

Nutrition and Your Health

Lesson 1 Nutrition During the Teen Years

Lesson 2 Nutrients

Lesson 3 Guidelines for Healthful Eating

Lesson 4 Food and Healthy Living



Analyzing Food Ads

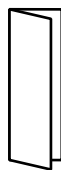
Your choice of foods can be influenced by media advertisements. Food industry advertisers create ads targeting certain groups of people:

- ▶ teens and children
- ▶ young adults
- ▶ married or unmarried people

Visit the Eye on the Media section at health.glencoe.com to learn more about how advertisers try to influence what you eat.

FOLDABLES™ Study Organizer

▶ Step 1



Fold a sheet of paper along the long axis.

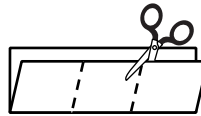
▶ Step 2

Turn the paper, and fold into thirds.



▶ Step 3

Cut the top layer along both folds. Label the tabs as shown.



Before You Read

Make this Foldable to record what you learn about the benefits of physical activity and the risks of physical inactivity. Begin with one sheet of plain 8½" x 11" paper or one sheet of notebook paper.

As You Read

Write down any questions you have about how each of these three factors influences your eating habits. As you read the chapter, write answers to your questions under the tabs.

SPOTLIGHT ON HEALTH

Using Visuals. Food and social activities often go together. Describe how friends and family influence your eating habits and food choices.

Nutrition During the Teen Years

Guide to Reading

Building Vocabulary

As you read this lesson, write each new highlighted term and its definition in your notebook.

- ▶ nutrition (p. 110)
- ▶ calories (p. 110)
- ▶ nutrients (p. 110)
- ▶ hunger (p. 111)
- ▶ appetite (p. 111)

Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Analyze** the relationship between nutrition, quality of life, and disease.
- ▶ **Evaluate** various influences on food choices.
- ▶ **Describe** the immediate and long-term benefits of nutrition on body systems.

Reading Strategy

Organize Information

- ▶ List the terms **Calories, Nutrients, Hunger, Appetite, Emotion, and Environment** on a sheet of paper. As you read, list the relevant factors under each term.

Quick Write

List five foods you like to eat. Describe why you like to eat each food.



Choosing fresh fruit as a snack is a good way to supply your body with the nutrients it needs.

What's your favorite healthful snack?

Picture yourself biting into a crisp, juicy apple or a slice of cheese pizza with zesty tomato sauce. Do these foods appeal to you? In this lesson, you will learn about the relationship between eating habits and total health. Enjoying a wide variety of healthful foods is an important part of good **nutrition**—the process by which the body takes in and uses food. Because not all foods offer the same benefits, making healthful food choices shows that you understand the impact of personal health behaviors on body systems.

The Importance of Good Nutrition

Good nutrition enhances your quality of life and helps prevent disease. It provides you with the calories and nutrients your body needs for maximum energy and wellness. **Calories**, or more correctly, kilocalories, are *units of heat that measure the energy used by the body and the energy that foods supply to the body*. **Nutrients** are *substances in food that your body needs to grow, to repair itself, and to supply you with energy*. Making healthy food choices will provide your body with the nutrients it needs to help you look your best and perform at your peak.



What Influences Your Food Choices?

Have you ever wondered why you choose the foods you do? Taste, of course, plays an important part in your choice of foods. You probably won't eat a food—even if you know it's healthful—if you don't like its taste. To gain insight into your eating habits, it's important to understand the difference between your physical *need* for food and your psychological *desire* for food—between hunger and appetite. Distinguishing between the two can help you make more healthful food choices. It is also important that you apply critical thinking skills to analyze marketing and advertising methods for influencing food choices.

Hunger and Appetite

Hunger, an unlearned, inborn response, is *a natural physical drive that protects you from starvation*. When your stomach is empty, its walls contract, stimulating nerve endings. The nerves signal your brain that your body needs food. When you eat, the walls of the stomach are stretched and the nerve endings are no longer stimulated. You have satisfied your physical need for food.

The physical need for food isn't the only reason people eat. Have you ever eaten something “just to be sociable” or in response to a familiar sensation—for example, the aroma of freshly baked bread? In such cases you are eating in response to appetite rather than to hunger. **Appetite** is *a desire, rather than a need, to eat*. Whether you are responding to hunger or to appetite when you eat, many factors influence your food choices and eating habits, including your emotions and a number of factors in your environment.

Food and Emotions

Food is sometimes used to meet emotional needs. For example, do you tend to eat more—or less—when you feel stressed, frustrated, or depressed? Do you sometimes snack just because you're bored? Do you reward yourself with a food treat when you've achieved a goal? Using food to relieve tension or boredom or to reward yourself can result in overeating and unhealthy weight gain. On the other hand, if you lose interest in eating whenever you're upset, you may miss getting enough of the nutrients your body needs. Recognizing when emotions are guiding your food choices can help you break such patterns and improve your eating habits.

Food and Your Environment

A number of environmental factors influence food choices:

- ▶ **Family, friends, and peers.** Many of your eating habits were shaped as you were growing up, when adults planned your meals. Now you may prefer certain foods because you've grown up eating them. Friends and peers can influence you to try new foods.



Managing Your Eating Habits

To manage your eating habits:

- ▶ **Try not to be overly influenced by others in making food choices.** Make choices with your health in mind—not just your appetite.
- ▶ **Pay attention to quantity.** Start off with reasonably sized servings, and, if possible, use a smaller plate. Listen to your body's “hunger clock” rather than to your appetite. When you feel full, stop eating. It takes 20 minutes for your stomach to signal your brain that it is satisfied.
- ▶ **Make something other than food the focus of social occasions.** If you are getting together with friends, for example, consider a setting other than a restaurant, such as a park or community center.



Describe What is the difference between hunger and appetite?

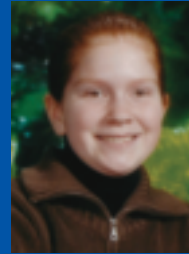


Resilient TEENS

When 14-year-old Ali Hoy's mother and father split up, she was relieved. The late night arguments and shouting stopped. Ali admits to being confused and embarrassed by all that was happening in her life. "I was really sad and worried at first," she says. "Then Mom took me to a counselor, and things got better."

Today, Ali's outlook is different. Her mother remarried and she's now part of a busy, happy family. She's studying oil painting, pottery, and guitar. She's involved in a variety of clubs and activities, including 4H and basketball. She's also become the family cook, preparing healthy dinners most evenings that are ready when her family comes home.

Ali has decided to become a professional chef. In her spare time, she writes away to culinary schools throughout the United States, requesting applications so that she can start right after she finishes high school in a couple of years. "I think all that stuff with the divorce made me tough," she says. "I know I'm strong."



"I was really sad and worried at first, then Mom took me to a counselor, and things got better."




Describe How did Ali use her love of cooking to bring her family together?

- ▶ **Cultural and ethnic background.** Your food choices may reflect your cultural heritage or ethnic background. Ethnic and cultural diversity both enrich and challenge healthy living. Some ethnic groups may eat more fruits and vegetables. Others may rely on using oils and salt.
- ▶ **Convenience and cost.** Convenience and cost of foods may be top priorities for some people. For example, busy families may rely on foods that can be prepared quickly, such as microwavable meals.

- **Advertising.** Advertisers spend millions of dollars each year to influence your decisions about food. Part of being an informed consumer involves carefully analyzing the health messages delivered through food advertisements in the media. Then you, rather than advertisers, will control your food choices.

Nutrition Throughout the Life Span

Good nutrition is essential for health throughout life but particularly during adolescence—one of the fastest periods of growth you’ll experience. Healthful eating provides you with the nutrients you need for growth and development, gives you energy for sports and other activities, enables you to stay mentally alert, and helps you feel good and look your best. A healthful and balanced eating plan also helps prevent unhealthy weight gain, obesity, and type 2 diabetes—conditions that have become more common among children and teens in recent years. Making healthful food choices now also lowers your risk of developing many life-threatening conditions as you get older. These conditions include heart disease, stroke, certain cancers, and osteoporosis.

 **Eating nutritious meals as a family can contribute to the health of all family members.**



LESSON

1

REVIEW

Reviewing Facts and Vocabulary

1. Briefly explain the relationship between nutrition, quality of life, and disease.
2. Define the term *appetite*.
3. Name three influences—other than family—on people’s food choices.

Thinking Critically

4. **Evaluating.** Give examples of how your family has influenced your food choices.
5. **Applying.** How does what you eat now affect your health, both now and as you grow older?

Applying Health Skills

Analyzing Influences. Look through magazines and other printed media to find five food advertisements that contain specific health claims. Analyze the health message that each ad delivers about its product. How might it influence your food choice? Present your findings in the form of a table.

After You Read

Describe. Write a list of three influences on your food choices. For each influence, list at least two ways that it can have a positive or negative effect on what you eat.



Nutrients

Guide to Reading

Building Vocabulary

As you read this lesson, write each new highlighted term and its definition in your notebook.

