

Desserts

SECTIONS

Section 29.1 Cookies

Section 29.2 Cakes

Section 29.3 Pies

Section 29.4 Specialty
Desserts

WRITING ACTIVITY

Personal Narrative

Have you ever seen a very special dessert? Write a short story about a memorable dessert. Describe the occasion, the type of dessert, and give sensory details about its appearance, flavor, and texture.

Writing Tips

- 1 Freewrite to gather ideas.
- 2 Ask yourself questions to help fill in details of the narrative.
- 3 Construct an outline to help organize your narrative.

EXPLORE THE PHOTO

Desserts are the sweet conclusion to a meal. *What types of desserts can you name?*



Cookies

Reading Guide

Before You Read

Pace Yourself Short blocks of concentrated reading repeated frequently are more effective than one long session. Focus on reading for 10 minutes. Take a short break. Then, read for another 10 minutes.

Read to Learn

Key Concepts

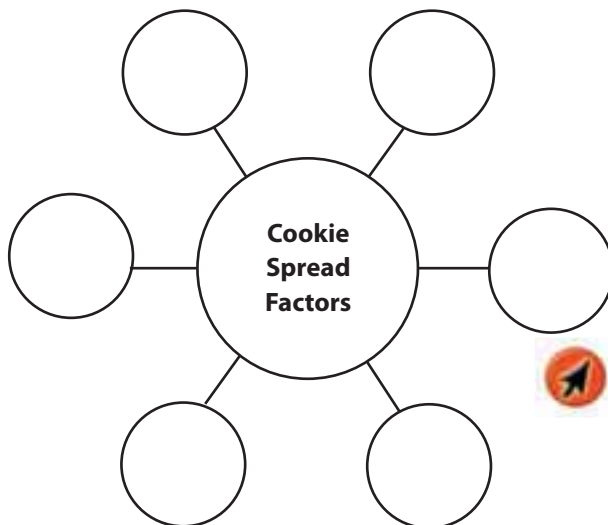
- **Distinguish** between crisp, soft, and chewy cookies.
- **Describe** types of cookies, and the methods for mixing, baking and storing them.

Main Idea

Cookies are small desserts that can be crisp, soft, or chewy and come in many shapes. Cookies are made using either a one-stage method, or a creaming method.

Graphic Organizer

Use a web diagram like this one to identify the six factors that determine the spread of a cookie.



Graphic Organizer

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

How many different cookies can you name?

ACADEMIC STANDARDS

English Language Arts

NCTE 12 Use language to accomplish individual purposes.

Mathematics

NCTM Measurement Apply appropriate techniques, tools, and formulas to determine measurements.

Social Studies

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

NCTE National Council of Teachers of English

NCTM National Council of Teachers of Mathematics

NCSS National Council for the Social Studies

NSES National Science Education Standards

Cookie Characteristics

It is nearly impossible to imagine a world without cookies. They are served in quick-service and family-style restaurants as well as in cafés where they may be served beside a dish of ice cream. It seems that almost any crunchy or flavorful ingredient, from candy to nuts to fruit, can turn basic cookie dough into a special dessert.

Cookies are classified according to their texture. They can be crisp, soft, or chewy. For example, biscotti (bē-'skä-tē) are hard and crispy, while a macaroon (,ma-kə-'rūn) is chewy and soft. Sometimes, the texture of a cookie, such as a chocolate chip cookie, is a matter of personal taste. Some people prefer them soft and chewy, while others prefer them crispy. It is important to know the various types of cookies so that you get the texture you want.

Crisp Cookies

A **crisp cookie** has very little moisture in the batter. Most are made from stiff dough, without much liquid in the mix. They also have a high ratio of sugar.

▼ **Cookie Texture** Different cookie textures appeal to a variety of customers. *Why do cookie textures differ?*



During the baking process, crisp cookies **spread**, or expand, more than other cookies because of the greater amount of sugar they contain. Crisp cookies dry fast during baking because of their thinness and must be stored in air-tight containers without refrigeration. If they absorb moisture, they will **turn**, or become, soft.

Soft Cookies

Soft cookies have a much different ratio of ingredients than crisp cookies do. A **soft cookie** has low amounts of fat and sugar in the batter, and a high proportion of liquid, such as eggs. Corn syrup, molasses, or honey is often used along with granulated sugar. Syrups retain moisture after the baking process, providing a soft texture.

Soft cookies are finished baking when their bottoms and edges turn a light golden brown. Soft cookies, like crispy cookies, must be stored in air-tight containers and not refrigerated. Soft cookie dough can be used in cookie-forming machines such as a spritz machine.

Chewy Cookies

All chewy cookies are soft, but not all soft cookies are chewy. A **chewy cookie** needs a high ratio of eggs, sugar, and liquid, but a low amount of fat.

For chewy cookies, the gluten in the flour must develop during the mixing stage. The amount of gluten in a particular kind of flour determines how much the cookie will expand. Gluten provides both stretch and flexibility to the cookie, which makes it chewy. Pastry flour is ideal for cookie production. However, a combination of cake flour and bread flour may be used for a chewier texture.

Cookie Spread

Some cookies require hand-labor to produce a particular molded shape. Although some cookies hold their shape while baking, most cookies will spread.

The spread of a cookie is determined by six factors:

- **Flour Type** Pastry flour is used in cookies for its medium gluten content. This creates the proper spread.
- **Sugar Type** Granulated sugar provides the right amount of spread. If a finer grain of sugar, such as confectioners' sugar, is used, the cookie will spread less.
- **Amount of Liquid** A cookie dough with a high amount of liquid, such as eggs, will have more spread. For reduced spread, decrease the amount of eggs in the recipe.
- **Baking Soda** In a cookie dough, the baking soda promotes the proper spread by relaxing the gluten. Baking soda is used as a leavening agent when it is combined with liquid and an acid.
- **Fat Type** The type of fat used in cookie dough also affects the spread of the cookie. When butter or margarine is used, more spread is created. When all-purpose shortening is used, less spread is created.
- **Baking Temperature** Oven temperatures that are too low cause excessive spread. Oven temperatures that are too high give little or no spread.



Identify

What are the different textures of cookies?

Making Cookies

When making cookies, you must determine the appropriate mixing type. The type of cookie that you make determines the mixing method you will use.

Mixing Methods

Most cookie doughs contain the same ingredients. Sugar, fat, eggs, flour, baking soda, and leavening agents, such as baking powder, are mixed together in varying amounts. Additional ingredients such as chocolate, nuts, or fruits may also be added.

One-Stage Method

Some cookies are made using the **one-stage method**. All ingredients, including melted butter or oil, are mixed in a single stage. All ingredients should be at room temperature and accurately measured.

Follow these steps:

1. Put all the ingredients in a mixer.
2. Blend at low speed using the paddle attachment. It will usually take two to three minutes to blend the batter or dough.
3. Scrape down the sides of the bowl with a spatula as necessary to be sure all the ingredients are well blended.



- ▲ **Spread Space** Be sure to leave enough space between cookies to allow for even spread.
What will happen to the cookies if you do not leave enough room?

Creaming Method

The creaming method is the most common method for mixing cookie dough. Creaming together sugar and fat, such as butter or shortening, makes a smooth mixture. It is smooth because air has been beaten into the fat and sugar cells. The air cells expand, lightening the texture of the cookies while they bake. A smooth mixture that is created by the creaming method will easily combine with other ingredients, such as fruit, nuts, chocolate chips, or seeds.

Small Bites

Add Eggs Separately If eggs are added all at once, the mixture may curdle because the fat cannot absorb all the liquid immediately. Lecithin, which is found in egg yolks, is an emulsifier and helps in the creaming process.

Cookie Types

Cookies may be classified not only by texture and mixing methods, but also by type.

HOW TO

Mix Creamed Cookie Dough

- 1 With all the ingredients accurately measured and at room temperature (70°F, or 21°C), use the paddle attachment on the bench mixer to cream sugar, fat, flavorings, and salt together. The mixture will become lighter in volume, texture, and color. Cream only slightly for a chewy cookie. Careful consideration should be given to the lightness of a cookie batter. Excessive lightness will cause a cookie to spread too much while it bakes.



- 2 After creaming, add eggs in stages to allow for their proper absorption into the mixture. Blend them in at low speed.



- 3 In a separate bowl, sift flour and other dry ingredients together.

- 4 Then, add dry ingredients to the creamed mixture and continue to mix on low speed until the dry ingredients are incorporated. Be careful not to overmix the batter. Overmixing develops the gluten, preventing the cookie from spreading properly as it bakes.



Make Biscotti

- 1 Divide the dough into equal portions, usually about 16 ounces each.
- 2 Roll the dough into logs approximately 1½ to 2 inches in diameter.
- 3 On each parchment-lined sheet pan, place three logs spaced a fair distance apart. Flatten the dough slightly, if desired.
- 4 Brush the dough with an egg wash if desired, then bake.

- 5 After the bars have cooled, slice them diagonally into cookies about ½-inch thick. Place the cookies on sheet pans and bake again at 375°F (191°C) until the cookies are dry and lightly browned.



The five basic types of cookies are drop, rolled, icebox, molded, and bar cookies.

