

Seasonings and Flavorings

SECTIONS

- 16.1 Enhancing Food
- 16.2 Herbs and Spices
- 16.3 Condiments, Nuts, and Seeds
- 16.4 Sensory Perception

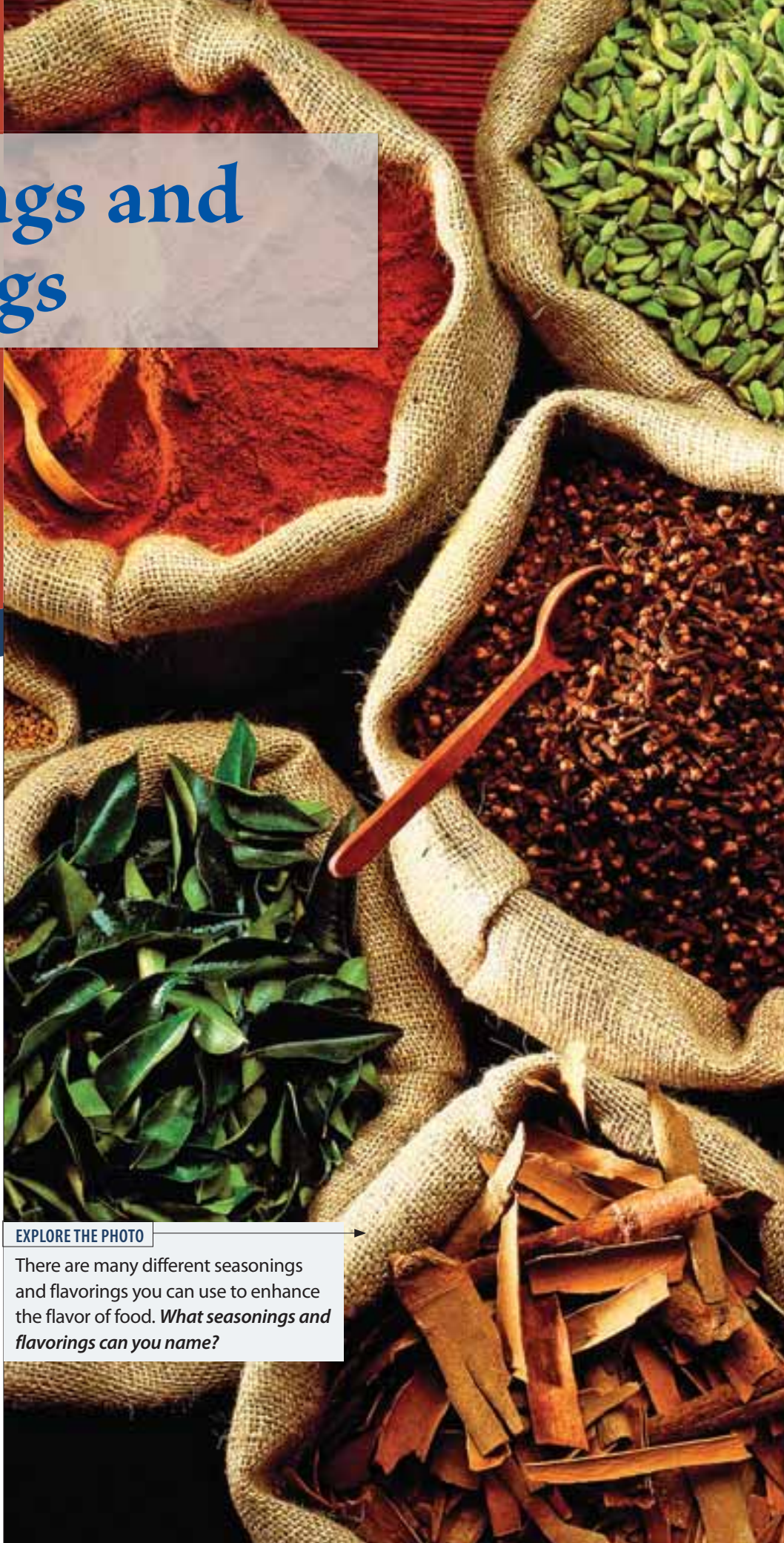
WRITING ACTIVITY

Essay Outline

Most writing assignments will require you to gather information. Choose one herb and research it in print resources and on the Internet. Highlight information that you feel is important. Then, create an outline for an essay.

Writing Tips

- 1 Use an Internet search engine, library catalog, or speak to a librarian to begin your search.
- 2 Evaluate each source to determine how reliable it is.
- 3 Choose information that will fit into your basic structure.



EXPLORE THE PHOTO

There are many different seasonings and flavorings you can use to enhance the flavor of food. *What seasonings and flavorings can you name?*

Enhancing Food

Reading Guide

Before You Read

Be Organized A messy environment can be distracting. To lessen distractions, organize an area where you can read this section comfortably.

Read to Learn

Key Concepts

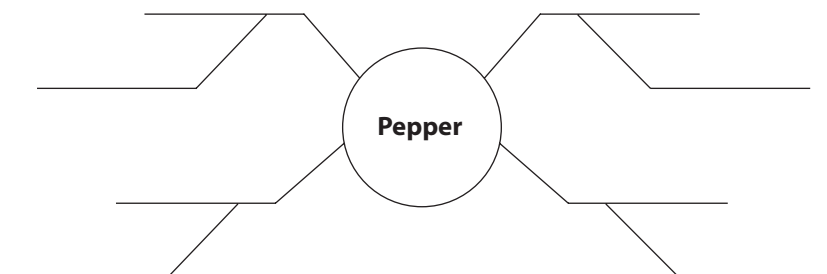
- **Describe** the varieties and uses of seasonings and flavorings.

Main Idea

Seasonings and flavorings strengthen a food's natural flavor. Knowing which seasonings and flavorings work well with certain food items is an important cooking skill.

Graphic Organizer

As you read, use a spider diagram like this one to list the four different types of pepper and their flavors.



Graphic Organizer Go to this book's Online Learning Center at glencoe.com for a printable graphic organizer.

Content Vocabulary

- seasoning
- flavor enhancer
- flavoring
- extract
- spice
- zest
- pith
- monosodium glutamate
- blend

Academic Vocabulary

- distinct
- lend

How do you like to season and flavor food?

ACADEMIC STANDARDS



English Language Arts

NCTE 12 Use language to accomplish individual purposes.



Mathematics

NCTM Problem Solving Solve problems that arise in mathematics and in other contexts.



Science

NSES A Develop abilities necessary to do scientific inquiry.



Social Studies

NCSS I E Culture Demonstrate the value of cultural diversity, as well as cohesion, within and across groups.

NCTE National Council of Teachers of English

NCTM National Council of Teachers of Mathematics

NSES National Science Education Standards

NCSS National Council for the Social Studies

Seasonings and Flavorings

Imagine eating food without any flavor. Or, imagine that you ate several foods that all had the same flavor. This does not sound very appetizing, does it? Customers expect flavorful dishes when they visit a restaurant. Fortunately, foods have their own natural flavoring. Sometimes, however, these flavors need to be strengthened. Foodservice professionals use seasonings, flavorings, and flavor enhancers to help.

Enhancing the natural flavor of foods is part of the art of cooking. You need to understand how the flavor of food can be enhanced to work successfully in food production. Using seasonings and flavorings correctly is a skill that develops over time. Tasting foods throughout the cooking process will help you develop this skill.

Both seasonings and flavorings improve or strengthen the natural flavor of foods. A **seasoning** is an ingredient that intensifies or improves food without changing the food's natural flavor. If a seasoning is used correctly, the individual flavor of a seasoning cannot be tasted in the food product itself.

Some seasonings are called flavor enhancers. A **flavor enhancer** increases the way you perceive the food's flavor without changing the actual flavor of the prepared dish. They do not add flavor to a dish. Flavor enhancers do this by affecting your taste buds. Monosodium glutamate (*mä-nə-sō-dē-əm 'glü-tə-mā t*), or MSG, is an example of a flavor enhancer. It intensifies the flavor of savory foods.

A **flavoring**, on the other hand, is an ingredient that actually changes the natural flavor of the foods to which it is added. This enhances the experience of tasting the dish.



Season with Salt Salt comes in many varieties. *What four kinds of salt are most often used in foodservice?*

Flavorings have their own **distinct**, or separate and unique, flavors. An **extract**, or a concentrated flavor such as almond and vanilla, are flavorings.

A wide variety of ingredients can be used as seasonings, flavorings, and flavor enhancers. Salt and pepper are two of the most common seasonings that are used. A more detailed description of these ingredients follows.

Salt

Salt is the most commonly used food seasoning today. It can be added to most foods, even some sweet foods, to heighten flavor. Salt has a more distinctive taste on cool foods than on hot foods.

