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# Breads

**Oven Tender**  
Tends stationary or rotary hearth oven that bakes breads, pastries, and other bakery products.

**Baker**  
Mixes and bakes ingredients according to recipes to produce breads, pastries, and other baked goods.

**Dividing-Machine Operator**  
Tends machines that automatically divide, round, proof, and shape dough into units of specified size and weight, according to work order, preparatory to baking.



## Terms to Know

- batter
- dough
- leavening agent
- gluten
- fermentation

## Objectives

- After studying this chapter, you will be able to
- describe how to select and store baked goods.
  - identify the functions of ingredients in baked products.
  - prepare quick breads and yeast breads.

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### Meeting Special Needs

Challenge academically gifted students in your class to attain the following higher-order objectives as they study the chapter:

- demonstrate how to select and store baked goods.
- analyze the functions of ingredients in baked products.
- evaluate the taste, texture, and appearance of quick breads and yeast breads.

You can prepare *quick breads* in a short amount of time. Quick breads include biscuits, muffins, popovers, cream puffs, pancakes, and waffles. They also include coffee cakes and breads leavened with baking powder.

*Yeast breads* require more time to prepare than quick breads. Yeast breads include breads, rolls, English muffins, raised doughnuts, crullers, and many other yeast-raised products.

## Selecting and Storing Baked Products

Quick breads and yeast breads are *baked products*. Cakes, cookies, and pies are baked products, too. Some of the following information applies to *all* baked products. However, preparation of cakes, cookies, and pies differs from preparation of breads. Therefore, cakes, cookies, and pies will be discussed further in the next chapter.

You can purchase baked products freshly baked, partially baked, refrigerated, and frozen. *Freshly baked items* are sold in bakeries, in bakery sections of supermarkets, and on supermarket shelves. They are ready to serve. *Brown-and-serve baked goods* are partially baked. They need a final browning in the oven before serving. *Refrigerated doughs* are ready to bake. They are handy for quickly preparing items like biscuits, turnovers, cookies, and rolls. *Frozen doughs and baked goods* require thawing and/or baking. Yeast doughs and cookie doughs are available frozen. You can buy frozen pies, cakes, coffee cakes, and doughnuts, too.

## Cost of Baked Products

The cost of rolls, cakes, and other bakery products depends a lot on the amount of convenience. Ready-to-serve items usually cost more than items that require some preparation. Bakery yeast rolls, for instance, usually cost more than frozen yeast rolls.

Bread costs depend on size of loaf, extra ingredients, and brand. Large loaves usually cost less per serving than small loaves. Breads with fruit and nuts cost more than plain white or wheat bread. Store brands generally cost less than national brands.

## Interdisciplinary Connections

Plan your study of this chapter in conjunction with the social studies department. In your classes, students will learn about quick bread and yeast bread preparation. In social studies classes, students can study the economic, political, environmental, and technological factors that affect the supplies of staple grains in different countries. They can also investigate the types of breads people make from these grains.

## Storing Baked Products

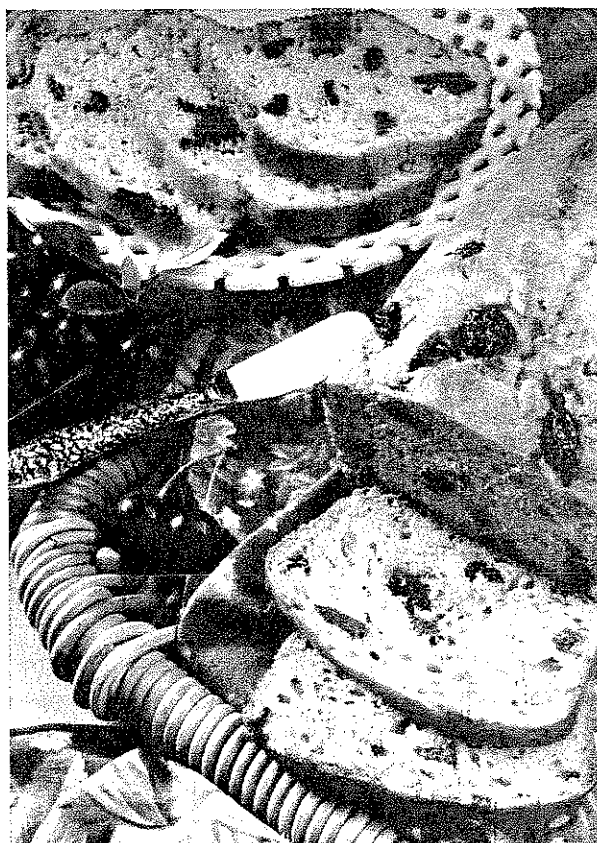
You can store freshly baked items at room temperature or in the freezer, tightly wrapped, 23-1. Freezing bread in hot, humid weather prevents mold growth. You can take slices of bread from the freezer as needed to thaw and eat.

Refrigerate any baked products with cream, custard, or other perishable fillings or frosting.

Keep refrigerated doughs refrigerated until you plan to bake them. Likewise, store frozen doughs and baked products in the freezer until you are ready to use them.

## Quick Breads

Quick breads may be made from batters or doughs. Both batters and doughs are mixtures of flour and liquid. *Batters* range in consistency



Cherry Marketing Institute

23-1 This freshly baked bread can be wrapped and stored at room temperature.

## Reflect

Ask students the following:

- Which of the listed quick breads and yeast breads have you tried?
- When would you choose to use each of the following types of baked products: freshly baked, brown-and-serve, refrigerated dough, and frozen dough and baked goods?

## Break It Down

Have students answer questions 1 and 2 under *Review What You Have Read* and complete activity 1 under *Build Your Basic Skills* at the end of the chapter.

**FYI**

● See Chapter 14 for more information about types of flour.

● Small clumps of baking powder and baking soda can give baked goods a bitter taste. Measuring these ingredients through a small strainer will help break up clumps for better distribution.

**Resource**

*Leavening Agents and Gases*, color transparency CT-23, TR. Use the transparency to illustrate the three basic gases—air, steam, and carbon dioxide—that cause baked products to rise. Explain how each of the different leavening gases might be incorporated into baked products.

**Integrating Math Concepts**

You can substitute  $\frac{1}{4}$  teaspoon baking soda plus  $\frac{1}{2}$  teaspoon cream of tartar for each teaspoon of baking powder called for in a recipe. Ask students to figure how much baking soda and cream of tartar to substitute in a recipe calling for 2 teaspoons of baking powder.

from thin liquids to stiff liquids. Thin batters are called *pour batters*. They have a large amount of liquid and a small amount of flour. You make a pour batter to prepare pancakes and popovers. Stiff batters are called *drop batters*. They have a high proportion of flour, and you can drop them from a spoon. You make a drop batter to prepare drop biscuits and some muffin recipes. **Doughs** have an even higher proportion of flour. They are stiff enough to shape by hand. You use soft dough to prepare shortcake and rolled biscuits. You use stiff dough to make rolled cookies and pastry.

**Quick Bread Ingredients**

Flour is a basic ingredient in all quick breads. However, the kinds of ingredients added to the flour distinguish one product from another. Leavening agents, liquid, fat, eggs, sugar, and salt are among the other ingredients that may be part of quick breads. Each ingredient serves a specific purpose.

**Q: Doesn't a slice of toast have fewer calories than a slice of bread?**

**A: No.** The heat of toasting removes water from bread but not calories.

**Flour**

Flour gives structure to baked products. White wheat flours are most often used for baking. Most quick breads are made with *all-purpose flour*. Some recipes call for *self-rising flour*. This is all-purpose flour with added leavening agents and salt.

**Healthy Living**

Breads, which are part of the grains group of the Food Guide Pyramid, are an excellent source of complex carbohydrates. You should be eating 6 to 11 servings of bread and cereal products every day to meet your body's energy needs. A typical serving of bread is one slice, one dinner roll, or half of a bagel, sandwich bun, or pita. When buying bread products, choose whole grain items often. They are low in fat and rich in vitamins and minerals. They are also higher in fiber than refined bread products.

**Leavening Agents**

**Leavening agents** are ingredients that produce gases in batters and doughs. These gases make baked products rise and become light and porous. Two leavening agents used in quick breads are baking soda and baking powder. Chemical reactions during baking cause these ingredients to release *carbon dioxide* gas.

*Baking soda* is sodium bicarbonate,

which is an alkaline ingredient. It is used in quick bread recipes that contain food acid ingredients, which neutralize the alkali. This prevents a bitter, alkaline taste from forming in the bread. Food acid ingredients include buttermilk, molasses, brown sugar, vinegar, honey, apple sauce or other fruit, and citrus juices. See 23-2.

