Math and Food Preparation  Have you noticed that cooking involves many different types of skills, including creativity, reading, and organization? Math skills also play an important role in food preparation. Write a minimum of two paragraphs about why and when math skills are needed for successful cooking. You have ten minutes to compose your paragraphs.

Writing Tips  Follow these steps to complete a timed writing:

- Take two minutes to outline main points and examples.
- While you write, use your outline as a guide to stay on track.
- Focus on the quality, not just the quantity, of your writing.

Activate Prior Knowledge  You can cut and mix foods in many different ways. What cutting methods can you use for vegetables?
Before You Read

Preview
Find a recipe, and underline each of the preparation techniques mentioned, such as “dice,” “baste,” or “marinate.” As you read this chapter, note the definition of each preparation technique mentioned in the recipe.

Read to Learn

Key Concepts
- **List** three different types of ingredients and the tools you needed to measure them.
- **Explain** guidelines for proper knife safety.
- **List** eight different ways to mix ingredients.
- **Describe** coating and why it is a useful cooking technique.
- **Explain** the benefits of learning specialized cooking techniques.

Main Idea
Different food preparation techniques have varied effects on foods, and mastering them is essential for success in the kitchen.

Content Vocabulary
- taring
- mixing
- cutting
- coating

Academic Vocabulary
- affect
- effect

Graphic Organizer
Use a graphic organizer like the one below to note how to stir, toss, and whip foods.

<table>
<thead>
<tr>
<th>STIR</th>
<th>TOSS</th>
<th>WHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></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.

Academic Standards

**English Language Arts**

*NCTE 12* Use language to accomplish individual purposes.

**Mathematics**

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

*NCTM Measurement* Understand measurable attributes of objects and the units, systems, and processes of measurement.

**Science**

*NSES C* Develop an understanding of matter, energy and organization in living systems.

**Social Studies**

*NCSS VIII B Science, Technology, and Society* Make judgements about how science and technology have transformed the physical world and human society.
Measuring Ingredients

Mastering food-preparation techniques is essential for success in the kitchen. Most recipes give amounts measured in standard units, such as cups, teaspoons, and tablespoons. That is why you need standard measuring measuring cups and spoons to follow recipes correctly. Coffee mugs, soup spoons, and juice glasses do not work well as measuring tools, because they come in all different sizes.

Liquids, dry ingredients, and fats each take slightly different measuring methods.

Measuring Liquids

Liquid measuring cups are used for larger amounts of flowing ingredients, including oils and syrups. To measure liquids, follow these steps:

1. Set the cup on a level surface. If you hold the cup in your hand, it may tip over or sit at an angle, resulting in an inaccurate reading.
2. Pour the liquid into the measuring cup.
3. Bend down to check the measurement at eye level. Looking down at an angle can distort the reading.
4. Add more liquid or pour some out, if needed, until the top of the liquid is at the desired mark.
5. Pour the ingredient into the mixing container. You may want to use a rubber scraper to empty the cup completely.

Do not measure ingredients over a mixing bowl. Anything you spill will land in the bowl.

Using Measuring Spoons for Liquids

For amounts of liquids smaller than ¼ cup, you need use measuring spoons instead of cups. Most sets of measuring spoons have a ¼-teaspoon measure as their smallest size. To measure ⅛ teaspoon, dribble the liquid into the ¼-teaspoon measure until it looks half full.

Measuring Dry Ingredients

Dry measuring cups are used for larger amounts of dry ingredients. They are also used for moist but not flowing ingredients, such as jam, yogurt, and peanut butter.

Before measuring dry ingredients, check whether you need to sift first. Flour, granulated sugar, and confectioners’ sugar are often sifted to add air and remove small lumps. Whole-grain flours are too coarse to go through the sifter. Stir them with a spoon before measuring.