Table salt is the most common type of salt used in both food preparation and to season food at the table. There are other types of salt used in the foodservice industry as well. Rock salt usually is used as a bed during baking for foods such as clams, oysters, and potatoes. Sea salt is preferred by some chefs because it has a strong, distinctive flavor. Kosher salt is coarse and free of iodine or other additives. It has a milder flavor. Chefs also like to use kosher salt to season food during preparation.

The amount of salt that is added to food depends on the food that is being cooked. It also depends on the preference of the diner. Taste food before you add more salt to a dish. You can always add more salt, but you cannot remove it. Too much salt can ruin a dish.

Pepper

Pepper is the most widely used spice in the world. A **spice** is an aromatic vegetable product that blends with the natural flavor of foods. Pepper has been used since ancient times, in civilizations from Ancient Egypt to Ancient Rome to India. In the Middle Ages, pepper was widely traded and commonly used as a form of currency.

Pepper is usually used in its ground form rather than as whole peppercorns. Ground pepper brings out the flavor of many foods.

Safety Check

✓ Hot Pepper Safety

When you work with hot peppers, you should always wear gloves to prevent burning your hands with the juice of the pepper. Always wash your hands after you touch hot peppers. Never rub your eyes without washing your hands first. Pepper juice will cause your eyes to burn.

CRITICAL THINKING *What else can you do to prevent pepper juice from staying on your hands?*

Whole or cracked pepper, however, is large enough to be detected on its own in the flavor of the food when it is added. A wide variety of peppers are used in the foodservice industry.

Black Pepper

Black pepper comes from the dried, unripe berries of the pepper plant. It is slightly hot, but not bitter. It is the most common pepper used. Black pepper stimulates juices in the stomach lining. This helps with digestion.

White Pepper

White pepper comes from the kernel of ripe pepper plant berries. It is an all-purpose seasoning that blends easily with most food, yet maintains a distinctive flavor. White pepper is a little hotter than black pepper.

Green Peppercorns

Green peppercorns come from unripened berries. They are preserved in brine until they darken, and have a fresh flavor. Green peppercorns are expensive. They are used only in special recipes, such as grilled veal tenderloin with a delicate brown sauce.

Red Pepper

Red pepper is not like black, white, or green pepper. Instead, it comes from the capsicum plant and is related more closely to the bell pepper family. Red pepper is used to add flavor to food, such as soups and sauces, without altering the food's natural flavor.



Popular Pepper There are several different types of pepper used in cooking. *Why do you think pepper is the most commonly used spice in the world?*

Hot red pepper, such as cayenne, can be difficult to use properly because of its intense heat. It is easy to add too much to food. Paprika (pə-ˈprē-kə) is a fine powder made from grinding sweet red pepper pods. Paprika can be sweet, mild, medium-hot, or hot. It is used in many ethnic cuisines.

Hot Pepper

Hot peppers are commonly referred to as chiles. They vary in their degree of hotness, color, and flavor. They can be used fresh, dried into flakes, or ground into powder. Hot peppers are often added to Indian and Asian foods for spice and flavor.

Onion

Onions are a flavoring that can be added to just about any food dish. The onion family also includes scallions, leeks, shallots, chives, and garlic. All of these flavorings have a strong aroma and flavor, especially when they are uncooked. Onions form part of the base for

many stocks and soups. Onions are also used as part of a mirepoix, which can be used in braising meats as well as stocks and soups.

When you use foods from the onion family, keep in mind that, unlike herbs, fresh onions have a stronger flavor than dried ones. Depending on the form you use, you may need to adjust the amount of onion flavoring that you add to the food.

Lemon

The **zest**, or rind, of the lemon is another type of flavoring. The zest contains the flavorful oil of the lemon. It is usually peeled or scraped carefully off the top layer of the lemon. It is added to dishes such as fish, meats, vegetables, and desserts to give a citrus flavor.

When you cook with lemon, use only the juice or the zest. Do not use the **pith**, or the white membrane that is just underneath the zest. The pith is bitter. You can avoid the pith by not scraping too deeply through the zest.

Small Bites

MSG Allergies Recent studies have shown that MSG is not dangerous to people unless they are sensitive to it. People who have food allergies, or are sensitive to certain ingredients, should avoid eating foods that contain those ingredients.

Monosodium Glutamate

Monosodium glutamate, or MSG, is a type of salt that comes from seaweed. It intensifies the natural flavor of most of the foods to which it is added. It also provides a savory flavor to food. For example, MSG is often added to vegetables, poultry, and fish to bring out more flavor. However, MSG has no effect on the flavor of milk products or fruits. Some people are sensitive or allergic to MSG. Be sure to label its use in your recipes and on your menu to keep customers safe and healthy.



Onion Family The foods shown here belong to the onion family. *How are they used to flavor different foods?*

When to Season

As a general rule, you can season food at any time during the cooking process. However, certain forms of food **lend**, or adapt, themselves to adding seasoning at certain times. For example, when you cook a dish such as soup, in which the seasoning can mingle easily with the food, you can add seasonings during the entire cooking process. However, you should wait until the end of the cooking process before you add salt.

On the other hand, when you cook large pieces of food, such as a roast, you should add your seasonings at the beginning of the cooking process. If you add the seasonings early enough in the cooking process, it allows enough time for the seasonings to be absorbed effectively throughout the food. A roast has a long cooking time, so it will have plenty of time to absorb the seasonings.

You may choose to add your seasonings throughout the cooking process. However, you must be sure to taste the food and evaluate its flavor. Overseasoning can overpower and ruin the natural flavor of food. Dried seasonings should be added earlier in the cooking process than fresh seasonings.

Adding Flavor


Flavorings also can be added to food during the cooking process. However, the effects of flavorings on prepared food will depend on the length of the cooking time. You need to know how long the food must cook before you can decide when to add any flavorings.

Flavorings need heat to release their flavors. They also need time to blend with the natural flavors of the food to which they are added. For example, whole spices, such as ginger or whole peppercorns, take longer to be absorbed into food than ground spices. You will need to think about this timing when you add flavorings to foods during cooking. Flavorings should not be overcooked, however. Overcooked flavorings quickly lose their effect.

Some flavorings are considered blends. A **blend** is a combination of herbs, spices, and seeds. Chili powder, curry powder, and garlic salt are examples of blends. These are ready-made dried products that can be purchased from a supplier or created in a commercial kitchen. Blends can be created ahead of time, or on the spot. Some foodservice businesses have their own signature blends. Customers may sometimes purchase containers of these blends to take home for use in their own kitchens. When herbs are used together with spices in the form of a blend, they complement each

other by enhancing the flavor of the food and of each other.

Enhancing food is a learned skill. It will take a great deal of practice to learn how to season and flavor food without overpowering the food. Practice combining flavors to see what effects you can achieve. Constantly taste food to determine the right level of seasoning for each dish.

 **Reading Check** **Distinguish** What is the difference between a seasoning and a flavoring?

SECTION 16.1 After You Read

Review Key Concepts

1. **Describe** the varieties of salt.

Practice Culinary Academics

Science

2. **Procedure** Some cookbooks say that adding salt to water helps pasta cook faster, while others say it adds flavor. Cook two batches of pasta: one with salt and one without salt. As the water boils, create a hypothesis of what you think will happen.

Analysis Record how long it takes the water to boil and the pasta to cook. Compare the flavor of each. What are your conclusions? Do they match your hypothesis? Write a summary explaining your findings.

NSES A Develop abilities necessary to do scientific inquiry.

English Language Arts

3. Conduct research to locate an older recipe that contains two or fewer seasonings. Rewrite the recipe, but add more seasonings and flavorings based on your knowledge of flavor from dishes you have tried before. Rewrite the recipe with the new seasonings and flavorings. If possible, test your recipe to see how the new seasonings and flavorings affect the dish.

NCTE 12 Use language to accomplish individual purposes.

Social Studies

4. Find a recipe from outside your culture. Make a note of the seasonings and flavorings that are used. Which are familiar to you, and why? Which are unfamiliar to you? Learn more about the unfamiliar seasonings and flavorings. Discuss your findings as a class.

NCSS I E Culture Demonstrate the value of cultural diversity, as well as cohesion, within and across groups.

Mathematics

5. A salt shaker weighs 152 grams when it is completely full. When you empty out exactly one-half of the salt, the shaker now weighs 116 grams. How much does an empty salt shaker weigh?

Math Concept **Writing Algebraic Expressions**

When you write an algebraic expression to solve a problem, pay particular attention to what the question is asking. Use variables, such as x and y , to represent any unknown values.

Starting Hint If x = the weight of half of the salt (which you can calculate given the facts of the problem), and y = the weight of the shaker, then $x + y = 116$ grams.

NCTM Problem Solving Solve problems that arise in mathematics and in other contexts.



Check your answers at this book's Online Learning Center at glencoe.com.

Herbs and Spices

Reading Guide



Before You Read

How Can You Improve? Before starting this section, think about the last exam you took on material you had to read. What reading strategies helped you on the test? Make a list of ways to improve your strategies to succeed on your next exam.

Read to Learn

Key Concepts

- **Compare and contrast** the uses and storage for different herbs.
- **Describe** the uses and storage for different spices.

