CHAPTER 44

Cakes, Cookies, & Candies

Celebratory Foods Some foods, including cakes, cookies, and candies, are associated with celebrations, gatherings, and holidays. Take 20 minutes to compose a one-page essay on the topic of celebratory foods. Why are specific foods eaten during certain occasions? What are some examples of foods and occasions? Which is your favorite and why?

Writing Tips Follow these steps to complete a timed writing:

- Plan your essay’s organization before you begin writing by creating an outline.
- Take a few minutes to jot down notes and ideas in your outline.
- Focus more on the quality of content than the quantity.

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Writing Activity Timed Writing

Essays will vary but should be one page long and deal with the topic of celebratory foods. A sample thesis reads, “Foods like cake, cookies, and candy play a role in life’s happiest occasions, and everyone has a favorite.” Body paragraphs may give examples of occasions and foods, and discuss a favorite celebratory food.

Activate Prior Knowledge

Caption Answer Answers will vary but may include using cookie cutters or decorative pans; spreading frosting, sprinkles, and; chopped nuts and presenting the food on a special platter or serving dish.

Discussion Ask students: What is your favorite cake, cookie, or candy? Why is it your favorite? (Answers will vary.)

Activate Prior Knowledge

Treats Cakes, cookies, and candies often look as good as they taste. What are some ways to make cakes and cookies look special?

CLASSROOM Solutions

Print Resources
- Student Edition
- Teacher Wraparound Edition
- Student Activity Workbook
- Student Activity Workbook Teacher Annotated Edition

Technology Resources
- Presentation Plus! provides visual teaching aids for every section.
- Online Learning Center includes resources and activities for students and teachers.
- TeacherWorks Plus is an electronic lesson planner that provides instant access to complete teacher resources in one convenient package.
Reading Guide

Before You Read

Preview Examine the photos and read their captions. Think about methods you may have used to prepare cakes, cookies, or candy.

Key Concepts
- **Describe** methods for making and decorating cakes.
- **List** and describe the six types of cookies.
- **Explain** the impact of temperature and crystallization in candy making.

Main Idea
Cakes, cookies, and candies are flavorful and appealing treats that can be made by carefully and precisely following recipes.

Content Vocabulary
You will find definitions for these words in the glossary at the back of this book.
- shortened cake
- conventional method
- one-bowl method
- foam cake
- bar cookie
- drop cookie
- rolled cookie

Academic Vocabulary
You will find these words in your reading and on your tests. Use the glossary to look up their definitions, if necessary.
- precision
- induce

Graphic Organizer
Use a graphic organizer like the one below to take notes about the six types of cookies.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>bar cookie</td>
<td></td>
</tr>
<tr>
<td>drop cookie</td>
<td></td>
</tr>
<tr>
<td>rolled cookie</td>
<td></td>
</tr>
<tr>
<td>molded cookie</td>
<td></td>
</tr>
<tr>
<td>refrigerator cookie</td>
<td></td>
</tr>
<tr>
<td>pressed cookie</td>
<td></td>
</tr>
</tbody>
</table>

Graphic Organizer Go to this book’s Online Learning Center at glencoe.com to print out this graphic organizer.

Develop Concepts

Main Idea Discuss the main idea with students. Ask: Why do you think it is unwise to rely solely on baking times listed in recipes? (Conditions like weather, altitude and oven type can affect the amount of time a baked good needs in the oven. Times listed on recipes are a good guideline.)

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.

**Science**
- **NSES B** Develop an understanding of chemical reactions.
- **NSES B** Develop an understanding of the interactions of energy and matter.

**NCSS National Council for the Social Studies**

Bell Ringer Activity

Sweet Memories
Write the word cookie on the board. Ask students to name the types of cookies that come to mind. Then, do the same with the words cake and candy. Ask students: What do you think influences your associations? A special memory of cookies your grandmother bakes? A memorable birthday cake you made or received? Explain.

Preteaching Vocabulary
Have students write a fill-in-the-blank question for each of the vocabulary words. Sentences should properly use each word.

Graphic Organizer
The graphic organizer is also on the TeacherWorks CD. (Descriptions for each cookie should include the following information: bar cookie, baked in a shallow pan and cut into a bar or square; drop cookie, made from soft dough and dropped onto a cookie sheet; rolled cookie, made from a stiff dough, rolled out and cut into shapes with cookie cutters; molded cookie, shaped by hand and rolled in chopped nuts or other coatings; refrigerator cookie, start with dough formed into long, even rolls about 1½ to 2 inches in diameter; pressed cookie, dough is forced through a cookie press and directly onto a baking sheet.)
Making Cakes

To make a cake successfully, it is important to follow a recipe very carefully. Ingredient amounts, mixing techniques, and baking times are developed to work together with scientific precision, or exactness. Always check a reliable guide before making ingredient substitutions. Remember that mixing directions are calculated to incorporate the right amount of air to give a cake better the best volume and texture.

Ingredients should usually be at room temperature before you begin to make a cake batter. Using ingredients at room temperature makes fat easier to mix and prevents eggs from curdling.

Shortened Cakes

The two basic types of cakes are shortened cakes and foam cakes. A shortened cake contains a solid fat such as butter, margarine, or shortening, as well as flour, salt, sugar, eggs, and liquid. The main leavening agent is baking powder or baking soda. Shortened cakes are sometimes called butter cakes.

