

Using Standardized Recipes

SECTIONS

13.1 Standardized Recipe Basics

13.2 Recipe Measurement and Conversion

WRITING ACTIVITY

Recipe

Choose a simple dish with few ingredients that you know how to prepare. Write a recipe for the dish. Before you begin, look at existing recipes as a guide.

Writing Tips

- 1 List any ingredients in the order that they will be used.
- 2 Include a list of the equipment and tools you will need.
- 3 Make each instruction brief and easy to follow.

EXPLORE THE PHOTO

Using a recipe helps ensure that the quality of your food is consistent. *Why would consistency be important in a foodservice operation?*



Standardized Recipe Basics

Reading Guide



Check for Understanding If you have questions as you are reading, that means you are checking your understanding of the material. To get the most out of the text, try to answer these questions.

Read to Learn

Key Concepts

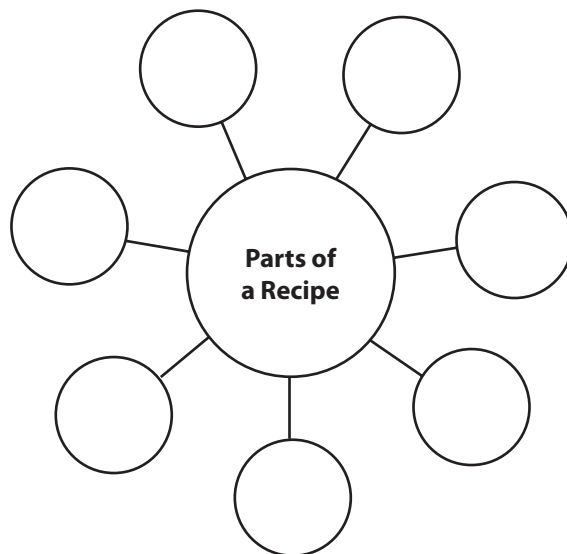
- **Explain** how standardized recipes help to maintain product consistency.

Main Idea

Recipes provide specific instructions to prepare food items. A recipe includes details on how to use ingredients, procedures, and cooking instructions.

Graphic Organizer

As you read, use a web diagram like this one to list the seven different parts of a recipe.



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

Content Vocabulary

- recipe
- quantity
- standardized recipe
- quality control
- product name
- yield
- portion size
- preparation procedure
- formula
- ingredient list
- baker's percentage

Academic Vocabulary

- consistent
- hallmark

Standardized recipes produce good food every time.

ACADEMIC STANDARDS



English Language Arts

NCTE 12 Use language to accomplish individual purposes.



Mathematics

NCTM Measurement

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



Science

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



Social Studies

NCSS VIII A Science,

Technology, and Society Identify and describe both current and historical examples of the interaction and interdependence of science, technology, and society in a variety of cultural settings.

NCSS IX A Global

Connections Explain how language can facilitate global understanding or cause misunderstanding.

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

A TASTE OF HISTORY

1545

The English cookbook *A Proper Newe Booke of Cokerie* is written

1558

Elizabeth I, queen of England, is crowned

The History of the Recipe

The written history of the recipe can be traced back to 1400 BCE. Ancient Egyptians used painted hieroglyphics to show the preparation of food. However, it was not until Roman times that recipes were written down using words. In 1896, American Fannie Merritt Farmer is credited with creating the model for how we write recipes today. By standardizing measurements, she made sure that recipe results were more reliable.

History Application

Conduct research to find a written recipe that is at least 100 years old. Does the writing and recipe differ from recipes you can find in today's cookbooks? Does it provide enough information for you to follow? Rewrite the recipe to follow today's recipe style.

NCSS IX A Global Connections Explain how language can facilitate global understanding or cause misunderstanding.

Standardized Recipes

Recipes are important tools in the foodservice industry. A recipe is not just a general set of instructions. Instead, a **recipe** is an exact set of directions on how to use ingredients, equipment, and preparation and cooking techniques for a certain dish.

To get the result you want from a recipe, you must carefully follow the specific directions that are listed on the recipe. If you do, the food will be a **consistent** quality, or will be free from variations, every time you prepare it. You will also end up with the same quantity of food every time you prepare the dish. **Quantity** is the total amount a recipe makes.

A **standardized** ('stan-dər-,dīzd) **recipe** is a set of written instructions that is used to consistently prepare a known quantity and quality of a certain food. Standardized recipes are often changed to meet the needs of a

particular user. Standardized recipes are also changed based on the type of equipment that a foodservice establishment has.

Each standardized recipe must go through quality control. **Quality control** is a system that ensures that everything will meet the foodservice establishment's standards. Recipes are tested many times to make sure that they work the same way every time before they are used for customers. To do this, directions on a standardized recipe must be clear and easy to follow, and ingredients must be listed correctly and accurately, in the order in which they will be used.

There are many benefits to using a standardized recipe:

- The quality of the food will be consistent each time the recipe is made.
- The quantity of the food will be consistent each time the recipe is made.
- You can control the portion size and cost of the recipe.
- Movement in the kitchen by foodservice workers will be more efficient because of clear, exact instructions.
- You will have fewer errors in food orders.
- You will eliminate waste by not overproducing food.
- You will meet customers' expectations of quality each time the food is prepared.