It is easier to classify cookies by their type than by their mixing method. Mixing methods are relatively simple, but cookie types can vary a great **deal**, or amount. Regardless of the method used to make the cookie, it is important that all the cookies in a batch be of the same thickness and size.

Drop Cookies

Chocolate chip, peanut butter, and oatmeal are examples of a **drop cookie**. The soft batter or dough for drop cookies uses the creaming process.

Follow these steps to make drop cookies:

1. Choose a scoop for the size of cookie that is desired.
2. Drop the cookies onto parchment-lined baking sheets; if the recipe calls for greased baking sheets, be sure to follow directions.
3. Leave enough space between the cookies on the baking sheet to allow for even baking and spreading. Keep in mind how much a particular type of cookie will spread. Sometimes a recipe will recommend using a weight dipped

in sugar to flatten each cookie. Most drop cookies will spread without being flattened.

Rolled Cookies

Sugar cookies are examples of rolled cookies. Rolled cookies have a stiff dough that is rolled out. Shapes are then cut out of the dough and baked. Rolled cookies can be cut by hand or by machine.

Icebox Cookies

Icebox cookies are perfect for making sure that freshly baked cookies are always on hand. Drop cookie dough and sugar cookie dough work well for icebox cookies. The dough can be rolled into logs, wrapped and stored in the refrigerator. Once the rolls of mixed dough have been placed in the refrigerator, the cookies can be sliced and baked as needed.

Molded Cookies

Crescents, almond lace, and tuile (*ˈtwēl*) are examples of molded cookies. **Tuile** is a Belgian cookie that comes out of the oven soft. Tuile and almond lace cookies are shaped after baking.

HOW TO

Make Rolled Cookies

- 1 Chill the dough for rolled cookies after mixing. Using as little flour as possible, roll out the dough to $\frac{1}{8}$ -inch thickness.



- 2 Use cookie cutters to cut out the cookies. To minimize the amount of wasted dough, cut the cookies as close together as possible. The dough can be rolled and cut twice. The scrap left over after the second cutting should be discarded because it will make tough cookies.



- 3 Place cookies on a parchment-lined baking sheet and bake.



FIGURE 29.1 Cookie Dough Troubleshooting

Cookie Problems Measurements for cookie ingredients must be as exact as measurements for other types of baked goods. *What might be the problem if your cookies do not spread properly?*

Cookie Dough Errors	Spreading	Crumbly	Hard	Dry	Lack of Spread
Poorly mixed	✓	✓			✓
Too little sugar					✓
Too much sugar	✓	✓			
Too little flour			✓	✓	✓
Too much flour				✓	
Too much leavening		✓			
Too much baking soda	✓				
Not enough eggs		✓			
Too much shortening		✓			


Bar Cookies

These cookies are made from dough that has been shaped into long bars, baked, and then cut. Popular bar cookies are hermits, coconut bars, and fruit bars. Biscotti are bar cookies that are baked, sliced, and then baked again.

Baking and Cooling Cookies

Always use clean pans that are not warped for baking cookies. A **warped** pan has become slightly less flat because of excessive heat and use. Lining the pans with parchment paper keeps cookies from sticking to the pan. It also allows for even browning. (Figure 29.1 on page 752 offers troubleshooting tips for baking cookies.)

The heat from the pan that continues to bake the cookies once they are removed from the oven is called carryover baking. It is better to slightly under bake cookies. To prevent burning the bottoms or edges of cookies before they are done, **double pan** them by

 **Small Bites**

Use Basic Cookie Mixes It can be more cost-effective to use a basic cookie mix as the foundation for several types of cookies. Some mixes require the addition of liquid only. Others may require liquid, fat, and eggs.

placing the sheet pan inside a second pan of the same size. This double-pan technique is recommended for rich dough. When you bake two sheets at one time on separate oven racks, reverse them halfway through the baking process. This ensures even baking.

Cookies are done when the bottoms and edges turn light golden brown. Be sure not to remove cookies from the pans until they are firm enough to handle.

 **Reading Check** **Name**

What are the five different types of cookies?

SECTION 29.1 After You Read

Review Key Concepts

1. **Explain** what gives a chewy cookie its chewy texture.
2. **Describe** how to cool cookies.

Practice Culinary Academics

English Language Arts

3. Imagine that you run a bakery and that you will offer five different kinds of cookies. Create a display card for each type of cookie. Give the name of the cookies, and describe them in a way that is informative and appealing to a potential customer.

NCTE 12 Use language to accomplish individual purposes.

Social Studies

4. Cookies have a varied history. Some have interesting origination stories. Research one type of cookie. Determine where the cookie originated from and how it was originally created. Write a report on your chosen cookie.

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


Mathematics

5. Serena is a baker at a local bakery. She is making rolled cookies for a party. Serena uses a circular cutter that is $2\frac{1}{2}$ inches in diameter to cut cookies from rolled dough. After baking, each cookie's diameter is 3 inches. By what amount did the circumference of each cookie increase during baking?

Math Concept **Circumference** The distance around a circle is known as the circle's circumference. Calculate circumference (C) as $C = \pi d$, where d = the circle's diameter and $\pi = 3.14$.

Starting Hint Using $d = 2.5$ inches in the above formula, calculate the circumference of a raw cookie. Subtract that from the circumference of a baked cookie, using $d = 3$ inches.

NCTM Measurement Apply appropriate techniques, tools, and formulas to determine measurements.

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

Cakes

Reading Guide

Before You Read

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

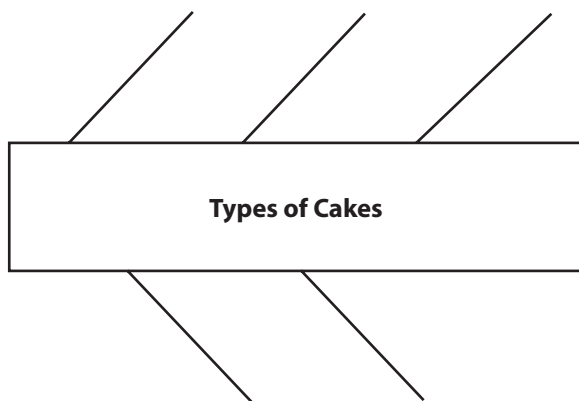
- **Differentiate** between different types of cakes and their ingredients.
- **Summarize** how to mix, prepare, bake, and ice cakes.


Main Idea

There are five types of layer cakes that are distinguished by their mixing methods. To make a successful cake, you must know how to scale and pan it properly.

Graphic Organizer

Use a herringbone organizer like the one here to list the five types of cakes.



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

Successful cakes make a beautiful addition to any special occasion.

ACADEMIC STANDARDS

English Language Arts

NCTE 5 Use different writing process elements to communicate effectively.

Mathematics

NCTM Geometry
Analyze characteristics of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.

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

Science

NSES B Develop an understanding of chemical reactions.

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

Types of Layer Cakes

Customers often look forward to something sweet, such as cake, for the end to a good meal. Cakes are made of eggs, flour, sugar, fat, leavening, and flavorings. They can be elaborate, like multi-layered tortes, or combined with other desserts, like ice cream cake. This section introduces different types of cakes and how to make them.

Cake Ingredients

Cake ingredients either weaken or strengthen a cake's structure and determine its texture, moisture, and sweetness. For example, sugar and fat, used in the right amounts, help weaken cake structure and give the cake tenderness. On the other hand, eggs and flour both have proteins that, when they are baked, join together to give the cake support.

The starch in flour also helps **stabilize**, or support, the cake by absorbing liquid when it is mixed. Liquid, such as milk or water, forms gluten when it combines with flour. When mixed, gluten gives structural support to the cake.



High-Fat Cakes

A **high-fat cake** generally uses baking powder as its leavening agent. High-fat cakes, such as butter cake, also require that air cells be creamed into the center of the fat cell. The air cells then pick up the leavening gases that the heat of the oven releases.


Low-Fat Cakes

A **low-fat cake**, such as sponge cake, is leavened from air that is whipped into the egg batter. These cakes have a light and springy texture. This makes them a good choice for desserts such as a torte that has many layers with cream and fruit between them. A torte is a cake that uses a large amount of eggs, and sometimes ground nuts or bread crumbs as well as flour.

Pound Cakes

The pound cake's origin can be traced back to England. A **pound cake** contains a pound each of butter, flour, sugar, and eggs. The butter pound cake is a familiar example, and is considered to be the basis for all layer cakes.



 **Cake Textures** Cakes come in a variety of pleasing textures and flavors. *What do you notice about these cakes' textures?*

Prepare an Angel Food Cake

- 1 Whip the egg whites with half the sugar, salt, and cream of tartar to full volume.



- 2 Sift the remaining half of the sugar with the flour. Fold the sugar and flour mixture into the egg-white foam just until it is absorbed.



Sponge or Foam Cakes

A **sponge cake**, which is also called a foam cake, has an airy, light texture because of large amounts of air whipped into the eggs. This type of cake does not rely on butter or modern types of fat such as all-purpose shortening or emulsified shortening. **Emulsified shortening** is a type of fat that helps create a smooth consistency throughout the mixture. Instead, sponge or foam cakes have a base of whipped, whole eggs.