*Baking powders* contain a dry acid or acid salt, baking soda, and starch or flour. Be sure to follow guidelines for using the recommended amount of baking powder. Too much baking powder will produce too much carbon dioxide, and the baked product will collapse. Too little baking powder will not produce enough carbon dioxide, and the product will be small and compact.

Two gases other than carbon dioxide that make baked products rise are steam and air. *Steam* is produced when liquid ingredients reach high temperatures during baking. Popovers and cream puffs are leavened almost entirely by steam. *Air* is incorporated into baked products by beating eggs, creaming fat and sugar together, folding doughs, and beating batters. All baked products contain some air.

**Liquids**

Water, milk, and fruit juices are liquids commonly used in baked products. Eggs and fats are also considered to be liquid ingredients.

Liquids serve several functions. They *hydrate* (cause to absorb water) the protein and starch in flour. Proteins must absorb water to later form gluten. Starches must absorb water to gelatinize during baking. Another function of

**Think Outside the Box**

Ask students what other nutrients are often found in bread products. (*B-vitamins and iron*) Ask what other foods are good sources of fiber. Have students read the Nutrient Facts labels on bread products you have on hand in your classroom. Which nutrients provide the high percent Daily Values in these products?

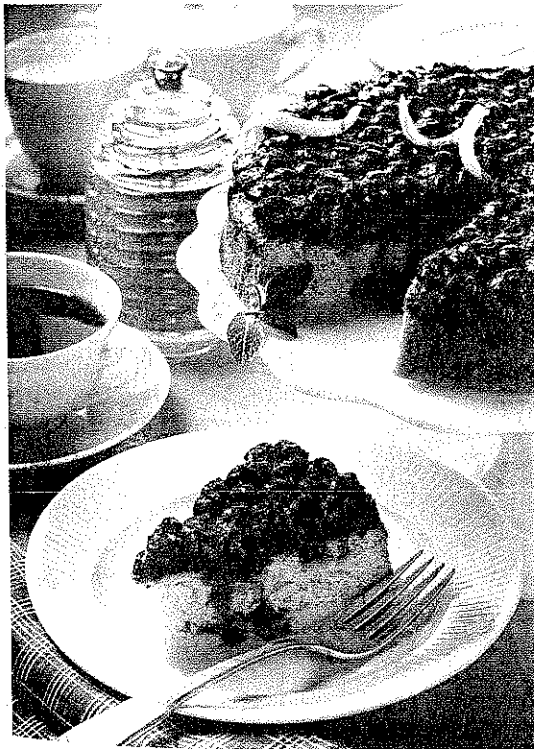
liquids is to moisten or dissolve ingredients such as baking powder, salt, and sugar. Liquids also serve as leavening agents when they are converted to steam during baking.

### Fat

Fat serves primarily as a tenderizing agent in baked products. The fat coats the flour particles and causes the dough structure to separate into layers. Fat also aids leavening. When you beat fat, air bubbles form. The fat traps these air bubbles and holds them.

### Eggs

Eggs help incorporate air into baked products when you beat them. They also add color



National Honey Board

23-2 The alkaline baking soda in this coffee cake is neutralized by honey and lemon juice.

## Be a Clever Consumer

Compare carefully when shopping for baked products. Although added convenience usually means added cost, there are exceptions. For instance, a devil's food cake made from a mix is often less expensive than one made from scratch. Also, keep in mind that convenience can be worth the extra cost when you are in a hurry.

and flavor and contribute to structure. During baking, the egg proteins coagulate. The coagulated proteins give the batter or dough elasticity and structure.

### Sugar

Sugar gives sweetness to baked products. It also has a tenderizing effect and helps crusts brown. In yeast breads, sugar serves as food for

the yeast. Brown sugar gives a distinctive flavor to baked products. It also produces baked products that are moister than products made with granulated sugar.

### Salt

Salt adds flavor to many baked products. In yeast breads, salt also regulates the action of the yeast and inhibits the action of certain enzymes. If yeast dough contains no salt, the yeast will produce carbon dioxide too quickly. The bread dough will be difficult to handle, and the baked product will have a poor appearance.

### Adjusting Ingredients

As you have read, baking powder, fat, eggs, sugar, and salt each perform certain functions in baked goods. However, some recipes call for more of these ingredients than is really necessary. You can follow some simple guidelines to adjust quick bread and yeast bread recipes to reduce excess ingredients. Cutting down on unneeded ingredients will result in breads that are lower in calories, fat, and sodium. Such changes are in line with the Dietary Guidelines for Americans.

Table 23-3 shows minimum proportions of fat, eggs, sugar, salt, and baking powder for basic bread recipes. Ingredients are listed in the amounts needed for each cup of flour in the recipe. Many bread recipes call for cornmeal, oatmeal, and bran along with flour to give structure to products. You should count these ingredients as flour when figuring proportions of ingredients. However, these ingredients are heavier and may require a little extra baking powder for proper leavening.

### Enrich

Have students design a bulletin board illustrating the functions of the basic ingredients in baked goods.

### Resources

- *Functions of Ingredients*, Activity A, SAG. Students are to list at least one function in the preparation of baked products for each ingredient pictured on the worksheet.

- *Adjusting Recipes*, Activity B, SAG. Students are to adjust the ingredients in a biscuit recipe to reflect minimum proportions. Then they are to calculate the calorie, fat, and sodium savings per biscuit that would result from these adjustments.

### Think Outside the Box

Ask students how they think the taste of a cake made from a mix compares to one made from scratch. Most students will say that a cake made from scratch will probably taste better. Ask volunteers to test this theory by preparing a cake made from scratch with the same type of cake made from a mix. Bring samples for the class to taste. If the taste of the cake mix is preferred, discuss why this might be.

### Discuss

● Ask students why they think many recipes call for more than the minimum amounts of ingredients listed in Table 23-3.

● Ask students how the properties of gluten affect the preparation of bread products. (*Gluten's strength gives structure to bread products. Gluten's elasticity causes dough to rise as trapped leavening gases expand, allowing bread to become light.*)

Minimum Ingredient Proportions per 1 Cup (250 mL) of Flour

Ingredient	Amount	Butter	Eggs	Sugar	Salt
Biscuits	2 tablespoons (30 mL)	—	—	1/4 teaspoon (1 mL)	1 1/4 teaspoons (6 mL)
Muffins	2 tablespoons (30 mL)	1/2	1 tablespoon (15 mL)	1/4 teaspoon (1 mL)	1 1/4 teaspoons (6 mL)
Popovers	1 tablespoon (15 mL)	2	—	1/4 teaspoon (1 mL)	—
Cream puffs	1/2 cup (125 mL)	4	—	1/4 teaspoon (1 mL)	—
Traditional yeast breads	1 tablespoon* (15 mL)	1/2*	1 teaspoon* (5 mL)	1/4 teaspoon (1 mL)	—
Bread machine yeast breads	2 teaspoons (10 mL)	—	1 tablespoon (15 mL)	1/2 teaspoon (2 mL)	—

\*Many traditional yeast breads can be made without any fat or eggs. When recipes for richer breads call for these ingredients, the minimums shown here will produce a suitably rich dough. Sugar is not an essential ingredient in traditional unsweetened yeast breads. However, most recipes call for a small amount to serve as food for the yeast. Fat and sugar are not optional ingredients in yeast breads prepared in bread machines. Adding an egg and decreasing other liquids by 1/4 cup (50 mL) will improve structure and volume of whole grain bread machine recipes.

**23-3** Following these proportions will reduce the sugar, fat, and sodium in many quick bread and yeast bread recipes.

You can make another simple adjustment by substituting fat free milk for whole milk in bread recipes. This change will reduce the fat in each serving of bread products. A recipe for corn muffins has been modified in 23-4.

### Food Science Principles of Preparing Quick Breads

You can see food science principles at work in quick breads in the development of gluten.

**Gluten** is a protein that gives strength and elasticity to batters and doughs and structure to baked products. It also holds the leavening gases, which are what make quick breads rise. Gluten is created by the proteins *gliadin* and *glutenin*, which are found in wheat flour. When you combine wheat flour with liquid and stir or knead the mixture, the glutenin and gliadin form gluten.

To understand gluten, think of a piece of bubble gum. When you first put the gum in your mouth, it is soft and easy to chew. As you chew the gum, it becomes more elastic, and you can blow bubbles. As you continue to chew the gum

for a long time, it becomes so elastic it makes your jaws hurt.

Gluten behaves in a similar way. If you mix or handle a batter or dough too much, the gluten will overdevelop. This can cause a quick bread to be compact and tough. To keep quick breads light and tender, mix them for only a short time and handle them carefully.

The different kinds of white wheat flour contain different amounts of gliadin and glutenin. Therefore, the strength of the gluten produced by each of the flours differs. In baking, you must use the type of flour listed in your recipe. This will result in the correct amount of gluten for the particular product you are preparing. Yeast breads require a strong gluten structure. Cakes should have a delicate gluten structure. Most quick breads fall somewhere between.