Main Idea

A foodservice employee must be able to identify and use herbs and spices. Correctly used, they can enhance a dish. Incorrectly used, they can ruin a dish.

Graphic Organizer

Use a matrix like the one below to list how to use and store herbs and spices.

	Use	Storage
Herbs		
Spices		



Graphic Organizer Go to this book's Online Learning Center at glencoe.com for a printable graphic organizer.

Content Vocabulary

- herb
- sachet
- bouquet garni
- aroma
- marinade
- paella
- risotto Milanese

Academic Vocabulary

- abundant
- opaque

Used correctly, herbs and spices can enhance a dish.

ACADEMIC STANDARDS



English Language Arts

NCTE 8 Use information to gather information and create and communicate knowledge.



Mathematics

NCTM Problem Solving Build new mathematical knowledge through problem solving.



Social Studies

NCSS I A Culture Analyze and explain the ways groups, societies, and cultures address human needs and concerns.

NCSS III I People, Places, and Environments

Describe and assess ways that historical events have been influenced by, and have influenced, physical and human geographic factors in global settings.

NCTE National Council of Teachers of English

NCTM National Council of Teachers of Mathematics

NSES National Science Education Standards

NCSS National Council for the Social Studies

Herb Varieties

Can you tell the difference between parsley and chervil? Do you know how to recognize nutmeg and allspice? Do you know how to properly store herbs and spices so that they remain fresh? Foodservice professionals need to know:

- What they look like.
- In what forms they are available.
- What their flavors and aromas are.
- How to correctly use them to enhance the flavor of food.

Herbs and spices enhance the flavor of food, but you must use them correctly. Incorrect use can ruin the flavor of foods.

Herbs are a flavoring that adds color and aroma to foods. An **herb** is a plant that grows in temperate climates. The parts of the plant that are harvested are the leaves and the stems. They can be used fresh or dried.

Basil, chives, oregano, and sage are examples of herbs. Fresh herbs should be used whenever possible. Fresh herbs are most **abundant**, or plentiful, in the summer. In the fall, fresh herbs can be dried or frozen for use during the winter. Knowing which herb to use, when to use it, and with what food is an important aspect of your job.

Herb Use

Herbs can be used with a variety of cold and hot dishes. Some herbs have a delicate flavor, while others have a bold flavor. Herbs can be purchased in two forms: fresh and dried. Fresh herbs are not as strong in flavor as dried herbs. When you use fresh herbs, you should use twice the amount of dried herbs that are called for in a recipe.

Fresh herbs should be minced or crushed as close to cooking or serving time as possible. They should be added at the end of the cooking process. You can add fresh herbs to uncooked foods, such as salads, several hours before serving time. Herbs often need plenty of time to release their flavor to cold foods. Dried herbs should be added at the beginning of or during the cooking process. Use a little and taste the food before you add more. Using too much can ruin the dish.

Some herbs and foods are natural combinations. For example, lamb is often flavored with rosemary. Basil seems to go hand-in-hand with tomato sauce. However, chefs often experiment with different combinations to create interesting dishes. You may also want to experiment with combining complementary herbs in a dish to see how they enhance flavor together.

HOW TO

Make a Sachet

- 1 Place your herbs and spices in the center of a small square piece of cheesecloth.



- 2 Pull the four corners together and tie the bag with a long piece of twine. This makes removing the sachet easy.



Herbs

Basil Basil (¹bā-zəl) is an herb from the mint family with tender, leafy stems. It is available in many varieties and has a mild, licorice-like flavor. Basil is available fresh or dried, as crushed leaves or ground. Basil is used in soups, tomato sauce, and salads. It is also used on pizza, vegetables, chicken, and pesto.



Bay Leaf Bay leaf is an herb that comes from the evergreen bay laurel tree. Bay leaves are commonly dried. They come whole, or broken into small flakes. They are used in soups, stews, vegetables, and meats. Whole bay leaves are generally removed from food before serving.

Chervil Chervil (¹chər-vəl) is a slightly peppery herb that is shaped like parsley. It is available fresh or dried, as crushed leaves or ground. Chervil can be used in soups, sauces, salads, fish and shellfish dishes, and baked goods.



Chives Chives (¹chīvs) are the long, toothpick-like leaves of a plant in the onion family. Chives have a delicate, onion flavor. Chives are available fresh, dried, or frozen. Chives can be used to flavor breads and soft rolls as well as soups, sauces, dips, and spreads. Chives can often be used in place of onions. They are commonly used to top off a baked potato with sour cream.

Cilantro Cilantro (si-¹län-(,)trō), from the coriander plant, has bright green leaves with longer stems. It has a distinct odor and a unique flavor. Cilantro is available fresh or chopped and frozen. Cilantro is used in sauces, salsa, and to add flavor to different dishes.



Dill Dill (¹dil) is a feathery-leaved herb. It has a strong, distinct flavor that is commonly associated with pickles. Dill comes in fresh or dried leaves. Dill is used in many soups, salads, and breads. It also is used to flavor various vegetable and fish dishes.

Herbs

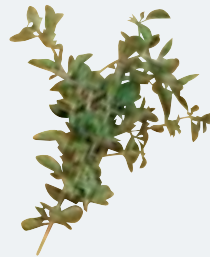
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Garlic Chives Garlic chives are flat stems. They have a mild, garlic flavor and are available fresh. Garlic chives can be used to flavor breads, soft rolls, soups, sauces, dips, and spreads.



Lemongrass Lemongrass is a tough, fibrous grass. The base has a lemony flavor. It comes in fresh stalks. Lemongrass is used in curries and in many southeast Asian dishes.

Marjoram Marjoram (¹mär-jə-rəm) is a plant in the mint family. It has a warm, mild flavor. It is available as fresh or dried, as crushed leaves or ground. Marjoram is used to flavor soups, stews, gravies, sauces, and many poultry, fish, and meat dishes.



Mint Mint grows in many varieties, the most well known being peppermint and spearmint. Mint is available as fresh or dried leaves. Mint is used in sauces, sweet dishes, pastries, tea, and ice cream. It is often paired with chocolate. Mint is also used on lamb, peas, and in fruit beverages.

Oregano Oregano (ə-¹re¹gə-nō) is sometimes referred to as wild marjoram. It has a slightly bitter flavor. It is available as fresh or dried, as leaves or ground. Oregano is used in soups, sauces, tomato dishes, pizza, and meat and egg dishes.



Parsley Parsley (¹pär-slē) is grown in many varieties. It has a soothing effect on your taste buds. It comes fresh or dried, as leaves or flakes. Parsley is widely used in soups, sauces, and dressings. It is often served as sprigs for a garnish, or chopped and used to add color to foods.

Rosemary Rosemary, an evergreen shrub with needlelike leaves, is a member of the mint family. It has a strong flavor and aroma. It is available fresh or dried, whole or ground. Rosemary is used in soups, stews, sauces, and baked goods.



Sage Sage is a member of the mint family. It has soft downy leaves that are fragrant and warm. It is available fresh or dried, whole or ground. Sage is often used in soups, stews, stuffings, and sausages. It is also used as a seasoning for poultry and pork.

Savory Savory (¹sā-və-rē) is another member of the mint family. It has a spicy taste and comes fresh or dried, as crushed leaves. Savory is used with meat and fish dishes, chicken, eggs, stuffing, and in many baked goods.



Tarragon Tarragon (¹ter-ə-gän) is an herb from the daisy family with a flavor that is a cross between mint and anise. It is what gives béarnaise sauce its flavor. It comes fresh or as dried, crushed leaves. Tarragon is used to flavor salad dressings, mustards, marinades, vinegar, sauces, and soups. It can also be used with chicken, veal, and fish.

Thyme Thyme (¹tīm) is a shrub of the mint family. It has a sharp and spicy flavor. It is available fresh or dried, as crushed leaves or ground. Thyme is used in meat, poultry, and fish dishes, as well as in soups and baked goods.



Sachets

When you cook liquid dishes, such as soups, stocks, and sauces, fresh herbs can be added to the dish in a sachet or a bouquet garni. **Sachet** (sa-'shā) is French for bag. A **bouquet garni** (bü-'kā gār-'nē) is a combination of fresh herbs and vegetables tied in a bundle with butcher's twine. The bundle is simmered in the stock pot and removed before the dish is served. The most common ingredients in a bouquet garni are leeks, parsley, celery, and thyme.

Herb Storage

In general, fresh herbs should be wrapped loosely in damp paper towels and stored on sheet pans in a refrigerator. Store them at temperatures between 34°F (1°C) and 40°F (4°C). Dried herbs should be kept in containers that are **opaque**, or light-blocking, and airtight. Store dried herbs in a cool, dry place at

temperatures between 50°F (10°C) and 70°F (21°C). Do not expose stored herbs to heat, light, and excess moisture. This can weaken their flavor. As dried herbs age, they naturally lose their flavor.