A quality shortened cake has good volume and a moist, tender texture. It has been mixed thoroughly, yet quickly, to control the amount of gluten and air. The result is grain that is fine and even, without tunnels. Shortened cake usually requires what is known as the conventional mixing method, but some recipes call for the faster, one-bowl method.

Conventional Method

In the conventional method for making shortened cakes, fat and sugar are creamed together. Sugar crystals grate against the fat, creating holes that fill with air. This builds volume into the batter.

Follow these steps to make a shortened cake with the conventional method:

1. Sift the dry ingredients. All of the dry ingredients should be sifted together.
2. Cream the fat and sugar. The solid fat and the sugar mixture should be combined until it has a light and fluffy consistency resembling whipped cream.
3. Beat the eggs. If eggs are to be beaten into the creamed mixture, pour them into the mixture according to the recipe. Recipes usually call for the eggs to be added one at a time.
4. Mix the liquid ingredients. The liquid ingredients should be combined in a separate bowl.
5. Blend dry and moist ingredients. Add one-fourth of the dry ingredients to the creamed mixture. Then add one-third of the liquids. Repeat, ending with the dry ingredients. This method helps keep the fat from separating, which could allow air to escape. Beat just enough to mix the ingredients after each addition. The batter should be thick and smooth. Overbeating causes a coarse texture and smaller volume.

Explore the Photo

Caption Answer Creaming fat and sugar causes sugar crystals to grate against the fat, creating holes that fill with air. This builds volume into the batter.

Discussion Ask students:
How does mixing contribute to the appearance of a shortened cake? (Answers will vary, but may include: Blending ingredients quickly and thoroughly controls the gluten and air, which helps the texture.)

Critical Thinking

Creaming the Fat Read students the following scenario: Teresa is preparing to bake a shortened cake for a friend’s housewarming party. After sifting the dry ingredients for the recipe, she realizes she forgot to take the butter out of the refrigerator so that it will be at room temperature. She melts the butter in the microwave and adds it to the sugar she has measured out. She then grabs a hot mixing bowl from the dishwasher so that she can beat the eggs for the mixture. Ask students to explain what might happen to Teresa’s cake.

What can Teresa do to keep this from happening in the future? (Answers will vary. Students should show an understanding of the importance of having ingredients at room temperature, and of properly creaming fat and sugar to incorporate the right amount of air to give a cake better the best volume and texture. In the future, Teresa should make sure she has all the ingredients ready before starting to prepare the cake, or she should use the microwave at a lower level to soften, not melt the butter. She should also ensure that the mixing bowl is not hot because it could start to cook the eggs.)
Cakes continue to bake even after they have risen to full size. When a cake is done, it has a thin, shiny crust, is nicely browned, and slightly mounded. The sides start to pull away from the pan and the top feels firm but springy. To test for doneness, insert a wooden toothpick in the center. If it comes out free of moist batter, the cake is done.

### One-Bowl Method

The **one-bowl method** is a quick way to mix ingredients for a shortened cake. In this method, combine dry ingredients first and then add moist ingredients. Some cakes made with the one-bowl method use oil instead of solid fat. Use the quick method only when a recipe calls for it. Cakes made using this method generally have a coarser texture. If you prefer a light and airy cake, do not use this method.

Follow these steps to make a shortened cake with the one-bowl method:

1. **Mix the dry ingredients.** Combine the dry ingredients in a large mixing bowl.
2. **Add fat and liquid.** Add to the dry ingredient mixture the fat, flavoring, and part of the liquid. Mix to make batter.
3. **Add eggs and liquid.** Add the unbeaten eggs and the remaining liquid and beat until thick and smooth. This can be done by hand or with an electric mixer. Scrape down the sides of the bowl several times to catch traces of unmixed ingredients.

### Baking Shortened Cakes

Shortened cakes can be baked in a variety of pans, including muffin pans, sheet pans, and bundt pans in all types of shapes. Use the pan size specified in the recipe. If this is not possible, choose a pan in which the batter fills no more than about one half. Adjust the baking time accordingly. **Figure 44.1** shows what size pan to use for various amounts of batter.

### Kitchen Math

**Novelty Baking Pans**

At a garage sale, Kevin picks out a triangular baking pan, thinking that it will be fun to bake triangular cakes. Unfortunately, when he gets home, he realizes that he has no idea how much the pan holds. If the pan is 9 in. wide, 9 in. tall, and 3 in. deep, how many cups of batter will it hold?

**Math Concept:** Volume of a Prism

A prism is a solid that has two parallel, equal-sized, polygonal bases. To calculate volume, find the area of one of the bases, and multiply by the height of the prism.

**Starting Hint:** Think of the pan as a prism with a triangular base. You will need to calculate the area of the triangle by multiplying \( \frac{1}{2} \times \text{base} \times \text{height} \) (\( \frac{1}{2} \text{ in.} \times 9 \text{ in.} \times 9 \text{ in.} \)). Then multiply by the depth of the pan to find the total volume in cubic inches. Divide by 14.4 to convert to cups, and round to the nearest cup.