Easy to Read

When buying measuring cups and spoons, look for products that are well made and designed for ease of use. Why should you set a liquid measuring cup on a flat surface rather than holding it in your hand?
To measure dry ingredients, follow these steps:

1. Lay out a piece of wax paper.
2. Set out the proper size measuring cup. If you need ¾ cup, use the ½-cup and ¼-cup measures. For ⅓ cup, measure ¼ cup twice.
3. Fill the cup with the ingredient. Do not pack down flour, granulated sugar, or confectioners’ sugar. Do pack down brown sugar, which tends to be fluffy. Use the back of a spoon to pack it firmly into the cup.
4. Level off the top of the cup using the straight edge of a spatula unless the recipe calls for a “heaping,” or rounded, measure. Let the excess fall on the wax paper and return it to its original container.
5. Pour the ingredient into the mixing container. Moist foods can be spooned or scraped into and out of the cup. You may want to use a rubber scraper to empty the cup completely.

Do not measure ingredients over the bowl in which you are mixing. Anything you spill will land in the bowl.

**Using Measuring Spoons for Dry Ingredients**

To measure dry ingredients in amounts smaller than ¼ cup, you need measuring spoons instead of cups. Level dry ingredients in spoons unless the recipe calls for a “heaping,” or rounded, measure. A heaping teaspoon is almost twice as much as a leveled teaspoon. If you need ¼ teaspoon of a dry ingredient, fill the ½-teaspoon measure and level it off. Then remove half the ingredient with the tip of a straightedge spatula or table knife. Add smaller measurements if you do not have a measuring spoon in the size you need.

**Dashes and Pinches** Some recipes ask for a dash or a pinch of an ingredient, typically an herb, spice, or other seasoning. This is an even smaller quantity, measured as the amount that can be held between the thumb and finger.

**Measuring Solid Fats**

Solid fats such as butter and margarine can be measured in several ways, depending on their type.

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**Be a Smart Consumer**

**Consider Costs**

When it comes to supplying their kitchens with measuring tools, consumers can choose from a variety of materials and a range of costs. A set of plastic measuring cups can be purchased for a few dollars, while a set of ceramic measuring cups costs five times as much. A basic electronic scale shows the weight of food in a digital display. A version that also displays the food’s nutritional values costs twice as much.

When shopping for tools to measure volume and weight, consumers can save money by paying only for the features they need.

**Challenge** Use the Internet to shop for liquid and dry measuring cups, measuring spoons, and a kitchen scale. Can you buy the necessary tools to measure volume and weight with a budget of 100 dollars? Share your findings verbally.

**Stick Method**

The stick method works for fat that comes in ¼-pound sticks, such as butter and margarine. The wrapper is marked in tablespoons and in fractions of a cup. You simply cut off the amount you need, cutting through the paper with a serrated knife.

**Dry-Measure Method**

The dry-measure method works well for measuring shortening. Pack the fat into a spoon or dry measuring cup, pressing firmly to eliminate pockets of air. Level off the top. Use a rubber scraper to remove as much of the fat as possible from the spoon or cup.

**Water-Displacement Method**

The water-displacement measuring technique works for any kind of fat. First, subtract the amount of fat you want to measure from one cup. Pour that amount of cold water into a 1-cup liquid measuring cup. If you need ¼ cup of shortening, for example, use ¾ cup of cold water. Cold water keeps the fat from melting. Now add fat until the water reaches the 1-cup mark. Hold the fat down to keep it completely
below the surface of the water. Do not push the utensil under the water, however, or it could affect, or change, the measured amount. Finally, lift the fat from the water with a slotted spoon.

**Measuring by Weight**

Many recipes list ingredients by weight. Some recipes call for a certain package weight, such as a 10-ounce bag of frozen peas or a 28-ounce can of peeled tomatoes. Others call for specific weights, such as 1 pound of chicken breasts.

Weight is a more exact measurement than volume. For example, four ounces of shredded cheese may fill between 1 and 1½ cups, depending on how firmly it packs. Professional chefs typically weigh ingredients to get accurate results.

You need a kitchen scale to weigh ingredients. A spring scale is used differently from an electronic scale, so follow the manufacturer’s directions for the type of scale you use. To weigh small pieces of food, such as rice or chopped vegetables, you need to put them in a container. Remember to adjust the scale by taring, or subtracting the weight of the container from the total weight in order to find the weight of the food. First place the empty container on the scale. Press the tare button to set the scale back to zero. Then add the ingredient. The scale will register that weight only.

