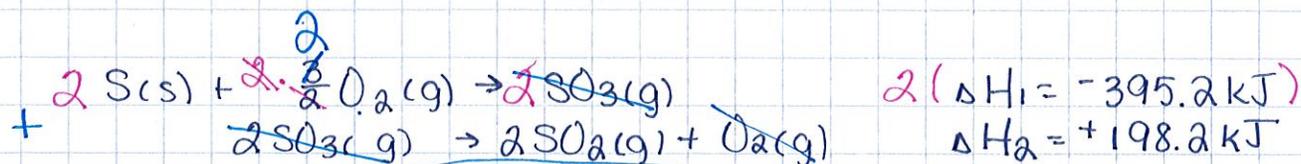
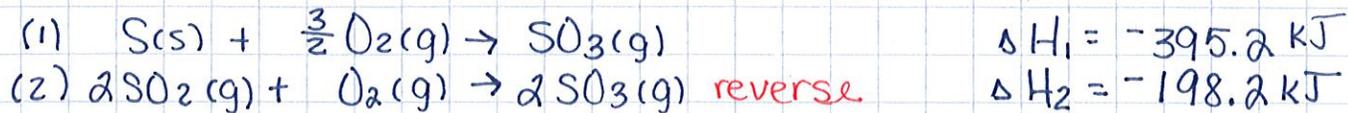


Ex) Calculate  $\Delta H$  for:  $C_{\text{graphite}}(s) \rightarrow C_{\text{diamond}}(s)$   
from:



If you need to, you can reverse a reaction, but you have to change the sign of  $\Delta H$

(Ex) Calculate  $\Delta H$  for:  $S(s) + O_2(g) \rightarrow SO_2(g)$  from



The magnitude of  $\Delta H$  is directly proportional to the quantities of reactants & products in the reaction. You can multiply any step by any number to solve the problem.

(Ex) Calculate  $\Delta H$  for:  $C(s) + H_2O(g) \rightarrow CO(g) + H_2(g)$  from:

