

Cost Control Techniques

SECTIONS

- 14.1 Calculate Food Costs
- 14.2 Manage Food Cost Factors

WRITING ACTIVITY

Freewriting

Think about the different ways you can save money. Then, think about what a restaurant can do most often to save money. Freewrite about money-saving techniques for restaurants.

Writing Tips

- 1 Continue writing for the entire time period.
- 2 If you cannot think of the correct word, just draw a blank line in that spot and keep going.
- 3 Do not edit your writing or fix mistakes. That can be done later.

EXPLORE THE PHOTO

Controlling costs will help ensure a successful business operation. *What would happen if a business did not control its costs?*



Calculate Food Costs

Reading Guide

Before You Read

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

Read to Learn

Key Concepts

- **Explain** how foodservice establishments manage portion control.
- **Describe** how to calculate unit cost.
- **Examine** the factors that affect yield percentages.
- **Summarize** how to cost a recipe.

Main Idea

It is important to calculate and control food costs to keep a business running smoothly. Several factors can influence the cost to prepare menu items.

Content Vocabulary

- specification
- scoop
- bulk
- flat
- as-purchased (AP) price
- unit cost
- trim
- debone
- product yield
- as-served (AS) portion
- edible portion (EP)
- yield test
- yield percentage
- by-products
- AP weight
- trim loss
- yield weight
- total weight as served
- Q factor
- cost per portion

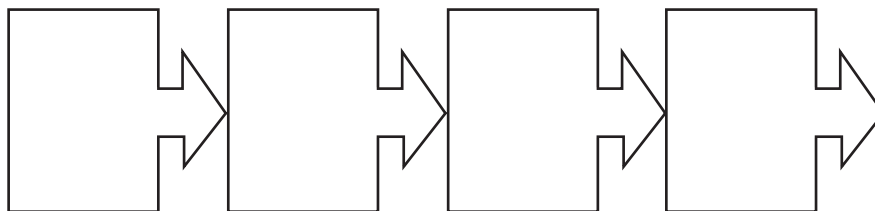
Academic Vocabulary

- implement
- aspect

Graphic Organizer

As you read, use a sequence chart like this one to list the four steps of the raw yield test. Write one step in each box.

Steps in a Raw Yield Test



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

Do you know how much a recipe costs to make?

ACADEMIC STANDARDS

Mathematics

NCTM Number and Operations Compute fluently and make reasonable estimates.

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

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

Portion Control

A foodservice facility is more likely to cover its operating expenses if it monitors food costs. In this section, you will learn about factors that influence the cost of preparing menu items, such as portion size. You will also learn how to calculate and control food costs.

Customers expect their food to be uniform in size and quality. They are concerned not only with how the food looks and tastes, but also the value they receive at their meal for their food dollars.

You must serve consistent portions to have a successful foodservice operation. These guidelines can help you control portions:

- Purchase items according to standard specifications.
- Follow standardized recipes.
- Use standardized portioning tools and equipment.

Purchase by Specifications

A foodservice operation must develop and **implement**, or put into practice, standards to

control food costs. These standards must be followed to be consistent in daily operations.

One way to maintain those standards is to purchase food according to specifications. A **specification**, or spec, is a written description of the products a foodservice operation needs to purchase.

One way to purchase by spec is to purchase products by count or number. The kitchen can then expect to create a definite number of food items from that amount. For example, whole cheesecakes can be purchased and then cut into a set number of individual servings.

A second way to purchase by spec is to order products already divided into individual servings. For example, most facilities purchase single-serving pats of butter or packets of sugar or ketchup.

Follow Standardized Recipes

Standardized recipes also help maintain fixed portions. A standardized recipe includes the portion size and the total number of portions you will make when you prepare a recipe.



◀ The Right Amount This cheesecake was ordered so that an exact number of portions could be created. *Why is portion control so important to a foodservice operation?*

For example, if you prepare sauerkraut based on your facility’s standardized recipe, you will end up with a specific number of servings. If you cook Polish sausage for too long or at too high of a temperature, the meat could shrink. This would create smaller portions. It is important to use the cooking time and temperature that is specified in the standardized recipe.

Portioning Tools and Equipment

If you use different-size ladles to fill soup bowls, you will serve different amounts of soup. You must use the same-size ladle each time you serve to ensure that portions are consistent. Selecting the correct tools and equipment for each dish your facility prepares is an important **aspect**, or part of a problem or challenge, of portion size control.

A **scoop**, or a disher, is a commonly used tool to control portions during food preparation and serving. Use scoops to measure quantities of food such as cookie dough, mashed potatoes, or corn bread stuffing.

