

Thermochemistry Review

Chem Worksheet 16-5

Name _____

The following represent some of the calculations we have mastered this chapter. These are the same types of calculations that will appear on the chapter test.

Heat Unit Conversions – $1 \text{ calories} = 4.184 \text{ joules}$

1. A chemical reaction produces 330 kJ of heat. Convert this to joules.
2. A popular energy drink is said to contain 84 Calories. How many calories is this?
3. Convert 775 calories to joules.
4. Convert 1500 kilojoules to calories.

Using Specific Heats - $Q = mC\Delta T$

5. How much heat is transferred when 75 g of iron ($C = 0.45 \text{ J/g } ^\circ\text{C}$) is heated from 30°C to 650°C ?
6. If 1200 J of heat is added to 18 g of silver ($C = 0.24 \text{ J/g } ^\circ\text{C}$), how much will its temperature increase by?
7. When 14 g of an unknown metal receives 325 joules of energy its temperature increases by 181°C . What is its specific heat?

Enthalpy Stoichiometry

8. How much heat is released when 90 g of NO decomposes according to the following equation?
$$2\text{NO} \rightarrow \text{N}_2 + \text{O}_2 \quad \Delta H = -180 \text{ kJ}$$
9. What mass of hydrogen must react in order to produce 1800 kJ of energy?
$$2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O} \quad \Delta H = -572 \text{ kJ}$$

Calorimetry Calculation (just like Lab)

10. When 2.5 g of LiCl is dissolved in 112.0 g of water the temperature of the water increases from 18.2°C to 22.9°C . Use this information to calculate ΔH for the reaction.
 - a. Find the amount of heat absorbed by the water in joules.
 - b. Find the heat released by the reaction in joules
 - c. Convert this heat to kilojoules
 - d. Find the number of moles of LiCl that reacted.
 - e. Divide the kilojoules produced by the moles of LiCl