Standardized recipes offer many benefits to foodservice operations. However, they cannot solve problems caused by purchasing or receiving poor-quality items, or purchasing too much food. If you make a substitution in the ingredients in a recipe, you must retest the recipe to make sure that the dish still has the same quality. A recipe that is specific and that produces the same product each time is the **hallmark**, or distinguishing feature, of a successful foodservice organization.

The success of any standardized recipe depends upon the experience of the person who uses it. If the person who uses the recipe does not understand basic cooking techniques, for example, he or she will not get the right results from the dish.

An experienced cook may be able to make slight changes to recipes without changing the outcome. This is because an experienced cook has learned to apply sound judgment and past experience to the techniques and instructions in each recipe.

Parts of a Recipe

These parts are always the same for any standardized recipe (See the recipe on page 332):

- **Product Name** Customers expect to receive what they order from a menu. The **product name**, or name given to the recipe, should be consistent with the name of the dish listed on the menu. Both of these should accurately describe the same product. This helps eliminate confusion between the kitchen and service staff.
- **Yield** The number of servings, or portions, that a recipe produces is its **yield**. The yield of a recipe is an important factor that is used to calculate the cost per serving of the recipe.
- **Portion Size** The **portion size** is the amount or size of an individual serving. Standardized recipes always show a portion size. This allows you to plan enough food for your customers.
- **Ingredient Quantity** Standardized recipes give directions on how to measure each ingredient to help control quantity. Use the right quantity of each ingredient during preparation.
- **Preparation Procedures** A **preparation procedure** is a step that you must take to prepare the dish. Preparation procedures are the result of careful testing of the recipes by experienced culinary professionals. To consistently produce a high-quality product, you must follow any preparation procedures carefully in the order in which they are listed. Environment, such as altitude, may affect preparation procedures.
- **Cooking Temperatures** You can ruin a dish if you use too high or too low of

a temperature for cooking. Range-top cooking temperatures are listed in a recipe as low, medium, or high. Temperatures for ovens and other appliances that have a thermostat to control cooking temperature are listed as exact degrees Fahrenheit or Celsius. Many recipes require that the oven be preheated to a specific temperature before any food is placed inside for cooking. The time that you will need for preheating will vary with the type of oven.

- **Cooking Time** Standardized recipes list the required cooking time for the dish. It is important to cook the food for the recommended time, using the specified equipment at the specified temperature. Using different equipment, a different size or type of cookware, or changing the cooking time can change the results. The dish may not come out the way you had expected.

Formula or Recipe?

A **formula** is a special type of recipe that is used in the bakeshop. Baking is different from cooking in many ways. One of the most important differences involves the chemistry of baking. Because baking involves chemical reactions, baked goods require precise formulas to work correctly. Small variations in the ingredients or measurements can affect the quality of the baked good item noticeably.

Although formulas and recipes are similar in the way in which they are written, there are three major differences between the two.

Small Bites

Ingredient Preparation Ingredient quantity and preparation steps must be listed accurately on a recipe. Important preparation steps are usually written just before or after the mention of an ingredient. For many foods, chopping, slicing, or other preparation is done before you measure the ingredients.

Green Beans in Garlic Sauce

YIELD: 20 SERVINGS YIELD
SERVING SIZE: 4 OZ. PORTION SIZE

INGREDIENT QUANTITY

Ingredients

3 lbs.	Fresh green beans, washed, ends trimmed, and cut in half
3 oz.	Butter
8 cloves	Garlic, peeled and minced
1 lb.	Canned crushed tomatoes
1 pt.	White chicken stock, heated to a boil
	Salt and freshly ground black pepper, to taste

Method of Preparation

1. In a saucepan, place the fresh green beans in boiling, salted water. Cook until done. Drain beans and shock in an ice bath. When beans are cold, remove and drain them.
2. In a sauté pan, melt the butter and sauté the garlic. Add the crushed tomatoes, and sauté for 5 minutes.
3. Add the green beans and chicken stock to the tomatoes, butter, and garlic.
4. Simmer at 180°F (82°C) until done. Season with salt and pepper to taste and serve, or hold at 135°F (57°C) or above.

PREPARATION PROCEDURES,

COOKING PROCEDURES,

COOKING TIME

Cooking Technique

Sauté

1. Preheat the cooking medium on high heat.
2. Add fat oil or oil. When fat or oil is almost smoking, add food.
3. Do not overcrowd the pan.

Chef Notes

Fresh green beans should snap apart when bent. Green beans that bend but do not break are not fresh.

Substitutions

- To lower saturated fat, use olive oil rather than butter for sautéing.
- Use herbs or spices to add flavor without adding salt.

