Class Notes for Monday March 10, 2014

How to calculate the change of energy using <u>Standard Heats of Reaction</u> from a table. [See page 317 for several examples].

- 1. Write a balanced reaction
- 2. Look up the energies of each substance using a table of Standard Heat of Formation.
- 3. Plug the table numbers into the following equation
 - $\Delta H = (\Delta H \text{ of the products formation}) (\Delta H \text{ of the reactants formation})$
- 4. Remember to multiply each energy by its coefficient in the balanced reaction. Be careful of all the double negative signs. To be safe, punch your answer into the calculator more than once to avoid careless goofs.

Example: Write the thermochemical equation for nitrogen gas reacting with liquid water to form nitrogen trihydride and oxygen gas.

PN20 +6H200 - 4NH20+ 026 renember: Put PRUDUCTS FIRST! [4(-4619)+3(200)] - [2(200)+6(-285.8)]

ANSWER = 1530.04 KJ

AH =

Example: Write the thermochemical equation for reacting dihydrogen monosulfide with sulfur trioxide to form sulfur dioxide and liquid water.

 $H_2S + 3SO_3 \rightarrow 4SO_2 + H_2O_{(4)}$ $\Delta H = [4(SO_2) + (H_2O)] - [(H_2S) + 3(SO_3)]$ $\Delta H = [4(-296.8) + (-285.8)] - [(-20.1) + 3(-395.7)]$

ΔH = -265 & KJ