**Measuring Unusual Amounts**

You can use your math skills and your knowledge of equivalents to measure nearly any unusual amount.

To measure amounts that are not marked on your measuring cups, use a combination of standard-size measures that add up to what you need. For example, suppose you halve a recipe and need 5⁄8 cup of flour. Measure out ½ (4⁄8) cup, then add 1⁄8 cup more. You can measure 1⁄8 cup using measuring spoons. 1⁄8 cup equals 2 tablespoons. So 5⁄8 cup equals ½ cup plus 2 tablespoons.

You can also measure some amounts by subtracting a smaller quantity from a larger quantity. To get ⅞ cup of milk, for instance, you can pour one cup and then remove 2 tablespoons.

<table>
<thead>
<tr>
<th>Reading Check</th>
<th>List What are three methods of measuring solid fats?</th>
</tr>
</thead>
</table>

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Serious cooks need a kitchen scale to measure ingredients exactly. Why is weight a more exact measurement than volume?
Cutting Foods

Cutting means dividing a food into smaller parts by using a tool with a sharp blade. The most common cutting tool is a knife.

Think safety first. Use a sharpened knife to help prevent accidents and make the work easier. Use a cutting board to protect the countertop and your hands. Place a wet paper towel or dishtowel under the board to prevent it from slipping.

Hold the food firmly on the board with your hand but not in your hand. Curl your fingertips away from the blade. Grasp the knife securely by its handle with the other hand, avoiding the sharp edge of the blade. Face the blade away from your body. For rounded foods such as potatoes and onions, cut a thin slice from the bottom first so that the food sits flat on the board.

Knife Cutting Techniques

You can use a knife to cut food into different sizes and shapes. Here are the cutting terms most often found in recipes. Figure 24.1 shows several of these techniques.

Chop, Mince To chop is to cut food into small, irregular pieces. To mince is to chop finely. Use a chef’s knife for both tasks. Hold the knife handle with one hand, pressing the tip against the cutting board. Guide the blade by resting the other hand lightly on the back of the blade near the tip. Rock or pump the knife handle up and down carefully, keeping the tip of the blade on the board as the blade chops the food.

Cube, Dice To cube is to cut food into square pieces about ½ inch on a side. To dice is to cut food into square pieces about ¼ inch on a side.

Pare To pare is to cut off a very thin layer of peel with a paring knife or peeler.

Score To score is to make straight, shallow cuts with a slicing knife in the surface of a food. Scoring helps to tenderize meat and let sauces sink in.

Slice To slice is to cut a food into large, thin pieces with a slicing knife. Use a sawing motion while pressing the knife down gently.

Sliver To sliver is to cut a food, such as almonds, into very thin strips.

Knife Safety

Good knife technique helps you protect yourself from injury and cut more efficiently. What knife-safety tips can you follow to avoid cutting yourself?

TECHNOLOGY FOR TOMORROW

Cutting-Edge Technology

The first knives were made of rock, wood, and bone. Since then, technology has evolved to bring modern cooks lightweight and efficient cutting tools—made with cutting-edge materials. Today, tough substances like titanium, carbon fiber, alloy tool steel, and ceramic give knives strength and durability. Ceramic blades are so hard that they stay sharp for years with no sharpening! Technology also influences knife-making processes. Instead of the old-fashioned method of forging, or shaping red-hot metal with a hammer, many knives are drop forged. This means hot metal is poured into a pre-shaped mold. In other cases, lasers are used to cut knife blades out of sheets of metal. Lasers are also used to make blade edges sharp and precise.

Investigate Some modern kitchen knives are labeled “self-sharpening.” Can these knives really sharpen themselves? If so, how? Share your findings in a paragraph.