European sponge cake, which is called **genoise** (zhā-'nwāz), is the most common example. Genoise can be the basis for special desserts with layers of jam, chocolate, or fruit filling. Because whole eggs are used in the batter, sponge cakes are richer than angel food cakes.

Angel Food Cakes

An **angel food cake** is a type of foam cake that is made with egg whites, but not egg yolks. The air whipped into the egg whites leavens the cake. Once the egg whites have been whipped, the cake batter must be finished quickly, or it will collapse when the air beaten into the egg whites escapes.

Usually angel food cakes are baked in tube pans. The pans are left ungreased so that as the batter rises it can attach to the sides of the pan. Turn the pan upside down as it cools, and leave the cake to cool inside the pan to keep the cake from **collapsing**, or falling. Angel food cake may be served plain, frosted, topped with a chocolate or fruit-flavored glaze, or served with whipped cream or fresh fruit. Because angel food cakes contain no egg yolks or other fat, they are a more healthful alternative to other cakes.

Chiffon Cakes

A **chiffon** (shi-'fän) **cake** is a variation of a genoise cake. Chiffon cakes are made by using whipped egg whites, or **meringue** (mə-'raŋ), to lighten the batter. The egg yolks and part of the sugar are whipped to full volume and then the flour is added to the yolk and sugar mixture. Finally, the egg whites and the remaining sugar are whipped and then folded in.

Chiffon cakes have less saturated fat and cholesterol than any cake except angel food cake, and about half the fat of a pound cake. Like angel food cakes, chiffon cakes are cooled upside down.

✦ MASTER RECIPE

Vanilla Chiffon Genoise

YIELD: 10 LBS., 6 OZ. (7 9-IN. CAKES)
SERVINGS: 70

Ingredients

2 lbs.	Egg yolks
3 lbs.	Sugar, granulated
12 oz.	Oil, vegetable
2 lbs.	Egg whites
2 lbs., 4 oz.	Flour, cake, sifted
1 oz.	Baking powder
5 oz.	Water, room temperature
To taste	Extract, vanilla

Method of Preparation

1. Gather the equipment and scale the ingredients.
2. Properly grease the cake pans.
3. Place the egg yolks and half of the granulated sugar in a 5-qt. mixing bowl; whip to full volume.
4. Continue mixing on medium speed, and slowly incorporate the oil.
5. In another 5-qt. mixing bowl, whip the egg whites to a medium peak; slowly add the remaining granulated sugar to make a meringue.
6. Sift together the cake flour and baking powder.
7. Combine the water and vanilla extract.
8. Alternately add the flour and water mixtures into the yolk mixture by hand.
9. Fold the meringue into the batter.
10. Scale 1 lb., 8 oz. batter into each greased, paper-lined, 9-in. cake pan.
11. Bake at 360°F (182°C) until spongy in the center.

Cooking Technique

Whipping

1. Hold the whip at a 45° angle.
2. Create circles, using a circular motion.
3. The circular motion needs to be perpendicular to the bowl.

Combining

1. Prepare the components to be combined.
2. Add one to the other, using the appropriate mixing method (if needed).

Chef Notes

Fold the egg whites carefully into the other ingredients. If you stir too much, you will lose air in the mixture, and the cake will not rise properly.

International Flavor

This light and airy cake can be served simply or dressed up into something exotic. Choose one of these dishes or find your own unusual recipe and write it up in recipe form.

- Pantespáni (Greek)
- Lamington (Australia)
- Biskvit (Russia)

Glossary

Perpendicular at right angles to a given line or plane

Components an ingredient, or part of a sum

HACCP

- Bake at 360°F (182°C)

Hazardous Foods

- Egg yolks
- Egg whites

Nutrition

Calories 220	Calories from Fat 80
Total Fat 8g	
Saturated Fat 1.5g	
Trans Fat 0g	
Cholesterol 160mg	
Sodium 70mg	
Total Carbohydrate 31g	
Fiber 0g	
Sugars 20g	
Protein	
• Vitamin A 4%	• Vitamin C 0%
• Calcium 4%	• Iron 8%

High-Ratio Layer Cake

A **high-ratio layer cake** contains a high ratio of both liquids and sugar, giving the cake a very moist and tender texture. It is necessary to use a high-ratio shortening or emulsified shortening to help absorb the quantity of liquids. These cakes have a tight, firm grain because of the mixing method. The paddle attachment is used on the bench mixer to limit the amount of air that is mixed into the batter. Wedding cake is an example of a high-ratio layer cake.



Reading Check

Identify What is a chiffon cake?

Baking Cakes

The process of baking a cake begins with the right mixing method. Once the cake is mixed, it must be carefully scaled and panned so that the cakes come out a consistent size.

Cake Mixing Methods

Each mixing method produces a certain kind of cake. (See **Figure 29.2** on page 759.) Bakers use the creaming method, the blending method, the sponge or foam method, the angel food method, and the chiffon method.

Creaming Method

The creaming method was once the standard method for mixing a cake. Ingredients should be at room temperature and accurately scaled.

Blending Method

The blending method is often called the two-stage method because the liquids are added in two stages. This method produces a smooth batter that makes a moist, tight, and firm-grained cake. It is used to make high-ratio cakes, which means using large amounts of liquids and sugar as well as emulsified shortenings to absorb the liquids and sugar.

HOW TO

Use the Blending Method for Cakes

- 1 Blend the sifted flour, sugar, chemical leaveners, and other dry ingredients for 30 seconds on medium speed.



- 2 Add the emulsified shortening and half of the liquids.



- 3 Mix on low speed until the ingredients are moistened. Then, increase the speed to medium and mix for 5 minutes.

- 4 Scrape the sides of the bowl and add the remaining liquid.



- 5 Blend on low speed for 3 minutes.

FIGURE 29.2 Cake Mixing Methods

The Right Mix Different cake recipes require different mixing methods. *Why is the choice of mixing method so important in cake making?*

Type of Cake	Mixing Methods
High-fat or Shortened Cakes	• Creaming, Two-stage
Low-fat or Foam-type Cakes	• Sponge, Angel food, Chiffon method.

Small Bites

Creaming and Temperature Creaming is best done when the fat or shortening is at 70°F (21°C). If the shortening is too cold, it will not bind and hold the air cells, and will take longer to mix. Shortening that is above 75°F (24°C) is too soft to hold as much air or give volume.

HOW TO

Prepare a Sponge Cake

- 1 Once all ingredients are at room temperature, melt the butter and set it aside.
- 2 Heat sugar and eggs in a double boiler, stirring constantly, to about 110°F (43°C).



- 3 Beat the eggs at high speed for 10 to 15 minutes, until they are thick and light. When properly beaten, the foam will fall in a ribbon-like shape when you lift the beater.



- 4 Sift all of the dry ingredients. Then, carefully fold them into the foam. Because the foam can easily be deflated, most bakers do this step by hand.



- 5 Fold in the melted butter, but do not overmix.



- 6 Pan and bake the batter at once so that it does not lose volume.

Sponge or Foam Method

In the sponge mixing method, leavening is formed from air that is trapped in the beaten eggs. When the ingredients are warmed to room temperature, the foam has a greater volume, creating a sponge-like texture.

Angel Food Method

Angel food cakes have no fat and are based on egg-white foam. They do, however, contain a large amount of sugar. Do not add all of the sugar to them at once. Gradually add the sugar as you whip the egg whites to create high-volume foam.

Chiffon Method

The chiffon method is closely related to the angel food method. Both methods rely on whipped egg whites for volume and a light texture. Unlike the angel food method, the chiffon method involves folding whipped egg whites into whipped egg yolks and oil.

Preparation Methods

To keep cakes from sticking, baking pans are usually coated with fat and flour or lined with parchment paper. This allows the cake to release easily from the pan after baking is done. Commercial pan preparations are also available, such as spray pan release, which is a type of grease.

Pans should be filled one-half to two-thirds full. This will keep the batter from spilling over the sides of the pan as it rises. Spread the batter evenly with an offset spatula. Do not work the batter too much, or air cells will collapse and the cake will not rise properly. When you make multiple cakes or a multi-layer cake, always fill pans to the same level. If one pan has more batter, it will be larger and require longer to bake than the other cakes. For all but foam cakes, tap the filled pans firmly on a bench or counter to let large air bubbles escape before baking.

HOW TO

Prepare a Chiffon Cake

- 1 Whip the egg yolks and half of the sugar to full volume. They will be pale yellow in color.



- 2 Fold in sifted flour and other dry ingredients.

- 3 Whip the egg whites and the remaining half of the sugar until a meringue with medium to stiff peaks forms.



- 4 Gently fold the meringue into the yolk mixture a small amount at a time.



Small Bites

Altitude Adjustments For high altitude areas, use these alterations for recipes that include a leavening ingredient:

- For altitudes of about 2,000 feet, decrease the amount of baking powder or other leavening agent called for in the recipe by 15%.
- For altitudes of about 5,000 feet, decrease the level of baking powder or other leavening agent called for in the recipe by 40%.
- For altitudes at about 8,000 feet, decrease the amount of leavening agent by 60%.
- Above 3,000 feet, the baking temperature for cakes should be increased by 25 degrees. This temperature will help prevent liquid evaporation.

Pan Preparation

It is important to have the pans prepared before the batter is mixed. Pans should be filled as soon as possible after mixing is complete so that air cells in the batter do not collapse. Then the cakes can go directly into the oven. This will help create a high-quality baked product.

Most pans are either sprayed with an oil and flour mixture or greased and dusted with a bit of flour. Extra flour should always be tapped out of the pan so that the bottom of the cake does not become doughy. Some baked items can be placed on pans lined with parchment paper. Parchment paper is easily pulled off of the bottom of the cake after it has cooled, and will help keep the cake from sticking.

Scaling Cake Batters

Because it is important that cakes are consistently the same size, the batter is scaled before it is panned. (See **Figure 29.3**.) How a batter is scaled is based on the amount of liquid in the batter and the amount of handling a batter can withstand. Creaming method cakes should be scaled by weight. Blending method cakes can be scaled by weight or volume.

Gourmet Math

Adjust for Altitude

The higher the altitude, the lower the air pressure. This means that a higher percentage of liquid evaporates at high altitudes than it does at low altitudes. Because liquid evaporates from cakes as they bake, they may end up tasteless and tough.

You are catering a family reunion in Denver. You plan to make a large sheet cake for the party. The sheet cake formula calls for 5 ounces of baking powder. Denver is 5,280 feet above sea level. For altitudes of about 5,000 feet, you must decrease the baking powder by 40%. What is the percentage of baking powder in the formula after adjusting for altitude?

Math Concept Converting Fractions to

Decimals A fraction can be converted to a decimal by moving over the decimal to the left by two places.

Starting Hint Move over the decimal place in 40% two spaces to the left. Then, multiply that number by the number of ounces of baking powder to find out how much the baking powder will decrease. Subtract that number from the original number of ounces to get the new ounce total of baking powder.

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

FIGURE 29.3 Cake Pan Choices

Pan Choices You must choose the correct-size pan for the type of cake you plan to bake. *What would happen if you were to choose the wrong-size cake pan?*

Pan Type and Size	Scaling Weight
High-fat Cakes	
• Round 8 in.	• 14-18 oz.
• Square 9 in. × 9 in.	• 24 oz.
• Loaf 2¼ in. × 3½ in. × 8 in.	• 16-18 oz.
Low-fat Cakes	
• Round 8 in.	• 10 oz.
• Sheet 18 in. × 26 in., ½-in. thick (for jelly roll or sponge roll).	• 2½ lb.
• Tube (angel food and chiffon) 10 in.	• 24-32 oz.

Baking Techniques

Preheat the oven to the correct temperature. If the oven is too hot, the cake may set before it has risen fully, or it may set unevenly, causing the crusts to be too dark. A temperature that is too low creates poor texture and volume because the cake will not set fast enough. Cakes also may collapse if oven temperatures are too low.

Ovens and the shelves in them should be level. When pans are placed in the oven, they should not touch each other. Air needs to flow between the pans for even baking.

It is important to keep the oven door closed while they bake. Cakes may fall if they are disturbed before they finish rising or become partially browned.

Determine Doneness

A cake is done if:

- A pick or cake tester comes out clean when it is inserted into the center.
- The center of the cake's top springs back when it is lightly pressed.
- The cake pulls slightly away from the sides of the pan.

Cooling Cakes

Cakes may break if they are removed from the pan too early. Always cool cakes for at least 15 minutes before you remove them from the pan. When you remove sheet cakes, lightly sprinkle the top with granulated sugar. Place an empty sheet pan with the bottom side down on top of the cake. Turn both pans upside down and remove the top pan from the cake. If parchment paper has been used to line the pan, peel it off the cake.

To remove a chiffon or angel food cake from the pan, loosen the cooled cake using a spatula or knife. Put a cooling rack or tray on top of the cake pan. Turn over the cake pan and rack carefully holding on to both. Carefully remove the pan from the cake.

Icing and Storage

Icing improves a cake by forming a protective layer around the cake that seals in moisture. Icing also adds richness and flavor. Fudge-type icings hold up well on cakes and last longer in storage.

Buttercream is usually used to make cakes, tortes, and desserts taste better and look more attractive. These are five different types of buttercream icing:

- Simple buttercream is made by combining butter, shortening, confectioners' sugar, egg whites, and vanilla.
- French buttercream is made with beaten egg yolks and butter.
- Italian buttercream is made with Italian meringue and butter. **Italian meringue** is meringue that is made with a boiling sugar syrup instead of granular sugar. It is very stable. It makes a light buttercream.
- German buttercream is made with butter, emulsified shortening, and fondant. **Fondant** is a mixture of sugar, water, and flavorings that serves as a base for icings.
- Swiss buttercream is made with Swiss meringue and butter. **Swiss meringue** is a meringue that is made by dissolving sugar and egg whites together over simmering water, and then beating them. Swiss buttercream is light.

Royal icing is another type of icing that is used to frost cakes and cookies, and to pipe decorations on cakes. It has a smooth, hard matte finish.

Icing Cakes

When you decide what type of icing to use, be sure that the icing is not too heavy for the type of cake. Dense cakes pair well with fudge-type icings and simple or German buttercreams. However, lighter buttercreams such as Swiss and Italian, whipped cream, and fruit fillings go well with sponge cakes. Simple syrups can also be used. A **simple syrup** is made of sugar dissolved into hot water.

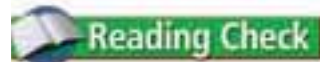
Before you spread the icing on a cake, tap off any loose crumbs that would interfere with a smooth appearance. Do not spread too much on the first layer. The iced cake should have a uniform appearance, with an even amount of icing on all surfaces. Icing should not ooze out of the side after the layers have been placed.

Before you begin icing, you must have all fillings in place on the cake. This may include fruit or mousse fillings between layers of a cake. It may also include ice cream, either as the top layer of the cake, or between cake layers. Ice cream cakes must be frozen first, before they are iced. Icing used on ice cream cakes must stand up to being frozen without cracking. You may use many different types of frosting for this purpose.

To ice the top layer, start from the center and work out to the edges. Then, spread the icing down the sides. Smooth the surface of the icing before you add decorations. You can use a pastry bag to pipe icing into shapes.

Storing and Serving Cakes

Cakes should be wrapped in air-tight containers or plastic wrap and stored in the refrigerator until they are needed. Frosted cakes should be stored in the refrigerator until they are served. Because frosting easily absorbs refrigerator odors, decorated cakes should be boxed or covered first. Always bring cakes to room temperature before you serve them.

 **Reading Check** **Describe** What is the process for icing a cake?

SECTION 29.2 After You Read

Review Key Concepts

1. **Differentiate** between a pound cake and a sponge cake.
2. **Summarize** how to prepare a cake pan.

Practice Culinary Academics

English Language Arts

3. Create a brochure about cakes for special diets. Research for information about cakes that meet special diet needs, such as low-fat or low-sugar diets. Create a brochure that has both nutritional information and recipes.

NCTE 5 Use different writing process elements to communicate effectively.

Science

4. **Procedure** Bake four small cake layers. For the first one, follow the recipe exactly. For the second one, leave out the fat. For the third one, leave out the egg, and for the fourth one, leave out the baking powder.

Analysis What are the differences between the various cakes? Write a summary about the ingredients' roles.

NSES B Develop an understanding of chemical reactions.


Mathematics

5. A rectangular sheet cake measures 18 inches by 9 inches. If the cake is cut in half to form two square cakes, each square will occupy half the area and half the volume of the original cake. Will each square also have half the perimeter of the original cake?

Math Concept **Perimeter** The distance around the outside of a closed shape is its perimeter. Calculate perimeter (P) by adding the lengths of all sides. For squares, $P = 4s$, where s is the length of one side.

Starting Hint Calculate the perimeter of the 18- by 9-inch original cake and the 9- by 9-inch square cake. Write a fraction of new perimeter to old perimeter in lowest terms.

NCTM Geometry Analyze characteristics of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.

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

Pies

Reading Guide

Before You Read

Prepare with a Partner Before you read, work with a partner. Read the titles of the heads and ask each other questions about the topics that will be discussed. Write down the questions you both have about each section. As you read, answer the questions you have identified.

Read to Learn

Key Concepts

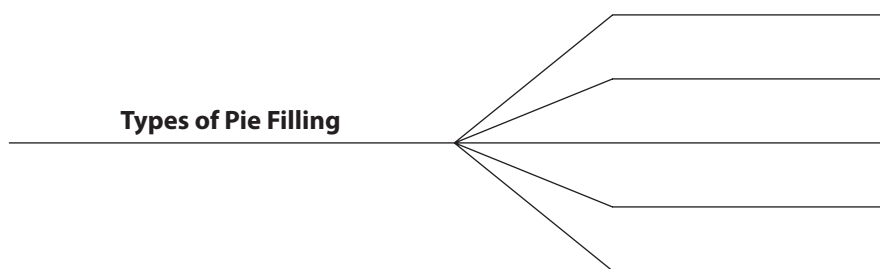
- **Identify** pie dough ingredients and types.
- **Describe** the process of making different types of pies.


Main Idea

Pie consists of a dough and a filling. Pie dough can be mealy or flaky. Once pies are prepared, they must be properly stored.

Graphic Organizer

As you read, use a line chart like this one to list the five different types of pie fillings.



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

Content Vocabulary

- latticework
- basic pie dough
- flaky dough
- mealy dough
- dust
- fluting
- baking blind
- modified starch

Academic Vocabulary

- contrast
- slightly

Pies are a popular dessert in most restaurants.

ACADEMIC STANDARDS

English Language Arts

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

Mathematics

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

Social Studies

NCSS II B Time, Continuity, and Change Apply key concepts such as time, chronology, and change to explain patterns of historical change and continuity.

NCSS III H People, Places, and Environments Examine, interpret, and analyze physical and cultural patterns and their interactions, such as cultural transmission of customs and ideas.

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

Pie Dough Basics

A few ripe peaches sweetened and baked in a crust with a latticework top make an appetizing pie. **Latticework** is a grid pattern on a pie crust made with individual strips of crust. Fruit pies, cream pies, and custard pies have long been considered favorite American desserts. This section presents the basics of pie dough and pie fillings.

Basic pie dough is sometimes called 3-2-1 dough. This ratio refers to the weight of three parts flour, two parts fat, and one part water. Successful pie crusts are based on gluten development in the flour and the mixture of flour and fat.

Pie Dough Ingredients

Using proper technique is an important factor in making pie dough. It also helps to understand how the ingredients work together.

Pastry Flour

Pie dough is made from pastry flour because the high gluten content in bread flour absorbs most of the liquid. This makes the dough tough and rubbery. However, pastry flour has enough gluten to keep the dough together so it can be rolled out.

Vegetable Shortening

Butter or vegetable shortening is used to make dough. With a high melting point of 90°F to 100°F (32°C to 38°C) and consistent quality, vegetable shortening is the best fat for a pie dough. The shortening should be cut or rubbed into the flour. The size of the fat particles in the dough determines its flakiness.

Water

Water or milk at 40°F (4°C) or colder is added to the dough to form gluten as it is mixed with flour. It is important not to overmix pie dough or it will become tough. The cold temperature of the water is also important so that the fat in the dough firms up. The

A TASTE OF HISTORY

1773

Sugar and Molasses Act imposed a tax on molasses for non-British producers

1779

France and Spain attack the British fortress of Gibraltar

Desserts, Colonial Style

Although their food supplies were limited at first, American Colonial cooks were very resourceful and managed to make some tasty desserts. Corn, pumpkins, and beans were new to them, and they learned to incorporate them into their meals. Pies made with pumpkin and native berries were popular. So was Indian pudding, which was made with cornmeal. Sweeteners included molasses and maple syrup.

History Application

Research American Colonial food. Imagine that you live in Colonial times. Write a diary entry about the dinner you have just helped your family prepare. Include details about your colony, and the foods and the methods of food preparation involved.

NCSS III H People, Places, and Environments Examine, interpret, and analyze physical and cultural patterns and their interactions, such as cultural transmission of customs and ideas.

crust will fall apart if not enough liquid is added. In **contrast**, or as a comparison, the crust becomes tough if too much liquid is used, because too much gluten develops.

Salt

Salt tenderizes the gluten and enhances flavor. To be sure salt is distributed evenly, either dissolve it in the liquid before you add it to the dough, or sift the salt with the flour.

Types of Pie Dough

Two-crust pies have both a bottom and a top crust. The top crust may be partially open in a latticework pattern or decorated with dough cutouts. Single-crust pies are often filled with cream or custard mixtures.

A pie is frequently judged by its flaky and tender crust. The two types of pie dough are flaky and mealy.

Flaky Pie Dough

Flour is not completely blended with the fat for **flaky dough**. Flaky pie dough is either long-flake or short-flake. In long-flake, the fat is about the size of walnuts, which creates a very flaky crust. This is used for the top crust of pies. In short-flake, the fat is in pieces about the size of peas. The gluten develops after the water is added and the dough is mixed. Then, the moistened flour and fat form flaky layers when the dough is rolled out. This dough is often used for two-crust pies.

Mealy Pie Dough

The texture of **mealy dough** resembles coarse cornmeal. The fat is blended into the flour more completely than it is for flaky dough. Mealy dough also requires less water or milk. The flour particles in mealy dough are more highly coated with fat and will not absorb as much liquid. Because the baked dough is less likely to absorb moisture from the filling, the crust will not be soggy. Because of this, mealy dough is used for the crust in custard and fruit pies.



Elegant Desserts Pies and tarts make elegant, tasty desserts for all occasions. *What type of pie dough do you think was used for this pie?*

Shaping Pie Dough

It is important not to overmix pie dough. To keep the dough flaky, pie dough should normally be mixed by hand. Pastry flour should be sifted together with the salt before mixing to lessen clumping. Next, the fat is cut or rubbed into the flour until the fat is the size of peas. The cold liquid is then added, and all ingredients are mixed until the dough holds together.

Dough should be covered with plastic wrap and chilled before using it. Some chefs refrigerate the dough overnight so that the gluten can relax. This allows the dough and fat to firm for easy handling and rolling. Because pie dough should not be kept refrigerated longer than one week, the dough can also be frozen in 8- to 10-ounce portions. If you will freeze the dough, wrap it in air-tight packaging, label and date it, and defrost it overnight in the refrigerator before use.

The mixing method for both flaky and mealy dough varies only **slightly**, or a little bit. The fat is cut or rubbed into the sifted flour for both kinds of dough. However, the fat in flaky dough is left in pieces the size of walnuts or peas, while the fat in mealy dough is blended to a cornmeal-like consistency. The larger pieces of fat determine the flakiness of the dough.

After the dough has been chilled, it is ready to be shaped. If the dough is too cold, allow it to soften slightly before you work with it.

Scaling the Dough

For a 9-inch top crust, use 7 ounces of dough. For a 9-inch bottom crust, use 8 ounces of dough. Add 1 ounce of dough to the top crust and 2 ounces of dough to the bottom crust for each additional inch of crust diameter.

Dusting

Dust the bench and rolling pin with flour. To **dust** is to sprinkle very lightly with flour. Do not use too much flour when you dust the bench and rolling pin. Flour makes the dough tougher.

Rolling and Panning

Roll the dough to a round shape $\frac{1}{8}$ -inch thickness all over, after lightly flattening it. Roll the dough from the center to the outer edges in all directions. Check the dough occasionally to be sure it is not sticking.

Roll the dough tightly around the rolling pin to lift it without breaking. Unroll the dough into the pan. Without stretching the dough, press it into the sides of the pie pan. Avoid air bubbles between the pan and the dough.

Fluting Single-Crust Pies

Fluting the edges of the crust gives a nice finish to the pie. **Fluting** is a manner of decorating the crust by making uniform folds around the edge of the pie. Fold under the extra dough extending beyond the edge of the pan and bring it above the pan's rim, even with the edge. Press your thumbs together diagonally to make a ridge around the dough.

Sealing and Fluting Two-Crust Pies

Place the cold filling in the bottom crust, and then place the top crust on top of the filling. Use a small amount of water or egg wash to moisten the edge of the bottom crust, and seal the two crusts together. Tuck the edge of the top crust under the bottom crust. Flute the crust and apply an egg wash or a glaze to the top crust if desired.

Baking Pie Shells

Sometimes bakers bake pie shells in advance, which is known as **baking blind**. The dough is fitted into a pan and pierced with fork tines or a dough docker so that blisters will not form in the dough as it bakes. An empty pie pan is placed on top of the dough and turned upside down to bake. Another method is lining the shell with parchment paper and filling the shell with dried beans or pastry weights.



Reading Check

Distinguish What are the two types of pie dough?

Making Pies

The pie dough is made not only to be the base of the pie, but also to create a shell to contain the filling. The filling is a sweet mixture of different ingredients that makes up the center of the pie and is covered by the pastry.

Pie Fillings

A variety of fruit, custard, and cream pie fillings can be used. Pie fillings can be topped with many food items, such as meringue, whipped cream, and marshmallows.

Cooked Fruit Fillings

Cooked fruit fillings can be purchased ahead of time, or made on the premises. Ready-made fillings are purchased in 10-pound cans or 20- to 45-pound pails for commercial use.

The fruit filling must cool before it is added to the unbaked shells. Fruit pies are baked between 400°F and 425°F (204°C and 218°C) until the crust has an even, golden brown color.

Types of Starches

Various starches are used to thicken pie fillings.

- Cornstarch sets up a gel that allows the filling to hold its shape when sliced.
- **Modified starch**, also called waxy maize, is a type of corn product that will not break down when frozen.
- Tapioca or flour starches are less often used because they cloud the pie filling.
- Pregelatinized starch is precooked, and can be used if the fruit does not need to be cooked before filling the pie shell.

Cream Pie Fillings

Cream pies are filled with flavored pastry cream, which is a cornstarch-thickened egg custard. The filling is cooked on the range and then placed in a pre-baked crust. Often, cream pies are topped with a meringue.

✦ MASTER RECIPE

Basic Pie Dough

YIELD: 1 LB., 8¼ OZ. (THREE 8-OZ. CRUSTS)
SERVING SIZE: 1 OZ.

