Thermochemical Equations Worksheet   Name:_____ Per. ___

1. How is a thermochemical equation different from a balanced chemical equation?

2. The enthalpy change for a reaction, ΔH, is negative. What does this indicate about the chemical potential energy of the system before and after the reaction?

3. How does the enthalpy of the products compare with the enthalpy of the reactants in an exothermic reaction? An endothermic reaction?

4. What is the sign of ΔH for an exothermic reaction? An endothermic reaction?
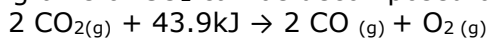

5. What mass of methane must be burned in order to liberate 12880 kJ of heat?
$$CH_{4\ (g)} + 2\ O_{2\ (g)} \rightarrow CO_{2\ (g)} + 2\ H_2O_{\ (g)} + 891\ kJ$$
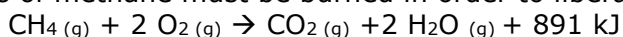
6. How much heat is released when 583 g SO_3 reacts with water in the following equation:
$$SO_{3\ (g)} + H_2O_{\ (l)} \rightarrow H_2SO_{4\ (aq)} + 129.6 kJ$$
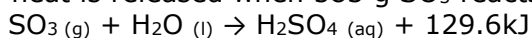
7. How many grams of CO_2 can be decomposed by the addition of 22.2kJ of heat energy?
$$2\ CO_{2(g)} + 43.9kJ \rightarrow 2\ CO_{\ (g)} + O_{2\ (g)}$$

8. a. How much heat is needed for 7.3mol of Fe to react with an excess of CO_2?
$$2Fe_{\ (s)} + 3CO_{2\ (g)} + 26.3kJ \rightarrow Fe_2O_{3\ (s)} + 3CO_{\ (g)}$$
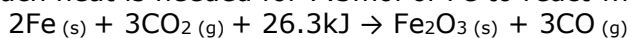
   b. Is this a positive or negative enthalpy change?   _____

9. How many joules of heat are lost by 3580 kg granite as it cools from 41.2 ºC to -12.9 ºC? (specific heat of granite is .803 J/gºC)

10. How much heat is liberated by the combustion of 206g of hydrogen? $\Delta H_{comb} = -286kJ/mol$