

Calories Count

Purpose: *An Introduction to energy and how we can use fire to figure out how many calories are in certain foods.*

Materials:

1. Ring Stand
2. Ring
3. Pop (or soda) can
4. Matches
5. Glass stirring rod
6. Foil (3 by 6)
7. Matches
8. Food source (Usually foods with more cheese burn better)
9. Calculator
10. Temperature probe
11. Food Stand (Made from a cork and sticking a paper clip in it)
12. 100mL of water
13. Graduated cylinder

Teacher Background:

In order to find out calories used in this experiment use the following equation: $H = \Delta t * C_p * \text{mass of water}$. H is the calories burnt. Δt is the change of temperature in the water. C_p is one in this experiment. Basically C_p is stating that for every mL of water you heat up one degree it has used one calorie. So if 100 mL changes 1 degree I used 100 calories. One mL of water weights 1 gram. I then have the kids find out how many calories per gram are in their chip. This is done by taking the calories divided by the amount of grams you burnt off. The kids will find out that they will get in the 1000's when they are suppose to get only 5 or so. This is because our bags have what we call a kilocalorie. We discuss that and why food companies might use this. We also discuss if they get 3000 calories and suppose to have 5000 why they don't match. (They lose some because not all the flame is heating the can. When this lab is over we start to talk about insulators and I go into my "Baby Bottle Lab.")

Procedure:

1. Set up pop can(This is done by putting the glass rod through the pop can tab and hanging it from the ring stand)
2. Add 100mL of water into the can
3. Measure the starting temperature
4. Weigh the food, food stand and the foil
5. Put the foil under the pop can (this is used to catch the oil of the food and crumbs)
6. Set up the food stand so the food lays on the stand
7. Light the food on fire (Try to get as much of the flame under the can as possible)
8. Record your ending weight (Make sure you weigh food, food stand and foil)
9. Record your ending temperature (This should be the highest temperature)
10. Do this with several different types of food
11. Have the students graph their rate of change
12. Using the TI-Navigator, collect the students different graphs
13. Using Activity Center to display several different foods graph
14. Compare which food burns faster and discuss why some foods have more calories

Chart:

	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
Type of Food					
Mass of Water					
Delta t					
Calories					
Grams of food					
Cal./ gram					
Kilcal/gram					
Difference					