- ▶ carbohydrates (p. 114)
- ▶ fiber (p. 115)
- ▶ proteins (p. 116)
- ▶ lipid (p. 117)
- ▶ vitamins (p. 119)
- ▶ minerals (p. 120)

Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Describe** the functions of the six basic nutrients in maintaining health.
- ▶ **List** nutrients in a variety of foods.
- ▶ **Explain** the relationship between nutrition, health promotion, and disease prevention.

Reading Strategy

Organize Information

- ▶ **Write** the word *nutrients*. Surround it with six circles titled **Carbohydrates, Proteins, Fats, Vitamins, Minerals, and Water**. As you read, list the relevant factors in each circle.

Quick Write

Write a brief paragraph describing a nutritious meal that you would enjoy.



Each of these foods is rich in one or more nutrients.

Which of these foods do you eat regularly?

To survive, the human body needs the nutrients found in food. These nutrients are classified into six groups: carbohydrates, proteins, fats, vitamins, minerals, and water. Each plays a unique part in maintaining the normal growth and functioning of your body. Health-literate teens understand how nutrient and energy needs vary in relation to gender, activity level, and stage of life.

Carbohydrates

Carbohydrates are the starches and sugars present in foods. Made up of carbon, oxygen, and hydrogen, carbohydrates are the body's preferred source of energy, providing four calories per gram. Your body uses energy from carbohydrates to perform every task, including sitting and reading the words on this page. Depending on their chemical makeup, carbohydrates are classified as either simple or complex. Most nutritionists recommend that 55 to 60 percent of your daily calories come from carbohydrates, mainly complex carbohydrates.

Simple and Complex Carbohydrates

Simple carbohydrates are *sugars*, such as fructose and lactose (found in fruit and milk, respectively). You're probably most familiar with the simple carbohydrate sucrose. It occurs naturally in many plants, such as sugarcane and sugar beets, and is refined to make table sugar. Sugars are added to many manufactured food products.

Complex carbohydrates, or *starches*, are found in whole grains, seeds, nuts, legumes (dried peas and beans), and tubers (root vegetables such as potatoes). The body must break down complex carbohydrates into simple carbohydrates before it can use them for energy.

The Role of Carbohydrates

Your body converts all carbohydrates to glucose, a simple sugar that is the body's main source of energy. Glucose that your body does not use right away is stored in the liver and muscles as a starch-like substance called glycogen (GLI-coh-jen). When more energy is needed, your body converts the glycogen back to glucose. However, it's possible to take in more carbohydrates than your body can use right away or can store as glycogen. When this happens, your body converts and stores the excess carbohydrates as body fat. You can avoid consuming excess carbohydrates by learning to make informed food choices and maintaining healthful eating habits.


Fiber

Fiber is an indigestible complex carbohydrate that is found in the tough, stringy parts of vegetables, fruits, and whole grains. Although it can't be digested and used as energy, fiber helps move waste through the digestive system and thereby helps prevent intestinal problems such as constipation. Eating enough fiber throughout your life may promote health by reducing your risk of heart disease. Some types of fiber have also been shown to help control diabetes by reducing blood glucose levels.

To stay healthy, eat 20 to 35 grams of fiber each day. Fruits and vegetables with edible skins and whole-grain products such as bran cereals, oatmeal, and brown rice are excellent sources of fiber.

To get 20–35 grams of fiber daily:

- ▶ Start your day with a whole-grain breakfast cereal, such as oatmeal.
- ▶ Choose whole fruit instead of fruit juice.
- ▶ Make sure you eat at least five servings of fruits and vegetables each day.
- ▶ Select high-fiber snacks (popcorn, raw vegetables, nuts, and fruit with edible skins).
- ▶ Eat legumes at least two or three times a week.
- ▶ Substitute whole-grain ingredients (whole-wheat flour, bran) for low-fiber ingredients (white flour) in recipes whenever possible.

 Each of these foods is a rich source of carbohydrates.



Proteins

A vital part of every cell in your body, **proteins** are *nutrients that help build and maintain body cells and tissues*. Proteins are made of long chains of substances called amino acids. Your body can manufacture all but 9 of the 20 different amino acids that make up proteins. The 9 that your body can't make are called *essential amino acids*—you must get them from the foods you eat.



Explain What is fiber?

Complete and Incomplete Proteins

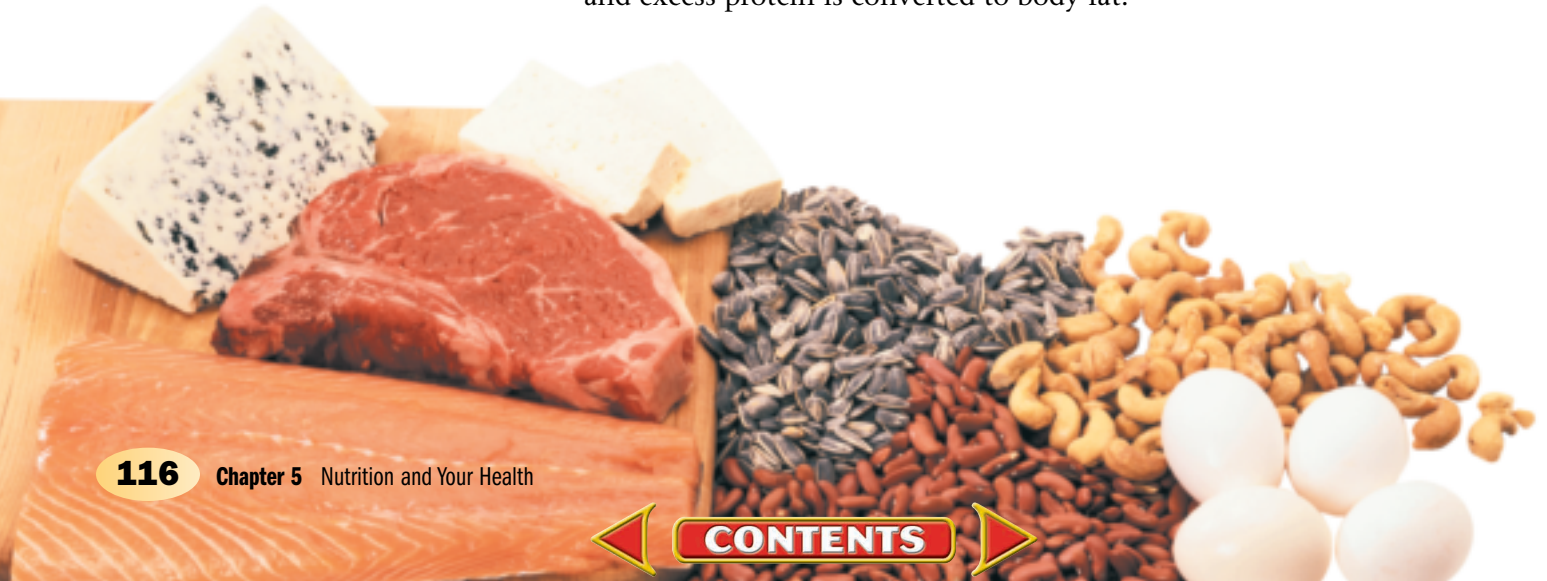
The proteins in food are classified into two groups, *complete proteins* and *incomplete proteins*.

- ▶ **Complete proteins** contain adequate amounts of all nine essential amino acids. Animal products—such as fish, meat, poultry, eggs, milk, cheese, and yogurt—and many soybean products are good sources of complete proteins.
- ▶ **Incomplete proteins** lack one or more of the essential amino acids. Sources include beans, peas, nuts, and whole grains. Consuming a combination of incomplete proteins, for example, rice and beans or peanut butter and bread, is equivalent to consuming a complete protein. You don't have to combine the incomplete proteins in one meal to get this benefit, you just need to eat them both over the course of the day.

The Role of Proteins

Proteins have many functions. During major growth periods, such as infancy, childhood, adolescence, and pregnancy, the body builds new cells and tissues from the amino acids in proteins. Throughout your life your body replaces damaged or worn-out cells by making new ones from protein. The body also uses protein to make enzymes, hormones, and antibodies. Enzymes are substances that control the rate of chemical reactions in your cells. Hormones regulate the activities of different cells, and antibodies help identify and destroy disease-causing organisms. Proteins also supply the body with energy, although they are not the body's main energy source. Like carbohydrates, proteins provide four calories per gram and excess protein is converted to body fat.

Each of these foods is a good source of protein. Which of these foods contain complete proteins? Which contain incomplete proteins?



Fats

Some fat in the diet is necessary for good health. Fats are a type of **lipid** (LIHP•ehd), a *fatty substance that does not dissolve in water*. Fats provide more than twice the energy of carbohydrates or proteins—9 calories per gram.

The building blocks of fats are called fatty acids, molecules made mostly of long chains of carbon atoms, with pairs of hydrogen atoms and single oxygen atoms attached. Fatty acids that the body needs, but cannot produce, are called *essential fatty acids*. Depending on their chemical composition, fatty acids are classified as either saturated or unsaturated. Most fats are a mixture of these two types.