Reading Check Explain How should you properly store dried herbs?

Spice Varieties

Spices come from the bark, buds, fruits, roots, seeds, or stems of plants and trees. Unlike herbs, spices are commonly used only in their dried form. Spices come in two forms: whole or ground into powder. Spices can be sweet, spicy, or hot. The flavor and aroma of spices come from oils. Some plants provide both an herb and a spice. For example, dill leaves are an herb, and dill seeds are a spice. You should know each spice, its **aroma**, or distinctive pleasing smell, and its effect on food.

You can easily add spices to hot foods such as soups, sauces, and broths with the help of a sachet. A sachet allows you to add the flavor of spices to the food without leaving the actual spice in the dish to be served. Typical ingredients in a sachet include cloves, garlic, and crushed peppercorns.

Spice Use

Spices can be used in a variety of forms, such as whole, ground, sliced, or in chunks. The form you use partially depends on the length of cooking time. Whole spices take longer to release their flavor. This means that whole spices should be added as early as possible to the cooking process. A dish with a 10-minute cooking time would not give you enough time to use whole spices.

You can also use whole spices when you poach fruit or make a marinade. A **marinade** (ˌmer-ə-'nād) is an acidic liquid usually used to soak meat before it is cooked, to give the meat flavor and tenderness. Spices should be added to cold food several hours before serving time.

A TASTE OF HISTORY

1502

Vasco de Gama claims a monopoly of pepper for the Portuguese

1509

Ponce de Leon becomes governor of Puerto Rico

The Spice of Life

Spices today are plentiful and are used mostly as flavorings. However, throughout most of history, spices were a luxury. Pepper was once so expensive that it was sometimes used as currency to pay taxes. The search for better routes to spice-rich lands led to an era of great exploration and expansion. European countries even fought spice wars for control over these precious spices.

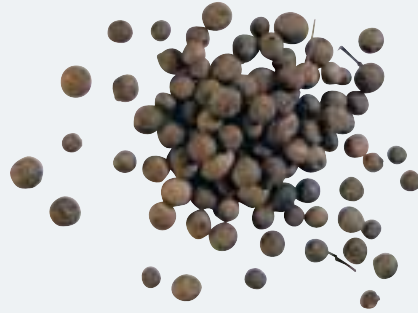
History Application

Research the European countries that dominated the spice trade and the routes their explorers took. Draw a map of the routes that the main spice traders took.

NCSS III | People, Places, and Environments Describe and assess ways that historical events have been influenced by, and have influenced, physical and human geographic factors in global settings.

Spices

Allspice Allspice is the dried, unripe berry of the pimiento (pəm-ˈyən-(,)tō) tree, a tropical evergreen found in the West Indies and Latin America. The berries are dried and either left whole or ground. The flavor of allspice combines the flavors of nutmeg, clove, and cinnamon. It is available dry, whole, or ground. Whole allspice is used with pickles, meats, fish, sausages, and sauces. Ground allspice is used in pies, cakes, puddings, relishes, and preserves.



Anise Seeds Anise seeds are dried greenish-brown seeds with a strong, licorice-like aroma and flavor. They are dried and available whole or ground. Anise can be used to flavor a variety of dishes, including fish sauces, breads, cakes, cookies, and candies.

Cardamom Cardamom (ˈkär-də-məm) is the seed from the fruit of an herb in the ginger family. It has a sweet, almost pepper-like flavor and aroma. It is the third most-expensive spice in the world behind saffron and vanilla. It is available whole or ground. Cardamom is used in curries, sweet dishes, yogurt, and baked goods.



Cinnamon Cinnamon is the thin, dried inner bark of two related evergreen trees of the laurel family. It is used in baking more than any other spice. Cinnamon has a warm, spicy aroma and flavor. It is available dried in sticks or ground. Cinnamon is used in cakes, cookies, pies, curries, sweet potatoes, meat stuffing, and preserves.

Celery Seeds Celery seed is a tiny, seed-like fruit with a strong celery flavor. It is available whole, ground, or mixed with salt. In its whole form, celery seed is used in sauces, salads, cole slaw, and pickling. Ground celery seed is used in soups, stews, and salad dressings.



Chili Powder Chili powder is a dried, ground blend of cumin, garlic, onion, and chile peppers. It is used in chili, egg dishes, and meat dishes.

Spices

continued

Cayenne Cayenne (ˌkɪ-ˈɛn) comes from hot red peppers that are ground into powder. It has a strong flavor that gives food a “kick.” It is dried and ground. Cayenne is used with meat, fish, eggs, and poultry. It is also used in soups, sauces, and salads.



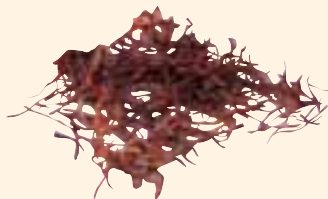
Cumin Cumin (ˈkʌ-mən) seeds are the dried, ripened fruit of an herb in the parsley family. It looks like caraway seed, but has a much different flavor and aroma. Cumin is available whole or ground. It is the spice that lends chili its distinctive flavor. Cumin is also used to flavor chicken, fish, curries, couscous, sausages, and hard cheeses.

Chiles Chiles are peppers that grow in a variety of shapes and sizes from round to oblong. They range in color from red, yellow, and green to purple. Chiles can be mild, sweet, or extremely hot. They are available fresh and dried. Chiles are used in a variety of dishes including salads, pickles, sauces, vegetable dishes, salsas, and meat dishes.



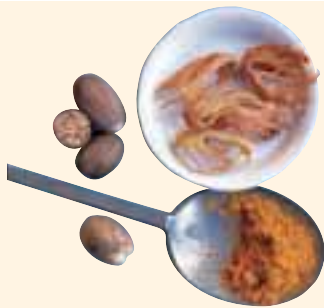
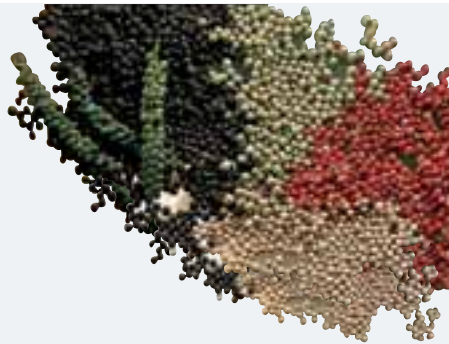
Dill Seeds Dill seeds are the small, dark seeds of the dill plant. They have a slightly sharp taste and distinct odor. Dill seeds are used in soups and salads. They are also used with sauerkraut and fish.

Fennel Seeds Fennel (ˈfe-nəl) seeds come from a tall, hardy plant in the parsley family. In addition to fennel seeds, the fennel plant is used widely in cooking and pickling. Both have a mild, anise-like flavor. Whole fennel seeds are used in breads, crackers, and sausages. They are also used in tomato sauce, marinades, and with fish and shellfish.



Saffron Saffron (ˈsɑ-,frən) is a yellow spice derived from the crocus plant. It has a sweet scent, but a bitter taste. Saffron is the most expensive spice in the world. It is available dried as whole threads or ground.

Pepper and Peppercorns The pepper plant is a smooth, woody vine that climbs tree trunks and produces grapelike clusters of small berries. The berries start green and then turn red as they ripen. There are three true varieties: green, black, and white. (Pink pepper is not derived from the pepper plant.) Each has its own unique flavor. Pepper is available whole, as peppercorns, or ground. Pepper is used in all sorts of dishes.



Nutmeg Nutmeg (¹nət-,meg) is the kernel of the fruit or seed of the evergreen nutmeg tree. Nutmeg is dried, removed from the shell, and either ground or kept whole for grating. Nutmeg has a sweet, warm, spicy flavor. Freshly grated nutmeg is superior in flavor to prepared ground nutmeg. Nutmeg lends itself to many baked items, soups, sauces, chicken, potatoes, and custards.

Mustard Seeds Mustard seeds are the small, round, smooth seeds of the watercress family. They have a tangy flavor. Mustard seeds are available whole, ground, or prepared as a condiment sauce. Mustard seeds are used in salads, salad dressings, and sauces. They are also used with meats, fish, cheese, and eggs.



Paprika Paprika is derived from dried, ripe, red sweet peppers. Its flavor is sweet. Hungarian paprika can be semi-hot or very hot. It is available fresh or dried, whole, canned, diced, or ground. Paprika is used in soups, stews, sauces, salad dressings, and tomato dishes. It is also used to accent fish and shellfish dishes.

Ginger Ginger is the underground stem of a plant native to Asia. It can be used fresh or dried. Dried ginger is most often used in baking to flavor cookies and cakes, or with fruits. Fresh ginger has a stronger flavor than the dried form and should be peeled before it is used. Ginger has a strong, sweet, peppery flavor. It is available whole, in pieces, in slices, or ground. Fresh ginger is used with fish, poultry, and curries.