International Flavor

Green beans are used in many different cultures as a side dish. Use the Internet or library to research these or other international variations, and write a half-page report on your findings:

- Masaledar sem (India)
- Fagiolini di Sant' Anna (Italy)

Glossary

Simmer to cook slowly and steadily in hot water

Shock to drop simmered or boiled food into cold water or ice to stop cooking

HACCP

- Hold at 135°F (57°C) or higher

Hazardous Foods

- Butter


Nutrition

Calories 284	Calories from Fat 41
Total Fat 5g	
Saturated Fat 3g	
Cholesterol 10mg	
Sodium 99mg	
Total Carbohydrate 46g	
Fiber 12g	
Sugars 5g	
Protein 17g	
• Vitamin A 6%	• Vitamin C 10%
• Calcium 10%	• Iron 30%

- **Ingredient List Order** Recipes and formulas both contain an **ingredient list**. This list includes all ingredients that will be used in the dish. In recipes, ingredients are listed in the order that they will be used. This list will be followed by procedures to use those ingredients for successful results. In formulas, however, ingredients are typically listed in order by decreasing weight. These are often given as percentages.
- **Baker's Percentage** Precise weight measurements are used in formulas to prepare food. This type of measurement, often called a **baker's percentage**,

includes the percentage of each ingredient in relation to the weight of flour in the final baked product. Baker's percentages make it easy to increase or decrease the quantity of individual ingredients. (Chapter 26 explains how to increase and decrease ingredients in detail.)

- **Preparation Instructions** Baking formulas may not always include the instructions that are needed to prepare the baked product.

 **Reading Check List** What are the three differences between recipes and formulas?

SECTION 13.1

Review Key Concepts

1. **Explain** how quality control works.

Practice Culinary Academics



Science

2. **Procedure** Locate a muffin recipe or formula and prepare it using the specified flour type. Then, prepare the recipe again using a different flour type.

Analysis What are the differences in the two muffins? What do you think causes this difference? Form a hypothesis, and research to find if your hypothesis was correct. Write a summary of your findings.

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



English Language Arts

3. Locate a recipe that you like and create a recipe card for it. Place each recipe element in the appropriate place and make sure that all elements are included. Make any appropriate changes to the recipe language to make it clearer and easier to follow.

NCTE 12 Use language to accomplish individual purposes.



Social Studies

4. Technology can help foodservice establishments improve the way they use standardized recipes.

Find one example of how technology has improved the use of standardized recipes and present it to the class in a five-minute oral presentation. Use images if possible.

NCSS VIII A Science, Technology, and Society Identify and describe both current and historical examples of the interaction and interdependence of science, technology, and society in a variety of cultural settings.



Mathematics

5. The recipe for Green Beans in Garlic Sauce in this chapter yields 20 4-ounce servings. What is the total yield of the recipe in ounces? What is the total yield in pounds?

Math Concept Converting Ounces to Pounds

There are 16 ounces in 1 pound. When converting from a smaller unit to a bigger unit, the number will always be smaller. Therefore, you must divide by the conversion factor (16).

Starting Hint Multiply the number of servings by the serving size to get the total number of ounces. To convert to the larger unit (pounds), divide the total ounces by 16.

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



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

Recipe Measurement and Conversion

Reading Guide

Before You Read

Use Diagrams As you read through this section, write down the main idea. Write down any facts, explanations, or examples you find in the text. Start at the main idea and draw arrows to the information that directly supports it. Then, draw arrows from these examples to any information that supports them.

Read to Learn

Key Concepts

- **List** different recipe measurements and when each is used.
- **Give examples** of the factors that affect recipe conversion.

Main Idea


Sometimes, foodservice professionals need to adjust recipes to meet their needs. Adjusted recipes should be tested before preparation, as many factors can affect conversion.

Graphic Organizer

Use a sequence chart like this one to list the steps in converting the portion size of a recipe. Write one step in each box.

Converting Portion Size

First:
Next:
Next:
Last:

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

Content Vocabulary

- convert
- metric system
- balance scale
- electronic scale
- volume measurement
- count
- recipe conversion
- conversion factor
- shrinkage

Academic Vocabulary

- precise
- alter

Do you know how to adjust recipes to fit your needs?

ACADEMIC STANDARDS

English Language Arts

NCTE 5 Use different writing process elements to communicate effectively.

Mathematics

NCTM Number and Operations Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

NCTM Number and Operations Compute fluently and make reasonable estimates.

Science

NSES 1 Develop an understanding of change, constancy, and measurement.

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

Standardized Recipe Measurements

Recipes are designed and written to yield a certain number of servings each time they are made. Sometimes, it is necessary to convert recipes to make more or less of a dish. To **convert** a recipe means to adjust ingredient quantities up or down. This can help meet the changing needs of the foodservice establishment. If you must change the yield or portion sizes, you must convert the recipe before you begin any ingredient preparation.

No recipe can be successful if you are careless about measuring ingredients. Careful measuring helps give you a consistent quantity each time a recipe is prepared and served. For a successful end product, each ingredient in the recipe must be measured precisely.



Measuring Tools Measuring tools come in many shapes and sizes. *Why is it important to have a variety of tools on hand?*

Standardized recipe measurements can make it quicker and easier to increase or decrease the amount that a recipe makes when needed. Ingredients are measured by weight (pounds, ounces), volume (cups, teaspoons), or count (2 eggs, 1 ear of corn).

Some measurements are done using the metric system. The **metric system** is a measurement system that uses powers of 10 to measure things. For example, 1 gram = 10 decagrams = 100 milligrams = 1,000 kilograms. It is easy to convert measurements from one unit to another by simply moving the decimal place.