Saturated and Unsaturated Fatty Acids

A *saturated fatty acid* holds all the hydrogen atoms it can. Fats high in saturated fatty acids are usually solid at room temperature. Animal fats and tropical oils—such as palm oil, palm kernel oil, and coconut oil—have a high proportion of saturated fatty acids. Fats in beef, pork, egg yolks, and dairy foods are higher in saturated fatty acids than are the fats in chicken and fish. A high intake of saturated fats is associated with an increased risk of heart disease.

Most vegetable fats—including olive, canola, soybean, corn, and cottonseed oils—contain a high proportion of unsaturated fatty acids. An *unsaturated fatty acid* has at least one unsaturated bond—a place where hydrogen can be added to the molecule. Unsaturated fats are usually liquids (oils) at room temperature. In contrast to saturated fats, unsaturated fats have been associated with a reduced risk of heart disease.

The Role of Fats

Besides providing a concentrated form of energy, fats are essential for other important health functions. They transport vitamins A, D, E, and K in your blood and serve as sources of *linoleic* (lih•noh•LAY•ihk) *acid*, an essential fatty acid that is needed for growth and healthy skin. Fats also add flavor and texture to food, and, because they take longer to digest than carbohydrates or proteins, they help satisfy hunger longer than other nutrients do. Foods that are high in fats also tend to be high in calories, and consuming excess amounts of fat increases your risk of unhealthful weight gain and obesity. Most nutritionists recommend eating only moderate amounts of fat—no more than 20 to 30 percent of your total daily calorie intake.

Did You Know?

There are two types of unsaturated fatty acids:

- Monounsaturated fatty acids have only one unsaturated bond. These fatty acids are liquid at room temperature but start to solidify when refrigerated. They are found in olive oil and canola oil.
- Polyunsaturated fatty acids have more than one unsaturated bond. These fatty acids are liquid both at room temperature and in the refrigerator. They are found in safflower oil and corn oil.



The foods pictured here all contain fat. **Classify each food shown here as a source of saturated fat or unsaturated fat.**

Hands-On Health **ACTIVITY**

Reducing Your Intake of Fats

Consuming too much fat can increase the risk of heart disease and unhealthy weight gain. Most teen boys need no more than 84 grams of fat each day. Most teen girls need no more than 66 grams each day. Analyzing the amount of fat in fast foods and snacks can help you see how to reduce your consumption of fats.

What You'll Need

- paper and pencil

What You'll Do

1. List every fast-food and snack item you eat and the portion size of each over the next three days. Next to each item, record how many grams of fat were in that portion. You can find fat grams in snacks by reading the label on packaged food products or by

using a computerized dietary analysis program. Fast-food restaurants can provide a list of nutritional information about their products.

2. Determine the total number of fat grams you consumed over the three-day period. Then divide by three to find your daily average. What did you discover? Were there any surprises?
3. Using your dietary analysis as a guide, set a goal to consume a healthy intake of fat for the next three days. Write a detailed plan describing the steps you will take to reach your goal.

Apply and Conclude

Follow your plan for three days. As a class, share low-fat foods that you tried and enjoyed.



The Role of Cholesterol

Cholesterol is a waxy lipidlike substance that circulates in blood. Your body uses the small amount it manufactures to make cell membranes and nerve tissue and to produce many hormones, vitamin D, and bile, which helps digest fats. Excess blood cholesterol is deposited in arteries, including the arteries of the heart. This increases the risk of heart disease.

High cholesterol may be hereditary, and cholesterol levels tend to rise as people age. Although heredity and age are out of your control, you can significantly reduce your risk of heart disease by eating a diet low in saturated fats and cholesterol. A high intake of saturated fats is linked to increased cholesterol production. Dietary cholesterol is found only in animal products such as egg yolks, meats (especially organ meats), and high-fat milk products. Losing excess weight can also lower cholesterol levels.

Vitamins

Vitamins are compounds that help regulate many vital body processes, including the digestion, absorption, and metabolism of other nutrients. Vitamins are classified as either water- or fat-soluble.

Water-soluble vitamins, listed in **Figure 5.1**, dissolve in water and pass easily into the blood during digestion. The body doesn't store these vitamins, so you need to replenish them regularly through the foods you eat. Fat-soluble vitamins are absorbed, stored, and transported in fat. Your body stores these vitamins in your fatty tissue, liver, and kidneys. Excess buildup of these vitamins in your body can be toxic. **Figure 5.2** on page 120 provides more information about fat-soluble vitamins.



Compare and Contrast

What is the difference between water-soluble and fat-soluble vitamins?

FIGURE 5.1

WATER-SOLUBLE VITAMINS


Vitamin/Amount Needed Each Day	Role in Body	Food Source
C (ascorbic acid) Teen female: 60 mg Teen male: 60 mg	protects against infection, helps form connective tissue, helps heal wounds, maintains elasticity and strength of blood vessels, promotes healthy teeth and gums	citrus fruits, cantaloupe, tomatoes, cabbage, broccoli, potatoes, peppers
B₁ (thiamine) Teen female: 1.1 mg Teen male: 1.5 mg	converts glucose into energy or fat, contributes to good appetite	whole-grain or enriched cereals, liver, yeast, nuts, legumes, wheat germ
B₂ (riboflavin) Teen female: 1.3 mg Teen male: 1.8 mg	essential for producing energy from carbohydrates, fats, and proteins; helps keep skin healthy	milk, cheese, spinach, eggs, beef liver
Niacin Teen female: 15 mg Teen male: 20 mg	important for maintenance of all body tissues; helps in energy production; needed by body to utilize carbohydrates, to synthesize body fat, and for cell respiration	milk, eggs, poultry, beef, legumes, peanut butter, whole grains, enriched and fortified grain products
B₆ Teen female: 1.5 mg Teen male: 2.0 mg	essential for amino acid and carbohydrate metabolism, helps turn the amino acid <i>tryptophan</i> into serotonin (a messenger to the brain) and niacin	wheat bran and wheat germ, liver, meat, whole grains, fish, vegetables
Folic acid Teen female: 180 mcg Teen male: 200 mcg	necessary for production of genetic material and normal red blood cells, reduces risk of birth defects	nuts and other legumes, orange juice, green vegetables, folic acid-enriched breads and rolls, liver
B₁₂ Teen female: 2.0 mcg Teen male: 2.0 mcg	necessary for production of red blood cells and for normal growth	animal products such as meat, fish, poultry, eggs, milk, and other dairy foods; some fortified foods



FIGURE 5.2

FAT-SOLUBLE VITAMINS

Vitamin/Amount Needed Each Day	Role in Body	Food Source
A Teen female: 800 mcg Teen male: 1,000 mcg	helps maintain skin tissue, strengthens tooth enamel, promotes use of calcium and phosphorous in bone formation, promotes cell growth, keeps eyes moist, helps eyes adjust to darkness, may aid in cancer prevention	milk and other dairy products, green vegetables, carrots, deep-orange fruits, liver
D Teen female: 5 mcg Teen male: 5 mcg	promotes absorption and use of calcium and phosphorous, essential for normal bone and tooth development	fortified milk, eggs, fortified breakfast cereals, sardines, salmon, beef, margarine; produced in skin exposed to sun's ultraviolet rays
E Teen female: 8 mg Teen male: 10 mg	may help in oxygen transport, may slow the effects of aging, may protect against destruction of red blood cells	vegetable oils, apples, peaches, nectarines, legumes, nuts, seeds, wheat germ
K Teen female: 55 mcg Teen male: 65 mcg	essential for blood clotting, assists in regulating blood calcium level	spinach, broccoli, eggs, liver, cabbage, tomatoes

 You get many of the minerals your body needs from these types of foods.



Minerals

Minerals are substances that the body cannot manufacture but that are needed for forming healthy bones and teeth and for regulating many vital body processes. Several key minerals are described in **Figure 5.3**.

Water

Water is vital to every body function. It transports other nutrients to and carries wastes from your cells. Water also lubricates your joints and mucous membranes. It enables you to swallow and digest foods, absorb other nutrients, and eliminate wastes. Through perspiration, water helps maintain normal body temperature. It's important to drink at least 8 cups of water a day to maintain health. Plain water, milk, and juice are the best sources of this nutrient. Beverages containing caffeine, such as tea, coffee, and some soft drinks, are not good choices—they cause you to lose some water through increased urination. Certain foods, such as fruits and vegetables, also contain some water.

