

Name _____ Date _____ Period _____

Regents Chemistry
Long Beach High School

Laboratory Experiment # _____

Power of Food

Background Information: Energy is trapped inside your food so that you can use it throughout the day. The energy can be measured in Joules, but we more commonly use calories for food. One calorie equals 4.18 J so the specific heat of water in calories is one. But the calories we eat are **Calories**, or kilocalories. In order to find out how many calories are in common foods, you must burn the food and trap the heat produced. You will use the formula $q=mc\Delta T$ to calculate the calories.

Guiding Questions: How many calories are trapped in common snacks? Are all snacks calories equal?

Materials: 2 food materials, matches, stand

Pre-Lab Questions:

1. If a person should eat 2000 Calories a day on average, calculate the number of calories they would eat.
2. Calculate the heat absorbed by 250 g of water when the temperature changes from 10 to 35°C.
3. Explain the direction of the heat flow while the sample is being burned.
4. Circle the word(s) that best describe your understanding of heat. Then write a scientific explanation to defend the prediction you chose.

Prediction: Burning the marshmallow and the cheese doodle for approximately the same length of time will result in (the same/ different) temperature changes of the water.

Reasoning:

Procedure: For each food sample...

Food	Initial Mass	Volume of water	Initial Temperature	Final Temperature	Final Mass

Calculations: All calculations for each food! Label your answers.

1. Find the heat calories absorbed by the water for each of the food samples.

2. Find the heat calories released by the food for each of the food samples. Remember, whatever heat the water absorbed, was from the food burning and releasing it.

3. Find the kilocalories of heat released by each food.

4. Find the kilocalories per gram of heat released by each food.

5. Calculate the percent error of each of the food samples using the calories reported on the container.

6. Construct a **claim** that supports or contradicts the prediction made in the pre-lab questions.

7. Provide **evidence** that supports your claim. Use your **reasoning** skills to explain why your evidence is relevant.

8. **Justify** the steps you took to obtain the evidence you obtained.