Another way food science principles are at work in quick breads is in chemical reactions that produce leavening gases. Baking soda is an alkali. When combined with a food acid ingredient, baking soda releases carbon dioxide. Acid ingredients also help neutralize the batter, which would otherwise have a bitter flavor and disagreeable color.

### Online Resource

Have students visit the Home Baking Association Web site at [homebaking.org](http://homebaking.org). Ask each student to find a baking tip or term to share with the class. Conclude the activity by asking each student to state something new that he or she learned from listening to the reports.

### Food Science

Have a student in each lab group place 1/2 cup of a different type of flour in a bowl. Ask one student to stir the flour while another student gradually adds water until the mixture forms a sticky dough. Inform students that this sticky dough is gluten. Have lab group members take turns stirring the dough, noting changes in the consistency. As a class, discuss the differences in gluten development among the different types of flour.

Recipe Comparison	
Traditional Biscuits	Lighter Biscuits
1 cup flour	1 cup flour
1 cup cornmeal	1 cup cornmeal
1/4 cup sugar	2 tablespoons sugar
1 teaspoon salt	1/2 teaspoon salt
4 teaspoons baking powder	1 tablespoon baking powder
1 egg	1 egg
1 cup milk	1 cup fat free milk
1/3 cup shortening	1/4 cup shortening

**23-4** Adjusting ingredient proportions in this traditional recipe can save 25 calories, 2 grams of fat, and 115 mg of sodium per muffin.

Most baking powders are *double-acting baking powders*. They release some of their carbon dioxide when they are moistened. However, they release most of their carbon dioxide when they are heated.

## Preparing Biscuits

The method used to mix baked products is another factor that distinguishes one baked product from another. When preparing biscuits, combine the ingredients using the *biscuit method*. This method involves sifting dry ingredients together into a mixing bowl. Use a pastry blender or two knives to cut the fat into the dry mixture. Continue cutting in until the particles are the size of coarse cornmeal. Then add the liquid all at once and stir until the dough forms a ball. This is the same mixing method you will use when making pastry.

The dry ingredients in biscuits are flour, baking powder, and salt. You can also use self-rising flour, which is a mixture of these three ingredients. The liquid in biscuits is milk or buttermilk. Drop biscuits contain a higher proportion of liquid than rolled biscuits. You drop the batter for *drop biscuits* from a spoon onto a greased baking sheet. You gently knead the dough for *rolled biscuits* 8 to 10 times and roll or pat it into a circle. Cut the dough with a biscuit cutter and place the biscuits on an ungreased baking sheet. Bake both types of biscuits in a hot oven until they are golden brown.

### Characteristics of Biscuits

A high-quality rolled biscuit has an even shape with a smooth, level top and straight

sides. The crust is an even brown. When you break it open, the *crumb*, or soft interior, is white to creamy white. It is moist and fluffy and peels off in layers. See 23-5.

Biscuits require gentle handling. An undermixed biscuit has a low volume and a rounded top with a slightly rough crust. The crumb is tender. An overmixed biscuit also has a low volume and a rounded top, but the top is smooth. The crumb is tough and compact.

## Preparing Muffins

When preparing muffins, combine ingredients using the *muffin method*. For this method, measure the dry ingredients into a mixing bowl. Make a well in the center of the dry ingredients. In a separate bowl, combine beaten eggs with milk and oil or melted fat. Pour all the liquid mixture into the well in the dry ingredients. For muffins, stir the batter just until the dry ingredients are moistened. You will also use this mixing method when preparing waffles, pancakes, popovers, and some coffee cakes. Batter for some of these baked products may require more stirring than the batter for muffins.

The dry ingredients in muffins are flour, baking powder, salt, and sugar. Fruits, nuts, cheese, and other ingredients may be added to muffin batter for variety. After combining ingredients, drop muffin batter into a greased muffin pan and bake.

### Characteristics of Muffins

A high-quality muffin has a thin, evenly browned crust. The top is symmetrical, but it looks rough. When broken apart, the texture is uniform, and the crumb is tender and light.

### Activity

Ask each student to find a recipe for baked products using each of the mixing methods described here.

### Food Science

*The Effects of Baking Powder in Biscuits*, food science master 23-1, TR. Have lab groups complete the experiment as directed on the master. Students will be evaluating the effects of using too little and too much baking powder in dropped biscuits.

### Enrich

Ask each student to find three variations to a basic muffin recipe calling for different added ingredients.

### Discuss

Ask students why they should not use bread flour when making cakes or cake flour when making breads. (*Breads made with cake flour would not have strong enough gluten to support the structure of the bread. Cakes made from bread flour would be tough and elastic because the gluten would be too strong.*)

### Time Management Tip

Make your own baking mix to save money as well as time. You can find recipes on the Internet to prepare a homemade baking mix in large batches from flour, buttermilk powder, salt, sugar, baking powder, baking soda, and shortening. This mix will keep for at least a month in a sealed container, and it can be stored longer in the freezer. It will save you measuring time when you use it as a basic ingredient in a number of muffin, pancake, waffle, and quick bread recipes.

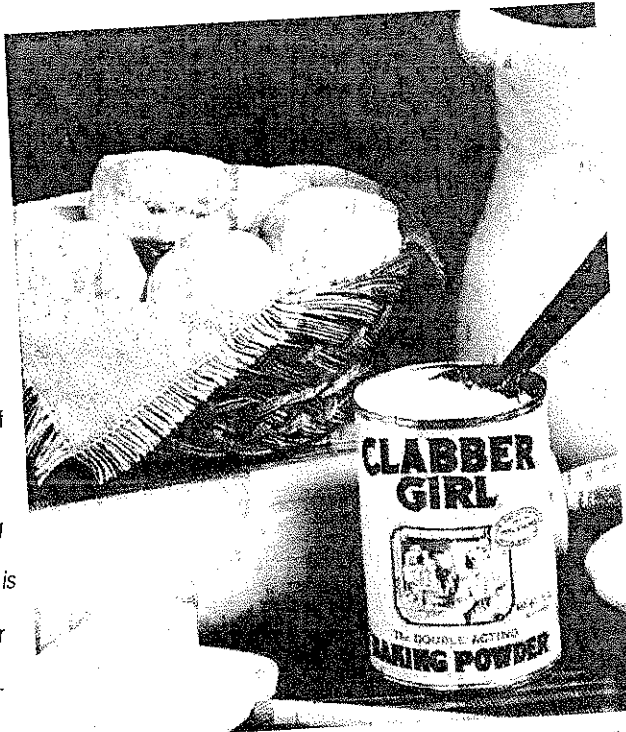
**Discuss**

Ask students the following:

- What basic ingredients found in most baked products are not found in popovers? (*leavening agent and sugar*)
- How could insufficient baking occur if popovers are cooked for the specified amount of time? How could this problem be avoided? (*Insufficient baking could occur if the oven temperature is too low. Using an oven thermometer will allow you to verify the accuracy of oven temperatures.*)

**Resource**

*Characteristics of Quick Breads, Activity C, SAG.* Students are to answer questions about the characteristics of quick breads.



Clabber Girl Corporation

*23-5 Light, golden rolled biscuits should have a uniform appearance.*

An undermixed muffin has a low volume and a flat top. The crumb is coarse. An overmixed muffin has a peaked top and a pale, slick crust. When broken apart, narrow, open areas called *tunnels* are visible.

**Preparing Popovers**

Popovers look like golden brown balloons. You can eat them with jam or fill their hollow centers with mixtures of meat, poultry, seafood, and/or vegetables. A variety of sweet fillings, such as ice cream, pudding, fruit, and custard, are also popular in popovers.

Popovers contain flour, salt, eggs, milk, and a small amount of fat. Use the muffin method to combine these ingredients. Then place popovers in a hot oven for the first part of the baking period. This allows steam to expand the walls of the popovers. Following this expansion, lower the temperature to prevent overbrowning before the interior has set. Do not open the oven door to check popovers during baking. If you do and they have not set, the steam can condense and cause the popovers to collapse.

**Strengthening Family Ties**

Have students make popovers or cream puffs for their families as a special treat. Students should allow their family members to choose the fillings for the quick breads—savory fillings for entrees or sweet fillings for desserts. Invite students to share their family members' reactions in class. If recipes are a hit with family members, make copies of the recipes to share with class members.

**Characteristics of Popovers**

A high-quality popover has good volume. The shell is golden brown and crisp, and the interior contains slightly moist (but not raw) strands of dough. See 23-6.

Insufficient baking is one of the biggest causes of popover failures. If you have not baked a popover long enough, it will collapse when you take it from the oven. The exterior will be soft instead of crisp, and the interior will be doughy.

