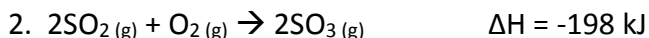
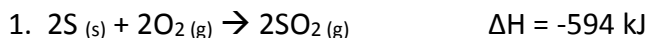


## Guided Notes: Hess's Law & Heat of Formation

### Hess's Law:

- Hess's Law- the overall enthalpy change in a reaction is equal to the sum of the enthalpy changes of individual steps
- Example:



### Standard Heat of Formation

- $\Delta H_f$  - the amount of energy \_\_\_\_\_ when a compound is formed from its \_\_\_\_\_
  - For example:  $H_{2(g)} + \frac{1}{2} O_{2(g)} \rightarrow H_2O_{(l)}$
- The standard heat of formation for water,  $\Delta H_f = -285.83 \text{ kJ/mol}$
- Page \_\_\_\_\_ in your book is a table of standard heats of formation
- We use this information to determine the heat of formation for any reaction
- How?
  - $\Delta H^\circ_{\text{rxn}} = \text{_____} (\text{_____}) - \text{_____} (\text{_____})$

### Practice Problems:

- $\Delta H^\circ_{\text{rxn}} = \Sigma \Delta H^\circ_f (\text{products}) - \Delta H^\circ_f (\text{reactants})$
- All elements in their standard states (example: oxygen gas, solid copper, liquid mercury) will have an Enthalpy of formation of \_\_\_\_\_.
- $4 \text{ FeS}_{(s)} + 7 \text{ O}_{2(g)} \rightarrow 2 \text{ Fe}_2\text{O}_3_{(s)} + 4 \text{ SO}_{2(g)} \quad \Delta H_{\text{rxn}} = ?$

### Check For Understanding

- Calculate the  $\Delta H_{\text{rxn}}$  for the following using the heats of formation on pg. 975 in your book.