NCSS VIII B Science, Technology, and Society Make judgements about how science and technology have transformed the physical world and human society.
Other Cutting Techniques

You can use a variety of kitchen tools besides a knife to produce a different effect, or result. **Crush** To crush is to pulverize food into crumbs, powder, or paste with a rolling pin, blender, or food processor. **Flake** To flake is to break or tear off small layers of food with a fork. Flaking is often used for fish. **Grate, Shred** To grate or shred is to cut food, such as cheese or carrots, into smaller pieces or shreds by rubbing the food against the rough surface of a grater or microplane. You can also shred cooked meat by pulling it apart with a fork. **Grind** To grind is to use a grinder to break food into coarse, medium, or fine particles. Meat herbs, spices, and coffee beans are often ground. **Mash** To mash is to crush food into a smooth mixture with a masher or beater. **Purée** To purée is to grind or mash cooked fruits or vegetables until they are smooth. You can use a blender, a food processor, a food mill, or a sieve to purée food. **Quarter** To quarter is to divide a food, usually by cutting it with a knife into four equal pieces. **Snip** To snip is to cut food into small pieces with kitchen shears. This technique is usually used with fresh herbs or dried fruit.

**Figure 24.1 Cutting Techniques**

**Slice and Dice** Different cutting tools and techniques let you shape food into different shapes and sizes. Why are foods cut into small pieces?

<table>
<thead>
<tr>
<th>Technique</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julienne</td>
<td>Cutting food into $\frac{1}{16} \times \frac{1}{16} \times$ 2-inch strips</td>
</tr>
<tr>
<td>Chip</td>
<td>Cutting food into small, $\frac{1}{8}$-inch thick slices</td>
</tr>
<tr>
<td>Dice</td>
<td>Cutting food into small, square pieces</td>
</tr>
<tr>
<td>Pare</td>
<td>Cutting off a very thin layer of peel</td>
</tr>
<tr>
<td>Waffle</td>
<td>Cutting food into $\frac{1}{8}$-inch thick perforated slices</td>
</tr>
<tr>
<td>French Fry</td>
<td>Cutting very long length-wise pieces</td>
</tr>
</tbody>
</table>

**Identify** When you make short, shallow cuts into the surface of a food, what do you do?
Mixing Ingredients

Most recipes require some form of mixing, combining two or more ingredients thoroughly so they blend. Spoons and forks work well for basic mixing. Appliances such as blenders and food processors help with bigger mixing jobs. The terms mix, combine, and blend all refer to basic mixing. More specific techniques are shown in Figure 24.2 and include the following:

**Beat** To beat is to mix thoroughly and add air to foods. Use a spoon and a vigorous over-and-over motion, or a mixer or food processor.

**Cream** To cream is to beat ingredients, such as shortening and sugar, until they are soft and creamy.

**Cut in** To cut in is to combine solid fats with dry ingredients such as flour to make small coarse pieces. Cutting in is used for many baked goods such as scones, biscuits, and pie crust. This is done by using a knife or fork to mash the fat into the flour.

**Fold** To fold is to gently mix a light, fluffy mixture into a heavier one. Egg whites are often folded into a cake batter. Place the light mixture on top of the heavier one in a bowl. With a rubber scraper or spoon, cut down through the mixture and move the tool across the bottom of the bowl to the side. Bring it back up to the surface, along with some of the mixture from the bottom. Do not lift the tool out of the mixture. Give the bowl a quarter-turn and repeat until well blended. Do this as gently and with as few passes of the scraper as possible.

**Stir** To stir is to mix with a spoon or a wire whisk in a circular motion. Stirring is often used for food that is cooking. It distributes heat and keeps foods from sticking to a pan.

**Toss** To toss is to mix ingredients, such as salad greens and dressing, by tumbling them with tongs or a large spoon and fork.

**Whip** To whip is to beat quickly and vigorously to incorporate air into a mixture, making it light and fluffy.

**Knead** To knead is to work a dough to blend the ingredients and make it smooth and springy. You can knead dough by hand or with a mixer.

List What three recipe terms all refer to basic mixing?
Coating Techniques

Another common preparation technique is coating. **Coating** means adding a thin layer of food on top of another food. Coating also refers to the food you use for the thin layer. Coating adds flavor and texture. It also helps food brown better and retain moisture.