Ingredients

12 oz.	Flour, pastry
8 oz.	Shortening, vegetable
¼ oz.	Salt
4 oz.	Water, ice-cold
0-1 oz.	Dried milk solids (optional)

Method of Preparation

1. Gather the equipment and scale the ingredients.
2. Sift the flour to aerate it, removing lumps and impurities.
3. Rub the shortening, by hand, into the flour.
4. Dissolve the salt in the cold water.
5. Incorporate the water into the flour until it is sticky. Do not overwork the dough.
6. Allow the dough to rest and chill properly, preferably overnight.
7. Divide the dough into 3 8-oz. portions.
8. Roll out the dough on a lightly floured pastry cloth. Roll the dough to about a ⅛-in. thickness in a circular form. The dough should be about 1 in. larger than the inverted pie pan.
9. Fold the rolled-out dough in half and carefully place the dough over half the pie pan. Unfold the dough to cover the entire rim of the pie pan. Gently pat the dough from the center of the pan out to work out any air bubbles under the crust.

International Flavor

Many different cultures use a form of pie dough to make savory dishes. Use the Internet to research these recipes, and write a half-page report on your findings.

- Steak and kidney pie (England)
- Tepsi boregi (Turkey)
- Kurnik (Russia)

Cooking Technique

Combine

1. Prepare the components to be combined.
2. Add one to the other, using the appropriate mixing method (if needed).

Chef Notes

The dry milk solids can be sifted at the beginning with the pastry flour. The process would be continued in the same manner.

Substitutions

- Add 1 oz. of sugar to slightly sweeten the taste of the dough.

Glossary

Aerate to add air to flour by agitating it
Cut or Rub to mix in fat with flour
Inverted upside down

HACCP

- Refrigerate pie dough no longer than one week

Hazardous Foods

- Vegetable shortening

Nutrition

Calories 140 **Calories from Fat** 80
Total Fat 9g
 Saturated Fat 2.5g
 Trans Fat 0g
Cholesterol 0mg
Sodium 120mg
Total Carbohydrate 11g
 Fiber 0g
 Sugars 0g
Protein 1g
• Vitamin A 0% • Vitamin C 0%
• Calcium 0% • Iron 6%

Custards

Custard pie fillings are made with eggs. For custard and soft pies, the unbaked crust is filled with uncooked filling, and then both are baked together. Sometimes a crumb crust is used. When the pie bakes, the egg protein firms the pie. Do not overcook the filling. Begin the baking process in a hot oven at 400°F to 425°F (204°C to 218°C) for the first 10 minutes. Then, reduce the oven temperature to between 325°F and 350°F (163°C and 177°C).

Soft Pies

Soft pies also have eggs in them that firm the pie when it bakes. Pecan is a type of soft pie.

Chiffon Pies

Chiffon pies are based on either cooked fruit or cream filling stabilized with gelatin. Then, a meringue is folded in. The filling is then placed in a prebaked shell and chilled.

Baking Pies

For the first 10 minutes, pies should be baked at 400°F to 425°F (204°C to 218°C). Fruit pies, however, are baked in high heat for the entire baking period. Reduce the temperature after the first 10 minutes for custard pies.

Determine Doneness

Custard or soft pies are done if no liquid shakes. The best way to judge if a fruit pie has finished baking is to follow formula guidelines.

Storing and Serving Pies

Custard pies and cream pies must be refrigerated. A baked fruit pie can be kept at room temperature for serving. Unbaked pie shells or unbaked fruit pies may be frozen for as long as two months.

 **Reading Check** **Explain** How do you know a pie is done?

SECTION 29.3 After You Read

Review Key Concepts

1. **Identify** the basic ingredients of a pie dough.
2. **Describe** how to check for pie doneness.

Practice Culinary Academics

English Language Arts

3. Imagine that you are compiling a food reference book, and you are working on the pie section. Research one type of pie and then use the information you find to write up a reference-style entry on that type of pie.

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

Social Studies

4. Research the history of pie and create a time line of historical events that have to do with pie or its ingredients. Display your time lines in class and compare them and see which events each student has included.

NCSS II B Time, Continuity, and Change Apply key concepts such as time, chronology, and change to explain patterns of historical change and continuity.


Mathematics

5. A freshly baked cherry pie is exactly 9½ inches in diameter. If the pie is cut into eight perfectly equal slices, what is the perimeter of each slice?

Math Concept **Circumference** Calculate the circumference (C) of a circle as $C = \pi d$, where d = the circle's diameter and $\pi = 3.14$.

Starting Hint Picture a circle divided into eight equal wedges. Two of the sides (the straight ones, coming to a point in the circle's center) of each wedge will be equal to the radius of the circle, or ½ the diameter. The third, curved, side will equal ⅛ of the circle's circumference.

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.

Specialty Desserts

Specialty desserts can make the end of any meal special.

Reading Guide

Before You Read

Get Your Rest The more well rested and alert you are when you sit down to study, the more likely you will be to remember the information later. Studying in the same state of mind as when you are likely to take a test (fully rested and mentally sharp) will help to ensure your best performance.

Read to Learn

Key Concepts

- **Compare and contrast** the methods for making and storing specialty desserts.

Main Idea

Specialty desserts include frozen desserts, custards, and puddings. A skilled chef can make desserts with a high-quality appearance, texture, and taste.

Content Vocabulary

- custard-style ice cream
- American-style ice cream
- frozen yogurt
- sherbet
- sorbet
- custard
- pudding
- stirred custard
- Bavarian mousse
- parfait
- sundae


Academic Vocabulary

- alternative
- substituted

Graphic Organizer

As you read, use a matrix like the one below to list the various specialty desserts in their proper category.

Frozen Desserts	Custards and Puddings	Bavarians, Chiffons, and Mousses
1.	1.	1.
2.	2.	2.
3.	3.	3.
	4.	

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

ACADEMIC STANDARDS

English Language Arts

NCTE 7 Conduct research and gather, evaluate, and synthesize data to communicate discoveries.

Mathematics

NCTM Data Analysis and Probability Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

Science

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

Social Studies

NCSS IX A Global Connections Explain how cultural elements can facilitate global understanding.

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

Specialty Dessert Types

Frozen desserts are a convenient **alternative**, or option, to pastry desserts. Frozen desserts do not require the strict measurements and ingredient ratios that baked goods do. They can be a simple dessert solution for foodservice operations that do not have an accomplished pastry chef on staff.

Frozen Desserts

Some desserts may not be baked goods, such as gelatin desserts, or even cooked items. They may use a combination of preparation methods, such as dessert crêpes and soufflés. Frozen desserts, puddings, custards, mousse ('müs), chiffons (shi-'fäns), and Bavarians (bə-'ver-ē-əns) are included in this section.

Dessert options include a variety of frozen dishes. Frozen desserts include ice cream, frozen yogurt, sherbet, and sorbet (sòr-'bā).

Ice Cream

Ice cream is one of the most versatile and popular frozen desserts. It may be served plain in a cone or dish, or as the basis of a rich dessert with fruit or chocolate shavings.

Custard-style ice cream is made with cooked vanilla custard that consists of cream, milk, eggs, sugar, and flavorings. **American-style ice cream** has no eggs, is uncooked, and is made with milk, cream, sugar, and flavorings. Gelato is an Italian-style ice cream that is more dense in texture.

Frozen Yogurt

Frozen yogurt includes the typical ingredients for American ice cream with the addition of yogurt. Starches or heavy creams are sometimes added to provide smoothness.

Fruits and other flavors, such as chocolate or vanilla, are the most common additions to yogurt. Nonfat frozen yogurt is made from nonfat yogurt. It is a common addition to menus.

Safety Check

✓ Prevent Foodborne Illness

Cream desserts, such as custard, can carry foodborne bacteria. Follow these safety guidelines:

- Store cream desserts in food-grade plastic or stainless steel.
- Do not serve leftover cream-filled products, such as éclairs or cream puffs.
- Keep cream desserts covered when cooling to prevent a skin from forming.
- Cool cream quickly in a shallow pan to avoid contamination.
- Use pasteurized egg products when preparing Bavarians, chiffons, and mousses.

CRITICAL THINKING Why is it important to use food-grade plastic to store cream desserts?

Sherbet and Sorbet

Sherbet combines fruit juices, sugar, water, and a small amount of cream or milk to increase smoothness and volume. If the milk or cream is omitted, the result is called **sorbet** in French. Sorbets are served as an intermezzo (,in-tər-'met-(,sō), or a brief interlude, between courses at a formal meal to cleanse the palate for the next course. It is also served as a light dessert to finish a meal. An ice is a dessert of shaved ice with a syrup poured over it.

Ice cream and sherbet are both mixed constantly in a churn as they freeze. Otherwise, they would freeze into solid blocks. The circulation of air increases the volume, and ice crystals remain small.

Custards and Puddings

A **custard** is made of eggs, milk or cream, flavorings, and sweeteners. Custards are baked or cooked in a double boiler on the range. Custard can be served alone; as the base for fruit pies, tarts, or ice cream; or for a dessert sauce.

Pudding is a dessert made from milk, sugar, eggs, flavorings, and cornstarch or cream for thickening.