Spices can also be used to add color to a dish. For example, saffron is used to give a soft yellow color to dishes such as **paella** (pă-'ā-yə), a Spanish rice dish with meat or shellfish, and **risotto Milanese** (ri-'sò-(j)tō ,mi-lə-'nəz), an Italian dish that includes rice that is sautéed in butter before stock is added. Ground cinnamon can be dusted over a dessert to make a beautiful topping.


Ground spices release their flavor immediately. In this case, it is best to add ground spices near the end of the cooking process.

Whenever you cook with spices, you must measure them accurately. Strong spices, such as clove, cayenne, or cumin, can overpower the food if you use too much. As a rule, spices should not dominate the food but complement it. The exceptions are curries or chilis.

Spice Storage

Spices should be stored in air-tight containers away from direct sunlight. Light can cause spices to deteriorate. This can rob spices of their flavor. Spices are best kept in a cool, dry place at temperatures of 50°F to 70°F (10°C to 21°C).

Many factors besides sunlight and heat can affect the flavor of spices. The age, type, and source of the spice play a role in how long a particular spice can be stored. Check spices often to make sure they have retained their strength. Discard spices that taste weak or strangely bitter.

 **Reading Check** **Determine** When should spices be added to foods?

SECTION 16.2 After You Read

Review Key Concepts

1. **Describe** how to properly store herbs.
2. **Explain** how to properly store spices.

Practice Culinary Academics



Social Studies

3. The taste that defines a region's cuisine often comes from a particular blend of seasonings. Find a spice blend that is used in a region of the world. Prepare a short presentation on where and for what the blend is used. Include images in your presentation. You may also prepare a food with the spice blend as a demonstration.

NCSS I A Culture Analyze and explain the ways groups, societies, and cultures address human needs and concerns.



English Language Arts

4. Conduct research on an herb that is not listed in this section, or conduct further research on an herb that is described in this section. Create a presentation on your chosen herb with visual aids. Present the information to your classmates, and turn in your notes to your teacher.

NCTE 8 Use information to gather information and create and communicate knowledge.



Mathematics

5. You would like to add freshly made mint ice cream to your restaurant's menu, and have decided to grow your own mint. Last month, your mint plant was 2 feet, 7 inches tall. You took care of the mint plant properly, and that care has paid off. This month, it is 4 feet, 1 inch tall. How much did it grow?

Math Concept Subtracting Lengths When you subtract measurements that are given in feet and inches, subtract the feet and inch amounts separately. If you wind up with a negative number of inches, add 12 to the inch amount, and subtract 1 foot.

Starting Hint Subtract 2 feet from 4 feet to get the new foot amount, and 7 inches from 1 inch to get the inch amount. Rewrite the answer to eliminate the negative number of inches.

NCTM Problem Solving Build new mathematical knowledge through problem solving.



Check your answers at this book's Online Learning Center at glencoe.com.

Condiments, Nuts, and Seeds

Reading Guide



Use Color As you read this section, try using different colored pens to take notes. This can help you learn new material and study for tests. You could use red for vocabulary words, blue for explanations, and green for examples.

Read to Learn

Key Concepts

- **Describe** various condiments and the foods they can accompany.
- **Identify** a variety of nuts and seeds.

Main Idea

Condiments, nuts, and seeds can be served with food to enhance flavor. Condiments are added to prepared food, while nuts and seeds are used during cooking.

Content Vocabulary

- condiment
- salsa
- ketchup
- steak sauce
- prepared mustard
- fermented
- relish
- vinegar
- flavored oil
- seed
- nut

Academic Vocabulary

- accompaniment
- complement

Graphic Organizer

As you read, use a chart like the one below to help you describe the proper way to store condiments, nuts, and seeds.

Condiments	
Nuts and Seeds	



Graphic Organizer Go to this book's Online Learning Center at glencoe.com for a printable graphic organizer.

What condiments do you use to season food?

ACADEMIC STANDARDS



Mathematics
NCTM Data Analysis and Probability Understand and apply basic concepts of probability.



Science
NSES C Develop an understanding of the cell.



Social Studies
NCSS I E Culture
Demonstrate the value of cultural diversity, as well as cohesion, within and across groups.

NCTE National Council of Teachers of English

NCTM National Council of Teachers of Mathematics

NSES National Science Education Standards

NCSS National Council for the Social Studies

Condiment Varieties

You have learned about herbs and spices and how they affect the flavor of foods, but what about the condiments, nuts, and seeds that can be served with food to enhance flavor? You will need to know which foods they enhance.

A **condiment** is traditionally served as an accompaniment to foods. An **accompaniment** is something that goes well with something else. Condiments' purpose is to **complement**, or go together well with, food flavors. They vary from sweet and tart to hot and spicy, or sour. Condiments can be purchased ready to use or can be created in the kitchen.

Sauces

Sauces can be used as a condiment for many foods. Many sauces can enhance foods:

- A **salsa** ('sól-sə) is a fresh or cooked mixture of chopped chiles, tomatoes, onions, and cilantro. Unopened, cooked salsas can be stored at room temperature for up to six months. Opened salsas should always be tightly covered and refrigerated. Fresh salsas can be refrigerated for seven days.
- **Ketchup** is a tomato-based sauce used throughout the world as a flavoring. Ketchup has a tangy, sweet-and-sour taste. Some ketchups have a flavoring added, such as jalapeño. As ketchup ages, it can taste stale.
- **Steak sauce** is a sauce that is tangier than ketchup. Steak sauce is used with grilled and broiled meats.

Prepared Mustards

A **prepared mustard** contains a combination of ground white, black, and brown mustard seeds, vinegar, salt, and spices. Prepared mustards have a variety of textures, from smooth to coarse to chunky. They also have a variety of flavors, from mild to hot. Prepared mustards are often served with pork, beef, vegetables, sandwiches, and salads. Prepared mustards can also be used in dips for vegetables, or as part of a sauce. As mustards age, they lose flavor.

Pickled Condiments

Some condiments have pickled ingredients. Pickles are made from vegetables that are **fermented** ((,fər-'men-ted), or chemically changed in brines or vinegars flavored and seasoned with dill, garlic, sugar, peppers, or salt. Cucumbers, tomatoes, and peppers are commonly pickled. A coarsely chopped or ground pickled item is called a **relish**. The most common flavors are sweet and dill.

Vinegars

Vinegar is a sour, acidic liquid used in cooking, marinades, and salad dressings. Some common vinegars are white vinegar, red wine vinegar, balsamic (ból-'sa-mik) vinegar, and cider vinegar. Discard vinegars three months after they are opened.

Flavored Oils

A **flavored oil** has been enhanced with ingredients such as herbs, spices, and garlic. The oils of these ingredients are extracted and then poured into olive or canola oil. Some flavored oils are created by simply adding the flavor enhancer itself, such as garlic, to olive or canola oil. Prepare only enough to use for one day to avoid foodborne illness.

Sometimes different vegetable oils are combined to create a unique taste. For example, Szechwan-flavored oil combines sunflower oil, canola oil, and sesame seed oil.

Condiment Storage

Unopened condiments should be stored in cool and dry areas. Temperatures should be between 50°F (10°C) and 70°F (21°C). Most opened condiments should be stored in the refrigerator.

Once opened, remove canned condiments from the cans and transfer them into airtight plastic containers. Store condiments in the refrigerator once they have been opened.



Reading Check

Name With what kind of foods would you use hot sauce?

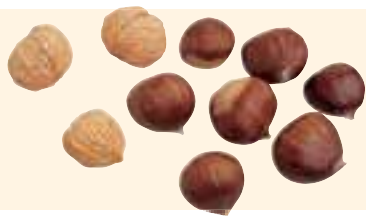
Nuts and Seeds

Almonds A medium-brown nut that is white inside, almonds can be sweet or bitter. Sweet almonds are eaten; bitter almonds are used as a source for almond flavoring. Almonds are available whole in the shell, shelled, skinned, sliced, in pieces, or as a paste.



Brazils Brazils are not actually nuts, but the seeds of a fruit. Brazil nuts are available whole in the shell or shelled.

Cashews The cashew is the edible seed of a tropical evergreen tree. Most cashews are salted and roasted. They are available raw or toasted.



Chestnuts Chestnuts are sweet nuts that contain more starch and less fat than other nuts. They can be roasted, boiled, or steamed. Chestnuts are available whole in the shell, dried, and canned in water or syrup.

Hazelnuts Hazelnuts grow in clusters and are the nut of the hazelnut tree. They are sweet, rich, grape-size nuts and often are used in salads and main dishes.



Peanuts Although peanuts are considered nuts, they are actually small legumes that resemble peas. The two most common types are Virginia and Spanish peanuts. The Virginia peanut has larger kernels and more flavor than the Spanish variety. Many people are allergic to peanuts. Customers should be told which menu items include peanuts. Peanuts are available as dry roasted, granules, salted, unsalted, and in the shell.

Pecans Pecans are the nut of the pecan tree. They have a very thin shell. Pecans are available whole in the shell, chopped, and in halves.