A coating can be a dry ingredient, such as flour or cornmeal. Coating is a popular way to prepare meat, poultry, and seafood for cooking. Shaking food in a bag is a convenient way to apply a dry coating. Put the coating in a large plastic bag and add the food you want to coat. Close the bag and shake it until the food is completely covered. Remove the food from the bag and shake off the excess coating.

A coating can also be a liquid ingredient. You can brush foods with a sauce or dip them in a batter. A batter is a dry coating mixed with liquid.

Different coating techniques help you achieve a variety of tasty results:

**Baste** To baste is to pour liquid over a food as it cooks, using a baster or spoon. Foods are often basted in sauces or pan juices.

**Bread** To bread is to coat a food with three different layers: first flour, second a liquid such as milk or beaten egg, and third seasoned crumbs or cornmeal, which provide a crunchy surface. The flour helps the liquid to stick to the food, and the liquid helps the crumbs to stick to the food.

**Brush** To brush is to use a pastry brush to coat a food with a liquid, such as melted butter or a sauce.

**Dot** To dot is to put small pieces of food, such as butter, on the surface of another food.

**Dredge** To dredge is to coat food heavily with flour, breadcrumbs, or cornmeal.

**Dust** To dust is to lightly sprinkle a food with flour or confectioners’ sugar.

**Flour** To flour is to coat a food, such as chicken or fish, with flour.

**Glaze** To glaze is to coat a food with a liquid that forms a glossy finish.

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**Kitchen Math**

**Dicing Potatoes**

Miranda is preparing a recipe for home fries, which calls for diced potatoes. After peeling a potato, she squares off the sides, leaving a rectangular block. She slices this block into 20 long sticks, each measuring \(\frac{5}{8}\) inch by \(\frac{5}{8}\) inch by \(6\frac{1}{4}\) inches. How many \(\frac{5}{8}\) inch cubes can she get out of the potato?

**Math Concept**

**Dividing Fractions** To divide fractions, convert any mixed or whole numbers to improper fractions. Multiply the first fraction by the reciprocal of the second fraction. Reduce to lowest terms.

**Starting Hint** To find the number of cubes in each stick, divide \(6\frac{1}{4}\) by \(\frac{5}{8}\). Do this by changing \(6\frac{1}{4}\) into an improper fraction, and then multiplying it by \(\frac{8}{5}\) (which is the reciprocal of \(\frac{5}{8}\)). Multiply the answer by 20 (since there are 20 sticks).

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

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

---

**Explain** Which coating technique involves the use of a handheld utensil and why?
Specialty Food-Preparation Techniques

Some food-preparation techniques are useful for specific situations, such as canning vegetables, grilling, or preparing fruit salad.

**Blanch** To blanch is to dip a food briefly into boiling water, then into cold water to stop the cooking process. Blanching is used in canning and freezing fruits and vegetables. Blanching foods with a thin coating or peel, such as peppers and almonds, makes them easier to peel. Blanching is useful when you want to partially cook food ahead of time so that you can finish it and serve it with other items in a complete meal.

**Candy** To candy is to cook a food in a sugar syrup. Some root vegetables, fruits, and fruit peels are prepared this way.

**Caramelize** To caramelize is to heat sugars on the surface of foods until they liquefy and darken in color. Other foods, such as onions, are sometimes caramelized to release their sugar content.

**Clarify** To clarify is to make a liquid clear by removing solid particles. These particles are usually mostly fat. Broth is clarified by cooking it with vegetables and egg whites that absorb the fat and remove it from the broth. Clarify butter by melting it and skimming off milk solids. The remaining butterfat is useful for frying.

**Core** To core is to remove the center of a fruit or vegetable, such as an apple, tomato, or pineapple.

**Deglaze** To deglaze is to loosen the flavorful food particles in a pan after food has been browned. Pour off the excess fat and push the food to the outside edges of the pan. Then add a small amount of liquid, scrape the particles from the pan with a wooden spoon. The liquid will cook off but the flavor will be absorbed into the food.

**Drain** To drain is to separate water from solid food, such as vegetables or cooked pasta, by putting the food in a colander or strainer and letting the water run off.

