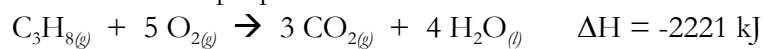


Name _____ Period _____

Thermochemistry Worksheet #1

1. Which has more kinetic energy: ice water or room temperature water? Explain your answer.
2. Which has more kinetic energy: 4 cups of boiling water or 8 cups of boiling water? Explain your answer.
3. Where is the energy stored in a molecule?
4. Explain what happens to the energy stored in a log when it is used in a campfire. What is the system in this case? The surroundings?
5. Convert the following:
 - a. $1.69 \text{ J} = \text{_____ cal}$
 - b. $20.0 \text{ cal} = \text{_____ J}$
 - c. $449.6 \text{ J} = \text{_____ kJ}$
 - d. $806 \text{ kJ} = \text{_____ J}$
 - e. $46.7 \text{ J} = \text{_____ Cal}$
6. What type of reaction absorbs heat? What type of reactions give off heat?
7. When potassium nitrate dissolves in water, the beaker containing the solution gets cooler. Is dissolving this salt an exothermic or endothermic process? Describe the flow of heat.
8. The reaction $2 \text{CO}_{(g)} + \text{O}_{2(g)} \rightarrow 2 \text{CO}_{2(g)}$ is exothermic.
 - a. Is ΔH positive or negative for this reaction?
 - b. Is the energy stored in the products greater or less than the energy stored in the reactants?

9. Consider the combustion of propane:



- a. Is this reaction exothermic or endothermic?
 - b. Is energy absorbed or released by the system? The surroundings?
10. Identify each of the following as exothermic or endothermic.
- a. Green plants need sunlight for growth.
 - b. Sodium metal dropped into a beaker of water causes an explosion.
 - c. Ice melts on a countertop.
 - d. A puddle freezes as the outside temperature drops.
 - e. Bread turns brown as it toasts.
 - f. $2 \text{HCl} \rightarrow \text{H}_2 + \text{Cl}_2 \quad \Delta H = 185 \text{ kJ}$
 - g. $4 \text{NH}_3 + 5 \text{O}_2 \rightarrow 4 \text{NO} + 6 \text{H}_2\text{O} \quad \Delta H = -1169 \text{ kJ}$