Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_

**Specific Heat Practice Worksheet #2 – Q = m(Tf-Ti)Cp**

1. An aluminum skillet weighing 1.58 kg is heated on a stove to 173°C. Suppose the skillet is cooled to room temperature, 23.9°C. How much heat energy (joules) must be removed to cause this cooling? The specific heat of aluminum is 0.901 J/(g°C) **[Ans: 212,000 J]**
2. It takes 487.5 J to heat 25 grams of copper from 25 °C to 75 °C. What is the specific heat in J/g°C? **[Ans: 0.39 J/g°]**
3. The specific heat of ethanol is 2.46 J/g ˚C. Find the heat required to raise the temperature of 193 g of ethanol from 19˚C to 35˚C. **[Ans: 7600 J]**
4. When a 120 g sample of aluminum (Al) absorbs 9612 J of energy, its temperature increases from 25˚C to 115˚C. Find the specific heat of aluminum. **[Ans: 0.89 J/g°C]**
5. If a 3.1g ring is heated using 10.0 J, its temperature rises 17.9°C. Calculate the specific heat capacity of the ring.

**[Ans: 0.18 J/g°C]**

1. What is the specific heat of an unknown substance if a 2.50 g sample releases 12 calories as its temperature changes from 25°C to 20°C? **[Ans: 0.96 cal/g°C]**

Use the table below to answer the following questions.

|  |  |
| --- | --- |
| Substance | Specific Heat (J/g•°C) |
| water | 4.184  |
| aluminum | 0.900 |
| copper | 0.385 |
| iron | 0.450 |
| granite | 0.790 |

1. When 3.0 kg of water is cooled from 80.0°C to 10.0°C, how much heat energy is lost? **[Ans: 880,000 J]**
2. How much heat is needed to raise a 0.30 kg piece of aluminum from 30.°C to 150°C? **[Ans: 32000 J]**

Calculate the temperature change when: ΔT = Q/mCp

1. 10.0 kg of water loses 232 kJ of heat. **[Ans: 5.54°C]**
2. 1.96 kJ of heat are added to 500. g of copper. **[Ans: 102°C]**
3. When heated, the temperature of a water sample increased from 15°C to 39°C. It absorbed 4300 joules of heat. What is the mass of the sample? **[Ans: 43 g]**