FIGURE 5.3

SOME IMPORTANT MINERALS

Mineral/Amount Needed Each Day	Role in Body	Food Source
Calcium Teen female: 1,300 mg Teen male: 1,300 mg	building material of bones and teeth (skeleton contains about 99% of body calcium), regulation of body functions (heart muscle contraction, blood clotting)	dairy products; leafy vegetables; canned fish with soft, edible bones; tofu processed with calcium sulfate
Phosphorous Teen female: 1,250 mg Teen male: 1,250 mg	combines with calcium to give rigidity to bones and teeth, essential in cell metabolism, helps maintain proper acid-base balance of blood	milk and most other dairy foods, peas, beans, liver, meat, fish, poultry, eggs, broccoli, whole grains
Magnesium Teen female: 360 mg Teen male: 410 mg	enzyme activator related to carbohydrate metabolism, aids in bone growth and muscle contraction	whole grains, milk, dark green leafy vegetables, legumes, nuts
Iron Teen female: 15 mg Teen male: 12 mg	part of the red blood cells' oxygen and carbon dioxide transport system, important for use of energy in cells and for resistance to infection	meat, shellfish, poultry, legumes, peanuts, dried fruits, egg yolks, liver, fortified breakfast cereal, enriched rice

LESSON

2

REVIEW

Reviewing Facts and Vocabulary

1. Compare the energy provided to the body by carbohydrates, proteins, and fats.
2. Analyze the relationship between good nutrition, health promotion, and disease prevention: How can reducing your saturated fat intake help lower your risk of heart disease?
3. What are *vitamins*?

Thinking Critically

4. **Analyzing.** Your friend Steve wants to cut down on his intake of saturated fats and cholesterol. What advice would you give him?
5. **Synthesizing.** What are the benefits of eating a variety of fruits and vegetables?

Applying Health Skills

Goal Setting. Copy your school's weekly lunch menus, and examine each day's options. Using what you've learned about nutrients in this lesson, list the most healthful food choices available each day. Then set a goal to eat healthful school lunches for the next week. Use the goal-setting steps to help you create a plan.

After You Read

Explain. Write a summary explaining why it's important to eat a well-balanced diet that includes all of the nutrients listed in this lesson.



Guidelines for Healthful Eating

Guide to Reading

Building Vocabulary

As you read this lesson, write each new highlighted term and its definition in your notebook.

- ▶ *Dietary Guidelines for Americans* (p. 122)
- ▶ *MyPyramid* (p. 124)

Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Apply** balance, variety, and moderation when making food choices.
- ▶ **Describe** the effects of healthful eating behaviors on body systems.
- ▶ **Formulate** healthful meals and snacks as part of a balanced diet.

Reading Strategy

Predict

- ▶ Scan the headings, sub-headings, and pictures in this lesson. Write at least three questions that you believe will be answered in the reading.

Quick Write

Write a brief paragraph about the importance of eating a variety of different foods.



Choosing nutritious foods from the thousands of products available can be a challenge. *What are some factors to consider when shopping for food?*

Guidelines for Healthful Eating

No single food provides all the nutrients your body needs at all stages of your life.

Dietary Guidelines for Americans


The U.S. Department of Agriculture (USDA) and the Department of Health and Human Services (DHHS) have published the ***Dietary Guidelines for Americans***. The guidelines are *recommendations about food choices for all healthy Americans age 2 and over*. The guidelines highlight three keys to a healthy lifestyle:

- ▶ Make smart choices from every food group.
- ▶ Find a balance between food and physical activity.
- ▶ Get the most nutrition out of your calories.

Making Smart Choices from Every Food Group

The best way to eat a balanced variety of nutrient-rich foods is by carefully choosing foods from every food group every day.

- ▶ Focus on a variety of fruits, whether fresh, frozen, canned, or dried. Try fruits other than the usual apples, bananas, oranges, and strawberries. Mango, guava, cantaloupe, papaya, and kiwi can add variety to your diet. To ensure adequate fiber intake, eat whole fruits rather than juice.
- ▶ Vary your veggies by eating more dark green and leafy vegetables and orange vegetables. Legumes are especially rich in fiber and should be consumed several times a week.
- ▶ Make half your grains whole. Look to see that grains are referred to as “whole” in the list of ingredients.
- ▶ Eat calcium-rich foods—such as low-fat or fat-free milk, yogurt, or cottage cheese. If you don’t or can’t consume milk, choose lactose-free milk products and/or calcium fortified foods and beverages.
- ▶ Go lean on meat protein and add more beans—such as pinto beans, kidney beans, black beans, garbanzo beans, and lentils. Eat more poultry and fish.

 **Choosing a variety of fruits and vegetables each day is an important part of building a healthy base.**
What fruits and vegetables would you choose as an afternoon snack?

Balancing Food and Physical Activity

As well as healthful eating, regular physical activity is important to staying well. Physical activity helps you control body weight by balancing the calories you take in as food with the calories you expend every day. The following guidelines will help you find balance between these needs.

- ▶ Aim for a healthy weight. Maintaining your weight helps you look and feel good. It also lowers your risk for heart disease, some cancers, and diabetes.
- ▶ Be physically active for 60 minutes every day, or almost every day.
- ▶ For even greater health benefits and to help control body weight, increase the intensity or the amount of time that you are physically active. About 60 minutes a day may be needed to prevent weight gain.





TOPIC MyPyramid

Go to health.glencoe.com for more information on the *Dietary Guidelines*.

ACTIVITY Create an individual eating plan based on the *Dietary Guidelines*, your age, and your activity level.

MyPyramid

MyPyramid is the USDA's food pyramid, shown in **Figure 5.4**, and is a useful tool for making healthful food and activity choices. Each of the colored bars that runs down the length of the pyramid depicts one of the food groups, including grains, vegetables, fruits, milk, and meat and beans. Fats, oils, and sweets are not a food group and should be consumed sparingly. The width of each bar shows you how much of that food you should eat in comparison to the other foods listed on the pyramid. A wider bar means that you should choose more of the foods in that group. As you can see, the grains and vegetables bars are the widest on the pyramid. The meat and beans bar is among the narrowest on the pyramid. This means that a larger percentage of the foods you eat should fall into the grains and vegetables categories rather than meats and beans.

FIGURE 5.4

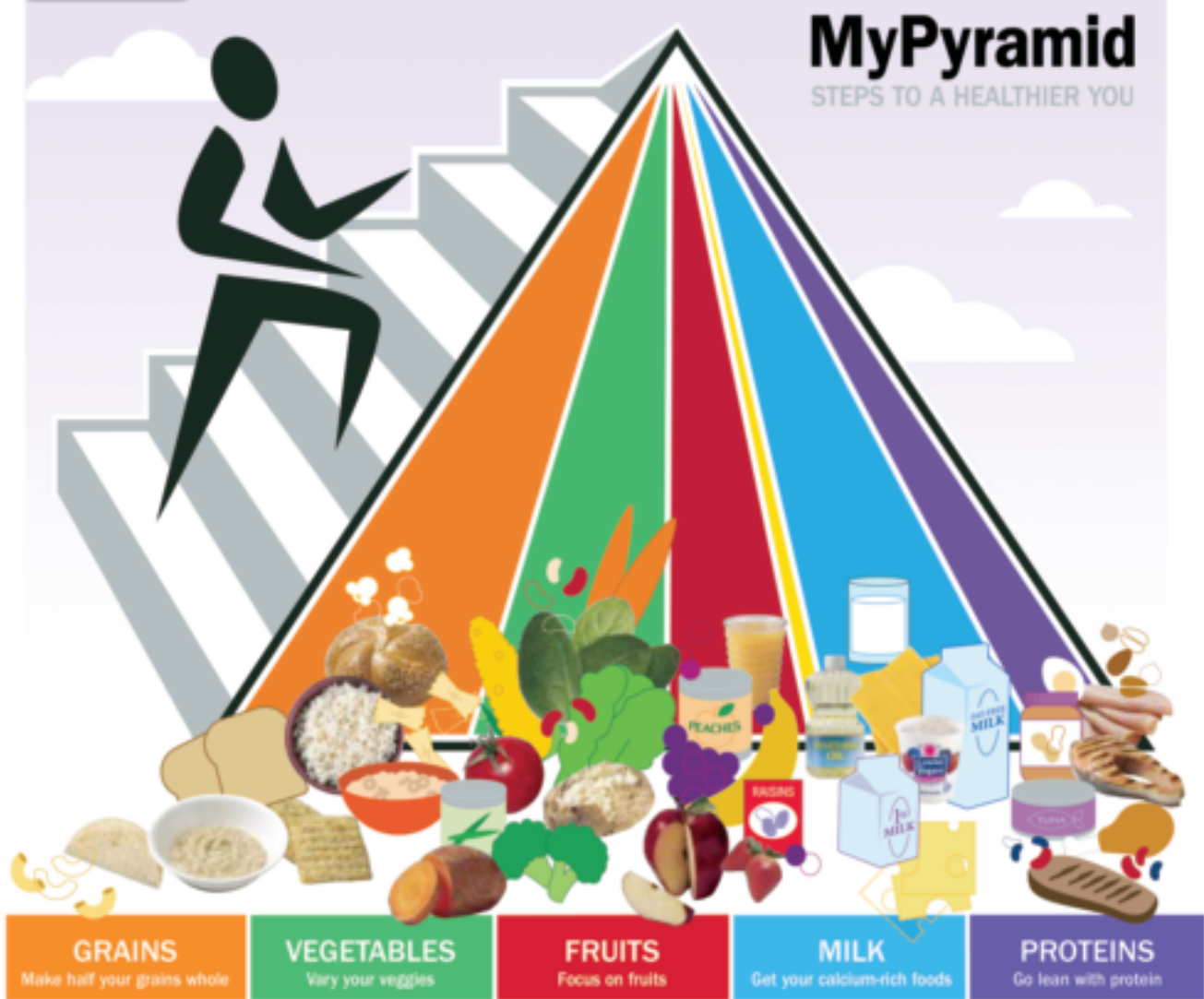


FIGURE 5.5

CALORIE LEVELS

Age	Females			Males		
	Sedentary*	Mod. Active*	Active*	Sedentary*	Mod. Active*	Active*
14	1800	2000	2400	2000	2400	2800
15	1800	2000	2400	2200	2600	3000
16	1800	2000	2400	2400	2800	3200
17	1800	2000	2400	2400	2800	3200
18	1800	2000	2400	2400	2800	3200