**Math Appendix:** For math help, go to the Math Appendix at the back of the book.

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

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**Figure 44.1 Baking Pan Equivalents**

<table>
<thead>
<tr>
<th>Batter Amounts</th>
<th>Pan Sizes to Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 cups of batter</td>
<td>8 × 1½ inch round cake or pie pan; 12-cup muffin pan</td>
</tr>
<tr>
<td>6 cups of batter</td>
<td>8 × 2 inch round cake pan; 9 × 1½ inch round cake pan; 8 × 8 square cake pan; 7½-inch Bundt pan</td>
</tr>
<tr>
<td>8 cups of batter</td>
<td>9 × 2 inch round cake or pie pan; 8 × 8 square cake pan; 5 × 3 inch loaf pan; 9-inch Bundt pan</td>
</tr>
</tbody>
</table>

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**TEACH cont.**

**Writing Support**

**Timed Writing**

**Cake Mixology** Tell students: Mixing directions are calculated to incorporate the right amount of air to give a cake the best volume and texture. Take 10 minutes to compose a paragraph on the topic of mixing ingredients using the one-bowl method. Why are dry ingredients mixed together before adding liquids? What might happen if the eggs or liquid ingredients for your cake are too cold? (For tips on timed writings, see page 680. Paragraphs will vary but should deal with the topic of mixing ingredients using the one-bowl method.)

**Universal Access**

**Auditory Learners**

**Understand the One-Bowl Method** Write the three steps to making a shortened cake with the one-bowl method. Have students repeat the steps of the methods aloud. Call on individual students to recite the rules. **ELL**

**Activity correlated to Mathematics standards.**

**Mini Clip**

**Math:** Connecting Plane and Solid Geometry

A teacher leads the class in a review of a formula for area of plane figures and begins a discussion of volume using real life objects.
Foam Cakes

A foam cake is leavened by air trapped in a protein foam of stiffly beaten egg whites. Foam cakes have a light, spongy texture and high volume. They come in three types: angel food, sponge, and chiffon.

Angel Food Cakes Containing no fat, angel-food cakes are made by beating egg whites with sugar until the mixture is stiff and glossy. Flour is sifted and gently folded in.

Sponge Cakes Named for their springy consistency, sponge cakes include egg yolks that are beaten until pale and thick, then mixed with the liquid ingredients. Flour is sifted and folded into the beaten egg whites, and the two mixtures are folded together.

Chiffon Cakes It takes four mixing steps to create a chiffon cake. First, flour, sugar, and baking powder are sifted together. Second, egg yolks are beaten with oil and liquids. Third, the liquid ingredients are stirred into the dry ingredients. Fourth, beaten egg whites are gradually folded into the batter.

Baking Foam Cakes

A tube pan is traditional for foam cakes because it gives the airy batter plenty of support to rise. Two-piece tube pans have a separate bottom for removing the cake more easily. A one-piece pan can be lined with parchment paper to help prevent sticking.

To test for doneness, touch the top lightly. It should spring back. Cool the cake upside down in the pan to keep its fragile structure from collapsing. Some pans have legs on the rim for support bottom for removing the cake more easily. Two-piece tube pans have a separate bottom for removing the cake more easily. A one-piece pan can be lined with parchment paper to help prevent sticking.

When the cake is cool, gently loosen it from the sides of the pan with a spatula. If the pan has a removable bottom, push it upward and use the spatula to free the cake. Invert the pan and the cake onto a serving plate.

Decorating Cakes

Frostings can be cooked or uncooked. Cooked frosting is heated to a certain temperature that is measured with a candy thermometer. The frosting is then cooled slightly and beaten until creamy. Frosting can also be cooked in a double boiler while being beaten with a mixer until it stands in soft peaks.

Uncooked frosting is easier to make. Cream condensers’ sugar with butter, margarine, or cream cheese. Blend in milk to make it easier to spread. Extracts, such as chocolate or vanilla, can be added to add flavor. Thin glazes are made the same way.

When making frosting, cover the container as you work to keep the mixture from drying out and forming a crust. Dry frosting is difficult to use, and flakes of crust are unattractive.

Frosting is high in fat, sugar, and calories. One alternative is a drizzling of glaze made with condensers’ sugar and fruit juice. Another option is to stencil a decorative design onto the cake using condensers’ sugar or another powder such as cocoa.

Frosting a Layer Cake

Frosting holds layer cakes together. To frost a layer cake, first brush off crumbs carefully. Frost the tops of the lower layers, but not their sides. Stack the layers and put the top layer in place. Frost the sides and top of the cake.

How is uncooked frosting made?

Uncooked frosting is made by creaming condensers’ sugar with butter, margarine, or cream cheese. Milk is sometimes blended in to make it easier to spread.

Discussion Ask students: Why is it important to prevent frosting from drying out? (Dry frosting is more difficult to spread and may harden into unpleasant crispy bits.)
Making Cookies

Cakes and cookies are made with similar ingredients. The main difference is that cookies have relatively little liquid, which gives them a thicker texture.

Cookies come in countless varieties, from crunchy butter wafers to soft, jam-filled rings. There are six basic types of cookies, based on how they are formed. These are bar cookies, drop cookies, rolled cookies, molded cookies, refrigerator cookies, and pressed cookies.

Bar Cookies

Baked in a shallow pan and then cut into a bar or square, a bar cookie can be soft, firm or layered with different bases, fillings, and toppings. Brownies are a popular type of bar cookie.

