**Specific Heat Practice**

C = ΔH/ (m\*ΔT)

Cwater­ = 4.18 J/g\*°C

1. A piece of stainless stell weighing 1.55 g absorbs 141 J of heat energy when its temperature increases by 178°C. What is the experimental specific heat of steel? (0.51 J/g\*°C)
2. The temperature of a piece of copper wire with a mass of 95.4 g changes from 25°C to 48°C when the metal absorbs 849 J of heat. What is the specific heat of copper? (0.387 J/g\*°C)
3. An aluminum sample with a mass of 2.3 g has an initial temperature of 15°C. During an extruding process, the sample absorbs 47.6 J of heat. What is the final temperature? (38°C)
4. Samples of aluminum, gold, and iron, each with a mass of 10.0 g, absorb the same amount of heat. If all three samples have the same initial temperature, which will have the largest final temperature? Explain.
5. How many joules are absorbed by 45.2 g of Al if its temperature rises from 12.5°C to 76.8°C? (2.61x103 J)
6. A 225-g sample of hot tea cools from 74.6°C to 22.4°C. How much heat, in kJ, is lost, assuming the tea has the same specific heat as water? (49.1 kJ)
7. A serving size of rigatoni pasta is 5.5 g and your body absorbs 22 Cal. What is the energy value for the pasta in kcal/g? In kJ/g? (4 kcal/g, 17 kJ/g)
8. The energy values for carbohydrates in food is 4 kcal/g, fats is 9 kcal/g, and protein is 4 kcal/g. If a fast food hamburger contains 37 g of carbs, 19 g of fat, and 23 g of protein, what is the overall energy value for the hamburger, in kcal? (410 kcal)
9. Determine the heat for each food burned in a calorimeter in kJ and kcal:
   1. One stalk of celery that heats 505 g of water from 25.2°C to 35.7°C.
   2. A waffle that heats 4980 g of water from 20.6°C to 62.4°C.