Name: _____ Date: _____ Period: _____

Q=mcΔT worksheet #1

Specific Heat Practice

Important equation: $Q = mc\Delta T$ $\Delta T = T_{final} - T_{initial}$ For Water, C = 4.184 J/g °C or C = 1.00 cal/g °C

1. How much heat is transferred when 57 grams of mercury cools from 76 °C to 18 °C? The specific heat of mercury is 0.14 J/g°C. **[Ans: - 460 J]**

2. How much energy is transferred when 70 grams of ethanol is heated from 21 °C to 68 °C? The specific heat of ethanol is 2.44 J/g°C. **[Ans: 8000 J]**

3. How much heat is required to increase the temperature of 20.0 grams of water by 26.0 °C? The specific heat of water is 4.184 J/g°C. **[Ans: 2180 J]**

4. What is the specific heat of a substance that absorbs 2500 joules of heat when a sample of 1000.0 g of the substance increases in temperature from 10.0°C to 70.0°C? **[Ans: 0.042 J/g°C]**

5. A block of aluminum weighing 140. g is cooled from 98.4°C to 62.2°C with the release of 1080 joules of heat. From this data, calculate the specific heat of aluminum. **[Ans: 0.213 J/g°C]**

6. What is the specific heat capacity of silver metal if 55.00 g of the metal absorbs 47.3 *calories* of heat and the temperature rises 15.0°C? **[Ans: 0.0573 cal/g°C]**

7. A total of 54.0 joules of heat are absorbed a piece of lead is heated from 12.0°C to 42.0°C. If the specific heat of lead is 0.129 J/g °C, what mass of lead was used? **[Ans: 14.0 g]**

8. What is the mass of a sample of metal that is heated from 58.80°C to 88.90°C with a specific heat of 0.4494 J/g°C, if Q = 4500.0 J? **[Ans: 332.7 g]**

9. A cube of gold weighing 192.4g is heated from 30.0°C to some higher temperature, with the absorption of 226 joules of heat. The specific heat of gold is 0.030 J/g·°C. What was the final temperature of the gold? **[Ans: 69 °C]**

10. If 500.0 J of energy are added to 25.0 g of water at 0.0 °C, what is the final temperature of the water? (The heat capacity of water is 4.184 J/g°C) **[Ans: 4.8 °C]**