Although the metric system is not used often in recipes from the United States, some measurement units, such as grams, may be found. Metric system measurements are often used in recipes from other countries where the metric system is the standard system for measurement.

Weight

In commercial foodservice establishments, most ingredients are measured by weight. Weight is a measurement that tells how heavy a substance is. Measuring by weight is the quickest, easiest, and most accurate way of measuring foods such as flour, sugar, meats, and cheeses. Ounces and pounds are examples of common weight measurements.

Scales for measuring weight come in many different types, sizes, and price ranges. The types of scales used in foodservice are balance, portion or spring, and electronic.

Balance Scale

A **balance scale**, also called a baker's scale, has two platforms. One platform holds the item that is being weighed. The other platform holds weights in predetermined amounts. These weights are added or removed until the two platforms are balanced. Counting the weights shows the weight of the food item. Balance scales are used when **precise**, or exact, measurement is important, such as in baking.



◀ **On the Scale** Scales come in different types and models. *What is this type of scale, and what is it used for?*

Portion Scale

A portion, or spring, scale is similar to a bathroom scale. It weighs items by measuring how much the spring is depressed when an item is placed on its platform. A needle on a dial shows the weight of the item. Spring scales are often used as portion scales. For example, you might use a spring scale to measure meats in a deli.

Electronic Scale

An **electronic**, or digital, **scale** is similar to a spring scale. It, too, has a spring that is depressed when an item is placed on its platform. The amount that the spring is depressed measures the weight of the item displayed on a digital readout. This readout is more accurate than the readout from a needle guide, but digital scales are more expensive than spring scales. Electronic scales and spring scales can be used as a portion scale.

Volume

The term volume refers to the amount of space that a substance occupies. Volume measures are used most often to measure liquids in a foodservice setting. A **volume measurement** is a form of measurement that is expressed in cups, quarts, gallons, and fluid ounces.

Figure 13.1 and Figure 13.2 show common cooking abbreviations and equivalents, including volume measurements.

FIGURE 13.1 Measurement Abbreviations

Measurement Labels Standardized recipes use abbreviations for common measurements. *Why do standardized recipes use abbreviations instead of the full spelling of measurements?*

Measurement	Abbreviation
Teaspoon	tsp. or t.
Tablespoon	tbsp. or T.
Ounce	oz.
Fluid ounce	fl. oz.
Pound	lb. or #
Cup	c.
Pint	pt.
Quart	qt.
Gallon	gal. or G.
Barrel	bbl.
Dozen	doz.
Bunch	bch. or bu.
Case	cs.

FIGURE 13.2 Measurement Equivalents

Equal Amounts This table shows you equivalents, or measurements that are equal to other measurements. *Why would it be important to know measurement equivalents?*

Measurement	Equivalent
3 tsp.	= 1 tbsp. = ½ fluid oz. = 15 mL
16 Tbsp.	= 1 c. = 8 oz. = 237 mL
2 c.	= 1 pt. = 16 oz. = 473 mL
2 pt.	= 1 qt. = 32 oz. = 946 mL
4 qts.	= 1 gal. = 128 oz. = 3.8 L
1 lb.	= 16 oz. = 454 g

Liquids are added to a recipe after they are measured by volume. The volume measure should always be placed on a level surface. If you hold the measure rather than placing it down on a level surface, you may get a false reading from the measure. This can affect the outcome of your recipe. Liquid should be filled to the correct line. Metal volume measures have measurement lines on both the outside and the inside.



Accurate Measurement It is important to measure liquids accurately when using volume measurements. *Why should volume measures always be placed on a level surface?*

Count

The number of individual ingredient items that are used in a recipe is called the **count**. You will measure ingredients by count when a particular food ingredient comes in standard sizes.

For example, most recipes list eggs by count instead of by weight or by volume. Volume measures for standard egg sizes are given only per dozen eggs. A cake recipe may ask for three large eggs. (Most recipes call for large-size eggs.) A cobb salad might ask for one hard-cooked egg. The same cobb salad recipe may also call for one small tomato, quartered, or three black olives, sliced.

In contrast, shrimp is often sold by the pound. In this case, the size of the shrimp will determine the count of the shrimp. The smaller the count per pound, the larger the individual shrimp size will be. The larger the count per pound, the smaller the individual shrimp size will be.

Reading Check **Determine** Which is most accurate: weight, volume, or count measurement?

Recipe Conversion

Sometimes you will need to **alter**, or change, a standardized recipe to produce more or less of a product. You may have more people coming to a restaurant for a special dinner, and need more food. Or, you may have fewer people coming to a banquet, and need less food.

When you change a recipe to produce a new amount or yield, you are practicing **recipe conversion**. You must have the proper math skills to correctly convert recipes. This is a skill that you will use a lot during your career as a foodservice worker. If you learn how to properly convert recipes, you can save money by preparing exactly the right amount of food. You will not have to waste food, time, or supplies to make the proper dishes.

Unit Prices

Unit price is the cost per unit of measure. This may be per item, per pound, per quart, or any other unit measure. When you buy food packaged in two different quantities, it is wise to know which is the better buy. To find the better buy, you need to know the unit price.

Which breadcrumbs package is the better buy: ½ pound for 75¢, or 3 pounds for \$5.65? Which orange juice is the better buy: 3 quarts for \$7.45, or 10 quarts for \$20.25?