Nuts and Seeds

continued

Pine Nuts Pine nuts are the kernels of pine cones. They taste like almonds and are available raw, toasted, and frozen.



Pistachios Pistachios (pə-ˈsta-sh(ē-,)ōs) are pale green to creamy white in color and have a mild flavor. Pistachios are available in the shell, shelled, roasted and salted, and dyed red.

Walnuts Walnuts are the fruit of the walnut tree. Sizes vary from small to large. Walnuts are available whole in the shell, shelled as halves, and chopped.



Poppy Seeds Poppy seeds are the dark black, dried seeds of the poppy plant. Poppy seeds are available whole.

Pumpkin Seeds Pumpkin seeds come from pumpkins. They are available in the shell, toasted, and raw.



Sesame Seeds Sesame (ˈse-sə-mē) seeds are creamy-colored, flat, oval seeds that have a nutty flavor. They are available whole, roasted, and ground into paste.

Sunflower Seeds These seeds come from the sunflower. The whole seed can be eaten raw or cooked.



Nuts and Seeds

Nuts and seeds can be used to enhance natural flavor, or add color and texture to food. A **seed** is a plant grain. A **nut** is a hard-shelled dry fruit or seed. Nuts are available shelled and unshelled. Purchase nuts in small quantities because they can easily spoil. Use nuts carefully, as many people are allergic to them. Seeds can be used in many ways. Some seeds, such as cumin, are considered spices, and are used during cooking. Other seeds, such as poppy seeds, are used for baking.

Nut and Seed Storage

Store fresh nuts and seeds in an airtight container in a cool, dry area with limited exposure to light. Nuts also can be refrigerated or frozen in airtight containers.



Reading Check

Describe What are the characteristics of a pistachio?

SECTION 16.3



After You Read

Review Key Concepts

1. **Describe** pickles, and name the foods that are most commonly pickled.
2. **Identify** the nutritional benefits of nuts and seeds.

Practice Culinary Academics



Mathematics

3. A bag of mixed nuts has 20 peanuts, 14 almonds, 8 Brazil nuts, and 6 cashews. What is the probability of randomly selecting a Brazil nut from the bag? What are the odds of selecting a Brazil nut?

Math Concept

Probability vs. Odds Probability is the ratio of the number of chances an event can occur to the total number of possible outcomes. Odds are written as a ratio of the chances of an event not occurring to the chances of it occurring.

Starting Hint For the probability, write a fraction with the number of Brazil nuts over the total number of nuts, and simplify. For the odds, count the number of nuts that are not Brazil nuts.

NCTM Data Analysis and Probability Understand and apply basic concepts of probability.

❖ Nutrition Notes ❖

Nuts About Nutrition!

Nuts are packed with essential nutrients. They are a good source of B vitamins, vitamin E, protein, and essential fatty acids. They are also high in calcium, folic acid, magnesium, potassium and fiber. Some scientific studies have concluded that a daily portion of just one ounce of nuts rich in monounsaturated fat can reduce the risk of heart disease by up to 10 percent. One ounce of nuts has about 180 calories and 17 grams of fat. Fifty to 80 percent of that fat is monounsaturated, the “good” fat that help the body reduce the level of LDL—the “bad” cholesterol.

CRITICAL THINKING How could you add nuts to a dish?



Science

4. **Procedure** Water inside vegetables flows out into salty brine in a process called osmosis. Drain the juice from a jar of dill pickles. Cut the pickles in half. Mix a solution of water, sugar, and two fruit punch packets. Place the pickles in the jar and replace the brine with the fruit punch.

Analysis Seal the jar and observe the pickles for a week. Keep a log of your observations. As a class, discuss what happened to the pickles, and why. Turn in your logs to your teacher.

NSES C Develop an understanding of the cell.



Social Studies

5. Condiments in different cultures have similarities and differences. Compare and contrast three condiments used in different cultures. Create a chart to show your comparisons.

NCSS I E Culture Demonstrate the value of cultural diversity, as well as cohesion, within and across groups.



Check your answers at this book's Online Learning Center at glencoe.com.

Sensory Perception

People use all five senses to enjoy food.

Reading Guide

Before You Read

Create an Outline Use the section's heading titles to create an outline. Make the titles into Level 1 main ideas. Add supporting information to create Level 2, 3, and 4 details. Use the outline to predict what you are about to learn.

Read to Learn

Key Concepts

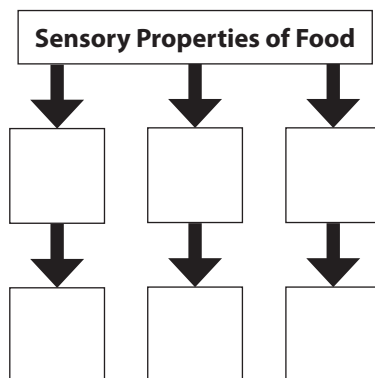
- **Summarize** the three sensory properties of food.
- **Illustrate** how sensory factors can affect a customer's enjoyment of food.

Main Idea

Using seasonings and flavorings requires foodservice professionals to understand sensory perception. This will improve your ability to taste and to create enjoyable dishes.

Graphic Organizer

Use a main idea chart like this one to list the three sensory properties of food. Then, list the senses that they stimulate.



Graphic Organizer Go to this book's Online Learning Center at glencoe.com for a printable graphic organizer.

ACADEMIC STANDARDS



English Language Arts

NCTE 4 Use written language to communicate effectively.



Mathematics

NCTM Geometry Use visualization, spatial reasoning, and geometric modeling to solve problems.



Science

NSES C Develop an understanding of the behavior of organisms.



Social Studies

NCSS I C Culture Apply an understanding of culture as an integrated whole that explains the functions and interactions of language, literature, the arts, traditions, beliefs and values, and behavior patterns.

NCTE National Council of Teachers of English

NCTM National Council of Teachers of Mathematics

NSES National Science Education Standards

NCSS National Council for the Social Studies

Sensory Properties of Food

To use seasonings and flavorings successfully, foodservice professionals must understand sensory perception. **Sensory perception** is how a person's eyes, nose, ears, mouth, and skin detect and evaluate the environment. Sensory perception will help you improve your ability to taste. Improved taste will help you to increase your customers' enjoyment of food.

Sensory properties of food affect how people perceive food. These sensory properties are color and appearance, flavor, and texture. Each one is detected by the five sense organs: the taste buds, nose, ears, skin, and eyes. (See **Figure 16.1**.)

When people eat, they use these sense organs to evaluate the food. This is done with special **receptors**, or groups of cells that receive stimuli. **Stimuli** are things that cause an activity or response. When a stimulus is detected, nerve impulses carry the signal to the brain, where it is processed.

When the stimulus is food, the sense organs of taste and smell cause a reaction that increases the production of saliva. Gastric secretions are also increased. These two fluids help with digestion and the distribution of nutrients to the body.

Color and Appearance

The appearance of food is usually the first **indication**, or sign, of how it will taste. The brighter and more colorful the food, the more visual appeal it has. Customers will prefer dishes that are colorful and are appealingly plated. The brain processes visual information about flavor and texture based on appearance alone. It then makes decisions about likes and dislikes. This happens because of people's highly developed sense of sight. In fact, our sense of sight is so highly developed that it may cause messages that are received from the other senses to be ignored. This means you must be absolutely sure that the color and appearance of food will be visually appealing to customers. Otherwise, it may not matter how good the food tastes.

Lighting

Different types of lighting affect how we see color. Foodservice professionals should be aware that the way that they see food in kitchen lighting may not be the way that the customer sees the food in dining room lighting. For example, when the color green is viewed under an incandescent light, it will appear more yellow than when it is viewed under fluorescent lighting. Warmer lighting tends to make food look more appetizing.

FIGURE 16.1 Sensory Perception of Food

Sensing Quality Customers use their senses to determine the quality of a dish. *Why is it important that food look appealing on the plate?*

Sense	Receptor	Stimuli	Sensation
Taste Buds	Taste cells	Sugars, salts, acids, amino acids, and alkaloids	Taste
Nose	Olfactory cells	Odor chemicals	Smell
Skin	Free nerve endings; skin receptors	Chemicals; heat and pressure	Pain; touch
Eyes	Rods and cones	Light energy	Sight



The Right Light Lighting affects the color of food. *How does lighting affect this plate of food?*

Physical Structure

The physical structure of food affects color. For example, spinach is made of plant cells that contain a large amount of liquid. These plant cells are surrounded by air pockets. When raw spinach is cooked, air escapes from the pockets, and the plant cells burst. This causes the air pockets to fill with liquid, and the cooked spinach looks darker. Because light reflects off liquids differently than it does air, cooked onions appear **translucent**, or clear, rather than opaque, or cloudy.

Chemical Structure

The chemical structure of food also affects appearance. For example, the pigments, the chemicals that give vegetables their color, change during the cooking process. Pigments found in foods can be red (as in beets), white (as in cauliflower), green (as in broccoli), and yellow (as in squash). When properly cooked, pigments remain bright. When overcooked, pigments become dull. Foods with dull pigments are also often mushy in texture, and have lost nutritional value.