*The number of calories you consume each day is directly related to your activity level. Sedentary means less than 30 minutes of moderate physical activity each day. Moderately Active refers to at least 30 to 60 minutes a day of moderate physical activity. Active means 60 or more minutes a day of moderate physical activity.

Understanding Serving Sizes

In addition to making smart food choices, it's important to make sure that you don't eat more than the correct portion size. Understanding portion sizes will help you see how much food is actually being recommended and will help you practice control. A portion is how much of a food you eat in one meal. Visualizing some common objects can help you estimate portion sizes and control the number of servings you eat. A medium apple, or one portion, is about the size of a tennis ball. One serving of meat is about the size of a regular computer mouse. A piece of meat twice this size equals two servings.

Getting the Most Nutrition from Your Calories

The amount of food you eat is directly related to your activity level. Active teens can eat more without gaining weight than inactive teens. To determine your range of recommended calories, see **Figure 5.5**.

The *Dietary Guidelines* define active as a lifestyle that includes physical activity equivalent to walking more than three miles per day at a pace of three to four miles per hour. When making food choices, consider your activity level and how many calories you believe you will use during the day. You could use up your entire calorie requirements for a day on a few high-calorie items.

CHARACTER CHECK

Citizenship. Citizenship means doing what you can to improve your community. For example, there may be people in your community who go hungry. **Find out how to organize an effort to collect nonperishable food items for a local food bank or homeless shelter. How could this benefit the whole community?**



Avoiding foodborne illness

To prepare, handle, and store food safely:

- ▶ Wash your hands before handling any foods.
- ▶ Clean food-contact surfaces, fruits, and vegetables. To avoid spreading bacteria to other foods, meat and poultry should not be washed or rinsed.
- ▶ Separate raw, cooked, and ready-to-eat foods while shopping, preparing, or storing.
- ▶ Cook meat, poultry, and fish to safe internal temperatures to kill microorganisms.
- ▶ Chill perishable foods promptly and thaw foods properly.



Explain How can the *Dietary Guidelines* help you make healthy food choices?

Moderation in Fats

To maintain good health, it is necessary to consume some dietary fats. However, the type of fat makes a difference to heart health, and the total amount consumed is also important. The *Dietary Guidelines* recommend that teens keep their total fat intake to no more than 35 percent of daily calories. The *Guidelines* also recommend that most fats come from sources such as fish, nuts, and vegetable oils. Eating less fat, especially saturated and trans fats, will lower your risk of developing cardiovascular disease. If you eat high-fat foods at one meal, eat foods that are lower in fats at other meals.

Moderation in Sugar

You might think that you don't eat much added sugar, but sugars are hidden many foods, including prepared foods. You can moderate your sugar intake by

- ▶ learning to identify added sugars by their names on food packages. Corn syrup, honey, and molasses are all types of sugar, as are ingredients ending with -ose, such as sucrose, fructose, and maltose.
- ▶ balancing foods that have added sugars with those that have less added sugars.
- ▶ limiting your intake of foods that have added sugars but few other nutrients. For example, choose 100 percent fruit juice or water instead of regular soda.
- ▶ choosing fresh fruits or canned fruits packed in water or juice.

Moderation in Salt

Sodium is an essential mineral. It helps transport nutrients into your cells and helps move wastes out. It also helps maintain normal blood pressure and nerve function. However, most Americans consume far too much salt. Consuming less salt can reduce your chances of developing high blood pressure and may also benefit your skeletal system by decreasing the loss of calcium. Try these tips to moderate your salt intake.

- ▶ Read the Nutrition Facts panel on food labels to learn how much sodium a serving contains. Choose foods that are low in sodium (less than 140 mg or 5 percent of the Daily Value [DV]).
- ▶ When eating at restaurants, ask for foods that are prepared without salt or salty flavorings or with reduced amounts of them.
- ▶ Taste foods before you salt them, and then go easy with the salt shaker. Better yet, season foods with herbs and spices instead of with salt.
- ▶ Choose fresh fruits and vegetables often.



Real-Life Application

Smart Snacking

Eating several small snacks each day can help growing teens get the nutrients they need. You can choose snacks that promote good health without adding too much fat or too many calories.

Nutrition Facts	
Serving Size 1 cookie (17g)	
Servings Per Container about 27	
Amount Per Serving *	
Calories 90	Calories from Fat 45
% Daily Value*	
Total Fat 5g	9%
Saturated Fat 2.5g	13%
Trans Fat	
Cholesterol 5mg	2%
Sodium 80mg	3%
Total Carbohydrate 11g	4%
Dietary Fiber 0g	0%
Sugars 6g	
Protein 1g	
Vitamin A 0%	Vitamin C 0%
Calcium 0%	Iron 2%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

ACTIVITY

In small groups, examine the snack labels that your group or teacher has brought to class. Read labels to identify snacks that are low in fat and sugar. In a paragraph, explain other ways the information on labels can help you choose nutritious snacks.

Calories from Fat

Look at this section of the Nutrition Facts panel to find out how much fat is in the snack you are choosing.

Total Fat

This gives you an overview of the fat in the snack. The amount of fat is listed in grams. Remember that fats provide 9 calories per gram, so even small amounts of fats can add many calories.

Saturated Fat

This tells how much of the fat in the snack is saturated. Remember, limiting saturated fats can help reduce the risk of heart disease.

Trans Fat

This tells how much of the fat in the snack is *trans* fat. Keep consumption of *trans* fat low: 5% or less is low; 20% or more is high.

Total Carbohydrate

Under this heading you'll find information about sugars. These, too, are listed in grams. Carbohydrates provide 4 calories per gram.

Healthful Eating Patterns

Whether you eat three meals a day or even more “mini-meals,” *variety*, *moderation*, and *balance* are the foundation of a healthful eating plan. Many people, including teens, find making healthful food choices particularly challenging when having breakfast, snacking, and eating out. Keep in mind that nutrition guidelines apply to all of your daily food choices, not to just a single meal or food. Any food that supplies calories and nutrients can be part of a healthful eating plan. You don't have to deprive yourself of your favorite foods. With a little planning, you can fit them into your diet.

Reading Check

Cause and Effect How does healthful eating help you stay healthy?



Many types of foods can be part of a healthy breakfast. Name three nontraditional breakfast foods that you might like to try.

The Importance of Breakfast

You’ve probably heard the saying, “Breakfast is the most important meal of the day.” While you sleep, your body uses energy for functions such as breathing and keeping your heart beating. By the time you wake up, your body needs a fresh supply of energy. Studies show that eating a nutritious breakfast improves mental and physical performance and reduces fatigue later in the day. If you eat breakfast, you tend to perform better in school, get better grades, and miss fewer days of school. Eating breakfast may also help you maintain a healthy weight. Skipping this meal may cause you to overeat later in the day.

Breakfast foods don’t have to be “traditional,” such as cereal or eggs. Try eating peanut butter on toast, or a stuffed tomato. To get enough vitamin C, add citrus juice, fruit, or tomato juice to your meal. Breakfast is also a good time to eat a high-fiber cereal and get one calcium-rich serving of milk, cheese, or yogurt.

Nutritious Snacks

A healthful eating plan can include sensible snacks. When you think about snacks, you might think of potato chips, soft drinks, and candy bars. These foods contain a lot of calories but very few nutrients. They may also be high in fat, added sugars, or salt. More healthful snacks include whole-grain products, fruits, and vegetables. If you have practice or a game after school, pack some fresh fruit, cut-up vegetables, string cheese, or a handful of unsalted nuts to avoid eating less healthful snacks. **Figure 5.6** lists some healthful snack items.