**Preparing Cream Puffs**

A cream puff is a golden brown, hollow shell with crisp walls. You can fill cream puffs with pudding, custard, ice cream, fruit, or whipped cream and serve them as a dessert. You can fill them with creamed meat, poultry, or fish and serve them as a main dish. You can also fill small cream puffs with cream cheese, shrimp salad, or another light filling and serve them as appetizers. Elongated cream puffs filled with custard are called *eclairs*.

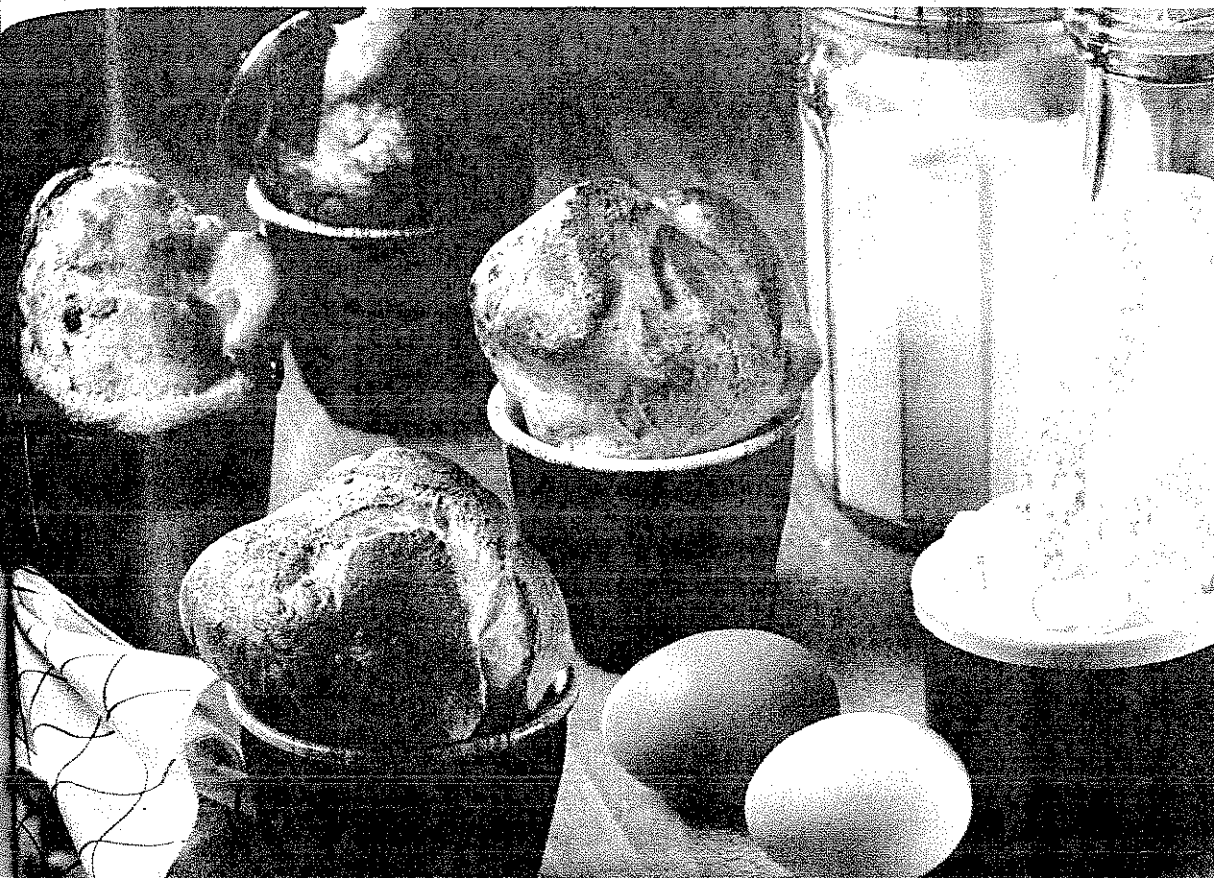
Cream puffs are made from water, fat, flour, and eggs. They require a special mixing method. Begin by bringing the water and fat to a boil. Then add the flour and stir vigorously over low heat until the mixture forms a ball. After removing the mixture from the heat, stir in the eggs until the mixture is smooth. The resulting dough is called *puff paste*.

Drop the puff paste onto an ungreased baking sheet. Begin baking the cream puffs in a hot oven so the steam will cause them to puff (rise). Then reduce the temperature. This will prevent the exteriors of the cream puffs from overbrowning before the interiors have set. Do not open the oven door to check the cream puffs during baking. If you do and the cream puffs have not set, the steam can condense and cause them to collapse.

**Characteristics of Cream Puffs**

A properly prepared cream puff has a good volume and a brown, tender crust. When broken apart, the interior of the cream puff is hollow. A few strands of moist, tender dough may be visible.

Cream puff failures usually are the result of underbaking. When you take an underbaked cream puff from the oven, it will collapse. The interior is moist and filled with strands of dough.



American Egg Board

**23-6** High-quality popovers look like golden brown balloons on the outside.

Occasionally, cream puffs will ooze fat during baking. The evaporation of too much liquid can cause this. Evaporation may take place when the water and fat are heated together or when the puff paste is cooked.

### Microwaving Quick Breads

You can use the microwave oven to prepare a variety of tasty quick breads in a matter of minutes. Nut breads, muffins, coffee cakes, corn bread, and biscuits all microwave beautifully. You can reheat frozen waffles and pancakes in a microwave oven, too. However, popovers and cream puffs do not microwave well due to the lack of dry heat needed for crust formation.

Many microwave quick bread recipes use baking mixes and refrigerated biscuits for added speed and convenience. You can use a variety of tasty toppings to disguise the lack of browning on these products.

#### Time Management Tip

Make your time count when you are baking. It takes little more time to measure ingredients for a quadruple batch than for a single batch of muffins, quick breads, and other baked goods. Extra baked goods can be stored in the freezer and defrosted quickly to add a special homemade touch to any meal. Be sure to label baked goods with the name of the item and the date before freezing them. Baked foods are best used within six months.

Quick breads will microwave more evenly in ring-shaped pans or muffin rings. A round casserole with a juice glass placed in the center will serve as a ring-shaped pan. Custard cups arranged in a circle can take the place of a muffin ring. You can also use loaf pans, but you should place foil shields on the ends to prevent overcooking in the corners.

### Yeast Breads

Homemade yeast bread is decidedly different from commercially prepared sandwich breads. It has a distinctively appealing sweet smell and delicious taste that cannot be matched, 23-7.

Many meal managers rely on the ease of bread machines to make homemade bread an option in their menu plans. All a meal manager

#### Resource

**Quick Bread Recipes**, recipe master 23-2, TR. Have students use the recipe master to plan a quick bread lab. Have each lab group complete a *Market Order Sheet* (TR) and a *Time-Work Schedule* (TR). After preparing and sampling their quick bread product, have each group complete a *Lab Evaluation Sheet* (TR).

#### Break It Down

Have students review the meanings of the terms *batter*, *dough*, *leavening agent*, and *gluten*. Have students answer questions 3-8 under *Review What You Have Read* and complete activities 1 and 2 under *Build Your Thinking Skills* at the end of the chapter.

#### Enrich

Ask each student to interview someone who owns a bread machine. Find out how long the person has owned the machine and how often he or she uses it. Also ask what types of bread products he or she makes with it. Share your findings in class.



**Reflect**

Ask how many students have eaten homemade yeast bread. Invite those who have to describe the taste and smell of homemade bread and compare it to commercially prepared sandwich bread.

**Activity**

Have students compare minimum ingredient proportions listed in Chart 23-3 for traditional yeast breads with bread machine yeast breads.

**FYI**

Some older recipes call for scalding milk used in yeast breads. This step was intended to kill enzymes in milk that can cause doughs to soften during fermentation. Scalding is now unnecessary because pasteurization destroys these enzymes.



photo courtesy of Fleischmann's Yeast

*23-7 The flavor, texture, and aroma of homemade yeast bread create a feast for the senses.*

has to do is measure the ingredients, and the bread machine does the rest. Even without the convenience of this appliance, however, you can serve homemade breads. Try recipes for brown-and-serve breads and cool-rise and frozen doughs. These recipes allow you to take advantage of time you have available to prepare products you can bake later.

## Yeast Bread Ingredients

All yeast breads must contain flour, liquid, salt, and yeast. Most recipes call for a small amount of sugar, and some include fat and eggs. Proportions of ingredients vary somewhat between traditional yeast breads and those prepared in bread machines.

### Flour

You can use all-purpose flour for making traditional yeast breads. When mixed with liquid

and kneaded, the flour develops gluten to support the carbon dioxide produced by the yeast.

Bread flour contains larger amounts of gliadin and glutenin than all-purpose flour. It produces the strongest and most elastic gluten of all the white wheat flours. Bread flour is recommended when preparing breads in a bread machine. This is because the actions of a bread machine require stronger gluten.

