Chemistry Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mr. Baruch Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Heat and Specific Heat Worksheet**

 **Heat = mass x specific heat x change in temperature (oC)**

 **q = *m* x *Cp*  x DT**

**Example:**  If a 5.00 gram sample of a glass of water is heated from

 20.0 oC to 30.0 oC, How much heat was gained by the water?

 Given: The specific heat of water is 4.18 joules/gram**.**oC

 **q = *m* x *Cp*  x DT**

q = 5.00 grams x4.18 J/g**.**oCx(30.0 oC - 20.0 oC)

q = 5.00 grams x4.18 J/g**.**oCx10.0 oC

q = 5.00 ~~grams~~ x4.18 J x10.0 ~~oC~~ = **209 joules**

 ~~gram~~**.**~~oC~~

**1.** If 25.0 grams of water is heated from 25.0 oC to 30.0 oC, how much heat was gained by the water?

**2.** If 15.0 grams of water is cooled from 20.0 oC to 15.0 oC, how much heat was lost by the water?

**3.** If a sample of water that is heated from 25.0 oC to 35.0 oC gains 250.8 joules of heat, what was the mass of the water sample?

**4.** If 30.0 grams of water is heated and gains 376.2 joules of heat, what was the change in temperature of the water sample?

**5.** If 10.0 grams of water is heated from 25.0 oC and gains 334.4 joules of heat, what was the final temperature of the water sample?



Mr. Baruch - Chemistry Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**PHASE CHANGE DIAGRAM WORKSHEET**

**Phase Change Diagram for 50.0 grams of Water**

**T** 120.0

**E**

**M** GAS

# P

**E** 100.0 **Heat of Vaporization**

**R**

**A**

**T** LIQUID

**U**

**R** **Heat of Fusion**

**E** 0

**(OC)**

 SOLID

 -10.0

 **Heat Absorbed (joules) ------------------------------------------------->**

**A 50.0 gram sample of water is heated from –10.0 OC to 120.0 OC (thus going through all three phases of matter). How much heat is absorbed in this process?**

**1.** First find the heat absorbed from the heating of ice at –10.0 OC to ice at 0.0 OC using the specific heat formula that you’ve been taught. (Note that ice has a specific heat of

 2.09 joules/g**.**OC)

**2.** Next find the heat of fusion for 50.0 grams of ice-water. (Use Heat of Fusion of Ice)

**3.** Next find the heat absorbed from the heating of water from 0.0 OC to 100.0 OC using the specific heat formula that you’ve been taught. (note that water has a specific heat of

 4.18 joules/g**.**OC)

**4.** Next find the heat of vaporization for 50.0 grams of water-steam. (Use Heat of vaporization of Water)

**5.** Next find the heat absorbed from the heating of steam from 100.0 OC to 120.0 OC using the

 specific heat formula that you’ve been taught. (Note that steam has a specific heat of

 2.09 joules/g**.**OC)

**6.** Now add up all the heats. What’s your total?