

## Finding the Energy

### Background:

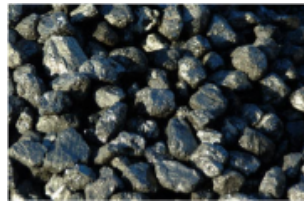
1. What is energy?

The ability to get work done. Energy comes in many forms. Some are electricity, heat, light, movement, and chemical energy.

2. What does your body use to get energy to do what you need to do?

3. Coal, gas, and wood are also energy sources. What kind of energy do we get directly from these three energy sources?

heat and light



4. We can convert the energy from coal, gas, and wood into another form of energy that is much easier for us to use to do work. What is this other form of energy?

electricity

5. When scientists measure heat energy, they used units called calories. How much heat energy is in one calorie?

One calorie is enough heat energy to raise one ml of water one degree C.

6. How do you compute how many calories something has?

You multiply the change in water's temperature from before it was heated to after it was heated times the number of mls of water that have been heated.

7. How will we be testing a cheeto for its energy content?

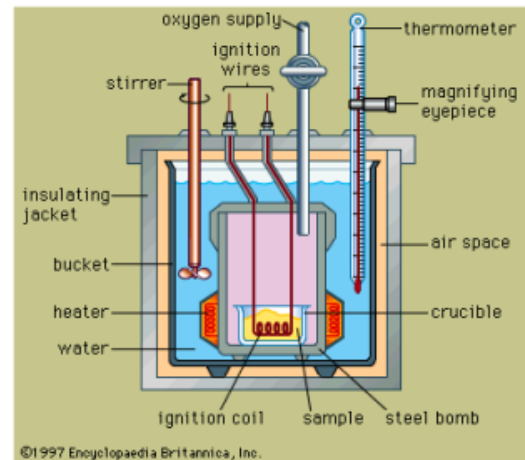
Make a container out of aluminum foil.

Measure 20 mls of water and test the container for leaks.

Measure the water's temperature and record it.

Burn the cheeto below the container of water.

Measure the water's temperature after the burning.



8. Calories are listed on most food packages. How is a food calorie different from the “chemistry” calories you will be measuring?

One food calorie is equal to 1000 "chemistry" calories. This is also called a Kcal or a kilocalorie.

Sample label for Macaroni & Cheese

Nutrition Facts	
Serving Size 1 cup (236ml)	
Servings Per Container 1	
Amount Per Serving	
<b>Calories</b> 80	Calories from Fat 0
% Daily Value*	
<b>Total Fat</b> 0g	0%
Saturated Fat 0g	0%
<i>Trans</i> Fat 0g	
<b>Cholesterol</b> Less than 5mg	0%
<b>Sodium</b> 120mg	5%
<b>Total Carbohydrate</b> 11g	4%
Dietary Fiber 0g	0%
Sugars 11g	
<b>Protein</b> 9g	17%
Vitamin A 10% • Vitamin C 4%	
Calcium 30% • Iron 0% • Vitamin D 25%	
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	

Nutrition Facts			
Serving Size 1 cup (228g)			
Servings Per Container 2			
Amount Per Serving			
<b>Calories</b> 250	Calories from Fat 110		
% Daily Value*			
<b>Total Fat</b> 12g		18%	
Saturated Fat 3g		15%	
<i>Trans</i> Fat 3g			
<b>Cholesterol</b> 30mg		10%	
<b>Sodium</b> 470mg		20%	
<b>Total Carbohydrate</b> 31g		10%	
Dietary Fiber 0g		0%	
Sugars 5g			
<b>Protein</b> 5g			
Vitamin A		4%	
Vitamin C		2%	
Calcium		20%	
Iron		4%	
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.			
	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g