FIGURE 5.6


SENSIBLE SNACKS

Food	Food Group	Total Calories per Serving	Calories from Fat
Air-popped popcorn, 3 cups (plain)	Grains	23	0
Apple, 1 medium	Fruit	80	0
Bagel, ½ (small, 2 oz.)	Grains	83	10
Bread stick, 1	Grains	42	6
Frozen juice bar, 4 oz.	Fruit	75	0
Skim milk, 1 cup	Milk	90	0
Sugar-free gelatin (½ cup) with ½ cup sliced banana	Fruit	76	0
Graham cracker squares, 3	Grains	80	15
Pretzel sticks, 50 small	Grains	60	9
Fat-free, sugar-free yogurt, 6 oz.	Milk	86	0

Eating Out, Eating Right

It's important that you learn to develop a personal healthful eating plan that incorporates food choices outside the home setting. This shows that you know various strategies when applying the decision-making process regarding healthy habits. Be aware that many menu items may be fried or topped with mayonnaise, butter, or high-fat sauces. For less fat, order foods that are grilled, baked, or broiled, and ask that high-fat sauces not be used at all or be served on the side. Many fast-food restaurants list the calorie counts and other nutrition information for the foods they serve. You can ask to see this list before placing your order.

When eating out, remember to watch portion sizes. Most restaurant meals are much larger than the serving sizes recommended in the *Dietary Guidelines* and My Pyramid. You may want to eat only part of a portion and take the rest home to enjoy later. As an alternative, offset the larger meal with a smaller meal later.

 **When eating out, don't hesitate to ask how a particular dish is cooked or what ingredients it contains. Name two other ways to make healthy food choices when eating out.**



LESSON

3

REVIEW

Reviewing Facts and Vocabulary

1. Define the *Dietary Guidelines for Americans*.
2. Examine the effects of healthful eating behaviors on body systems: How can decreasing salt intake benefit the cardiovascular and skeletal systems?

Thinking Critically

3. **Analyzing.** Why might a person eat fewer servings than recommended by the Food Guide Pyramid and still gain an unhealthy amount of weight?
4. **Evaluating.** For lunch Josh had a cheeseburger, fries, and a nondiet soft drink. What could he choose for his afternoon snack and dinner to balance out his high-fat, high-sugar, high-salt meal?

Applying Health Skills

Advocacy. Work with a partner to create a poster that encourages teens to adopt healthful eating habits. Use pictures cut from magazines, computer graphics, or your own drawings to illustrate your poster.

After You Read

Identify Problems and Solutions. Create a one-day menu incorporating the advice in the *Dietary Guidelines*. Write down at least three obstacles you may face by following this menu. Provide solutions for each problem.



Food and Healthy Living

Guide to Reading

Building Vocabulary

As you read this lesson, write each new highlighted term and its definition in your notebook.

- ▶ food additives (p. 131)
- ▶ food allergy (p. 133)
- ▶ food intolerance (p. 134)
- ▶ foodborne illness (p. 134)
- ▶ pasteurization (p. 135)
- ▶ cross-contamination (p. 136)

Focusing on the Main Ideas

In this lesson, you will learn how to:

- ▶ **Analyze** the information on food labels.
- ▶ **Compose** eating plans to meet changing nutritional requirements, such as special dietary needs and food allergies.
- ▶ **Describe** the causes and prevention of foodborne illness.

Reading Strategy

Predict

- ▶ This lesson contains information on nutrition labeling and foodborne illnesses. Select one of these topics and write a one-page summary describing the type of information you believe will be contained in the lesson.

Quick Write

Make a list of the types of information on a food label that could help you make a healthy food choice.



The labels on packaged food products contain valuable information for the consumer.

Using the *Dietary Guidelines* is one good way to assess the nutritional contribution of a particular food to your overall eating pattern. Similarly, the information on packaged and prepared foods can help you determine whether or not a particular product meets your nutritional needs. Know strategies for health enhancement and risk reduction. Part of health literacy also involves understanding and evaluating food product claims.

Nutrition Labeling

Examine almost any food package, and you'll find a Nutrition Facts panel. The law requires that these information panels be placed on packages of food that are intended for sale. The information provided in a Nutrition Facts panel is shown in **Figure 5.7**.

Did You Know?

Certified organic foods must meet strict national standards. They must be produced and processed without conventional pesticides and fertilizers, bioengineering, radiation, hormones, or antibiotics. To be labeled “USDA Organic,” a food product must be at least 95 percent organic.

SUGAR AND FAT SUBSTITUTES

In response to the public’s concerns about excess calories in foods, the food industry has developed a number of substitutes for sugar and fat. Many diet drinks, for example, are sweetened with *aspartame*, which is essentially calorie-free. Fructose, the natural sugar in fruit, is sometimes used as a sweetener. Because fructose is sweeter than table sugar, less sweetener is needed and fewer calories are added to the food. Some potato chips are made with fat replacers so that they supply few calories from fat. An example of a fat replacer is *olestra*, which passes through the body undigested. Because olestra is not absorbed, some people find that its consumption can produce gastrointestinal problems such as diarrhea.

Product Labeling

Along with nutrition information, food labels may state the potential health benefits of a food. In some cases the label may also detail the conditions under which the food was produced or grown—for example, whether or not a food is organic or contains organic ingredients.

Nutrient Content Claims

Product labels may advertise a food’s nutrient value. Claims such as “100% Fat-Free” or “Light in Sodium” describe the nutrient content of a food. Some specific terms include the following:

- ▶ **Light or Lite.** The calories have been reduced by at least one-third, or the fat or sodium has been reduced by at least 50 percent.
- ▶ **Less.** The food contains 25 percent less of a nutrient or of calories than a comparable food.

Claims on food products must meet strict guidelines. Check the Nutrition Facts panel for more specific information. *What do the labels on each of these food products tell you?*



- ▶ **Free.** The food contains no amount, or an insignificant amount, of total fat, saturated fat, *trans* fat, cholesterol, sodium, sugars, or calories.
- ▶ **More.** The food contains 10 percent more of the Daily Value for a vitamin, a mineral, protein, or fiber.
- ▶ **High, Rich In, or Excellent Source Of.** The food contains 20 percent or more of the Daily Value for a vitamin, a mineral, protein, or fiber.
- ▶ **Lean.** The food is a meat, poultry, fish, or shellfish product that has less than 10 grams of total fat, less than 4 grams of saturated fat, and less than 95 mg of cholesterol per 3-ounce serving.

Open Dating

Many food products have *open dates* on their labels. The open dates on products such as milk and canned goods reflect their freshness. Canned foods eaten after these dates are safe, but they may not taste as fresh. Open dates on food such as meat can help you make decisions about the food's safety. Below are some common types of open dating you may see on product labels.

- ▶ **Expiration date.** The last date you should use the product.
- ▶ **Freshness date.** The last date a food is considered to be fresh.
- ▶ **Pack date.** The date on which the food was packaged.
- ▶ **Sell-by date (or pull date).** The last date the product should be sold.

Food Sensitivities


Do you know anyone who feels ill after eating certain foods? This person may have a special sensitivity to the food or to an additive in the food.

Food Allergies

A **food allergy** is a condition in which the body's immune system reacts to substances in some foods. These substances, called **allergens**, are proteins that the body responds to as if they were pathogens, or foreign invaders. Allergies to peanuts, tree nuts, eggs, wheat, soy, fish, and shellfish are most common. Scratch tests, in which tiny amounts of suspected allergens are injected under the skin, are a common test for allergies. A simple blood test can also indicate whether a person is allergic to a specific food.

People with allergies have different types of allergic reactions. These reactions may include rash, hives, or itchiness of the skin;



 Milk containers are labeled with a sell-by date. *What does this date indicate?*

Did You Know?



Lactose intolerance, the inability or reduced ability to digest the natural sugar in milk, is a manageable condition. Small amounts of milk consumed more frequently may be easier to digest. Drinking milk with food helps, too. Another option is to get milk's nutrients from yogurt or cheese, which usually don't cause a problem. Health care professionals can provide lactase enzymes and can explain how to use them. Also, lactose-reduced milk and other products containing the same nutrients as milk are offered at many supermarkets.



Foods that can cause allergic reactions include milk products, soy products, peanuts, wheat, and shellfish. **What should you do if you have a severe reaction to any food?**

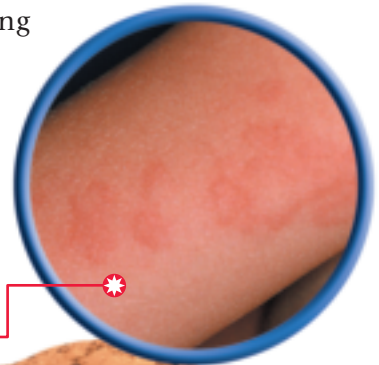
vomiting, diarrhea, or abdominal pain; or itchy eyes and sneezing. If you eat something and experience any of these symptoms, consult a health care professional. Serious allergic reactions, such as difficulty breathing, can be deadly. If you or someone else experiences a severe allergic reaction, call for medical help immediately.