Flavor

The sensory property of flavor, or taste, is a combination of three sensory experiences: basic tastes, aromas, and touch, through nerve endings. People's perception of these three sensory experiences is chemical in nature. Salt, for instance, changes the chemistry of certain taste buds. This change in chemistry sends a signal to the brain that travels through nerve fibers. The brain translates this signal into the **perception**, or awareness, of saltiness.

Tastes

The basic tastes are: sweet, salty, sour, and bitter. Sometimes savory ('sā-və-rē) is included. **Savory** means stimulating and full of flavor.

Tastes are detected by taste buds. A **taste bud** is a specialized cell for tasting that is scattered over the surface of the tongue. In addition to taste buds, saliva plays an important role in taste perception. Without saliva, the sweeteners, salts, acids, and bitter components of food could not reach the taste cells.

Aroma

The perception of aroma is more complex than the perception of taste. Humans can detect hundreds, even thousands, of distinctly different aromas. The sense of smell allows people to differentiate between similar flavors, such as an orange and a tangerine. People can actually “taste” the different flavors.

Nerve Endings

Nerve endings that are just below the skin throughout the mouth and nose are responsible for detecting flavors. They allow you to feel the menthol in peppermint and the carbon dioxide in carbonated beverages. In fact, people who have lost their senses of taste and smell can often still detect the presence of certain flavors with these nerve endings.

Texture

The last sensory property of food that must be evaluated is texture. The characteristics of texture can vary greatly. For example, cooked rice can be rough or smooth, sticky or slick, hard or soft, moist or dry, chewy or crumbly.

The texture depends on the type of rice and how it was prepared.


Sound also plays a part. Taste can sometimes depend on crunch, such as for crisp vegetables or tortilla chips. Sometimes one characteristic stands out, but foodservice professionals should practice identifying food textures as completely as possible.

Texture Evaluation

Foodservice professionals must train themselves to pay attention to the texture of all foods. Ask these questions when you evaluate the texture of food:

- How does the food feel against the soft tissue in the mouth?
- How does the food react to being squeezed, pulled, bitten, or chewed? Is it hard? Does it bounce back like gelatin? Is it crumbly? When you evaluate texture, you will need to see how food reacts to being eaten.
- How does the food react to the warmth of the mouth? For example, the smoothness of ice cream and chocolate depend in part on how quickly and completely they melt in your mouth.



 **Translucent Onions** Raw onions are opaque, while cooked onions are translucent.
Why does this happen?

Taste Sensations

The tongue contains many tiny bumps called papillae (pə-¹pi-(,)lē). These bumps sense the basic tastes of bitterness, saltiness, sourness, and sweetness. Each bump contains more than 200 taste buds.

Procedure

Gather 4 coffee stirrers, 1 teaspoon salt, 1 teaspoon sugar, 1 teaspoon cocoa powder, one lemon, and a glass of water. Use the coffee stirrer to place a sample of salt on the tip of your tongue. Record whether it tastes sweet, sour, bitter, or salty. Repeat the procedure on each section of your tongue, and record the taste. After you complete the experiment with the salt, rinse your mouth with water and repeat the experiment with the sugar, cocoa powder, and lemon. Be sure to rinse between each sample.

Analysis

Examine your records. Did you notice any difference in taste between different parts of the tongue? Research to find out if taste on your tongue corresponds to different areas. Create a summary of your records and your research.

NSES C Develop an understanding of the behavior of organisms.

- Does the food leave a coating after swallowing? For example, shortenings, especially those with a high melting point, tend to leave a waxy coating in the mouth. Is the coating pleasant or unpleasant?
- How does the food sound when chewed? Potato chips are not crispy unless you can hear the crunch.



Reading Check

List What are the sensory properties of food?

Sensory Evaluation

Sensory evaluation is the science of judging and evaluating the quality of a food by use of the senses. Many foodservice businesses conduct consumer taste tests to find out what

their customers like and dislike. This helps food companies to design products that the customers will find tasty.

Customers test foods based on their likes and dislikes, but other food taste testers need to evaluate food objectively. Their job is to describe only the sensory characteristics. To increase the objectivity of the evaluations, blind taste tests are often done on food. A **blind taste test** means that the food samples are not labeled so that the testers will not know which product they are tasting.

You will need a lot of practice to successfully recognize and identify the many sensory characteristics of food. Culinary skills involve putting flavors together. The process of sensory evaluation, however, is one of taking flavors apart.

Product Factors

Different versions of the same type of food may taste or smell different from each other. For example, one vinaigrette (vi-ni-'gret) dressing may taste more sour than another even though they both contain the same amount of acid. Several factors shape the characteristics of a food product.

Type of Ingredients

Vinaigrette dressings are made of oil, vinegar, and herbs. Different vinaigrettes may contain the same amount of acid. However, if they contain different types of acid, they will not taste the same. For example, if one vinaigrette is made from vinegar and the other is made from lemon juice, the vinaigrette with vinegar will seem more acidic.

Product Temperature and Consistency

Products that are warm usually have a stronger flavor and aroma than those that are cold. Thicker products may have less flavor than thinner ones. This is because flavor molecules take longer to dissolve or evaporate in saliva when food products are thicker.

Presence of Other Factors in Foods

You can suppress a person's ability to perceive flavor in foods when you combine flavors or aromas in those foods. For example, if you add a small amount of sugar to vinaigrette salad dressing, it will not taste as acidic. This is true even if the amount of sugar added is so small that sweetness from the sugar cannot be detected.

- Add acid to food to make the food taste less sweet.
- Add salt to food to make the food taste less sour.
- Add sugar to food to make the food taste less bitter.

Flavor Enhancers

Flavor enhancers change the natural flavor of food without adding a flavor of their own. They are able to do this through the chemistry that occurs between the enhancer and your body. It is believed that flavor enhancers interact with certain taste chemicals and receptors in your mouth. This produces a different perception of how foods taste with the enhancer than how they taste alone.

Amount of Oil and Water

The amount of oil or water in foods will affect the perception of taste and smell. A taste chemical that dissolves in oil will not fully dissolve in saliva. Because of this, little of it will reach the taste buds. When an odor chemical dissolves in water or oil, it will not evaporate to the olfactory cells where it can be smelled.

Plate Composition

The **plate composition**, or the way in which foods are arranged on a plate, should be carefully planned even before the food is cooked. Create contrasts in color and appearance, height, shape, texture, flavor, and temperature of foods.

Color and Appearance

The colors of food presented on a plate should be vibrant and contrasting. Carefully choose the foods and the plate on which the food will be served. However, the plate should not detract from the food presentation.



◀ **Varying Shapes** Plate food with varying shapes to make it interesting to the eye. *What other features do you see that make this plate of food visually appealing?*

Height

Often, one of the most difficult elements in plate composition is varying the heights of food on a plate. For example, mashed potatoes might be neatly piped onto the plate in a circular pinnacle. Grilled steak is then placed leaning slightly against the mashed potatoes. A cob of corn could be cut in half and stood on each side of the steak.

Shape

Vary the shape of foods in every presentation. Do not serve a round meatloaf patty with sautéed peas and boiled new potatoes. These are all round forms. Instead, try serving it with asparagus spears and diced, roasted potatoes.

Texture

Include a variety of textures on each plate. Choose foods that may have soft, hard, chewy, crunchy, creamy, or meaty textures.

Flavor

Each element of food in a plate presentation should contribute to the overall flavor, including any garnishes added. Flavor should be considered before cooking.

Temperature

Foods should be served at the appropriate temperatures. Properly use hot and cold serving plates.

Garnishing

A garnish makes food or drink items look more appealing. Not all food presentations need a garnish. However, garnishes should complement the food. Some dishes are so identified with a particular garnish that they may appear incomplete without it.

 **Reading Check** **Explain** What plating elements should be considered?

SECTION 16.4

After You Read

Review Key Concepts

1. **Explain** how lighting affects the perception of food.
2. **Illustrate** how product temperature can affect a customer's enjoyment of food.

Practice Culinary Academics

English Language Arts

3. The next time you eat a meal, focus on the sensory properties of the meal: the color, appearance, flavor, and texture. Try to remember how you perceived each property when you ate the meal. Write a description of the meal using details to describe each of the sensory properties.

NCTE 4 Use written language to communicate effectively.

Social Studies

4. To the Japanese, presentation and sensory properties are very important in a meal. Do some research or interview a chef of Japanese cuisine about how the sensory properties affect the preparation of various Japanese menu items.

How might you apply these practices to your own cooking? Write a one-page report of your research.

NCSS I C Culture Apply an understanding of culture as an integrated whole that explains the functions and interactions of language, literature, the arts, traditions, beliefs and values, and behavior patterns.

Mathematics

5. You would like to place a circle of mashed potatoes in the center of an 11-inch dinner plate so that it covers one-half of the surface area of the plate. What is the diameter of the mashed potatoes?

