

Good nutrition provides energy for cell growth and repair.

Prepare in Advance

Investigation 1: Have students keep track of and list everything they eat and drink in one 24-hour period. This data will be used in the investigation.

Teacher Information

Nutrients are the substances that the body needs in order to live. There are six types of nutrients (carbohydrates, fats, proteins, vitamins, minerals, and water) people should have each day. **Carbohydrates** (sugars and starches) and **fats** supply the body with energy; **proteins** are used to build, repair, and maintain the body; **vitamins** and **minerals** are needed to maintain bones and teeth and to keep the cells healthy; **water** is necessary for all body processes.

The USDA food pyramid was put together by scientists, physicians, nutritionists, and other health workers who researched medical journals, hospital records, health statistics, and other reports to determine the diets of people who live the longest and healthiest lives. The pyramid shape indicates that people need to eat more foods at the bottom of the pyramid than at the top. On a daily basis, people should eat 6 to 11 servings from the bread and pasta group, 3 to 5 servings from the vegetable group, 2 to 4 servings from the fruit group, 2 to 3 servings from the dairy group, 2 to 3 servings from the protein group, and a minimal amount of fats and sweets. Athletes and adolescent boys need the maximum number of servings, while sedentary people need the minimum.



Nutrients for Good Health

Nutrient	Why Needed	Where Found
Carbohydrates	energy, fiber	bread, cereal, pasta, fruit, rice
Proteins	repair, growth, make amino acids	milk, meat, fish, poultry, eggs, seeds, beans
Fats	energy	butter, meat, oil
Vitamins	strong bones and teeth, blood clotting, night vision, nerves, digestion, skin	fruits, vegetables, proteins, milk
Minerals	fluid balance, nerve transmission, strong bones and teeth	fruits, vegetables, protein products
Water	chemical reactions, fluid replacement	in most foods

USDA Food Guide Pyramid

Fats, Oils, Sweets
Use sparingly



**Meat, Poultry, Fish,
Beans, Eggs, Nuts**
2-3 servings daily



Milk, Yogurt, Cheese
2-3 servings daily



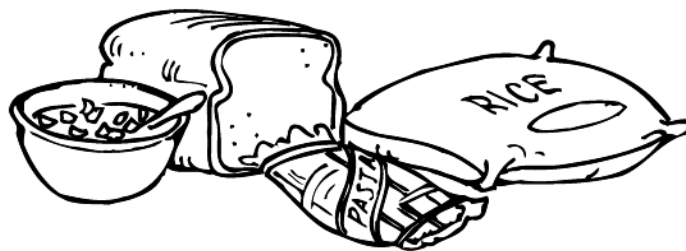
Fruits
2-4 servings daily



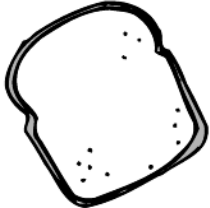


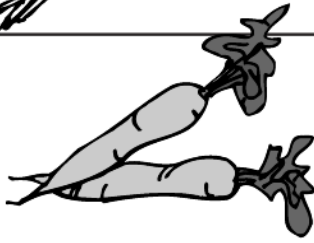




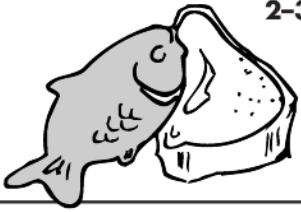

Vegetables
3-5 servings daily



**Bread, Cereal,
Rice, Pasta**
6-11 servings daily



What's in a Serving?

	Bread and Cereal Group 1 slice bread, bagel, or bun 1 ounce cold cereal 1 cup cooked cereal, rice, or pasta	
	Vegetable Group 1 cup raw, leafy vegetables 1 cup other vegetables, cooked or raw 3/4 cup vegetable juice	
	Fruit Group 1 medium raw fruit 1/2 cup cooked or canned fruit 3/4 cup fruit juice	
	Dairy Group 1 cup milk or yogurt 1 1/2 ounces natural cheese 1/2 ounce processed cheese	
	Protein Group 2-3 ounces cooked, lean meat, fish, or poultry 1/2 cup cooked, dried beans 1 egg 5 tablespoons peanut butter	



Investigation 1

Plan a Real Meal

Materials

See advance preparation on page 26.