Whole wheat and nonwheat flours, such as rye, soy, corn, and oat, have a lower protein content than all-purpose flour. They will produce a denser loaf than all-purpose or bread flour. Many recipes calling for whole grain flours also call for some all-purpose or bread flour. Such a combination is essential when preparing products in a bread machine. The combination of flours will produce more gluten and help bread rise. Traditional recipes may suggest equal parts of all-purpose and whole grain flours. A ratio of two parts bread flour to one part whole grain flour is recommended for bread machines.

### Liquid

You can use plain water, potato water, or milk as the liquid in yeast breads. Milk produces a softer crust and helps breads stay fresh longer than water. Other options for liquid ingredients in yeast breads include buttermilk, fruit juices, yogurt, applesauce, and cottage cheese. These options add nutrients and distinctive flavors.

The temperature of the liquids affects yeast cells. You need to warm liquids used in traditional yeast breads. Your recipe will tell you the temperature to which liquids should be heated. Temperatures that are too high kill the yeast cells. Temperatures that are too low can slow or stop yeast activity. When preparing breads in a bread machine, liquids should be near room temperature, 75°F to 85°F (24°C to 29°C). Using liquids that are too warm may keep yeast breads prepared in a bread machine from rising.

### Salt

Salt regulates the action of the yeast and inhibits the action of certain enzymes in the flour. Bread machine recipes require a higher proportion of salt than traditional recipes. Without salt, a traditional yeast dough is sticky and hard to handle. When baked, the bread may look moth-eaten. Omitting salt from a bread machine recipe may cause the top of the loaf to collapse.

### Online Resource

Have students visit the Fleischmann's Yeast Web site at [breadworld.com](http://breadworld.com). Ask each student to find the answer to a frequently asked question; a solution to a common problem when baking yeast breads; or a tip about equipment, ingredients, or baking directions to share with the class. Conclude the activity by asking each student to state something new that he or she learned from listening to the reports.

## Yeast

Yeast is a microscopic, single-celled plant used as a leavening agent in yeast breads. It is available in three forms.

*Compressed yeast* is made from fresh, moist yeast cells that are

pressed into cakes. You must refrigerate compressed yeast because it is very perishable.

*Active dry yeast* is made from an active yeast strain that has been dried and made into granules. *Fast-rising yeast* products are highly active yeast strains. The granules of these products are smaller than those of active dry yeast, which allows them to act more quickly. Active dry and fast-rising yeast are both available in small foil packets and glass jars. Store these yeast products in a cool, dry place and refrigerate jars after opening. For fastest action, buy yeast in small quantities and use it promptly. See 23-8.

For best results, use the amount of yeast specified in your recipe. A general guideline is  $\frac{1}{4}$  teaspoon (3 mL) active dry yeast or  $\frac{1}{2}$  teaspoon (2 mL) fast-rising yeast per cup of flour. Using too much yeast will cause the dough to rise too quickly. Excess yeast will also give the bread an undesirable flavor, texture, and appearance. Using too little yeast will lengthen the rising time.

## Sugar

Sugar, brown sugar, honey, and molasses can all be used in yeast bread recipes. These ingredients influence browning, flavor, and

## Good Manners Are Good Business

You can use a piece of bread to help you push a bite of food onto your fork at a business meal. However, avoid using your bread to wipe your plate clean.

texture. They also provide extra food for the yeast so the dough will rise faster. If you use too much sugar, however, the yeast will work more slowly.

Bread machine recipes require a higher proportion of sugar than

traditional recipes. In a bread machine, too much sugar can keep bread from rising. Even the sugar contributed by dried fruits can have this effect. Some bread machines have a special cycle for sweet breads. This cycle is designed to produce high-quality products when using recipes with a high sugar content.

## Fat

Fat increases tenderness of yeast breads. Fat is optional in some traditional recipes, but it is required in bread machine recipes. Most recipes call for solid fat, but some call for oil.

## Eggs

Eggs add flavor and richness to yeast breads. They also add color and improve the structure.

You may wish to add an egg to a bread machine recipe calling for whole grain flour. This will help improve the structure and volume of the finished product. Eggs are considered part of the liquid in yeast bread recipes. Therefore,

## Vocabulary Builder

The term *yeast* comes from an Old High German word that means to ferment. Ask students why this etymology seems logical.

## FYI

- A  $\frac{1}{4}$ -ounce (7 g) package of yeast contains about 2 $\frac{1}{2}$  teaspoons (11 mL). One package active dry yeast is enough for 3 cups (750 mL) flour. One package fast-rising yeast is enough for 4 $\frac{1}{2}$  cups (1125 mL) flour.
- Artificial sweeteners cannot be successfully substituted for sugar in yeast bread recipes. These sweeteners are proteins and cannot be fermented by yeast.

**Q:** If I want more fiber in my diet, shouldn't I eat brown bread instead of white bread?

**A:** Use the Nutrition Facts panel and the ingredients list rather than color to find bread that is higher in fiber. In some bread, brown coloring comes from food dyes not high-fiber, whole grain ingredients.



Jack Klasey

**23-8** In addition to yeast, basic yeast bread ingredients include flour, liquid, salt, sugar, fat, and eggs.

## Think Outside the Box

Ask students to describe the correct way to butter and eat bread and rolls. (Tear bread into two pieces and then into two again. Tear rolls in half. Put butter on your bread and butter plate with the knife that accompanies the butter. Then use your table knife to spread butter on one piece of bread or roll at a time.) Ask students where a bread plate would be placed at an individual cover on a table. (Just above the salad plate, which is to the left of the dinner plate above the napkin.)

**Activity**

Have each student use text information to prepare a table comparing the traditional, one-rise, mixer, and batter methods of mixing yeast doughs. Column headings in the table might include *Type of Yeast, Temperature of Liquid, Mixing Steps, and Number of Risings*.

**For Example...**

Prepare yeast dough and allow it to rise before class. Use the dough to demonstrate for students how to test dough for lightness and punch the dough down.

**Reflect**

Ask students if they prefer homemade yeast bread or commercially prepared sandwich breads. Explain their choices.

when adding an egg not listed in the recipe, decrease the amount of other liquid ingredients by  $\frac{1}{4}$  cup (50 mL).

**Other Ingredients**

You may add other ingredients, such as raisins, nuts, cheese, herbs, and spices, to bread dough. They add flavor and variety. However, these ingredients tend to lengthen the rising time.

**Mixing Methods for Yeast Breads**

You will use the traditional, one-rise, mixer, or batter method when mixing yeast dough. Your recipe will tell you which method to use.

**Traditional Method**

For the *traditional method*, dissolve the yeast in a small amount of warm water. The water should be 105°F to 115°F (41°C to 46°C). Then add remaining liquid, sugar, fat, salt, and some of the flour. Like the water used to

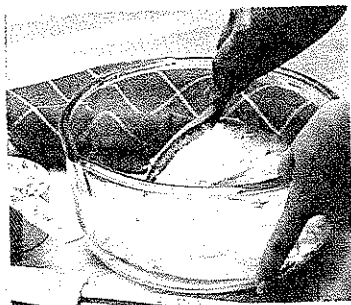
dissolve the yeast, remaining liquid should be 105°F to 115°F (41°C to 46°C). Cold liquid will slow the rising action when added to activated yeast. If the recipe calls for eggs, stir them in before adding the remaining flour to form a soft dough.

Doughs prepared by the traditional method are allowed to rise twice. The first rising takes place after you mix the ingredients. Then you shape the dough and allow it to rise a second time. See 23-9.

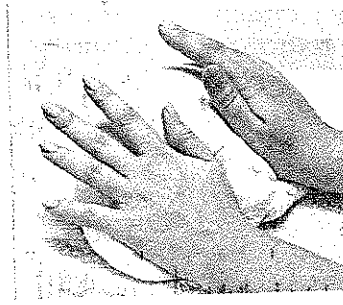
**One-Rise Method**

The *one-rise method* requires the use of fast-rising yeast. Mix the yeast with some of the flour and all the other dry ingredients. Heat the liquid and fat together to a temperature of 120°F to 130°F (49°C to 54°C). Add the warmed liquids to the dry ingredients. If eggs are required, add them before adding the remaining flour to form a soft dough.

After combining the ingredients, you may knead the dough. Then cover it and allow it to rest for 10 minutes. This resting period replaces



A—Combine ingredients and beat until smooth. Stir in enough additional flour to make a moderately stiff dough.



B—On a lightly floured pastry board or cloth, knead dough until smooth and elastic.



C—Place dough in a lightly greased bowl; turn once to grease top.



D—Let dough rise in a warm place until double in bulk. Test dough for lightness with two fingers.



E—When dough is light, punch down.



F—Shape dough into loaves or rolls. Allow the dough to rise a second time, then bake as directed.

photo courtesy of Fleischmann's Yeast

23-9 To prepare yeast bread by the traditional method, follow these easy steps.

