The Carrying Capacity of People

You're on a QUEST!

Does the human population have a carrying capacity? To answer this question, you must first be able to calculate your personal energy intake. This activity will help you examine the amount of food (energy) your body takes in every day. Then you may be able to connect your individual intake with the food/energy demands of the general human population.

First, it will help to collect several standard food labels from products that you eat. You should also refer to the United States Department of Agriculture's Recommended Daily Requirements (see below). Then you will record your daily food intake (see the Energy Intake Worksheet at the end of this handout). This activity will help you gain a better understanding of the caloric content of the foods you eat, or the total amount of energy you consume.

Nutrition Facts
Serving Size 15 Crackers (31g)
Servings Per Container About 7

Amount Per Serving
Calories 160 Calories from Fat 70

	% Daily Value*
Total Fat 8g	**12%**
Saturated Fat 1.5g	**7%**
Cholesterol 0mg	**0%**
Sodium 430mg	**18%**
Total Carbohydrate 19g	**6%**
Dietary Fiber Less than 1g	**3%**
Sugars 2g	
Protein 2g	

Vitamin A 0% • Vitamin C 0%
Calcium 0% • Iron 6%

*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

1. Locate a standard food label for any food that you typically eat (e.g., cereal, soup, prepared food, ice cream, etc.). Read the label carefully, and use the Calorie Counter at the bottom of the USDA Recommended Daily Requirements for a Teenager (below). The Calorie Counter is designed for you to use with one standard food label. Compare this particular food with the daily calorie intake estimate for teenagers in the chart.

2. Take your investigation a step further by calculating your total daily consumption of calories. Using the Energy Intake Worksheet at the end of this handout, keep track of the food you eat in a 24-hour period. Record all of the calories you take in, if possible. Total the numbers, and then see what you daily intake is. If you multiply that number by 365, you will arrive at an estimate of your yearly calorie intake.

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The **United State Department of Agriculture (USDA) Recommended Daily Requirements for Teenagers** varies in terms of type of food, but some specific examples can be found in the following chart. Use this chart for guidance. The USDA recommends a diet of about 2,200 calories for active teenage girls and 2,800 calories for active teenage boys.

Girls	Meal	Boys
1 slice wheat toast, 30 ml peanut butter 240 ml ready-to-eat cereal 240 ml low-fat milk 1 banana	**Breakfast**	2 slices wheat toast, 30 ml peanut butter 480 ml ready-to-eat cereal 240 ml low-fat milk 1 banana
1 slice pepperoni pizza (no extra cheese) 1 apple 180 ml fruit juice	**Lunch**	1 slice pepperoni pizza (no extra cheese) 1 apple 360 ml fruit juice
Chopped raw vegetables or fruit 60 ml pretzels or 2 crackers	**Snack**	Chopped raw vegetables or fruit 120 ml pretzels or 4 crackers
120 ml lean chicken or beef 1 baked potato or 240 ml cooked rice or pasta (with 15 ml of butter) 240 ml cooked vegetables Salad, 30 ml of dressing 240 ml low-fat milk	**Dinner**	180 ml of lean chicken or beef 1 baked potato or 240 ml cooked rice or pasta (with 15ml of butter) 240 ml cooked vegetables Salad, 30 ml of dressing 240 ml low-fat milk

Calorie Counter

Using a food label that shows the nutrition content of that food, use the calorie counter below to calculate the amount of energy you are consuming.

1. Total calories in the container or package: _____

2. Servings per container: _____

3. Calories per serving: _____

4. Number of grams of fat, carbohydrates, and proteins: _____

5. Percentage of calories from fat per serving: _____
(9 cal/g x gram of fat) divided by the number of cal per serving x 100

6. Percentage of calories from carbohydrates per serving: _____
(4 cal/g x gram of carbohydrates) divided by the number of cal per serving x 100

7. Percentage of calories from proteins per serving: _____
(4 cal/g x gram of proteins) divided by the number of cal per serving x 100

Energy Intake Worksheet

FOOD	Breakfast	Lunch	Dinner	Snacks	TOTAL
Bread					
Wheat cereal					
Citrus fruits					
Orange juice					
Coffee					
Tea					
Peanut butter					
Rice of cereal					
Potatoes					
Carrots, other \vegetables					
Apples, other fruits					
Vegetable oil					
Margarine					
Beet sugar					
Cane sugar					
Soft drinks					
Corn cereal					
Sweet corn					
Milk					
Cheese					
Eggs					
Chicken					
Pork					
Beef					
Tuna					
Perch (fish)					
Shrimp (shell fish)					
Other					
TOTALS					

Record calories if possible. Or, record servings or weights and convert to calories. Divide by 1,000 to convert to Kilocalories.

Your 24-hour gross energy intake: _____ cal

Your yearly gross energy intake: _____ cal