Bar cookies are usually cut when cool. Use a sharp, thin-bladed knife to make clean, even cuts. Removing a corner piece first makes others easier to lift out.

Drop Cookies

A drop cookie is made from soft dough dropped onto a cookie sheet. Chocolate chip cookies are popular drop cookies.

A small cookie scoop is handy for forming drop cookies. You can also scoop a rounded portion of the dough on a teaspoon and then push it onto the sheet with a rubber scraper or another teaspoon. Allow at least 2 inches between cookies on the sheet, since they spread and flatten during baking.

Rolled Cookies

Made from stiff dough, a rolled cookie has been cut into different shapes with cookie cutters before baking. Chill rolled cookie dough to make it easier to handle. Work with a small amount of dough at a time, leaving the rest in the refrigerator. On a lightly floured surface, roll the dough to about ¼ inch in thickness. Use as little flour as possible to avoid drying out the cookies.

Before cutting rolled cookies, dip the cookie cutter in flour and shake off the excess. Work efficiently by positioning cutters to minimize excess scraps of dough. These can be rolled and cut again, but they get a little tougher in texture each time. Use a spatula to place the cookies on a baking sheet about 1 inch apart.

Molded Cookies

Shaped by hand, a molded cookie can be rolled in chopped nuts or other coatings before baking. Some are flattened with the bottom of a glass. Others are patterned with cookie stamps or tiles. Peanut butter cookies are pressed with a fork, creating their characteristic ridges. You can also make crescents, pretzels, logs, or twists.

Chill molded cookie dough to make it easier to shape. Pinch off walnut-size pieces of dough and form them quickly. Overworking makes cookies tough. Press the dough together so the cookies hold their shape.

Place molded cookies about 1 inch apart on a cookie sheet, or 3 inches apart if you are going to flatten them. If using a glass or fork for pressing, dip it in flour or granulated sugar to keep it from sticking to the dough. If using cookie stamps, oil them lightly before use and flour them between cookies.

TEACH

Skill Practice

Identify Ask students to identify the six basic types of cookies and explain the factor that is the basis for dividing cookies into different types. (Answers will vary, but may include: There are six basic types of cookies based on how they are formed: bar cookies, drop cookies, rolled cookies, molded cookies, refrigerator cookies, and press cookies.)

Explain Ask students to write a paragraph explaining how and when they should cut bar cookies. (A sample paragraph may say: Bar cookies should be allowed to cool before they are cut into bars. If you cut them too soon, the edges will continue to settle and the cuts won’t look as crisp. When cutting bar cookies, use a thin knife with a sharp edge. Removing a corner piece first can be a help in making even, clean cuts.)

Apply Ask students to write a paragraph in which they describe the difference between bar cookies and drop cookies. (Paragraphs will vary, but should include information on the differences between bar and drop cookies.)

Critical Thinking

Proper Placement Read students the following scenario: Janette is making a batch of oatmeal cookies. When she takes the first pan out of the oven, she finds that the cookies have run together. Ask students: What should she do differently with the next batch? (Janette should place the cookies further apart. She should allow at least 2 inches between cookies on the sheet, since they spread and flatten during baking.)
**Safety Matters**

**Raw Cookie Dough**
Many people love to eat raw cookie dough, which has all the sweetness and flavor of a cookie, but with an appealing, soft, and gooey texture. For safety reasons, however, you should resist the temptation to nibble on even small amounts of raw, homemade cookie dough while baking. It nearly always contains raw eggs, which can carry a dangerous bacterium called *Salmonella*, one of the leading causes of food-borne illness-related deaths in the United States. Are you wondering about your favorite flavor of ice cream? Cookie dough ice cream contains specially made and pasteurized cookie dough, so it is safe to eat.

**What Would You Do?** Kenny loves to eat cookie dough, but knows it is unsafe. Instead, he undercooks his cookies by about 10 minutes so they will have a soft and gooey texture. Would you eat Kenny’s cookies?

**Refrigerator Cookies**
A refrigerator cookie starts with dough formed into long, even rolls about 1½ to 2 inches in diameter. Wrap the rolls well in wax paper, foil, or plastic wrap, and chill them as the recipe directs. The dough can be prepared several days in advance.

To cut, slice the roll by encircling it with heavy thread and pulling the ends. Place slices about 1 inch apart on the cookie sheet.

**Presssed Cookies**
Dough can be forced through a cookie press and directly onto a baking sheet. The result is a pressed cookie. Spritz cookies, made with a basic butter dough, are a popular type of pressed cookie. Cookie presses include disks for making an array of shapes, from clovers to camels.

The pressed cookie dough must be soft enough to press but firm enough to hold its shape. Work quickly for best results. Pressed cookies have a stiff dough that spreads very little, so you need only about ½ inch between cookies on the sheet.

**Baking and Storing Cookies**
Cookies bake more evenly when they are of uniform size. Let cookie sheets cool between batches. Dough softens and loses its shape on a hot baking sheet.

Cookies are delicately browned when done. To test drop and bar cookies, lightly press one with your finger. You should see a slight imprint. Remove cookies from the sheet as soon as they are done unless the recipe states otherwise.

Store cookies in a container after cooling. Store crisp and soft cookies separately. Cover crisp cookies with a loose-fitting lid. Cover soft cookies with a tight-fitting lid. You can also freeze cookies for longer storage.