Make Baked Custard

- 1 Mix eggs, sugar, salt, and vanilla in a bowl until blended.
- 2 Scald milk in a double boiler by heating it to just below simmering. To scald means to heat just below the boiling point.
- 3 Slowly pour the milk into the egg mixture. Be sure to stir it constantly.
- 4 Skim off any bubbles that form on top of the custard. Pour the custard into cups that are arranged in a shallow hotel pan.



- 5 Pour water into the hotel pan, making sure that the level of water is halfway up the sides of the custard cups.



- 6 Bake the custard at 325°F (163°C) for the length of time indicated in the formula or until it is set. It should have the consistency of firm gelatin.



- 7 Remove the custard from the oven, being careful not to spill the hot water. Cool, label, date, and then store the custard covered in the refrigerator.

Stirred and Baked Custards

A **stirred custard** is made on the range in a double boiler or saucepan. To keep the custard from overcooking, it must be stirred constantly. These custards, therefore, do not set as firmly as baked custards do. Stirred or baked custard is used as a dessert sauce, or can become part of a more complex dessert.

Baked Custard Baked custards work on the same principle as stirred custards. The eggs must coagulate and the custard must become thick, not runny. Thickening occurs during the baking process. If over baked, the protein in the eggs coagulates too much. This leads to a curdled, broken, and watery custard. Custards should be taken from the oven when the center is still slightly fluid.

Smooth Custard Add small amounts of hot liquid gradually while beating the egg and liquid mixture to keep the custard from curdling. When custard curdles, the eggs separate from the solids, making it tough. A bain marie, or a water bath, is used to insulate the custard pan so that the custard does not bake too quickly. When baking, keep the oven at a low setting between 325°F and 350°F (163°C and 177°C). Double boilers should be kept at between 165°F and 170°F (74°C and 77°C).

Puddings

A good pudding results from careful preparation and a trusted recipe. The most common dessert puddings in foodservice operations are starch-thickened and baked.

Make Crème Anglaise

- 1 Heat heavy cream and vanilla to scalding, when bubbles form around the edges of the pan.



- 2 In a separate bowl, whisk together egg yolks and sugar.

- 3 Slowly mix in $\frac{1}{2}$ cup of the scalded milk mixture into the eggs, to warm, or temper, them so they do not scramble.



- 4 Gradually add the tempered egg yolk mixture to the remaining milk mixture on a double boiler. Whisk constantly while adding the egg yolk mixture.
- 5 Cook on the double boiler until the crème anglaise thickens, and can coat a spoon.



Starch-Thickened Puddings Starch-thickened puddings, also called boiled puddings, require starch as the thickening agent to make them firm up. To cook the starch, the pudding is boiled in a saucepan. Pastry cream is a good example of starch-thickened pudding. The resulting mixture can be poured into molds and chilled. To serve these puddings, unmold them and garnish them with chocolate shavings, fresh mint, or fruit such as raspberries.

Baked Puddings Two popular styles of baked puddings are rice pudding and bread pudding. Both of these desserts are made by adding a large amount of either rice or bread to the custard. They may have nuts or fruits added. Baked puddings are often topped with rich sauces to enhance their appearance and make them more flavorful.

Bavarians, Chiffons, and Mousses

Bavarians, chiffons, and mousses are all based on ingredients and techniques discussed earlier. Custard, whipped cream, and thick fruit fillings make these airy desserts.

A **Bavarian**, or Bavarian cream, is made of whipped cream, gelatin, and a flavored custard sauce. The gelatin is softened in cold water or another liquid. Then, it is dissolved in a hot custard sauce and cooled until it is nearly set. Next, whipped cream is folded in, and the entire mixture is put in a mold to set.

The amount of gelatin is key in a good Bavarian cream. While too much gelatin makes the Bavarian rubbery and overly firm, too little gelatin makes the dessert too soft to hold its shape. Be sure to measure accurately.

Chiffons can be served as chilled desserts, not only as pie fillings. The process of making a chiffon is similar to the method described above for Bavarians except that meringue is **substituted**, or switched, for the whipped cream. Other chiffon bases may be fruit fillings and pastry cream. Serving chiffons with interesting garnishes can create contrasting flavors, colors, and textures. The final effect should be pleasing to the eye.

Mousse is a light and airy dessert made with both meringue and whipped cream to enhance the lightness. Fresh fruit or melted chocolate often serves as a base for mousse. Mousse is often served in eye-catching containers, such as hollowed fruits or special molds. Mousse may be served with whipped topping.

Storing and Serving Desserts

Any dessert with eggs or cream must be kept refrigerated or frozen until it is served. Ice cream and sherbet should be kept at 0°F (−18°C) or below. Before serving a frozen dessert, it should be held at 8°F to 15°F (−13°C to −9°C) for 24 hours, so that it will be soft enough to serve.

Parfaits (pär-'fās) and sundaes are two popular desserts. A **parfait** is a frozen dessert flavored with heavy cream. A **sundae** contains one or more scoops of ice cream topped with garnishes, fruits, or syrups.



Reading Check List What are the common ingredients in Bavarians, chiffons, and mousses?

SECTION 29.4 After You Read

Review Key Concepts

1. **Compare** Bavarians, chiffons, and mousses.

Practice Culinary Academics



Science

2. **Procedure** Some fruit can affect the way gelatin sets. Make two gelatin dessert mixes: one as per the directions, and one with raw pineapple added.

Analysis Observe the results. Research fruit enzymes, and create a hypothesis to explain any differences you observe.

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



English Language Arts

3. Conduct research, and then write an essay on the special skills that are needed to become a pastry chef. Why are desserts usually made by these specialized chefs rather than a generally trained chef?

NCTE 7 Conduct research and gather, evaluate, and synthesize data to communicate discoveries.



Social Studies

4. Conduct research to find three specialty desserts from other cultures that are not baked goods.

Describe the desserts, how they are made, and their country and culture of origin.

NCSS IX A Global Connections Explain how cultural elements can facilitate global understanding.



Mathematics

5. On Tuesday, Mr. Kim sold 90 scoops of chocolate, 45 scoops of vanilla, 27 scoops of pistachio, 9 scoops of peach, and 9 scoops of blackberry at his ice cream shop. Display this information in a circle graph.

Math Concept Circle Graphs A circle graph (or pie chart) can be used to indicate percentages of a whole, which are shown as sections (wedges) of the circle. Because a full circle is 360 degrees, multiply each percent times 360 degrees to find the angles of each section.

Starting Hint Convert each total into a percentage of all scoops sold, and multiply each percent by 360 degrees. Draw a circle, and use a protractor to divide the circle into sections with the correct angles. Label each section.

NCTM Data Analysis and Probability Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.



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

Chapter Summary

Desserts include cookies, cakes, pies, frozen desserts, and puddings. Cookies vary in mixing and panning methods and baking time. The five types of cakes have two basic categories of batter, with different mixing methods.

Flaky and mealy pie doughs are chosen for different types of end products. Fruit, custard, and cream are all varieties of pie fillings.

Frozen desserts offer a wide range of variety, from ice cream to sherbet.

Content and Academic Vocabulary Review

1. Write a letter explaining the appeal of different desserts. Use at least 12 of the following terms in your letter.

Content Vocabulary

- crisp cookie (p. 748)
- spread (p. 748)
- soft cookie (p. 748)
- chewy cookie (p. 748)
- one-stage method (p. 749)
- drop cookie (p. 751)
- tuile (p. 751)
- warped (p. 753)
- double pan (p. 753)
- high-fat cake (p. 755)
- low-fat cake (p. 755)
- pound cake (p. 755)
- sponge cake (p. 756)
- emulsified shortening (p. 756)
- genoise (p. 756)
- angel food cake (p. 756)
- chiffon cake (p. 756)
- meringue (p. 756)
- high-ratio layer cake (p. 758)
- Italian meringue (p. 762)
- fondant (p. 762)
- Swiss meringue (p. 762)
- simple syrup (p. 762)
- latticework (p. 765)
- basic pie dough (p. 765)
- flaky dough (p. 766)
- mealy dough (p. 766)
- dust (p. 766)
- fluting (p. 767)
- baking blind (p. 767)
- modified starch (p. 767)
- custard-style ice cream (p. 771)
- American-style ice cream (p. 771)
- frozen yogurt (p. 771)
- sherbet (p. 771)
- sorbet (p. 771)
- custard (p. 771)
- pudding (p. 771)
- stirred custard (p. 772)
- Bavarian (p. 773)
- mousse (p. 774)
- parfait (p. 774)
- sundae (p. 774)

Academic Vocabulary

- turn (p. 748)
- deal (p. 751)
- stabilize (p. 755)
- collapsing (p. 756)
- contrast (p. 765)
- slightly (p. 766)
- alternative (p. 771)
- substituted (p. 774)

Review Key Concepts

2. **Distinguish** between crisp, soft, and chewy cookies.
3. **Describe** types of cookies, and the methods for mixing, and baking them.
4. **Differentiate** between different types of cakes and their ingredients.
5. **Summarize** how to mix, prepare, bake, and ice cakes.
6. **Identify** pie dough ingredients and types.
7. **Describe** the process of making different types of pies.
8. **Compare and contrast** the methods for making and storing specialty desserts.

Critical Thinking

9. **Determine** ingredients. If you wanted to increase the spread of a cookie and you had used all your milk and eggs, what would you add?
10. **Analyze** baking formulas. Why do high-ratio cakes require a high amount of emulsified shortening to absorb the liquids?