Scoops are available in a variety of sizes with color-coded handles. This helps foodservice employees match the appropriate scoop with a particular portion size. For example, for a recipe for boneless stuffed chicken breasts, you may need one No. 12 scoop of stuffing for each breast. However, this may apply only to your particular foodservice operation. Another operation’s version of this recipe may use one No. 8 scoop of stuffing for each chicken breast.

Other portion control tools and equipment include ladles, spoons, balance and portion scales, slicers, and volume measures. Using these tools and equipment helps you more accurately control cost per portion. It also allows customers to know what size portion they can expect.

 **Reading Check** **Explain** How can a foodservice operation control portion sizes?

Calculate Unit Cost

Most foodservice facilities purchase food in **bulk**, or in large quantities of a single food product. Buying in bulk is effective if storage space is available and no food is wasted. Examples of bulk packages include a case of canned tomatoes, a flat of strawberries, or a 50-pound bag of flour. A **flat** is a shallow box or container used to hold foods. Bulk items are divided into smaller quantities to use in individual recipes.

To find how much it costs to make one recipe, you must first find out how much the ingredients cost. To do this, convert the bulk price, called the **as-purchased (AP) price**, to the unit cost. The **unit cost** is the cost of each individual item.

For example, suppose a 50-pound bag of granulated sugar costs \$22. A marinated mushroom salad recipe calls for 3 ounces of sugar. The unit for the sugar is ounces. To find the unit cost of each ounce of sugar, first convert pounds to ounces by multiplying 50 by 16. (There are 16 ounces in 1 pound.) To find how much each ounce costs, divide the total cost by the total number of units (in this case, ounces).

$$\begin{array}{r}
 50 \text{ lb.} \times 16 \text{ oz.} = 800 \text{ oz.} \\
 \qquad \qquad \qquad .0275 \\
 (\text{units}) 800.00 \overline{)22.00} \text{ (AP price)} \\
 \underline{1600} \\
 6000 \\
 \underline{5600} \\
 4000 \\
 \underline{4000} \\
 0
 \end{array}$$

\$0.0275 rounded up = \$0.03 (unit cost)

The unit cost is \$0.03 per ounce of sugar.

The AP price is the cost of a food product when it is first purchased, usually in a large quantity. Some foods, such as deli meats, are used completely after they are purchased. There is no food waste. Other foods need



The Right Weight The difference between AP and EP weight can be significant. *What are the consequences of underestimating a food's EP weight?*

some type of preparation, such as trimming or deboning, which results in waste. To **trim** food means to cut off excess fat or to cut food to a desired shape or size. To **debone** means to remove bones from meat, poultry, or fish.

Product Yields

Product yield is the amount of food product left after preparation. Many times, foods lose volume or weight as they are prepared.

A lot can happen to food to make the portion served to a customer smaller than the original product. For example, a roast can shrink up to one-third of its original size when it is cooked. The **as-served (AS) portion** is the actual weight of the food product that is served to customers.

Edible Portion

Many foods are reduced in size and weight during preparation and cooking. For example, carrots must be prepared before cooking by being peeled. After preparation, the consumable food product that remains is called the **edible portion (EP)**.

You can see that what you buy is not always what you serve. Foodservice buyers must consider the AP cost, EP cost, and AS portion when they decide how much of a food product to purchase.

Reading Check **Explain** What must foodservice buyers consider when they determine how much of a product to purchase?

Yield Percentages

Product yield is the usable portion of a food product. A **yield test** is a process by which AP food is broken down into EP and waste. The **yield percentage** is the ratio of the edible portion of food to the amount of food purchased.

Yields for various foods vary depending on many factors. For example, how much a foodservice operation typically trims its meat products and whether or not these trimmings are used in other recipes will affect the yield.

Calculate Inventory Value

Every foodservice establishment keeps food products and ingredients that will eventually be sold to customers, called inventory. Calculating inventory value can be as simple as counting the quantity of each item, and multiplying that quantity by the item's unit cost. More complicated situations arise when an item is purchased at different times at different costs. For this, an accounting method such as first in, first out (FIFO) can be used.

On Monday, 100 grapefruit were purchased for \$250. On Wednesday, 50 grapefruit were purchased for \$150. On Friday, 50 grapefruit were purchased for \$115. What is the value of your closing grapefruit inventory (using FIFO) if you started the week with no grapefruit and ended with 64 grapefruit?

Math Concept **FIFO Calculations** To calculate inventory value using FIFO, assume that the items remaining in inventory were purchased last. Use the unit cost of the newest batch. If there are more items on hand than were in the newest batch, continue to the next-newest batch, and so on.

