

Name: _____

Eating your Energy's Worth

(Exploring energy consumption through food)

Overview

In this activity, you will learn that energy comes in many forms (electrical and chemical, for example) and that some physical activities and electrical appliances use energy very quickly and others use energy very slowly.

Part 1 Food and Exercise

1) Think about the following food items. Talk with your group members and rank the foods based on the amount of energy you think the food contains (with 1 being the food with the most energy and 7 being the food with the least energy). Hint: The number of calories in a piece of food tells us how much energy it contains.

Food item	Predicted Energy rank
Snickers Bar	
Big Mac	
Double Whopper	
Orange	
Mountain Dew	
Banana	
Personal Pan Pizza from Pizza Hut	

2) Let's say you had a Mountain Dew with lunch one day and you decided to go for a walk. How long do you think you would need to walk to use all of the energy contained in the Mountain Dew?

My predicted walking time is: _____ minutes

3) Use the Energy Calculator to find out. From the food selections, choose Mountain Dew. From the exercise selections, choose walking. Be sure to enter your weight in the space provided. Have the other members in your group use their weights, too.

a) How long would you have to walk to burn off all of the energy in a Mountain Dew?

b) Did this value surprise you? Why or why not?

4) What if you chose a different physical activity, like running or playing basketball? Do you think the length of time would be different for those activities? Why or why not?

5) Let's try it and see. Use the Energy Calculator to calculate the amount of time you would have to spend for each of the following activities to burn off a Mountain Dew.

Exercise	Length of time (minutes)
Walking	
Swimming laps	
Running fast	
Running slowly	
Playing basketball	
Sleeping	
Watching television	

6) In the table below, rank the exercises based on how fast they used the energy in the Mountain Dew.

Exercise	Rank
Walking	
Swimming laps	
Running fast	
Running slowly	
Playing basketball	
Sleeping	
Watching television	

7) Why do you think the different types of exercise use energy more slowly or more quickly?

8) At the beginning of this activity, you were asked to rank types of food based on the amount of energy they contained. How could you use the Energy Calculator to figure out whether you were right? Talk with your group members and write your idea here.

9) Try it and see. Copy your group's predicted ranks and then use your idea from part 8 to determine the ranks of the different types of food.

Food item	Predicted Energy rank	Real Energy rank
Snickers Bar		
Big Mac		
Double Whopper		
Orange		
Mountain Dew		
Banana		
Personal Pan Pizza from Pizza Hut		

- 10) a) Does the real rank seem correct? Don't forget to explain why or why not.
b) Were your results a lot different from your original predictions?

a)

b)

11) Why do you think the Energy Calculator uses a person's weight? Do you think how fast a person uses energy depends on their weight? Explain.

Part 2 (Home Appliances and Energy)

In Part 1, we looked at the amount of energy in different types of food and how fast different activities used energy. In this part, we look at different electrical appliances and how fast they use energy.

12) Look at the list of electrical appliances below. Remembering what you learned about different types of exercise, talk with your group members and rank the appliances based on how fast they use energy. Use 1 to indicate the most energy and 8 to indicate the least energy.

Appliance	Rank
Toaster	
Computer	
Lamp	
Stereo	
Television	
Microwave	
Vacuum cleaner	
Hair dryer	

13) What factors did your group consider as you were ranking the appliances?

14) a) Just like exercising, the appliances need to run for a while to use energy. For each of the appliances, talk with your group members to figure out how long each of the appliances is used daily. The Energy Calculator will let you choose the following lengths of time: **2 minutes, 5 minutes, 10 minutes, 30 minutes, 1 hour, 2 hours, or 3 hours**. Use these values when you fill out the chart.

b) For each of the appliances, use the Energy Calculator to determine how much energy that appliance uses each week. The Energy Calculator reports energy amounts in the food items used in part 1. You can choose any type of food, but use the same for all the calculations. Be sure to fill out the shaded box with your food type.

Appliance	Amount of time	Number of _____
Toaster		
Computer		
Lamp		
Stereo		
Television		
Microwave		
Vacuum cleaner		
Hair dryer		

15) How much total energy was used by all of the appliances in a week? Were you surprised by the amount?

16) Earlier in this section, you were asked to rank the appliances based on how fast they used energy. How could you use the Energy Calculator to figure out whether you were right? Talk with your group members and write your idea here.

17) Try it and see. Copy your group's predicted ranks and then use your idea from part 16 to determine the ranks of the different appliances.

Appliance	Predicted Rank	Real Rank
Toaster		
Computer		
Lamp		
Stereo		
Television		
Microwave		
Vacuum cleaner		
Hair dryer		

18) a) Does the real rank seem correct?
b) Were your results a lot different from your original predictions?

a)

b)

19) How could we decrease the amount of electrical energy we use each week? Hint: Look at your energy tally from section 14 to see what areas used the most energy and which areas could be easy to change.