Academic Skills

**English Language Arts**

11. **Find an Article** Locate an in-depth cookbook or an instructional cooking magazine on making a dessert type that you have read about in this chapter. Read the text, and then write a short summary of what you have learned that has expanded on your knowledge from this chapter. Be sure to include any preparation or cooking techniques that are listed in your summary.

NCTE 1 Read texts to acquire new information.

**Social Studies**

12. **Dessert History** Choose one type of dessert that you have learned about in this chapter and research its history. Create a brief presentation on the history of your chosen dessert and present it to the class. Include any people who have contributed to the development of the dessert over time. Use illustrations or photos to show your dessert and its ingredients.

NCSS II D Time, Continuity, and Change Systematically employ processes of critical historical inquiry to reconstruct and reinterpret the past, such as using a variety of sources and checking their credibility.

**Mathematics**

13. **Frost a Layer Cake** Debra is preparing a circular, three-layer yellow cake. Each layer of cake is $1\frac{1}{2}$ inches tall and 8 inches in diameter. She would like to put a layer of chocolate frosting on top of each layer of cake, and would also like to cover the sides of the entire cake in the same chocolate frosting. For frosting that is $\frac{1}{4}$ -inch thick in each location, what is the total surface area (in square inches) that Debra must cover in frosting?

Math Concept Area and Circumference of

Circles Calculate circumference (C) as $C = \pi d$, where d = the circle's diameter and $\pi = 3.14$. Calculate the area (A) of a circle as $A = \pi r^2$, where the radius $r = (\frac{1}{2})d$.

Starting Hint Calculate the area on the top of one circular layer of cake, and then multiply by 3 (since there are three layers). Find the surface area of the sides of the cake by multiplying the circumference of the cake times the total height (three cake layers + three frosting layers) of the cake.

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

Certification Prep

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

14. Which types of cakes are leavened with baking soda?
- high-fat cakes
 - low-fat cakes
 - chiffon cakes
 - angel food cakes
15. Which dessert is often used as an intermezzo between courses at a formal meal?
- sorbet
 - ice cream
 - Bavarian
 - smooth custard

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

Test-Taking Tip

If you do not know the answer to a question, make a note and move on to the next question. Come back to it later after you have answered the others.

Real-World Skills and Applications

Interpersonal and Collaborative Skills

- 16. Create a Quiz** Work together with a partner to create a quiz with five multiple-choice and five true/false questions about desserts. The questions should be based on information found in this chapter. Swap your test with another group and take each other's tests. Then, grade each other's work.

Decision Making Skills

- 17. Compare Nutritional Information** Research the nutritional information for different types of cakes. Create a chart to compare the nutrition of these cakes. Write conclusions about each type of cake. Which are the healthiest in your opinion, and which are the least healthy?

Technology Applications

- 18. Dessert Blog** Under your teacher's supervision, perform online research on a dessert. You may even try preparing the dessert, and taking pictures of your final product. Create a short blog entry with facts about the dessert.

Financial Literacy

- 19. Make Dessert Choices** You are making desserts for a party of 50 people. The apple pie costs \$0.84 per serving and the ice cream costs \$0.75 per serving. You will need to buy a new ice cream scoop for \$10. Or, you could make chocolate mousse with whipped cream. The mousse costs \$1.39 per serving and the whipped cream costs \$0.43 per serving. Which dessert is least expensive to serve?

Culinary Lab



Use the culinary skills you have learned in this chapter.

Make Cream Puffs

- 20. Work in Teams** During this lab, you will work in teams to prepare and serve a basic cream puff recipe, and then evaluate the results.
- A. Form teams and bake.** Divide into teams at your teacher's direction and prepare the Basic Cream Puffs formula below. Prepare either a custard filling, a pudding, a sweetened fruit, or an ice cream filling.
- Unsalted butter or shortening, 8 oz.
 - Bread flour, sifted, 10½ oz.
 - Salt, ¼ oz.
 - Eggs, 1 lb.
 - Granulated sugar, ¼ oz.
 - (Yield: 25 cream puffs; serving size: 2 oz.)
 - Water or whole milk, 1 lb.
- B. Add fillings.** Split the cream puffs almost all the way around, or cut in halves almost down to the bottom crust. Fill one half of the puff with the filling and put the halves together.
- C. Add toppings and serve.** Choose one of the following toppings: confectioners' sugar, frosting, hot fudge sauce, fresh fruit, nuts, or ice cream. Add your topping and plate your dessert. Share desserts with other teams, and create an evaluation.

Create Your Evaluation

After tasting your cream puff, write a brief explanation of why you chose the filling and topping you did and why they go well together. Then, evaluate your dessert using the following rating scale: 1 = Poor; 2 = Fair; 3 = Good; 4 = Great. Explain the reasons for your rating.

Baking and Pastry

The art of baking and pastry appeals to both the palate and the eye.

Baking and pastry employees use a variety of doughs and batters to produce breads, cakes, muffins, pies, biscuits, scones, pastries, and other elegant desserts. Attention to detail, excellent eye-hand coordination, and an artistic flair are key skills for those interested in baking and pastry.

Baking and pastry workers must be skilled in basic bread and pastry techniques and have in-depth knowledge of how different ingredients function together. These individuals can find work in a variety of places, from small neighborhood bakeries to large hotel catering operations.



Casey Shiller, Executive Pastry Chef

Q Describe your job.

A I am the executive pastry chef for the Boeing® Leadership Center. I supervise the preparation of all cakes, pies, cookies, muffins, breakfast pastries, plated desserts, breads, and pastries. I am also a faculty member at St. Louis Community College, where I teach classes in baking, pastry, chocolates, wedding cakes, and confectionary art.

Q What kind of education have you received?

A I graduated with honors with a Bachelor of Science in Pastry Arts and Baking from Johnson & Wales University. That was the foundation for my career and a necessary experience for me to have followed my career path.

Q What has been your career path?

A I have had a number of work experiences that have allowed me to continually develop my technical skills and gain valuable knowledge. Before coming to the Boeing® Leadership Center,

I worked at various hotels, including the Trump Plaza Hotel-Casino®, Trump Taj Mahal Hotel-Casino®, Trump Worlds Fair Hotel-Casino®, and The Ritz-Carlton® Amelia Island.

Q How do you maintain your enthusiasm for your work?

A I find that it is very important to stay involved. I am an active member of the American Culinary Federation (ACF), the U.S. Pastry Alliance, and the St. Louis Chefs de Cuisine Association. I also coach the Missouri State Junior Culinary Team.

Q What have been your most rewarding professional achievements?

A In the year 2000, I was named one of the Top 10 Rising Star Pastry Chefs 2000 by Chocolates a la Carte®. I have also earned several gold and silver medals for my chocolate sculptures and plated desserts at the New York Food Show.

Career Ingredients

Education or Training	Most employers require a culinary degree, plus at least two to four years of on-the-job training.
Academic Skills Required	English Language Arts, Mathematics, Science
Aptitudes, Abilities, and Skills	Creativity, artistic ability, good eye-hand coordination, a keen sense of taste and smell, good communication skills, ability to work under pressure, excellent organizational skills, and inventory control experience.
Workplace Safety	Basic kitchen safety, sanitations, and food handling rules must be followed.
Career Outlook	Openings will be plentiful for years to come as the foodservice industry continues to expand.
Career Path	Baking, pastry, and supervisory experience needed for advancement.

Career Pathways

Baker's helpers	Assist bakers in preparing non-dessert baked items, such as breads and rolls.
Baker and pastry apprentices	Work closely with the baker or pastry chef in preparing baked products and fancy desserts.
Pastry cooks	Work under a pastry chef. Prepare items, such as desserts and specialty cakes, for all occasions.
Pastry chefs	Responsible for the preparation of pastries and desserts. They supervise pastry cooks and bakers. May be responsible for creating new formulas.
Bakers	Prepare breads and rolls. In some operations, they also bake cakes and pies. In large operations, each baker may focus on one type of baked product.
Production bakers	Must be familiar with large retail baking systems, product development, bakery management, and sales.
Confectionery food technologists	Work with developing bakery and confectionery products and establish specifications for raw materials used in food products.
Restaurant chefs	Known as line cooks, they are responsible for à la carte dishes.
Chef instructors	Experienced chefs who choose, after many years of experience, to become instructors.

In large bakery and pastry operations, you may also find: **district sales managers, cake decorators, production supervisors, bakery/food scientists, executive pastry chefs, and flavorists.**

Critical Thinking What classes have you taken in school that might help you prepare for a career in baking and pastry?



Most culinary certification programs incorporate baking techniques. Develop a new or modified recipe for a sweet or savory pie. Determine the type of filling, dough, crust, and final appearance of the pie. Be creative.

COMPETITION PRACTICE

Imagine you have entered a pie-making competition. You will be timed, and you must complete the pie you developed in the Get Certified practice within that time. The finished product should be visually appealing, salable, and appetizing. Evaluate your efforts based on the following rating scale:

1 = Poor; 2 = Fair; 3 = Good; 4 = Great

Judge your menu on:

- The visual presentation of your finished pie.
- Whether you finished your pie on time.
- How the pie tastes.