**Convenience Cakes and Cookies**
Cake and cookie mixes are prepared mixes that you combine with water, oil, and eggs. Some mixes rival homemade recipes in taste and quality. Many boxes list recipe variations. Frostings are also sold in mixes and ready-to-use forms.

You can make cookies from cake mix by reducing the amount of liquid in the recipe. You can also find ready-to-use cookie dough in the store’s refrigerator case.

**Making Candies**
Candies are sweet, chewy, or crunchy desserts made from sugar, liquid, flavorings, and sometimes other ingredients such as egg whites, fat, and cream. Candy making is an even more exact art and science than baking. You cannot substitute ingredients in a candy recipe as you might in a cookie.

You must also pay attention to temperature and time. Thirty seconds can mean the difference between success and failure. Increasing or decreasing the yields in candy recipes is tricky. If the yield of a recipe is too small, make additional batches rather than doubling the recipe.

**Answer** You should not eat Kenny’s cookies. Cookie dough contains raw eggs, which can carry *Salmonella*.

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**TEACH** cont.

**Skill Practice**

**Guided Practice**

**Identify** Ask students to identify two tips for baking cookies. (Answers will vary, but may include: Cookies bake more evenly when they are of uniform size; let cookie sheets cool between batches because dough softens and loses its shape on a hot baking sheet.)

**Explain** Ask students to explain why they might use a small ice cream scoop to measure out drop cookies before putting them on a sheet. (Answers should indicate that a scoop will help make drop cookies uniform in size, which will allow them to bake more evenly.)

**Apply** Ask students to write one or two paragraphs in which they describe how to bake and store cookies. Ask students: How can you tell when cookies are done baking? Should you store crisp and soft cookies separately? (Paragraphs will vary, but may include any of the above information, as well as the following: store cookies in a container after cooling. Store crisp and soft cookies separately. Cover crisp cookies with a loose-fitting lid. Cover soft cookies with a tight-fitting lid. You can also freeze cookies for longer storage.)

**Reading Check**

**Describe** Cookies are delicately browned when done. To test drop and bar cookies for doneness, lightly press them with a finger and look for a slight imprint.
Types of Candies

Like cakes and cookies, candy comes in many forms, including:

**Nougat** Chewy or crunchy, nougat is made by beating hot sugar syrup into beaten egg whites.

**Fondant** Smooth and pliable, fondant is usually a base for other candies, including mint patties and chocolate-covered cherries. Fondant is extremely sweet because it is made by cooking large amounts of sugar into water. Cooking the sugar allows it to form tiny crystals that come out smooth. Fondant is so smooth in texture that it is used for attractive cakes, including wedding cakes.

**Divinity** The soft, sweet, and puffy qualities of divinity come from its stiffly beaten egg whites, sugar, corn syrup, and flavoring.

**Taffy** Pulled and twisted into long strands to incorporate air, taffy is a soft, chewy candy that is made in many colors.

**Caramel** Rich and chewy, caramel is formed by cooking butter, milk or cream, and sugar.

If you are new to making candy, it is a good idea to build your skills by starting with easy-to-prepare candies that need little or no cooking.

Principles of Candy Making

In candy making, chemical processes transform the ingredients from liquid to solid. To master the art, you need to understand its two most important aspects: temperature and crystallization.

The Role of Temperature

Why do candy recipes call for such unusual temperatures, such as 248°F? As you cook a candy mixture, the mixture starts to boil. As liquid evaporates, the mixture thickens and its boiling point rises. The boiling point continues to rise as more liquid escapes. Therefore, the longer candy boils and the drier it becomes, the hotter it gets. Temperature is a measure of how much liquid is left in the mixture.

To monitor the temperature of candy-in-progress, place a candy thermometer in the pan so it can be read at any time. Make sure the bulb of the thermometer does not touch the bottom of the pan.

If you do not have a thermometer, you can use the cold water test, a way to estimate syrup temperature based on how it acts in cold water. This test is less reliable than a thermometer, but it is still effective.
**Quiz**

Ask students to answer the following questions:

1. Define shortened cake.
   (A shortened cake is a cake that contains a solid fat such as butter, margarine, or shortening, as well as flour, salt, sugar, eggs, and liquid.)

2. What is the one-bowl method, and why should you only use it when a recipe calls for it? (The one-bowl method is a quick way to mix ingredients for a shortened cake in which you combine dry ingredients first and then add moist ingredients. Use this method only if a recipe calls for it because it could affect the final outcome and texture of the cake.)

3. With which type of cookie dough is the dough cut into different shapes with cookie cutters before baking? (rolled cookies)

**Science in Action**

**The Role of Humidity in Candy Making**

Humidity in the air impacts candy making. Why? Sugar attracts moisture. On hot and humid days, candy absorbs water vapor from the air and stays softer than desired. That is why many people make candy only in dry weather. At higher altitudes, mixtures boil at lower temperatures, which can also affect the candy making process.

**Procedure**

High altitudes are usually less humid than lower ones. So why and how do you think candy is affected if syrup mixtures boil at lower temperatures in high altitudes? Use the Internet to research what can be done to ensure a good outcome when making candy at high altitudes.

**Analysis**

Write a list of suggestions you have found for making candy at high altitudes.

Small crystals create the smooth, silky texture that marks a superior candy. Large crystals, however, feel gritty on the tongue. That is why controlling crystallization is the key to candy making.