- student record sheet on page 31, 3 copies per student
- transparencies of the three charts *Nutrients for Good Health*, *USDA Food Guide Pyramid*, and *What's in a Serving?* on pages 27–29
- photocopies of the three charts for each group
- crayons or markers
- large manila drawing or construction paper

Steps to Follow

1. Before beginning the activity, have students keep track of and list everything they eat and drink in a 24-hour period.
2. Using the *Nutrients for Good Health* transparency, hold a discussion about nutrients.
3. Display the *USDA Food Guide Pyramid* transparency. Explain how and why the pyramid system was designed and why it is a pyramid shape.
4. Display and discuss the *What's in a Serving?* transparency.
5. Distribute copies of the three charts.
6. Place students in groups of four to share their 24-hour food lists. Have them compare their lists with the food pyramid and decide whether they had a nutritious day.
7. Distribute manila paper to all students. Have them divide it into three sections and label the top of each section "Breakfast," "Lunch," and "Dinner." Tell students to design a one-day food plan consisting of three meals and two snacks. Have them plan meals that they like to eat but that also meet the USDA guidelines for a healthful diet.
8. Display the food plans around the room. Distribute the record sheets to students and have them analyze their classmates' food plans.
9. Hold a discussion about the food plans and the USDA guidelines.

Follow-Up

Have students examine the school lunch menu for a week and analyze where it meets the USDA nutritional requirements and where it falls short.

Name _____



Plan a Real Meal

Classmate's Name _____

Number of Servings from Each Food Group					
Breads	Veggies	Fruits	Dairy	Protein	Fats/Sweets

Based on the USDA guidelines, would you say this student planned a nutritious day? _____

Explain:

Classmate's Name _____

Number of Servings from Each Food Group					
Breads	Veggies	Fruits	Dairy	Protein	Fats/Sweets

Based on the USDA guidelines, would you say this student planned a nutritious day? _____

Explain:



Investigation 2

Testing Foods for Nutrients

Materials

- student record sheet on page 33, reproduced for each student
- iodine solution
- trays to hold materials
- droppers
- plastic dishes
- plastic knives
- small brown paper bags
- peanut butter
- bread
- potato slices
- lettuce leaves
- crackers
- fruit slices
- cheese slices or cubes
- newspaper

Steps to Follow

1. Make an iodine solution by mixing about one part iodine to four parts water. Use iodine that has **not** had the color removed.
2. Review nutrients and their importance. Emphasize that fats and carbohydrates (sugars and starch) supply the body with energy.
3. Tell students that they will test foods for starch by dabbing iodine on them. If a food contains starch, it will turn blue-black. They will then rub the food on a piece of brown paper bag and hold the bag up to the light. After any water dries, if the food contains fat, the bag will become translucent (allow light to shine through).
4. Place students in small groups. Have them cover their work tables with newspaper.
5. Distribute student record sheets, and then read them together. Have students complete their predictions individually.
6. Distribute a tray of materials to each group. Under your direction, have the class test the cracker for starch and for fat following steps 3 and 4 on the record sheet. Then have students record the information on their data tables.
7. Each group should test the other foods in the same manner and complete their record sheets.
8. Share class findings in a follow-up discussion.

Follow-Up

Have students bring in other foods to test.

Name _____



Testing Foods for Nutrients

Predictions

1. Which of the foods listed in the table below do you think contain starch? Give a reason for your prediction.

2. Which foods do you think contain fat? Give a reason for your prediction.

Procedure

3. Test the cracker for starch. Put a piece of cracker in a dish. Put a drop of iodine solution on the cracker. Did it turn blue-black? If so, it contains starch. Record your observations below.
4. Test the cracker for fat. Rub the cracker on a piece of a paper bag and hold the bag up to the light. Is there a translucent spot on the bag? If so, it contains fat. Record your observations below.
5. Test each of the other foods listed below. Record your data.

	Cracker	Bread	Potato	Peanut Butter	Cheese	Fruit	Lettuce
Contains Starch?							
Contains Fat?							

Conclusion

6. If you wanted to reduce your fat intake, which foods would you eat less of? Justify your answer by referring to your data table.