Math Concept Calculating Unit Rates

A unit rate is a ratio showing how much of one quantity is needed to match 1 unit of another quantity. Unit price, a type of unit rate, is calculated by dividing the price by the quantity.

Starting Hint To find which item is the better buy, you need to calculate the unit price for each item. Do so by dividing the item's price by its quantity. The unit price of the first breadcrumbs package, for example, equals $\$0.75 \div \frac{1}{2}$, or \$1.50. This means that you pay \$1.50 per pound of breadcrumbs.

NCTM Number and Operations Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

Total Yield Conversion Method

Before you increase or decrease the yield of a standardized recipe, you must determine a conversion factor for all of the ingredients. The **conversion factor** is the number that comes from dividing the yield you want by the existing yield in a recipe:

$$\frac{\text{conversion factor}}{\text{existing yield}} = \frac{\text{desired yield}}{\text{desired yield}}$$

For example, if the existing recipe yield is 40 portions, but the yield you need is 80 portions, the formula will look like this:

$$\text{(existing yield) } 40 \frac{2 \text{ (conversion factor)}}{80 \text{ (desired yield)}} = \frac{80}{80}$$

If you decrease a recipe, the conversion factor will be less than one. If you increase a recipe, the conversion factor will be more than one.

You will use the recipe conversion factor to increase or decrease a standardized recipe. To get the new food quantity, multiply each individual ingredient quantity by the conversion factor.

For example, say your restaurant has a recipe for chicken teriyaki that has a yield of 10 portions. The recipe calls for 3 pounds of boneless chicken and 20 fluid ounces of teriyaki sauce. You find that you will need more for tonight's dinner service, so you need to convert the yield to 15 portions. You would use the following steps to convert the recipe to make more:

1. Determine the conversion factor.
 $15 \text{ (desired yield)} \div 10 \text{ (existing yield)} = 1.5 \text{ (conversion factor)}$
2. Multiply the existing quantity by the conversion factor to find the new quantity.

$$\begin{array}{r} \text{existing quantity} \\ \times \text{conversion factor} \\ \hline \text{desired quantity} \\ \\ 3.0 \text{ (pounds of chicken)} \\ \times 1.5 \text{ (conversion factor)} \\ \hline 4.5 \text{ (pounds of chicken)} \\ \\ 20.0 \text{ (fluid ounces of teriyaki sauce)} \\ \times 1.5 \text{ (conversion factor)} \\ \hline 30.0 \text{ (fluid ounces of teriyaki sauce)} \end{array}$$

You will likely be asked to convert recipes to different yields and different portion sizes. You must be accurate and consistent.

Portion Size Conversion

A foodservice establishment may need to increase or decrease the portion size of a recipe. This is an important skill. Perhaps customers are complaining that the portion size of a dish is too small for the cost. Or, perhaps the portion is so large that it results in little or no profit left over for the establishment.

1. To find the total existing yield, multiply the number of existing portions by the existing size of each portion.

$$\begin{array}{r} \text{existing portions} \\ \times \text{existing portion size} \\ \hline \text{total existing yield} \end{array}$$

Using the chicken teriyaki recipe example:

$$\begin{array}{r} 10 \text{ (portions)} \\ \times 5 \text{ ounces (portion size)} \\ \hline 50 \text{ ounces (existing yield)} \end{array}$$

2. To find a new yield, multiply the desired portions by the desired portion size.

$$\begin{array}{r} \text{desired portions} \\ \times \text{desired portion size} \\ \hline \text{new yield} \\ \\ 15 \text{ (desired portions)} \\ \times 8 \text{ ounces (desired portion size)} \\ \hline 120 \text{ ounces (new yield)} \end{array}$$

3. Divide the new yield by the existing yield to get the conversion factor.

$$\begin{array}{r} 2.4 \text{ (conversion factor)} \\ \text{(existing yield) } 50 \overline{)120.00} \text{ (new yield)} \end{array}$$

4. Multiply each ingredient by the conversion factor to get the new ingredient yield.

$$\begin{array}{r} \text{existing yield} \\ \times \text{conversion factor} \\ \hline \text{new yield} \\ \\ 3.0 \text{ pounds (existing yield, chicken)} \\ \times 2.4 \text{ (conversion factor)} \\ \hline 7.20 \text{ pounds (new yield, chicken)} \end{array}$$

(The new chicken quantity can be rounded down or rounded up, as desired.)

$$\begin{array}{r} 20.0 \text{ fluid ounces (existing yield,} \\ \text{teriyaki sauce)} \\ \times 2.4 \text{ (conversion factor)} \\ \hline 48.9 \text{ fluid ounces (new yield, teriyaki} \\ \text{sauce)} \end{array}$$

(See **Figure 13.3** on page 341 for an example.)

Factors that can Impact Conversion

These conversion calculations do not take into account problems that may arise when you alter standardized recipes. These problems could include adjustments to equipment size, cooking times, cooking temperatures, and recipe errors. When you make adjustments to deal with these problems, be sure to write them down on your recipe card. This will help you create the same quality dish every time.