**Figure 44.2 Estimating Candy Temperature**

**Cold Water Test**

The cold water test is a way to estimate a candy’s temperature based on its consistency. As candy cooks, it passes through the stages shown in this chart, from loose and sticky to brittle. **If a recipe calls for candy to reach 245°F, how should it behave during the cold water test?**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Temperature</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread stage</td>
<td>230–233°F</td>
<td>Forms a loose, sticky thread that will not form into a ball.</td>
</tr>
<tr>
<td>Soft-ball stage</td>
<td>234–240°F</td>
<td>Forms a soft ball that flattens.</td>
</tr>
<tr>
<td>Firm-ball stage</td>
<td>244–248°F</td>
<td>Forms a ball that holds its shape, is pliable, and does not flatten.</td>
</tr>
<tr>
<td>Hard-ball stage</td>
<td>250–266°F</td>
<td>Forms a hard, compact ball that holds its shape but flattens when pressed between the fingers.</td>
</tr>
<tr>
<td>Soft-crack stage</td>
<td>270–290°F</td>
<td>Forms brittle threads that are pliable when removed from water.</td>
</tr>
<tr>
<td>Hard-crack stage</td>
<td>300–310°F</td>
<td>Forms brittle threads that break or snap easily when removed from water.</td>
</tr>
<tr>
<td>Caramel stage</td>
<td>320–338°F</td>
<td>Forms brittle threads, and liquid turns brown.</td>
</tr>
</tbody>
</table>

**Caption Answer**

It should form a ball that holds its shape, is pliable, and does not flatten. This is the firm-ball stage.

**Discussion**

Ask students: At what temperature do you think a hard rock candy mixture is done? (between 250–266°F)
To keep sugar crystals small, recipes often include ingredients called interfering agents. An interfering agent is an ingredient that breaks down sugar crystals or keeps them from forming. Cream of tartar is an acid that breaks down sugar crystals. Fat gets between sugar molecules and keeps them apart. Corn syrup adds extra glucose to the syrup, which helps to block excessive crystallization.

You can also manage crystals by mixing. You can induce, or bring about, crystallization by starting to beat the mixture when it has cooled. Continue to beat the mixture to produce more small crystals. If you keep beating until crystallization stops, you will create a creamy, velvety texture. Some candies, such as toffee and caramel, should not have any crystals at all. These candies have a large amount of butter and are cooled without stirring.

Preventing Unwanted Crystallization

The following guidelines can help you prevent unwanted crystallization:

- Have all ingredients at room temperature.
- Use only clean pans, spoons, and thermometers. Wash and dry equipment before reusing it. Dip cold utensils in warm water to warm them.
- Rub the sides of the pan with butter to prevent sugar from sticking.
- Put sugar in the pan first. Wash the sides with the liquid used in the recipe.
- Dissolve crystals on pan sides with a pastry brush dipped in hot water while cooking. Watch for crystals that start to slide into the syrup.
- Work quickly when pouring out the mixture. Be careful not to scrape the sides or the bottom of the pan.
- Save syrup that starts to crystallize by adding a small amount of water. You will have to cook the mixture again.

Steps in Candy Making

Most candy is made by heating ingredients in a pan, stirring and beating the mixture, and then molding or cutting it to shape. Candy making requires exact timing, so pre-preparation is essential.

Preparing to Cook Candy

Read the entire candy recipe before beginning to cook. Measure and arrange all ingredients so they will be at hand when needed. Assemble the equipment you will need, such as a baking sheet and cooling racks. Some candies, such as nougat and divinity, require a sturdy, free-standing electric mixer. Portable mixers do not have enough power. Some candies also require specialized equipment, such as candy molds and dipping forks.

For most candy recipes you will need:

- A candy thermometer.
- A heavy, deep pan with straight sides. Choose a pan that holds about three times the volume of the ingredients. If the pan is too small, the syrup can foam up and boil over, making a mess and possibly causing burns. If the pan is too large, the mixture may not be deep enough to cover the bulb of the thermometer.
- A wooden or silicone spoon with a long handle. Sugar syrups reach very high temperatures. Metal spoons get too hot to hold, and plastic spoons may melt.
Cooking Candy

Different candies are made using different methods. Most candies require quick action, so read recipes through before beginning. One process found in many recipes involves these steps:

1. **Attach the thermometer.** Clip the candy thermometer to the side of the pan.
2. **Add ingredients to the pan.** Add the basic ingredients, such as sugars, liquids, and butter.
3. **Heat and stir.** Place the pan over low heat and stir until the sugar is completely dissolved. Stir constantly but carefully to minimize splashing. Avoid scraping the sides, which could trigger crystallization.
4. **Boil.** Add other ingredients as called for in the recipe, and bring the mixture to the correct temperature. Stir as the recipe instructs. You may need to stir the boiling mixture occasionally or stop stirring once the sugar dissolves.
5. **Remove from heat.** After moving the pan away from the heat, stir in extracts, nuts, or other flavorings, as directed.
6. **Let cool.** Let the mixture cool undisturbed to the temperature indicated. Some recipes advise placing the pan in water to speed cooling and encourage fine crystals to grow.
7. **Beat.** Beat the mixture according to the recipe. Pour or drop the candy onto baking sheets or pans, which are usually prepared by buttering or lining with wax paper.

