



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Jake C. Porath	Project Number J0417
Project Title What Type of Nut (Peanuts, Cashews, Pecans, or Almonds) Gives Our Bodies the Most Energy?	
Objectives/Goals As a student athlete, I am interested in what foods will give me the most energy during competition. This is why I decided to choose a Science Fair project that would teach me about energy in food. The project I researched was what type of nut (peanut, cashew, pecan or almond) gives our bodies the most energy.	
Abstract Methods/Materials From my experiment research, I learned that energy is measured in calories. The more energy a food releases in our bodies when we digest it the greater amount of calories it has. A calorie is the amount of energy it takes to raise the temperature of 1 gram of water 1 degree Celsius. For each trial of my experiment, one gram of each nut was burned and the heat energy was calculated by measuring the change in temperature of 200 milliliters (230 grams) of water in a homemade calorimeter. The increase in the temperature (in degrees Celsius) times the mass of the water (in grams) gives us the amount of energy captured by the calorimeter, in calories. Four trials were conducted for each nut and the results were averaged together.	
Results My experiment findings showed that the burning of 1 gram of peanuts increased the temperature of 200 milliliters (230 grams) of water on average 10.0 degrees Celsius or had 2.3 kilocalories, almonds increased the water temperature 5.0 degrees Celsius or had 1.2 kilocalories, pecans increased the water temperature 15.5 degrees Celsius or had 3.5 kilocalories and cashews increased the water temperature 13.0 degrees Celsius or had 3.0 kilocalories. The increase in water temperature (degrees Celsius) times the mass of the water (grams) gave me the amount of energy captured by the calorimeter, in calories. We can write this in the form of an equation: Heat captured, Calories = (Water mass, Grams) x (Water heat capacity, 1cal/g degree Celsius) x (Water temperature increase, degrees Celsius)	
Conclusions/Discussion My experiment findings showed that the burning of 1 gram of pecans increased the temperature of 200 milliliters (230 grams) of water more than the other nuts that were tested. Therefore, pecans had more chemical energy than the other nuts that were tested(3,500 calories or 3.5 kilocalories).	
Summary Statement The measurement in calories of how much energy is stored in different types of nuts.	
Help Received My father helped me burn the nuts.	