Name:_____   Date:_____

Flaming Cheetos

Problem: How can you determine the amount of heat energy released per gram when burning a cheeto?

Background:
Heat is something that can be difficult to measure directly. In this lab, we will use a method called calorimetry to determine the heat evolved in the burning of a cheeto. Calorimetry is the quantitative measurement of the heat required or evolved during a process which is chemical in nature. A Calorimeter is an instrument for measuring the heat of a reaction during a well defined process.

Procedure:
Gather the materials needed to assemble the set-up shown below.
Materials
Ring stand   PaperClip
150ml beaker   Cheetos
Thermometer   Clamp
Ring
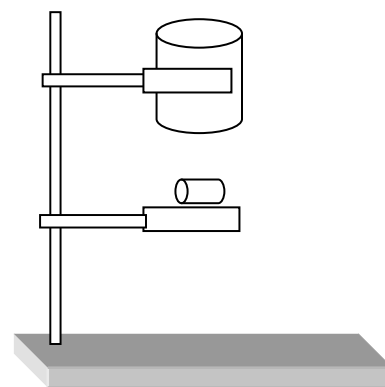
Record the dry mass of the 150ml beaker using a digital balance. Pour approximately 100 mL of water into the 150ml beaker and determine the mass of the 150ml beaker and water. Record this data in the data table. Obtain a cheeto and record its mass. Mass(weigh) and place a small sheet of aluminum foil underneath the 150ml beaker to catch any residue that may fall during combustion. Spear a Cheeto with a straitened paperclip and place on the ring. Record the initial temperature of the water in the 150ml beaker and then light the cheeto with a match. Allow the cheeto to combust completely. Record the maximum temperature of the water bath. Mass(weigh) any remaining cheeto residue. Complete three trials.

Data Table

	Trial 1	Trial 2	Trial 3
Mass of Calorimeter cup (g)			
Mass of beaker + water (g)			
Mass of water (g)			

Name:_____   Date:_____

Initial water temperature (^{0}C)			
Final water temperature (^{0}C)			
Change in temperature (^{0}C)			
Initial mass of Cheeto (g)			
Mass of Cheeto remaining (g)			
Mass of Cheeto that burned (g)			
Calculated Data			
Calories absorbed by water (C)			
Calories absorbed per gram of Cheeto (C/g)			
Average Calories per gram of Cheeto (C/g)			

Summing Up:
1. Look on the bag of Cheetos for the accepted value for the calorie content (This is located on the nutritional information.)
    a. How does the accepted value on the package compare to your experimentally determined value?

    b. Carefully explain why your experimentally determined value differs from the accepted value.

2. Calculate the percent error using the following:
    Percent Error = [(experimental value – accepted value)/accepted value] x 100