**Storing Candies**

Allow candies to cool completely before storing them. Keep them in a cool place in a tightly covered container, layered between sheets of wax paper, plastic, or foil. You can also wrap them individually. Most candies can keep this way for up to three weeks. Many candies can be frozen for up to one year.

**Orange-Almond Biscotti**

**Ingredients**

- 1½ cup Flour
- ⅛ cup Sugar
- 1 tsp. Orange zest
- ¼ tsp. Salt
- 2 Eggs
- ¼ cup Olive oil
- 1 tsp. Vanilla extract

**Directions**

1. Preheat oven to 450°F.
2. In a large mixing bowl, combine the flour, sugar, orange zest, and salt. Mix well. In a separate bowl, beat the eggs and add the olive oil and vanilla extract.
3. Mix the dry ingredients with the wet ingredients.
4. Pour the batter onto a baking sheet lined with parchment. Pour in a straight line across the middle of the baking sheet so that the center is higher than the edges.
5. Bake for 25 minutes.
6. Remove from the oven and let cool.
7. Slice lengthwise into 1-inch pieces and lay the pieces on their sides on a baking sheet. Bake again for 20 minutes.

**Nutrition Analysis per Serving**

- Calories: 100
- Total fat: 4 g
- Saturated fat: 1 g
- Cholesterol: 30 mg
- Sodium: 83 mg
- Carbohydrate: 14 g
- Dietary fiber: 0 g
- Sugars: 5 g
- Protein: 2 g

**Recipe Prep Tip**

This recipe will work with virtually any different seasonings and dried fruits. You can also use chocolate chips or candied ginger. Avoid wet ingredients, which will affect the consistency of the biscotti.
After You Read

Chapter Summary
Cakes, cookies, and candies are flavorful treats. The two basic types of cakes are shortened cakes and foam cakes, which are made using different methods. Cakes can be decorated using frosting, icing, or other toppings. Cookies have a thicker texture than cakes, but are made using similar ingredients. There are several types of cookies, each with its own taste, texture, appearance, and preparation method. Cookies must be baked and stored properly. Cakes, cookies, and frostings are available in convenience forms. Candies also come in many forms, and are made through a chemical process. They should be stored properly to retain their flavor and freshness.

Content and Academic Vocabulary Review
1. Use each of these content and academic vocabulary words in a sentence.

Content Vocabulary
- shortened cake (p. 682)
- conventional method (p. 682)
- one-bowl method (p. 683)
- foam cake (p. 684)
- bar cookie (p. 685)
- drop cookie (p. 685)
- rolled cookie (p. 685)
- molded cookie (p. 685)
- refrigerator cookie (p. 686)
- pressed cookie (p. 686)
- cold water test (p. 687)
- crystallization (p. 688)
- interfering agent (p. 689)

Academic Vocabulary
- precision (p. 682)
- induce (p. 689)

Review Key Concepts
2. Describe methods for making and decorating cakes.
3. List and describe the six types of cookies.
4. Explain the impact of temperature and crystallization in candy making.

Critical Thinking
5. Evaluate whether you should bake a cake without a recipe, even if you remember most of the ingredients.
6. Predict the consequences if Jorge uses the one-bowl method to prepare a cake recipe that calls for the conventional method.
7. Compare and contrast cakes and cookies. How are they similar? How are they different?
8. Explain two reasons why candy might come out softer than desired, even if you carefully follow the recipe instructions.
9. Evaluate whether a bit of lint that fell from Elsa’s sweater into her candy mixture started a chain reaction of crystallization.
10. Infer why there is no category for cakes and cookies in MyPyramid.

Critical Thinking
5. To estimate the proper amount for even one ingredient would be a mistake, because exact measurements and precision are required to prepare a cake successfully.
6. Jorge’s cake might lack volume. His recipe may have called for the conventional method because the process of grating sugar crystals against fat while creaming them together creates holes that fill with air. Without this process, the specific ingredients used in the recipe may create a dense and heavy cake.

Chopped nuts before baking. Refrigerator cookies are made by forming dough into long, even rolls about 1 1/2 to 2 inches in diameter, wrapping them in protective covering, and refrigerating them, then slicing the roll with heavy thread. Pressed cookies are made by forcing dough through a cookie press directly onto a baking sheet.

Temperature is a measure of how much liquid is left in a mixture of candy ingredients. As a candy mixture is cooked, it starts to boil. It thickens as moisture evaporates. The longer candy boils, the drier it becomes and the hotter it gets. Crystallization is the formation of sugar crystals in syrup. Crystallization that results in small crystals creates the smooth, silky texture of good candy.

Critical Thinking
5. To estimate the proper amount for even one ingredient would be a mistake, because exact measurements and precision are required to prepare a cake successfully.
6. Jorge’s cake might lack volume. His recipe may have called for the conventional method because the process of grating sugar crystals against fat while creaming them together creates holes that fill with air. Without this process, the specific ingredients used in the recipe may create a dense and heavy cake.
7. Cakes and cookies are made with similar ingredients. The main difference is that cookies have relatively little liquid, which gives them a thicker texture.

8. Candy may come out softer than desired if you prepare it on a humid day, or at a high elevation. Humidity might cause the candy to absorb water vapor from the air and stay soft. A high elevation might have caused the mixture to boil at a lower temperature, becoming insufficiently cooked.