Equipment

Recipes usually specify the size of equipment and size and type of cookware that you will need to use to prepare the food. If you increase or decrease a recipe's yield, you may need to change the size of the equipment. If you use the wrong-size equipment for a recipe, it can affect the outcome of a recipe. The dish may lack the quality that you expect.

Mixing and Cooking Time

Time is another important factor to consider when you convert recipes. In general, the mixing time and cooking time do not increase when a recipe is converted. Some changes, however, will affect mixing or cooking times. For example, a baking formula that has been decreased could be affected by overmixing. A baking formula that has been increased could be affected by undermixing.

Changes in one part of a recipe will create changes in other parts of a recipe. Preparation times may also be affected by changes in cookware.

For example, you will need a large stockpot to prepare the existing yield of the Southern Vegetable Soup recipe on page 340. If you decrease the soup recipe, you will need a smaller pot to cook the new yield of soup. This smaller volume will also likely decrease the cooking time. If you increase the recipe, you will need a larger pot to cook the new yield of soup. This will likely increase the cooking time.

Southern Vegetable Soup

YIELD: 10 SERVINGS
SERVING SIZE: 8 OZ.

Method of Preparation

1. Place the salt pork in a large marmite and render the fat, stirring frequently until browned. Add the beef and sauté until browned.
2. Add the tomatoes, and sauté for another 2 minutes.
3. Add the boiling stock, and simmer until the meat is slightly firm in texture.
4. Add all other ingredients, and continue to simmer until the vegetables are tender.
5. Season to taste and serve immediately in preheated cups, or hold at 135°F (57°C) or above. Reheat to 165°F (74°C) for 15 seconds.

Cooking Technique

Boil (at sea level)

1. Bring the cooking liquid to a rapid boil.
2. Stir the contents, and cook the food throughout.
3. Serve hot.

Chef Notes

Season the soup near the end of the cooking time. Flavors get stronger as they cook together.

Substitutions

- To lower fat, drain excess fat from the pork and beef before adding other ingredients.

Ingredients

- 2 oz. Salt pork, cut into a small dice

- 10 oz. Beef, bottom round, cut into small cubes

- 8 oz. Canned peeled tomatoes, drained, seeded, and chopped

- 3½ qts. Beef stock, heated to a boil

- 2 oz. Frozen green beans

- 2 oz. Red beans, cooked

- 4 oz. Onions, peeled and diced brunoise

- 3 oz. Celery stalks, washed, trimmed, and diced brunoise

- 6 oz. Green cabbage, washed, cored, and chiffonade

- 3 oz. Carrots, washed, peeled, and diced brunoise

- 2 oz. Frozen corn kernels

- 2 oz. Frozen okra, sliced

- 2 oz. Zucchini, washed, trimmed, and cut in a ½-in. dice

- Salt and freshly ground black pepper, to taste

International Flavor

Use the Internet or library to research these international soup recipes, and write a report on your findings.

- Gazpacho (Spain)
- Ful Nabed (Egypt)
- Botvinia (Russia)

Glossary

Brunoise ⅛-inch dice
Chiffonade ribbons of leafy greens
Marmite stockpot
Render to melt fat over low heat to separate it from the meat tissue

HACCP

- Hold at 135°F (57°C) or above
- Reheat to 165°F (74°C) for 15 seconds

Hazardous Foods

- Beef

Nutrition

Calories 210 **Calories from Fat** 90
Total Fat 10g
 Saturated Fat 4g
 Trans Fat 0g
Cholesterol 30mg
Sodium 910mg
Total Carbohydrate 11g
 Fiber 2g
 Sugars 4g
Protein 17g
 • Vitamin A 30% • Vitamin C 25%
 • Calcium 6% • Iron 15%

FIGURE 13.3 Total Recipe Conversion Method

Increase Recipes Use a recipe conversion formula to ensure that recipes will taste the same, even when made in larger amounts. *What mathematics skills will you use to convert recipes?*

Ingredient	Amount	Conversion Factor	New Yield
Salt Pork	2 oz.	3.5	7 oz.
Bottom Round	10 oz.	3.5	35 oz.
Peeled Tomatoes	8 oz.	3.5	28 oz.
Beef Stock	3½ qts.	3.5	12.25 qts.
Green Beans	2 oz.	3.5	7 oz.
Red Beans	2 oz.	3.5	7 oz.
Onions	4 oz.	3.5	14 oz.
Celery	3 oz.	3.5	10.5 oz.
Green Cabbage	6 oz.	3.5	21 oz.
Carrots	3 oz.	3.5	10.5 oz.
Corn	2 oz.	3.5	7 oz.
Okra	2 oz.	3.5	7 oz.
Zucchini	2 oz.	3.5	7 oz.

Southern Vegetable Soup
Existing Yield: 10 servings
Existing Portion Size: 8 oz.
New Yield: 35 servings
New Portion Size: 8 oz.
Determine the Conversion Factor:

$$\frac{\text{Conversion Factor}}{\text{Existing Yield}} = \frac{\text{New Yield}}{\text{Existing Yield}}$$

$$\frac{3.5}{10} = \frac{35.0}{10}$$

Cooking Temperatures

Cooking temperatures can also be affected by a change in cooking equipment. For example, imagine that the restaurant where you work has just bought a new convection oven. However, the recipe that you are following was developed using a conventional oven. Because convection ovens bake foods much more quickly than standard ovens, the cooking time for the recipe must be adjusted.