Food Intolerances

Food intolerances are more common than food allergies. A **food intolerance** is a *negative reaction to a food or part of food caused by a metabolic problem, such as the inability to digest parts of certain foods or food components*. Food intolerance may be associated with certain foods, such as milk or wheat, or with some food additives. Some types of food intolerance may be hereditary, such as the reduced ability to digest lactose (milk sugar) or gluten, a protein in some grain products.

Foodborne Illness

You've seen the signs in restaurant restrooms: "Employees must wash their hands before returning to work." Restaurants have this policy because handwashing after using the restroom is one strategy to prevent **foodborne illness**, or *food poisoning*. Foodborne illness may result from eating food contaminated with pathogens (disease-causing organisms), the poisons they produce, or poisonous chemicals. Many times the contaminant can't be seen, smelled, or tasted. The best way to protect yourself is to become knowledgeable about the causes of such illnesses and ways to keep food safe.



Allergic Reaction



Causes and Symptoms of Foodborne Illness


According to the Centers for Disease Control and Prevention (CDC), bacteria and viruses cause most common foodborne illnesses. Bacteria that contaminate food include *Campylobacter*, *Salmonella*, and *E. coli* O157:H7. Viruses include the Norwalk and Norwalk-like viruses. Foods become contaminated with these pathogens in two main ways:

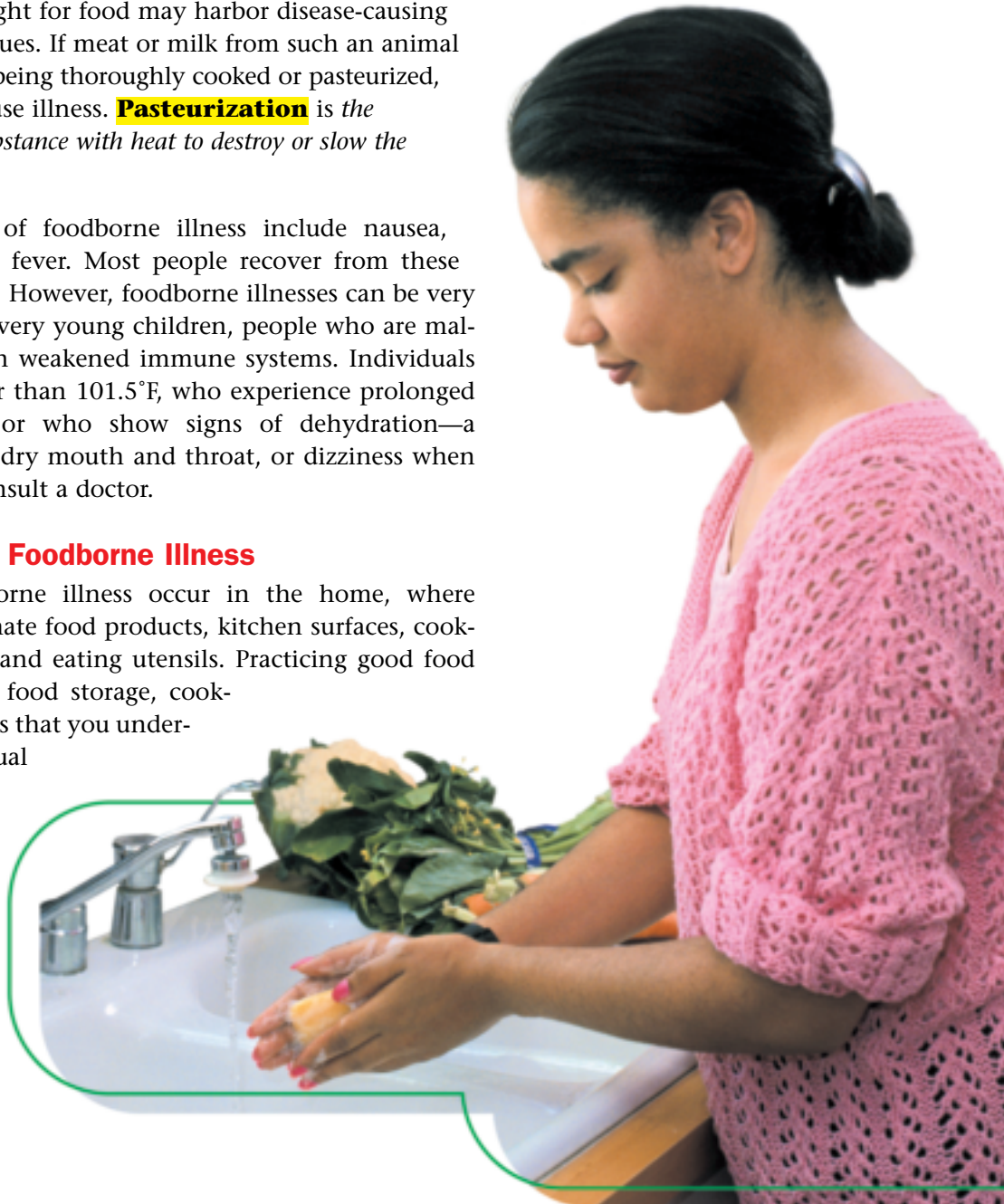
- ▶ Food may be contaminated with pathogens spread by an infected person. This means foodborne illness is a type of **communicable disease**.
- ▶ Animals raised or caught for food may harbor disease-causing organisms in their tissues. If meat or milk from such an animal is consumed without being thoroughly cooked or pasteurized, the organism may cause illness. **Pasteurization** is the process of treating a substance with heat to destroy or slow the growth of pathogens.

Common symptoms of foodborne illness include nausea, vomiting, diarrhea, and fever. Most people recover from these symptoms in a few days. However, foodborne illnesses can be very serious for older adults, very young children, people who are malnourished, or those with weakened immune systems. Individuals who have a fever greater than 101.5°F, who experience prolonged vomiting or diarrhea, or who show signs of dehydration—a decrease in urination, a dry mouth and throat, or dizziness when standing up—should consult a doctor.

Minimizing Risks of Foodborne Illness

Most cases of foodborne illness occur in the home, where pathogens can contaminate food products, kitchen surfaces, cooking and serving dishes, and eating utensils. Practicing good food safety habits, including food storage, cooking, and sanitation shows that you understand the role of individual responsibility regarding personal risk behaviors. To help keep food safe to eat, follow the practice recommended by the Partnership for Food Safety Education: clean, separate, cook, and chill.

 **Washing your hands after using the bathroom and before handling or eating foods greatly reduces your risk of foodborne illness and the risk of passing pathogens to others. What are some of the symptoms of foodborne illness?**



Reading Check

Compare and Contrast

What are the differences between a food allergy and a food intolerance?

Wash cutting boards in hot, soapy water. *How can using different cutting boards for raw meats and raw vegetables help protect you from foodborne illness?*




► **Clean.** Before preparing food and after using the bathroom, handling pets, changing diapers, or touching any other obvious source of pathogens, wash your hands thoroughly in hot, soapy water. To prevent **cross-contamination**, *the spreading of bacteria or other pathogens from one food to another*, wash your hands, cutting boards, utensils, plates, and countertops with hot, soapy water after preparing each food item. It is also recommended that you use cutting boards made of nonporous materials, such as plastic or glass, for preparing foods. When possible, use disposable paper towels instead of dishcloths to clean kitchen surfaces. Also, remember to wash fruits and vegetables before you eat them.

► **Separate.** To avoid cross-contamination, separate raw meat, seafood, and poultry from other items in your shopping cart. At home, store these foods separately from other foods. The bottom shelf of the refrigerator is a good place to keep these foods because their juices won't run onto other foods. Use separate cutting boards for raw meats and raw vegetables or foods that are ready to be eaten. Never place cooked food on a plate that previously held raw meat, seafood, or poultry. After contact with raw meats, wash cutting boards and other utensils (as well as your hands) in hot, soapy water.

► **Cook.** Cook foods to a safe temperature: 160°F for ground beef, 170°F for roasts and poultry, and 145°F for fish. Use a meat thermometer to make sure meats and fish are cooked thoroughly. When thoroughly cooked, meat or poultry juices should run clear. Properly cooked fish should be opaque and flake easily with a fork. Don't eat raw ground beef or ground beef that is still pink after being cooked. Avoid dishes that contain partially cooked or raw eggs. Sauces, soups, and gravies should be brought to a boil before serving.

► **Chill.** Cold temperatures slow the multiplication of bacteria. Refrigerate or freeze perishable foods as soon as you get home. Foods that need to be kept cold should be refrigerated quickly at temperatures of 40°F or less. Frozen foods should be stored at 0°F. Refrigerate or freeze prepared foods and leftovers within two hours after a meal—even sooner on a hot day. Divide leftovers into small, shallow containers to help them cool more quickly. Remove any stuffing before freezing meats or poultry. Don't over-pack the refrigerator; air needs

to circulate around the food to keep it cool. Don't defrost foods on a kitchen counter. Instead, thaw these foods in a refrigerator, under cold running water, or by using a microwave's defrost function. At a picnic, keep hot foods hot and cold foods cold. Thoroughly cook meats at the picnic site. Discard foods that have been sitting out for two hours—one hour if the temperature is above 85°F.