**Strengthening Family Ties**

At home, have students prepare a recipe for yeast bread and divide the dough into portions. Have students make a different yeast bread variation for each member of their families. Ingredients that can be added are raisins, nuts, cheese, herbs, and spices. Invite students to share family members' responses to the bread variations.

the first rising required in the traditional method. After resting, shape the dough and allow it to rise before baking.

### Mixer Method

The *mixer method* works well with active dry or fast-rising yeast. Like the one-rise method, begin by mixing the yeast with some of the flour and all the other dry ingredients. Heat the liquid and fat together to a temperature of 120°F to 130°F (49°C to 54°C). Using an electric mixer, add the warmed liquids to the dry ingredients. Add eggs if required. Then stir in the remaining flour with a spoon to form a soft dough. This method allows ingredients to blend easily. Using the mixer helps develop gluten and, therefore, shortens the kneading time.

### Batter Method

Some recipes use the *batter or no-knead method*. These recipes use less flour, so the yeast mixture is thinner than dough. Vigorous stirring, rather than kneading, helps develop the gluten. Batter recipes that require two risings rise first in the mixing bowl. Then you spread the batter in a pan for the second rising before baking.

## Food Science Principles of Preparing Yeast Breads

Like preparing quick breads, preparing yeast breads requires the development of gluten and the formation of carbon dioxide. During mixing and kneading, the gluten develops. The gluten will form the framework of the bread. It will trap the carbon dioxide produced by the yeast as the dough rises. As the amount of carbon dioxide increases, the dough will rise, giving volume to the bread. The preparation of successful yeast bread depends on careful measuring, sufficient kneading, and controlled fermentation temperatures. Correct pan size and baking temperature are also important.

### Kneading

After forming yeast dough by the traditional, one-rise, or mixer method, you must knead it. Although some of the gluten develops during initial beating, kneading develops most of the gluten. To knead, press the dough with the heels of the hands, fold it, and turn it. You must rhythmically repeat this motion until the dough is smooth and elastic. See 23-10.

### Discuss

Ask students what would be the advantage of mixing yeast dough by the batter method. (*This method saves the time required by other methods for kneading.*)

### Reflect

Ask students which of the mixing methods for yeast breads they think sounds most convenient and why.

### Activity

Have students practice kneading dough.

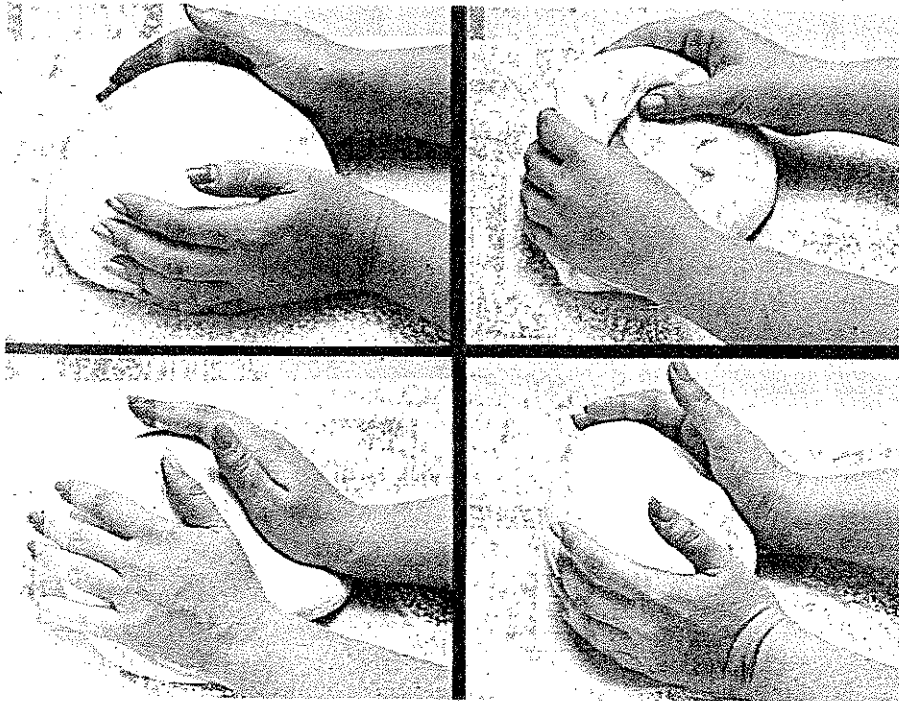


photo courtesy of Fleischmann's Yeast

**23-10** To knead dough, use your fingers to fold it in half toward your body. With the heels of your hands, push against the dough and turn it one-quarter turn.

### Community Interactions

Arrange for students to bake bread for a local soup kitchen or homeless shelter. Students might also offer to demonstrate bread-baking techniques to elementary school classes. Plan to include some experiments that explain the food science principles of preparing yeast breads.

**FYI**

- Dough that is allowed to rise too long may produce a dry, crumbly loaf with holes in it. It can have a yeasty smell and taste. These problems can be avoided by punching down overraised dough and allowing it to rise again.
- To prevent overbrowning of yeast bread crusts, cover loaves with foil tents during the last 10 to 15 minutes of baking time.

**For Example...**

Besides traditional loaves baked in loaf pans, yeast dough can be shaped into round loaves, elongated loaves, braids, rings, and bread sticks.

Avoid adding too much extra flour when kneading the dough. Too much flour will make the dough stiff. It is also important not to be too rough with the dough. Too much pressure at the beginning of kneading can keep the dough sticky and hard to handle. Too much pressure toward the end of kneading can tear or mat the gluten strands that have already developed.

**Fermentation**

After kneading yeast dough, you must allow it to rest in a warm place. During this resting time, the yeast acts on the sugars in the bread dough to form alcohol and carbon dioxide. This process is called **fermentation**. The alcohol evaporates during baking. The carbon dioxide causes the bread to rise.

The dough should at least double in volume during fermentation. To see if dough has doubled in size, gently push two fingers into the dough. If an indentation remains, the dough has risen enough.

Fermentation time varies depending on the kind and amount of yeast, the temperature of the room, and the kind of flour. Breads made with fast-rising yeast rise up to 50 percent faster than products made with regular yeast. The dough should be kept in a warm place for optimal fermentation. The temperature range of 80°F to 85°F (27°C to 29°C) is ideal for the production of carbon dioxide by the yeast. You can create such a warm environment by placing the bowl of dough over a pan of steaming water. Avoid temperatures that are too warm, which will cause the yeast to work too quickly, causing the dough to rise too fast.

**Punching the Dough**

When the dough is light (has completed the first rising), you must punch it down to release some of the carbon dioxide. Punch dough down by firmly pushing a fist into the dough. Then fold the edges of the dough toward the center, and turn the dough over so the smooth side is on top. At this point, some doughs require a second rising time. (Doughs made with bread flour need a second rising.)

**Shaping**

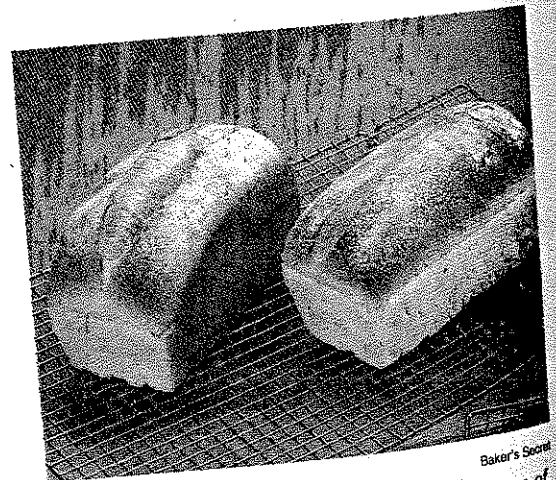
After punching the dough down, use a sharp knife to divide it into portions as the recipe directs. Allow the divided dough to rest about 10 minutes. After resting, the dough will be easier to handle and shape as desired.

To shape yeast dough, first flatten the dough into a rectangle. The width of the dough should be about the length of the bread pan. Using a rolling pin will help you to work out any large air bubbles. Fold the ends of the rectangle to the center, overlapping them a little. This should give you a smaller rectangle. Use your rolling pin to flatten the rectangle into a square. Roll the dough into a cylinder. Pinch the edge of the dough into the roll to seal it. Seal each end of the roll by pressing down on it with the side of your hand. Fold the ends under. Place the shaped dough, seam side down, in a greased loaf pan. Brush the top with melted shortening, if desired. Cover the loaf with a clean towel, and shape the remaining dough. Let the loaves rise in a warm, draft-free place until they have doubled in bulk.

