

## ***AP Worksheet 6a (Calorimetry)***

1. A 466-gram sample of water is heated from 8.50 °C to 74.60 °C. Calculate the amount of energy absorbed by the water.
2. The specific heat of aluminum is 0.215 cal/g°C. How many calories are given off by an aluminum bar that has a mass of 200.0 grams and the temperature change of the block is 35°C?
3. The specific heat of gold is 0.031cal/g°C. What is the mass of the water used if a gold ring with a mass of 250 grams raises the temperature of the water from 10°C to 20°C, and the temperature of the ring goes from 150°C to 20°C?
4. How many Joules of heat is needed to increase the temperature of 750 ml of water by 67°C?
5. If 95 grams a of a metal at a temperature of 26.8 °C is placed in 42.2 grams of water at a temperature of 9.5°C and the final temperature of the system is 12.5°C, what is the specific heat of the sample in J/g°C?

6. Using the data below calculate the specific heat of an unknown metal

Mass of unknown metal	65.0 grams
Start temperature of metal	96.3°C
Mass of water	150 grams
Start temp of water	23.4°C
End temp of water	26.3°C

7. Suppose a Cheeto is burned underneath a soda can containing 200. milliliters of 21.6 °C distilled water. The heat released from the burning of the Cheeto raises the temperature of the water by 24.8 °C.
- Calculate the amount of energy released by the burning of the Cheeto.
  - How many calories of energy did the Cheeto contain?
  - How many Calories are in a bag of Cheetos containing 42 pieces?  
1 calorie = 4.18 Joules  
1 nutritional Calorie = 1 kilocalorie = 1000 calories
  - Calculate the percent error in this experiment. (Note: the bag of Cheetos used in this experiment actually contained 300. Calories.)
  - Why do you think this experiment had such a large percent error?