 **Proper preparation of picnic foods will help ensure that these foods remain safe to eat. *Why should you discard any picnic food that's been sitting out for two hours?***



LESSON

4

REVIEW

Reviewing Facts and Vocabulary

1. What can the ingredients list of a food product tell you?
2. How does a *food allergy* differ from a *food intolerance*?
3. What is *pasteurization*?

Thinking Critically

4. **Analyzing.** How does the policy that requires food service workers to wash their hands help prevent communicable disease?
5. **Applying.** Develop a strategy to store food that's left over from dinner.

Applying Health Skills

Accessing Information. Find three to five reliable online sources of information about practices related to preventing foodborne illness. Use these resources to create a pamphlet titled "Preventing Foodborne Illness."

After You Read

Cause and Effect. Make a chart with two columns. List the causes and symptoms of foodborne illness on one side. List the ways to minimize the risks of foodborne illness on the other side.

Cracking a Tough PROBLEM

Could relief be in sight for those suffering from peanut allergy?

A peanut allergy can be very dangerous. Unlike hay fever, an even more common allergy, an allergic reaction to peanuts can quickly kill a person. Of the nearly 1.5 million Americans who suffer from peanut allergy, more than 150 of them die each year from exposure to peanuts or peanut products. Problems occur when the body overreacts to the presence of peanuts—a process called anaphylaxis. The body's airways clamp down, which can lead to suffocation in some cases. Fortunately, anaphylaxis can be reversed—if it is recognized in time. A peanut allergy is tricky: There's no way to predict who is prone to anaphylaxis and who isn't. Many people who develop anaphylaxis might have had only a mild reaction to eating peanuts in the past. Plus, it is difficult to avoid peanuts or peanut oil—which may be found in plain chocolate candies, sunflower seeds, and other foods.

The Origin of the Allergy

Why do certain people have peanut allergy? Researchers point to a molecule named IgE. One of many compounds produced by the body's immune system, IgE may have evolved to help our

ancestors fight off parasitic worms. These days, parasitic worms aren't so common, and IgE has become a nuisance. The higher the level of IgE in your body, the more likely you will develop allergic reactions to otherwise harmless stuff, like peanuts. IgE-related allergies also may play a role in some cases of asthma.

Over the past decade, researchers have developed compounds to block the action of IgE and dampen the body's allergic reactions. What does this mean? There may one day be a treatment—or even cure—for peanut allergy.

So for now, at least, folks with peanut allergy have to do what they have always done: Avoid peanuts in any form and try to lead as normal a life as possible. ■



TIME
to **THINK...**

About Peanut Allergy

Take a poll of your classmates to find out how many students have allergies and what they are allergic to. Then tally the responses in various categories and answer these questions:

1. What percentage of the class has allergies?
2. What is the most common allergy in the class?
3. What percentage of students has that allergy?

Health Skills Application



1. Advocacy. Watch 30 minutes of television and keep a record of the food commercials shown. Analyze the health messages delivered through this media. Then write a script for an advertisement that encourages viewers to try a particular healthful food. (LESSON 1)



2. Goal Setting. Develop a table that summarizes what you have learned about the nutrients your body needs. Include in your table the name of each type of nutrient, why your body needs the nutrient, and what foods you can eat to make sure you include enough of the nutrient in your eating plan. Then set a goal to improve your intake of one or more of these nutrients. Use the goal-setting steps to reach your goal. (LESSON 2)



3. Accessing Information. Use reliable online resources to do more in-depth research on the relationship between nutrition and heart disease. How can good nutrition prevent this disease and improve quality of life? Summarize your findings in a one-page report. (LESSON 3)



4. Practicing Healthful Behaviors. Analyze how healthful practices might reduce the risk of foodborne illness, a communicable disease. Then develop a plan that features safe cooking strategies to reduce the spread of foodborne pathogens. (LESSON 4)

CAREER Corner

Dietetic Technician

Do you enjoy planning meals and cooking? Do you like interacting with others? If so, you may enjoy a career as a dietetic technician. This career allows you to assist dietitians in the planning of healthful meals.



To enter this field, you must first complete a two-year associate's degree program. You'll also need to complete an accredited dietetic technician program and pass a national exam. To maintain certification, you'll need to stay up-to-date on nutrition trends. Find out more about this and other health careers by clicking on Career Corner at health.glencoe.com.



BEYOND the Classroom

Parent Involvement

Accessing Information. Work with your family to list the foods you most enjoy eating. Then look through cookbooks to find recipes for similar foods that contain less fat, sugar, and salt. Make a recipe booklet of these healthful alternatives, and set a goal to try one new recipe each week.

School and Community

Meals on Wheels. Many communities have organizations, such as Meals on Wheels, that provide nutritious meals to older adults or physically challenged individuals who are unable to prepare meals for themselves. Find out whether your community has such an organization and how you and your classmates can become involved.



After You Read

Use your completed Foldable to review what you have learned about the ways that appetite, emotions, and environment influence your eating habits.



► **EXPLORING HEALTH TERMS** Answer the following questions on a sheet of paper.

Lesson 1 Fill in the blanks with the correct term.

hunger **nutrition** **calories**
nutrients **appetite**

The process by which the body takes in and uses food is (**_1_**). (**_2_**) are the units of heat that measure the energy used by the body and the energy that foods supply to the body. The substances in food that your body needs to function properly are (**_3_**).

Lesson 2 Match each definition with the correct term.

vitamins **lipid** **carbohydrates**
proteins **fiber** **minerals**

- The starches and sugars present in foods.
- An indigestible complex carbohydrate.
- Nutrients that help build and maintain body cells and tissues.
- A fatty substance that does not dissolve in water.

Lesson 3 Fill in the blanks with the correct term.

MyPyramid**Dietary Guidelines for Americans**

- The _____ is a set of recommendations for healthful eating and active living prepared by the USDA and DHHS.
- _____ is a guide for making healthful daily food choices.

Lesson 4 Match each definition with the correct term.

food allergy **pasteurization**
food additives **cross-contamination**
foodborne illness **food intolerance**

- Substances intentionally added to food to produce a desired effect.
- Another name for food poisoning.
- The spreading of bacteria or other pathogens from one food to another.

► **RECALLING THE FACTS** Use complete sentences to answer the following questions.

- How does hunger differ from appetite?
- Give an example of how friends and peers can influence food choices.
- Why is good nutrition especially important during the teen years?
- What is the relationship between glucose and glycogen?
- How does water benefit the body?
- List three minerals that are important for health.
- What three elements form a healthful eating pattern?
- How many servings should you eat each day from the Milk Group? From the Meat and Beans Group?
- What does the Percent Daily Value column of a food label tell you?
- What are some symptoms of a food allergy?
- How can you keep picnic foods safe to eat?



▶ WRITING CRITICALLY

- 1. Descriptive.** Prepare a meal menu for a family celebrating a holiday or birthday. Include foods that are unique to your family's culture or ethnic group. Provide detailed descriptions of any ethnic foods served including how they taste and how the tradition began for serving them at particular times of the year or at certain family functions.
- 2. Descriptive.** Louis Pasteur discovered the process of pasteurization in 1822. Conduct further research on Louis Pasteur and his discovery and write a one-page biography about him. In your biography, focus primarily on his discovery of pasteurization.

Standardized Test Practice



Read the passage below and then answer the questions.

Food for Healthy Living

(1) What do you eat when it's the middle of the afternoon and you're hungry? (2) Suppose that you go to the kitchen to look for a snack. (3) In the refrigerator you find nothing to eat but a few old apple slices and some lettuce. (4) A box of cookies sits on the counter next to the refrigerator, so you finish off the box that's half full.

(5) Everyone gets cravings between meals, especially teens. (6) The middle of the morning, the afternoon stretch between lunch and dinner, and late at night might not be the best times to eat an entire meal, but they are good opportunities for a few nutrients. (7) The challenge with snacking is not when you eat, but what you eat.

(8) Prepare for a snack attack by having something besides candy, chips, or cookies on hand. (9) Beat your craving for a cookie by substituting a pretzel, breadstick, popcorn, or even a carrot stick. (10) Make sure that when you open the refrigerator door you find things. (11) Fill the refrigerator with healthy snacks-not the high-fat, high-salt, and high-calorie foods you see advertised. (12) Even half a baked potato is better than a bag of chips!

- Which detail should the writer add after sentence 9 to support the topic of the third paragraph?
 - A Yogurt has a smooth texture.
 - B There are many different kinds of chips.
 - C It's hard to think clearly when you're hungry.
 - D The crunchy texture may satisfy your craving.
- Which words should replace the word "things" in sentence 10 so the reader knows specifically what the writer had in mind?
 - F assorted items
 - G a pitcher of water
 - H breakfast, lunch, and dinner
 - I fruits, vegetables, and yogurt
- Write an advice column for your school newspaper that outlines your own helpful ideas for healthy eating.