**Baking**

Baking times and temperatures vary somewhat depending on the kind of dough and size of the loaf. Place most yeast breads in a moderately hot oven. During baking, the gas cells formed during fermentation expand. The walls of dough around these cells set and become rigid. During the first few minutes of baking, the dough will rise dramatically. This rapid rising is called *oven spring*.

After baking, immediately remove bread from the pans and place it on cooling racks. Cool the bread thoroughly before you slice and store it, 23-11.



**23-11** Using a cooling rack will keep the bottom of yeast bread from getting soggy due to trapped steam.

**Interdisciplinary Connections**

Coordinate your teaching of this chapter with the study of yeast fermentation in chemistry classes. As you discuss the role of fermentation in yeast breads, chemistry teachers can elaborate on the reactants, products, and byproducts of the chemical reaction that causes fermentation.

## Characteristics of Yeast Bread

A high-quality loaf of yeast bread has a large volume and a smooth, rounded top. The surface is golden brown. When sliced, the texture is fine and uniform. The crumb is tender and elastic, and it springs back when touched.

If yeast dough has been under- or overworked, the finished product will have a low volume. This is because carbon dioxide has leaked out of the dough.

If you allow bread to rise for too long a time before baking, it may have large, overexpanded cells. The top of the loaf may be sunken with overhanging sides, much like a mushroom. The texture is coarse, and it may be crumbly.

If you have not allowed bread to rise long enough before baking, it may have large cracks on the sides of the loaf. Its texture is compact.

## Timesaving Yeast Bread Techniques

Bread making no longer has to be the all-day task it once was. Fast-rising yeast can cut rising time in half. Using the one-rise mixing method saves rising time. The mixer method speeds the blending of ingredients and shortens kneading time. The batter method eliminates kneading entirely.

Besides timesaving ingredients and mixing methods, some recipes allow you to fit bread making conveniently into your schedule. These include recipes for cool-rise, refrigerator, and freezer doughs. Of course, a bread machine is the ultimate time-saver.

### Cool-Rise Doughs

*Cool-rise doughs* are prepared from recipes that are specially designed to rise slowly in the refrigerator. You mix ingredients and knead the dough. Then after a brief rest, you shape the dough and place it in a pan. You cover the dough and place it in the refrigerator. The dough will rise and be ready to bake at your convenience any time from 2 to 24 hours later.

### Refrigerator Doughs

Like cool-rise doughs, *refrigerator doughs* are prepared from recipes that are specially designed to rise slowly in the refrigerator. The batter method is often used to prepare these doughs. Therefore, they are not kneaded like cool-rise doughs. Refrigerator doughs are also

shaped after, rather than before refrigeration. Refrigerator doughs can usually remain in the refrigerator for 2 to 24 hours. Then you shape the dough, let it rise, and bake it.

### Freezer Doughs

Another type of specially formulated yeast bread recipe is for *freezer doughs*. These recipes allow you to mix and knead dough. Then you can freeze the dough before or after shaping. Store dough in the freezer for up to one month. When you are ready to eat it, simply thaw, shape if necessary, let rise, and bake.

### Q: Isn't bread fattening?

A: Bread provides mostly complex carbohydrates, which supply 4 calories per gram, or about 70 calories for the average slice. If you're worried about calories, go easy on high-fat spreads, such as butter and margarine.

### Bread Machines

Few people would argue that bread machines are the fastest, easiest way to produce homemade bread. However, these marvelous appliances are not foolproof. Each machine model behaves a bit differently. The best way to ensure success when using your machine is to carefully follow the manufacturer's directions. See 23-12.

The consistency of the dough in a bread machine indicates the quality of the bread that will result. You can check the texture of the dough by opening the machine's lid partway through the first knead cycle. The dough should form a soft ball that is somewhat sticky to the touch. If the dough is too moist, the loaf will collapse during baking. To correct this, add bread flour 1 tablespoon (15 mL) at a time. If the dough is not moist enough, it may produce a small, compact loaf. To correct this, add liquid 1 tablespoon (15 mL) at a time.

~~Weather conditions can have an effect on~~ dough prepared in a bread machine. Therefore,

### Enrich

Have each student use the information about characteristics of yeast bread to write ad copy for a 30-second television or radio spot advertising homemade wheat bread. Remind students that ad copy should not just describe the product. It must persuade consumers to buy the product. Encourage students to make up a brand name and develop a slogan for their bread products, too.

### Reflect

Ask students the following:

- When would you find it helpful to use recipes for cool-rise, refrigerator, and freezer yeast doughs?
- Would you be interested in owning a bread machine? Why or why not?

### Online Resource

Have students visit the Bread Machine Industry Association Web site at [breadmachine.org](http://breadmachine.org). Ask them to find tips for selecting a bread machine and answers to frequently asked questions. Discuss styles and features of bread machines in class. Have a student demonstrate the use of a bread machine and sample the finished bread.

**Reflect**

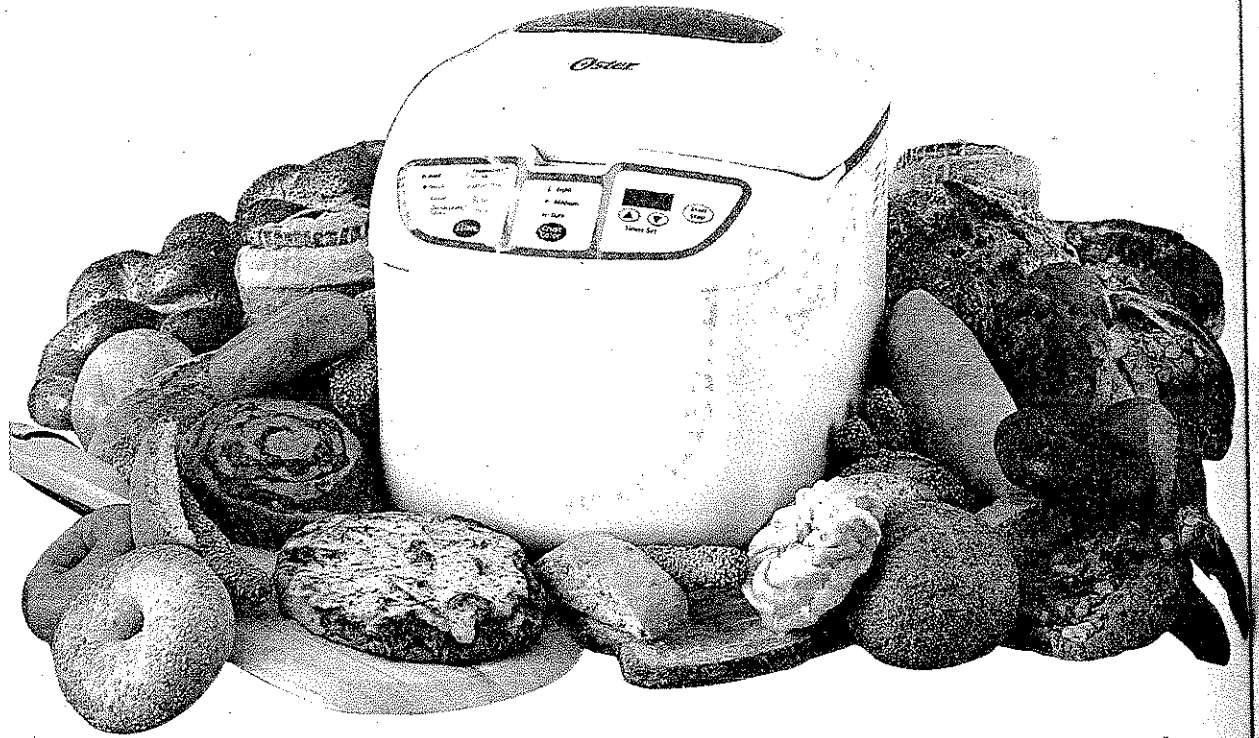
Ask students if they would find the lack of a crisp, brown crust on a loaf of bread baked in a microwave oven objectionable. Ask them to think about why or why not.

**Vocabulary****Builder**

Have students look up all the terms in a dictionary that begin with the word *bread*. Have them compare definitions and note the connotations the word *bread* has in English-speaking culture.

**Resource****Yeast Bread**

*Recipes*, recipe master 23-3, TR. Have students use the recipe master to plan a yeast bread lab. Have each group complete a *Market Order Sheet* (TR) and a *Time-Work Schedule* (TR). After preparing and sampling their yeast bread products have each group complete a *Lab Evaluation Sheet* (TR).



Oster

23-12 A bread machine simplifies the process of making yeast bread at home.

a recipe may produce satisfactory results one time and unsatisfactory results another time. For advice on specific problems with your bread machine, use the toll-free consumer information number provided by the manufacturer. Your county extension agent may also be able to offer suggestions related to your specific situation.