Shrinkage

Shrinkage is the percentage of food that is lost during its storage and preparation. Shrinkage is often caused by moisture loss. The amount of shrinkage affects not only the cost of the ingredient, but also the portion sizes that are served to customers. You must know ahead of time how much shrinkage will affect a particular food product. If you do not, you may not purchase the correct amount for your establishment's needs.

Corned beef, for example, shrinks when you cook it. You must consider this shrinkage when you purchase the beef. You will have to start with a larger amount to end up with an adequate portion. As a general rule, corned beef shrinks by about 50% after it has been cooked. If you need 10 pounds of cooked corned beef, you will need to purchase about 20 pounds of uncooked corned beef.

Recipe Errors

Sometimes, you may make an error in measuring an item, or there may be a mistake in a printed recipe. Very often, recipe errors are so minor that they do not affect the results of the dishes. However, even minor errors can become major problems if the recipe is increased or decreased. To avoid this type of problem, recipes that have been increased or decreased need to be tested before being made for customers.

For example, a recipe may have mistakenly listed 2 ounces of cornstarch instead of 1 ounce. This mistake is so small that the extra cornstarch may not affect the taste or appearance of the dish. The mistake may go unnoticed until the recipe is tripled. The amount of cornstarch would then affect both the appearance and taste of the product.

Become familiar with a recipe before you attempt to recreate it. You can often find an error by reading through it carefully.

Reading Check Describe What problems might arise when converting recipes?

Food Loss Remember to consider shrinkage when you purchase food. *What causes shrinkage?*



SECTION 13.2 After You Read

Review Key Concepts

1. **Describe** the different instruments used for measuring weight.
2. **Explain** how shrinkage can affect recipe conversion.

Practice Culinary Academics

English Language Arts

3. Write a guide on how to convert the total yield of a recipe and the total portion size of a recipe. Include factors that could impact the conversion.

NCTE 5 Use different writing process elements to communicate effectively.

Science

4. **Procedure** A solid object placed in water will displace an amount of water equal to its volume. Measure various solid objects by placing them in a full container of water and then measuring the water that spills out in a volume measure.

Analysis Write down the volumes of the objects you measured, a summary of displacement, and why your measurements are accurate.

NSES 1 Develop an understanding of change, constancy, and measurement.

Mathematics

5. A recipe for potato skins yields 4 portions and requires 6 potatoes, 5 strips of bacon, and 4 ounces of Cheddar cheese. Using the total yield conversion method, change the recipe to yield 18 portions.

Math Concept Multiplying with Decimals

Perform the multiplication as you would with whole numbers. Add the number of total decimal places in all factors, and move the decimal point a corresponding number of places in the product.

Starting Hint Calculate a conversion factor by dividing the desired yield (18 portions) by the original yield (4 portions). Multiply this conversion factor by each of the original quantities to find the new quantities.

NCTM Number and Operations Compute fluently and make reasonable estimates.

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

Chapter Summary

A standardized recipe helps ensure consistency in quality, quantity, and portion size. Every standardized recipe provides information for foodservice to plan, prepare, and use the food product. Recipes list ingredient amounts

by weight, volume, or count. You must use a formula to adjust a standardized recipe's total yield or portion size. Baking formulas may list ingredients in a different order; use a baker's percentage, and may lack specific instructions.

Content and Academic Vocabulary Review

1. Write each of the terms below on an index card, with definitions on the back. Use the cards to review.

Content Vocabulary

- recipe (p. 330)
- quantity (p. 330)
- standardized recipe (p. 330)
- quality control (p. 330)
- product name (p. 331)
- yield (p. 331)
- portion size (p. 331)
- preparation procedure (p. 331)
- formula (p. 331)
- ingredient list (p. 333)

- baker's percentage (p. 333)
- convert (p. 335)
- metric system (p. 335)
- balance scale (p. 335)
- electronic scale (p. 336)
- volume measurement (p. 336)
- count (p. 337)
- recipe conversion (p. 337)
- conversion factor (p. 338)
- shrinkage (p. 341)

Academic Vocabulary

- consistent (p. 330)
- hallmark (p. 330)
- precise (p. 335)
- alter (p. 337)

Review Key Concepts

2. **Explain** how standardized recipes help to maintain product consistency.
3. **List** different recipe measurements and when each is used.
4. **Give examples** of the factors that affect recipe conversion.

Critical Thinking

5. **Explain** retesting of standardized recipes. When would a chef need to retest a recipe?
6. **Discuss** some situations in which a recipe might need to be converted.
7. **Evaluate** if yield conversions are necessary. A coworker wants to simply double all ingredients to increase the yield of a recipe. Is this a good idea? Why or why not?
8. **Imagine** that severe winter weather has raised the cost of local produce. You may lose customers if you raise your prices. What can you do?
9. **Consider** what would happen if you replaced your conventional oven with a new model of conventional oven. Would you need to retest your standardized recipes? Why or why not?
10. **Explain** why weight is a better method of measurement to use than count for solid ingredients.