9. Answers should demonstrate critical thinking and an ability to formulate an explanation based on the information that is in the text. For example, the small bit of lint interrupted the liquid smoothness of the syrup mixture and provided a small solid to which molecules of glucose and fructose could attach, causing them to cluster together and turn back into granulated sugar.

10. MyPyramid is comprised of food groups that should be consumed every day because they provide valuable nutrients. Cakes, cookies, and sweets are usually high in calories, sugar, fat, and cholesterol, and do not provide many nutrients.

11. Preferences will vary. After each team reveals whether their sample was full- or low-fat, students should assess how fat content may have influenced their preferences. For example, some students may note that their favorite samples were all full-fat recipes, showing that fat provided a flavor and appearance they liked.

12. Daphne can embellish the cake by drizzling on a glaze made of confectioners' sugar and fruit juice. She can also use a stencil to dust a design onto the cake with confectioner's sugar.

13. Slide shows will vary, but should express five distinct ideas for creative cake decorating. For example, one idea may be to use edible flowers.

Real-World Skills

7. Cakes and cookies are made with similar ingredients. The main difference is that cookies have relatively little liquid, which gives them a thicker texture.

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Real-World Skills

Problem-Solving Skills

14. Enrique was in the middle of making a batch of candy. He was using a thermometer to monitor the temperature of his candy as it cooked, until the thermometer broke. Can Enrique still monitor the temperature of his candy mixture? If so, by what method?

Interpersonal and Collaborative Skills

15. Cookie Sale

Follow your teacher’s instructions to form groups. Then participate in a teacher-led, classwide discussion to plan a cookie sale. Decide on a worthy cause for which you would like to earn funds, and determine what type of cookies each group will prepare. Work with your group to find a recipe for the cookies you will make and sell.

Financial Literacy Skills

16. Cookie Sale Costs

Work with the same group as in the interpersonal and collaborative activity above. Determine the cost of making 36 cookies using the recipe your group has chosen for the cookie sale. If you want to make a 75 percent profit, how much will you charge for each cookie?
Academic Skills

**Food Science**

**Leavening Actions** Baking soda and baking powder are two leavening agents frequently used in cakes and cookies.

**Procedure** Pour ½ cup of cold water into each of two bowls. Dissolve ½ teaspoon of baking soda into one bowl and ½ teaspoon of baking powder into the other. Observe and record the results. Add a teaspoon of vinegar to each bowl and observe and record the results.

**Analysis** Write a paragraph explaining what you have learned about baking soda and baking powder from this experiment.

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**English Language Arts**

**History of Famous Cakes** Research the history of cakes, learning about different famous types, such as Lady Baltimore cake, which is thought to have originated in the late 19th century, or Red Velvet cake, which is thought to have originated in the late 19th century. Write a one-page report explaining the history or origins of one type of famous cake, as well as its ingredients, flavor, and appearance.

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**Mathematics**

18. **Frosting a Layer Cake** Marie is making a circular, three-layer yellow cake. Each layer of cake is 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 in the same chocolate frosting. If the frosting will be ½-inch thick in each location, what is the total surface area to be frosted?

**Math Concept** Area and Circumference of Circles

Calculate circumference \( C = \pi d \), where \( d \) is the circle’s diameter and \( \pi \approx 3.14 \). 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. Then multiply by 3 (since there are three layers). Find the area of the sides of the cake by multiplying the circumference of the cake by the total height (3 cake layers + 3 frosting layers) of the cake.

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**English Language Arts**

19. **History of Famous Cakes** Students should conclude that baking soda reacts to liquid acids and the baking powder reacts to dry acids.

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**Mathematics**

18. 339.12 sq. in. of surface will be covered in frosting. Each circular layer has a top surface area of \( (3.14)(4 \text{ in.})(4 \text{ in.}) = 50.24 \text{ sq. in.} \). The total height of the cake equals the height of each of the three cake layers plus the height of each of the three frosting layers, or 2 in. + 0.5 in. + 2 in. + 0.5 in. + 2 in. + 0.5 in. = 7.5 in. The circumference of the cake equals \( (3.14)(8 \text{ in.}) = 25.12 \text{ in.} \), so the surface area of the side of the cake equals \( (25.12 \text{ in.})(7.5 \text{ in.}) = 188.4 \text{ sq. in.} \). Thus, the total surface area to be covered with frosting equals 339.12 sq. in. + 50.24 sq. in. + 50.24 sq. in. + 188.4 sq. in. = 658.00 sq. in.

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**English Language Arts**

19. Answers will vary depending on the cake researched but should provide details on the cake, its creator and appearance.

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**Financial Literacy Skills**

16. Answers will vary depending on the ingredients required in recipes. For example, if it costs $7 to buy the ingredients to make 36 oatmeal raisin cookies, a group should charge 35 cents per cookie to make a 75 percent profit.

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**Academic Skills**

**(Food Science)**

**Leavening Actions** Baking soda and baking powder are two leavening agents frequently used in cakes and cookies.

**Procedure** Pour ½ cup of cold water into each of two bowls. Dissolve ½ teaspoon of baking soda into one bowl and ½ teaspoon of baking powder into the other. Observe and record the results. Add a teaspoon of vinegar to each bowl and observe and record the results.

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