**Glaze** To glaze is to finish cooking blanched foods, usually vegetables, in a syrup of water, sugar and butter.

**Marinate** To marinate is to add flavor to a food by soaking it in a cold, seasoned liquid. The liquid is usually discarded but sometimes can be used as a base for a sauce. In addition to adding flavor, marinades can be used to break down tough pieces of meat. The acid in a marinade loosens muscle fibers.

**Mold** To mold is to shape a food by hand or by placing it in a decorative mold.

**Pit** To pit is to remove a stone or seed from fruit using a sharp knife.

**Reduce** To reduce is to simmer a mixture in order to evaporate the liquid and intensify the flavor. When reducing, be careful not to bring mixtures to a boil as this can burn the liquid and give it a bitter flavor. Reducing is also called cooking down.

**Scald** To scald is to heat liquid to just below the boiling point. Many baking recipes call for scalded milk. A liquid is scalded when very small bubbles begin to form.

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*Capturing Flavor*

When you make tea, you steep the leaves in hot water to extract the flavor. What is the difference between steeping and marinating?
**Score**  To score is to cut shallow lines into the bottom of a piece of meat that is going to be pan fried. This prevents the meat from puffing up in the middle and curling at the edges as it is heated during cooking.

**Season**  To season is to add flavorings such as salt, pepper, herbs, and spices to a food before or during cooking.

**Shell**  To shell is to remove the tough outer coating of a food, such as eggs, nuts, and shellfish.

**Steep**  To steep is to soak dry ingredients, such as tea or herbs, in hot liquid to extract the flavor or soften the texture. You then strain the mixture and discard the solids. The longer the ingredients steep, the stronger the mixture will be.

**Strain**  To strain is to separate solid particles from a liquid, such as broth, by pouring the mixture through a strainer or sieve. Sometimes it is necessary to strain a liquid more than once.

**Vent**  To vent is to leave an opening, usually a small slit, in a container so steam can escape during cooking.

Practice these preparation techniques to expand your kitchen skills and try new flavors. Mastering a wide range of food-preparation techniques will help you to add new recipes to your list of favorites. Knowing a wide range of techniques and understanding how they can be applied to different foods allows you to create your own recipes. It allows you to base your cooking decisions on ingredients you have available. By knowing a wide range of cooking techniques you can find uses for whatever ingredients you have on hand and avoid waste.

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**Light and Healthy Recipe**

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**Pico de Gallo**

**Ingredients**

- 3 Roma tomatoes, diced
- 1 White onion, diced
- 2 tsp. Cilantro, chopped fine
- 2 tsp. Lime juice

**Directions**

1. Put the diced tomatoes, onions, and cilantro in a bowl and fold together.
2. Squeeze or pour the lime juice onto the mixture and fold again.
3. Serve with chips or as a condiment to a dinner of tacos or burritos.

**Yield**  4 servings

**Nutrition Analysis per Serving**

- Calories 22
- Total fat 0 g
- Saturated fat 0 g
- Cholesterol 0 mg
- Sodium 4 mg
- Carbohydrate 5
  - Dietary fiber 1 g
  - Sugars 3 g
- Protein 1 g

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**Pico de Gallo gets its attractive look not just from the colors of red, white and green, but also from the precise cuts of tomato and onions.**
After You Read

Chapter Summary

Food preparation techniques are essential for success in the kitchen. Liquid and dry ingredients, as well as solid fats, require specific measuring tools. Foods may be measured by either volume or weight. Cutting foods requires care to ensure safety. Different cutting techniques each have varied effects on food. Most recipes require some form of mixing. There are eight mixing techniques, each having a different result. Coating techniques add a thin layer of food on top of another food. There are eight ways to coat foods. Specialty food preparation techniques are useful for specific situations, and help cooks expand their kitchen skills.

Content and Academic Vocabulary Review

1. Use each of these content and academic vocabulary words in a sentence.

   **Content Vocabulary**
   - taring (p. 374)
   - cutting (p. 375)
   - mixing (p. 377)
   - coating (p. 378)

   **Academic Vocabulary**
   - affect (p. 374)
   - effect (p. 376)

Review Key Concepts

2. List three different types of ingredients and the tools you needed to measure them.
3. Explain guidelines for proper knife safety.
4. List eight different ways to mix ingredients.
5. Describe coating and why it is a useful cooking technique.
6. Explain the benefits of learning specialized cooking techniques.