Math Concept **Area of a Circle** Calculate the area (A) of a circle as $A = \pi r^2$, where r indicates the radius (or $\frac{1}{2}$ of the diameter) of the circle. Use 3.14 for π .

Starting Hint Calculate the area of the plate as $A = (3.14)(5.5)(5.5)$. Take half of that amount (which is the area of the potatoes), and plug that into the formula as A , and solve for r .

NCTM Geometry Use visualization, spatial reasoning, and geometric modeling to solve problems.



Check your answers at this book's Online Learning Center at glencoe.com.

Chapter Summary

Seasonings and flavorings are used to enhance the natural flavor of a food. Spices and flavorings can be added to foods at any time during the cooking process. The most common seasonings are herbs and spices. Other seasonings and flavorings include condiments and

nuts. Condiments are flavored sauces that are served with food. Nuts add color, texture, and flavor to food. Evaluate color, appearance, flavor, and texture of food. Foodservice professionals taste a variety of food products to evaluate, or analyze, their characteristics.

Content and Academic Vocabulary Review

1. Arrange the vocabulary terms below into groups of related words. Explain your groupings.

Content Vocabulary

- seasoning (p. 400)
- flavor enhancer (p. 400)
- flavoring (p. 400)
- extract (p. 401)
- spice (p. 401)
- zest (p. 402)
- pith (p. 402)
- monosodium glutamate (p. 403)
- blend (p. 404)
- herb (p. 406)
- sachet (p. 410)
- bouquet garni (p. 410)
- aroma (p. 410)
- marinade (p. 410)
- paella (p. 414)
- risotto Milanese (p. 414)
- condiment (p. 416)
- salsa (p. 416)
- ketchup (p. 416)
- steak sauce (p. 416)
- prepared mustard (p. 416)
- fermented (p. 416)
- relish (p. 416)
- vinegar (p. 416)
- flavored oil (p. 416)
- seed (p. 419)
- nut (p. 419)
- sensory perception (p. 421)
- sensory properties (p. 421)
- receptors (p. 421)
- stimuli (p. 421)
- translucent (p. 422)
- savory (p. 422)
- taste bud (p. 422)
- sensory evaluation (p. 424)
- blind taste test (p. 424)
- plate composition (p. 425)

Academic Vocabulary

- distinct (p. 401)
- lend (p. 403)
- abundant (p. 406)
- opaque (p. 410)
- accompaniment (p. 416)
- complement (p. 416)
- indication (p. 421)
- perception (p. 422)

Review Key Concepts

2. **Describe** the varieties and uses of seasonings and flavorings.
3. **Compare and contrast** the uses and storage for different herbs.
4. **Describe** the uses and storage for different spices.
5. **Describe** various condiments and the foods they can accompany.
6. **Identify** a variety of nuts and seeds.
7. **Summarize** the three sensory properties of food.
8. **Illustrate** how sensory factors can affect a customer's enjoyment of food.

Critical Thinking

9. **Choose** three seasonings that you would use in the preparation of a lamb dish. Explain which three you would choose, and why.
10. **Explain** why you think some foodservice operations might choose to use dried herbs rather than fresh herbs.

Academic Skills

**English Language Arts**

- 11. Evaluate Magazine Articles** Locate three magazine articles that focus on seasonings or flavorings. Evaluate each magazine article by answering these questions: what is the intended audience for this article? What is the focus of the article? What kind of information does the article give? What is the writing style of this article? If you were to write an article, what seasoning or flavoring would you choose and what would be the focus?

NCTE 3 Apply strategies to interpret texts.

**Science**

- 12. Apples and Onions** Your sense of smell plays an important role in how you perceive the flavor of food.

Procedure Get several pieces of cut up apple and onion and a blindfold. With a partner, take turns being blindfolded. While you are blindfolded, pinch your nose and have your partner give you a piece of each food, not revealing which you are getting. Can you tell which is which? Try it again but with your partner holding the food so you can smell it. Can you tell which is which now?

Analysis Write a short summary of your experience, and theorize why the sense of smell is so important to the sense of taste.

NSES B Develop an understanding of the structure and properties of matter.

**Mathematics**

- 13. Calculate Salt Use** You are in charge of refilling the salt and pepper shakers at your restaurant. On Monday, you fill an empty 2-ounce salt shaker completely full. The next day, you fill it up again when it is $\frac{3}{4}$ full. Wednesday, the shaker is $\frac{7}{8}$ full when you refill it. On Thursday, you fill it again when it is $\frac{2}{3}$ full. At the end of the week, you refill the shaker when it is $\frac{1}{2}$ full. What is the total amount of salt that you put in the shaker during the week?

Math Concept Order of Operations If an expression contains multiple operations, you can save time and effort if you perform the operations in a certain order. Perform the operations in this order: **P**arentheses, **E**xponents, **M**ultiplication and **D**ivision, and finally **A**ddition and **S**ubtraction. Within each type of operation, work from left to right. Use the acronym PEMDAS to remember this mnemonic device for order of operations for evaluating math expressions.

Starting Hint Each day, you add a fraction of 2 ounces to the shaker. For example, if the shaker is $\frac{3}{4}$ full, you will add $(\frac{1}{4} \times 2)$ ounces of salt to the shaker. Write an expression listing all of the amounts added to the shaker: $2 + (\frac{1}{4} \times 2) + (\frac{1}{8} \times 2)$ and so on. Solve within the parentheses first, and convert any fractions to common denominators. Use the PEMDAS order to help you to solve the equations in the expression.

NCTM Number and Operations Understand the meanings of operations and how they relate to one another.

Certification Prep

Directions Read the questions. Then, read the answer choices and choose the best possible answer for each.

- 14.** What is the shelf life of opened vinegar?
- | | |
|------------|-------------|
| a. 2 weeks | c. 3 months |
| b. 1 month | d. 1 year |
- 15.** What is the first indication of how food will taste?
- | | |
|---------------|------------|
| a. appearance | c. texture |
| b. aroma | d. flavor |

Sharpen your test-taking skills to improve your kitchen certification program score.

Test-Taking Tip

If the test is timed, you may have a tendency to rush. If you go too fast, you may lose focus or miss something. Take your time, but keep an eye on the clock.

Real-World Skills and Applications

Critical Thinking Skills

- 16. Replace Salt** Think of five dishes to which you normally add salt, either during or after preparation. Now, think of other seasonings, flavorings, or condiments that could be added to the dish instead of salt that would improve the flavor without adding sodium. Make a list of the dishes and substituting that you find. Discuss your possible answers as a class.

Interpersonal and Collaborative Skills

- 17. Create a Recipe Collection** Gather five recipes that use different seasonings and flavorings. The seasonings and flavorings can be used during or after preparation. As a class, divide each recipe into categories of herbs, spices, condiments, and seeds and nuts. Some recipes may fit in more than one category. Write down the recipes in a standard format. Then, create a classroom recipe file for the recipes you have gathered.

Technology Applications

- 18. Make a Spreadsheet** Using spreadsheet software, make a chart listing the different seasonings and flavorings in the chapter and some potential uses for each. Include columns for the type (seasoning or flavoring), how it works, what foods it might enhance, and the page number it is found on in this book. Divide the spreadsheet into categories so that you can easily locate the type of item you wish to use. Turn in a copy of your spreadsheet to your teacher. You may wish to combine the spreadsheets as a class.

Financial Literacy

- 19. Purchase Spices** 20 ounces of Chinese 5 Spice Powder costs \$20 from your supplier. The ingredients are: cinnamon (\$5.00), star anise (\$5.00), anise seed (\$3.00), ginger (\$5.00), and cloves (\$6.00). How much money will you save by purchasing the blend rather than purchasing each ingredient individually?

Culinary Lab



Use the culinary skills you have learned in this chapter.

Herbs and Spices in Action

- 20. Create a Sauce** Working in teams, you will use herbs and spices to create a unique sauce. Think about the food you will serve it with and the desired final outcome.
- Choose seasonings and flavorings.** Choose a basic sauce to prepare. Review the list of herbs and spices and investigate how they are used with various foods.
 - Decide on the details.** Decide which spices or herbs will produce the unique flavor your team wants for its sauce. Also, decide on the best time to add your seasonings to produce the maximum flavor.
 - Prepare your sauce.** Cook your sauce, adding the seasonings you have chosen. Write down the ingredients and amounts used, and the steps you took when you prepared the sauce. When you are satisfied with the sauce, write out the recipe for others to use.
 - Do a taste test.** Taste every team's sauce. Evaluate each sauce, and keep a record of your evaluations.

Create Your Evaluation

Share your team's sauce with the class. Evaluate each team's sauce for flavor, color, and texture. Use the following rating scale to score each team's sauce: 1 = Poor; 2 = Fair; 3 = Good; 4 = Great. Discuss your ratings as a class and why you chose the ratings you did for each group. After hearing your ratings, think about ways to improve the sauce.