Academic Skills

**English Language Arts**

- 11. Create a Plan** Imagine that you will prepare a standardized recipe for a catered event. Choose a recipe and write out the steps necessary, from purchasing the ingredients you will need to delivering the food to the event. Also, create supplemental information you will need, such as shopping and equipment lists. Write your plan in such a way that other members of your staff could follow it.

NCTE 12 Use language to accomplish individual purposes.

**Social Studies**

- 12. Development of the Recipe** Research the history of recipes, and choose one person who contributed to the development of modern recipes. Find out details about the person's life and their contributions to recipe development. Bring your details to class. As a class, discuss how modern cooking has been improved because of these developments. Turn in your notes to your teacher.

NCSS IV B Individual Development and Identity Identify, describe, and express appreciation for the influence of various historical and contemporary cultures on an individual's daily life.

**Mathematics**

- 13. Change Portion Size** You currently have a bowl of asparagus soup on your menu, but have found that customers are reluctant to order such a large portion. You have decided to serve smaller cups instead. The current recipe yields eight 20-ounce servings and requires 4 pounds of asparagus, 12 cups of chicken broth, 2 onions, 1 cup of cream, and $\frac{3}{4}$ teaspoon of lemon juice. Convert this recipe so that it yields 20 11.5-ounce servings instead.

Math Concept Rounding Decimals To round a decimal to the nearest whole number, discard the decimal portion of the number. Increase the whole number portion by one if the number to the right of the decimal point was five or greater.

Starting Hint Determine the total yield of the old recipe by multiplying portion size by number of portions. Repeat for the new recipe. Calculate a conversion factor by dividing the new total yield by the old total yield. Multiply this conversion factor by each of the ingredient quantities to get the new quantities. Round to the nearest whole number (but round smaller quantities like the cream and lemon juice to the nearest 0.5 instead).

NCTM Number and Operations Compute fluently and make reasonable estimates.

Certification Prep

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

- 14.** What measurement is preferred for liquid ingredients in recipes?
- volume measurement
 - weight measurement
 - count measurement
 - height measurement
- 15.** How many 5-ounce portions of soup can you make from a recipe yielding 24 8-ounce portions?
- 19
 - 38.4
 - 28.4
 - 40

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

Test-Taking Tip

Read the directions carefully to figure out how many correct answers there are, whether you are penalized for guessing, and how much time is allowed for the test.

Real-World Skills and Applications

Critical Thinking Skills

- 16. Convert a Recipe** Find a recipe that is not standardized. Convert the recipe to a standardized recipe. Convert all solid ingredient measurements to weight measurements. Change any vague or nonspecific instructions. Test the changes you made to ensure that the recipe comes out properly.

Self-Management Skills

- 17. Create a Shopping List** Imagine that you are opening a breakfast restaurant. Locate five standardized recipes that will be on your main breakfast menu. If you anticipate that you will serve 50 people each morning, create a list of the ingredients you will need to prepare enough breakfasts for two days.

Technology Applications

- 18. Create a Recipe Card Template** Use a word processing or desktop publishing program to create a template to use as a recipe card. Make a space for each part of the recipe and use any guidelines or labels that will be helpful. Create five recipes using your template, and turn them in to your teacher.

Financial Literacy

- 19. Determine a Recipe Item Cost** You have a turkey sandwich recipe that yields 12 sandwiches. It calls for 12 ounces of mayonnaise (\$2.25), six 8-ounce turkey thighs (\$5), 24 slices of pumpernickel bread (\$7), three large tomatoes (\$3), and 2 heads of romaine lettuce (\$3). What is the item cost per sandwich?

Culinary Lab



Use the culinary skills you have learned in this chapter.

Convert Recipes

- 20. Make Corn Bread** In this lab, you will lower the yield on a corn bread formula. Then, you will make the corn bread, and evaluate the finished product.
- A. Calculate portion size.** You need the following ingredients to make one full sheet pan of corn bread (yield: 9 lbs., 5 $\frac{3}{4}$ oz.; portions: 25):
- 1 lb., 12 oz. Bread flour, sifted
 - 12 oz. Pastry flour, sifted
 - 2 $\frac{3}{4}$ oz. Baking Powder
 - 1 oz. Salt
 - 6 oz. Dry milk solids
 - 1 lb. Cornmeal
 - 1 lb., 10 oz. Sugar, granulated
 - 1 lb., 14 oz. Water
 - 1 lb. Eggs, whole
 - 12 oz. Oil, vegetable

Divide the existing yield by the existing portions to find the existing portion size.

- B. Calculate the conversion factor.** Calculate the conversion factor needed for a half-sheet pan of corn bread, to make 13 portions. Divide the desired yield by the existing yield. Then, multiply the existing quantity of each ingredient by the conversion factor to find the new quantity.
- C. Bake the corn bread.** Gather the new amounts of the ingredients, and bake the half-sheet pan of cornbread in a 400°F (204°C) oven for 30 to 40 minutes.

Create Your Evaluation

Evaluate the recipe and the final product. Write an evaluation of the corn bread's texture, appearance, and flavor. What are the pros and cons of using a different yield? In addition, evaluate your own performance on the lab. Did you have difficulty with any portion of it? Did you make any mistakes that you later needed to correct?