Critical Thinking

7. Explain which tools you will use to measure each ingredient, and whether you will measure weight or volume. The recipe calls for 2 cups of milk, 1 cup of brown sugar, 1 teaspoon of baking soda, and 1½ pounds of chocolate chips.
8. Describe a meal that uses six knife cutting techniques on six different ingredients.
9. Identify the technique to make egg whites light, fluffy, and full of air so that they may be folded into heavier mixtures.
10. Explain why breaded foods are typically higher in fat than dredged foods.
11. Making a Streusel  Streusel is a topping for baked goods that is supposed to be crumbly. Different techniques for making streusel can produce very different results.

**Procedure**  Prepare two recipes for streusel, using different techniques. For both recipes, use 2 Tbsp. flour, 2 Tbsp. sugar, and 2 Tbsp. margarine. For the first recipe, sift together the flour and sugar; then cut in the margarine. For the second recipe, cream the margarine and the sugar; then cut in the flour.

**Analysis**  In a paragraph, compare your results and explain which technique produced the more crumbly mixture and why.

12. Measuring Fats  Laura is careful not to include more saturated fats in her food than her recipes require. She uses butter in a tub, not stick butter. What can she do to ensure that she measures her butter accurately when her recipes call for it? What is the best way for Laura to measure accurately? What other ways can she measure?

13. Terms and Techniques  Under your teacher’s supervision, conduct research on the Internet to find a recipe that involves one of the four following food preparation terms: purée; glaze; caramelize; marinate. Share your recipe in a brief oral report to the class. Include a picture of the completed dish and display it while you give your report. Explain how to use the food preparation technique that the recipe requires.

14. A Cutting Conflict  Ron, a cook at a restaurant, scored a piece of beef. Then his boss noticed and said, “I asked you to cube that, not to score it.” What can Ron do?

15. Techniques Quiz  Follow your teacher’s instructions to form pairs. Each person should find a recipe that uses at least four preparation techniques from the chapter, then write a four-question quiz that asks for explanations of each technique. Exchange recipes and quizzes with your partner. Grade your partner’s completed quiz.

16. Measuring and Money  The owner of a restaurant is upset. When she buys a week’s worth of ingredients for recipes, they only last three days. She is spending extra money on ingredients, serving the usual amount of food. Explain why her kitchen staff’s measuring techniques could be causing the problem.
Academic Skills

**Food Science**

17. **Surface Tension**  Water molecules cling together to act as an elastic sheet at the surface, causing surface tension. Molecules not only cling to themselves, but have an attraction to the glass as well. Notice the curve at the top called the meniscus. It is higher at the edges than the middle, or concave.

**Procedure**  Fill a glass to the brim with water, and place in a bowl on a level surface. Drop paper clips into the water, one at a time. Record how many you can add before any water spills.

**Analysis**  the top of the glass? Did the meniscus change shape? Explain how this is possible.

**Mathematics**

18. **Measuring Volume**  Brendan has a two-cup container of frying oil that is $\frac{3}{4}$ full. Whenever he has friends over for dinner he likes to prepare his famous wok-fried shrimp, which requires 2 tablespoons of oil each time. How many dinners can Brendan prepare with the oil he has on hand?

**Starting Hint**  Compute the number of tablespoons that fit in the two-cup container and divide by $\frac{3}{4}$.

**English Language Arts**

19. **Methods Demonstration**  Write and perform an oral presentation for your class in which you demonstrate and explain one of the following food preparation methods: cutting safely with knives; measuring solid fats; coating techniques; measuring by weight in a bowl. Use your own words when you write and present your demonstration. As a handout for your presentation, create a list of tips to remember what goes along with your chosen topic. Pass the tip sheet out to your classmates before you begin your presentation.

**Test-Taking Tip**  Before deciding whether a statement is true or false, read it carefully, and recall what you have learned from reading the text. Does the statement reflect what you know? Pay close attention to individual words. One word can make the difference between a true statement and a false one.