### Microwaving Yeast Breads

You may be able to use a microwave oven to help you with some steps in yeast bread preparation. For instance, you can defrost frozen bread dough in a microwave oven. Start by microwaving 1 cup (250 mL) of water for 3 to 5 minutes on high power until boiling. This creates a warm, moist atmosphere for the dough. Then place the frozen dough in a greased, microwavable loaf pan. Microwave on the defrost setting for 3 minutes. Turn dough over and rotate the pan. Microwave on defrost for another 3 minutes until the dough is soft to the touch. Allow the dough to stand for 5 minutes to become pliable.

You can raise dough in a microwave oven by placing the dough in a greased bowl. Turn the dough to grease all sides. Cover the bowl with waxed paper and place it in a dish of warm water. Microwave on low power for 1 minute. Let the dough stand in the oven for 15 minutes. Rotate the dish one-quarter turn. Repeat the microwaving, standing, and rotating process as needed until the dough is doubled in size.

Some recipes are even designed to be baked in a microwave. However, the resulting loaves will lack the crisp, brown crusts of conventionally baked breads. Batter breads work especially well in a microwave oven because they do not have crusts. Raised coffee rings with toppings and dark breads also microwave well because they do not show the lack of browning.

Bread baked in a microwave oven is microwaved on medium power until it is almost done. Complete the last few minutes of microwaving on high power until bread is no longer doughy. You may place bread in a pre-heated conventional oven for a final few minutes to brown the crust.

**Time Management Tip**

If you do not have a bread machine, a food processor can be a real timesaver when preparing yeast breads. The processor can be used to efficiently knead dough while leaving your hands free to complete other tasks. If a food processor is available in the classroom, demonstrate this function.

## Yeast Bread Variations

Add variety to yeast bread by combining white flour with whole wheat flour, rye flour, or cornmeal. Try adding dried fruits, nuts, herbs, or cheese to the basic dough. Brush the tops of the loaves with butter and sprinkle them with poppy, sesame, or caraway seeds.

You can shape basic bread dough into rolls. After punching the dough down, allow it to rest for a short time. Then divide it into portions and shape it into rolls. Crescent rolls, cloverleaf rolls, Parker House rolls, fan tans, and bows are popular roll shapes. You can find directions for shaping rolls in many cookbooks. See 23-13.

**Resource**  
*Yeast Breads*, Activity D, SAG. Students are to complete exercises dealing with yeast breads.

**Break It Down**  
Have students review the meaning of the term *fermentation*. Have students answer questions 9–14 under *Review What You Have Read*. Have them complete activity 2 under *Build Your Basic Skills* and activity 3 under *Build Your Thinking Skills* at the end of the chapter.



photo courtesy of Fleischmann's Yeast

23-13 Fruit filling and a fancy shape turn ordinary yeast dough into a festive coffee cake.

### Meeting Special Needs

Provide a bread slice holder for students with limited manual dexterity. This device will hold a slice of bread in place on a countertop, allowing students to more easily cut or spread it.



## Resources

• **Chapter 23 Study Sheet**, reproducible master 23-4, TR. Have students complete the statements as they read the chapter.

• **Chapter Review Games CD**. Have students play the chapter review game according to the instructions that appear on the screen.

## Summary

Quick breads and yeast breads are baked products. All baked products are available in various forms. Convenience tends to affect the cost of these products. Unless they contain perishable fillings or frostings, you can keep most baked products at room temperature. Use the freezer for longer storage.

Biscuits, muffins, popovers, and cream puffs are four popular types of quick breads. Flour, leavening agents, liquids, fat, eggs, sugar, and salt each serve specific functions in these baked products. Varying ingredient proportions and mixing methods results in the distinctive differences among these baked products.

The mixing methods used to prepare yeast breads are different from those used to prepare quick breads. Most yeast breads require kneading to develop the gluten needed to form the structure of the bread. Yeast breads also need time for fermentation to occur. This is the time during which yeast acts on sugars, causing the dough to rise. You must punch the dough down and shape it before baking. Adding different ingredients to the dough and changing the shaping can produce a variety of yeast breads.

## Review What You Have Read

Write your answers on a separate sheet of paper.

1. Explain the difference between quick breads and yeast breads. Give three examples of each.
2. What is the advantage of freezing bread in hot, humid weather?
3. What is the difference between a batter and a dough?
4. What are the three gases that make baked products rise?

5. What is the minimum amount of fat, sugar, and salt needed per cup of flour when preparing muffins?
6. Why is it important to use the type of flour listed in a recipe?
7. Match the following quick breads with their descriptions:  
\_\_\_\_\_ May be rolled or dropped.  
\_\_\_\_\_ Has a peaked top and tunnels when overmixed.  
\_\_\_\_\_ Leavened almost entirely by steam; baked in muffin pans or custard cups.  
\_\_\_\_\_ Made with a dough called puff paste.  
A. biscuit  
B. cream puff  
C. muffin  
D. pancake  
E. popover
8. What two quick breads do not microwave well?
9. What is a main difference between liquids used in traditional yeast breads and liquids used in bread machine yeast breads?
10. Which mixing method for yeast breads eliminates the need for kneading?  
A. The traditional method.  
B. The one-rise method.  
C. The mixer method.  
D. The batter method.
11. What is the function of kneading yeast dough?
12. List three factors that affect the length of fermentation for yeast doughs.
13. What is the proper consistency of dough in a bread machine and how can it be checked?
14. True or false. Yeast breads can be baked in a microwave oven.

## Build Your Basic Skills

1. **Math.** Visit the bread aisle in a local grocery store. List 25 bread products in order according to cost, beginning with the least expensive. Share your findings in a class discussion on factors that affect bread costs.
2. **Science.** Use a microscope to watch yeast grow. Explain how yeast differs from other leavening agents.

## Build Your Thinking Skills

1. **Compare.** Prepare biscuits from scratch, from a refrigerated biscuit product, and from biscuit mix. Taste and compare. Which would you rather eat and why?
2. **Analyze.** Prepare a plain muffin batter. Drop half of the batter from a large spoon into a muffin pan. Place it in the oven and bake it as the recipe directs. Continue beating the remaining batter for two more minutes. Drop it into another muffin pan and bake as the recipe directs. Analyze the differences in appearance, flavor, and texture of the two products.
3. **Evaluate.** Bake a traditional loaf of white bread and a loaf in a bread machine. Evaluate the two loaves along with a loaf of purchased white bread. Rate each product in terms of appearance, texture, flavor, and cost.

## Apply Technology

1. Research the mass production processes used to manufacture bread.
2. Compare convenience features available on various models of bread machines to identify the model you would prefer to own.

## Using Workplace Skills

Darnell is a baker at The Village Bakeshop, a popular spot among commuters who ride the morning train. Darnell arrives at work at 3 o'clock every morning to begin making a variety of breads and pastries. Using cool-rise dough prepared the day before, Darnell shapes, bakes, fills, and frosts loaves, rolls, and coffee cakes. When the bakeshop opens at 6:00 a.m., Darnell must have a variety of baked goods ready to sell.

To be a successful employee, Darnell needs skill in making good use of time. Put yourself in Darnell's place and answer the following questions about your need for and use of this skill:

- A. How will having skill in making good use of time help you as a baker?
- B. How might commuters respond if you lack skill in making good use of time?
- C. How might The Village Bakeshop be affected if you lack skill in making good use of time?
- D. What is another skill you would need in this job? Briefly explain why this skill would be important.

**Career**  
Have students reread the career descriptions of an oven tender and a dividing-machine operator that appear at the beginning of the chapter. Ask students why people working in these occupations might need skill in making good use of time.

### Answer Key for Review What You Have Read questions

1. Quick breads contain leavening agents other than yeast and can be prepared in a short amount of time. (List three examples:) biscuits, muffins, popovers, cream puffs, pancakes, waffles, coffee cakes leavened with baking powder, breads leavened with baking powder  
Yeast breads use yeast as a leavening agent and require more time to prepare. (List three examples:) yeast-raised breads, rolls, English muffins, raised doughnuts, and crullers
2. It helps prevent mold growth.
3. Batters range in consistency from thin liquids to stiff liquids. Doughs have a higher proportion of flour and are stiff enough to shape by hand.
4. carbon dioxide, steam, air
5. fat—2 tablespoons (30 mL); sugar—1 tablespoon (15 mL); salt—¼ teaspoon (1 mL)
6. Using the type of flour listed in a recipe will result in the correct amount of gluten for the particular product being prepared.
7. A, C, E, B
8. popovers, cream puffs
9. Liquids used in traditional yeast breads must be warmed. Liquids used in bread machine yeast breads should be near room temperature.
10. D
11. kneading develops most of the gluten.
12. (List three:) kind of yeast, amount of yeast, temperature of the room, kind of flour
13. Dough in a bread machine should form a soft ball that is somewhat sticky to the touch. It can be checked by opening the lid of the bread machine partway through the first knead cycle.
14. true