Starting Hint Assume the 64 remaining grapefruit come from the most recently purchased batches. There are only 50 items in the newest (Friday) batch, so the remaining 14 items should come from the Wednesday batch. Calculate the unit cost of each batch (cost ÷ quantity), and multiply by the quantity coming from that batch.

NCTM Number and Operations Compute fluently and make reasonable estimates.

Raw Yield Tests

Raw yield tests are used on food products that do not have any usable leftover parts, or **by-products**. For example, the outermost leaves of a head of lettuce are trimmed and discarded when the lettuce is cleaned. The trimmings are never used for other dishes. For foods like this that have no by-products, you must keep this loss in mind when you determine the yield.

To conduct a raw yield test for products without by-products, follow these steps:

1. Weigh the product before trimming. This number is called the **AP weight**.
2. Weigh the waste material that was trimmed from the purchased product. This number is called the **trim loss**.
3. Subtract the trim loss from the AP weight. This number is the **yield weight**.
4. Divide the yield weight by the AP weight. This results in the yield percentage.

For example, say you take two whole red bell peppers from the refrigerator to prepare marinated mushroom salad. The two peppers weigh a total of 11 ounces. After trimming the peppers, you have 3 ounces of trim loss, or unusable waste. To find the yield percentage, subtract the trim loss (3 ounces) from the AP weight (11 ounces). Then, divide the yield weight by the AP weight.

$$\begin{array}{r}
 11 \text{ (AP weight)} \\
 - 3 \text{ (trim loss)} \\
 \hline
 8 \text{ (yield weight)} \\
 \end{array}$$

$$\begin{array}{r}
 .727 \\
 11 \text{ (AP weight)} \overline{)8.00 \text{ (yield weight)}} \\
 \underline{77} \\
 30 \\
 \underline{22} \\
 80 \\
 \underline{77} \\
 3
 \end{array}$$

.727 rounded up = .73 or 73% (yield percentage)

The yield percentage of 11 ounces of fresh red bell peppers is 73%.

Each foodservice operation has its own standards for how workers should trim products. This means that yield percentages will differ in different foodservice operations.

Cooking Loss Test

To determine how cooking affects yield percentage, follow the steps on the next page.

1. Identify the net cost and yield weight of the raw food product.
2. Count how many portions are produced from the product after cooking.
3. Multiply the number of portions by the portion weight when the food is served. This gives you the **total weight as served**.

For example, the net cost of 20 pounds of boneless turkey breast is \$62. When cooked, the turkey breast results in 46 portions, each weighing 6 ounces. To determine the total weight as served, multiply the number of portions (46) by the portion weight when served (6 ounces).

$$\begin{array}{r} 46 \text{ (number of portions)} \\ \times 6 \text{ (portion weight)} \\ \hline 276 \text{ oz.} \end{array}$$

$$\begin{array}{r} 17.25 \\ 16 \text{ (oz.) } \overline{) 276 \text{ (oz.)}} \\ \underline{16} \\ 116 \\ \underline{112} \\ 40 \\ \underline{32} \\ 80 \\ \underline{80} \\ 0 \end{array}$$

17.25 lbs. = total weight as served

The total weight of 20 pounds of boneless turkey breast when served is 17.25 pounds.

Shrinkage

Shrinkage may account for the weight loss that happens when food is cooked. Shrinkage is the difference between the AP weight and the AS weight.

By finding the percent of shrinkage, you will know how much shrinkage affects the cost per pound of a food product. To calculate this percentage, divide the shrinkage by the AP weight.

$$\text{AP weight } \overline{) \frac{\text{percent of shrinkage}}{\text{shrinkage}}}$$

For example, you may want to determine the shrinkage percent of a hamburger patty. The AP weight of a hamburger patty is 4 ounces, while the AS weight of a cooked hamburger patty is 3.5 ounces. The difference of 0.5 ounces is the shrinkage. Divide the shrinkage (0.5 ounces) by the AP weight (4 ounces).

$$\begin{array}{r} .125 \\ 4 \text{ (AP weight)} \overline{) 0.5 \text{ (shrinkage)}} \\ \underline{4} \\ 10 \\ \underline{8} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

$$.125 = 12.5\% \text{ (percent of shrinkage)}$$

The percent of shrinkage is 12.5%.



Reading Check Describe How is shrinkage involved in food cost calculations?

Costing Recipes

Once you have calculated the total recipe cost, you can figure out how much each portion costs. Chefs determine the selling price of one portion based upon the cost of that portion. You can also adjust a selling price based on what your competition charges or what you think customers will pay. Once you know portion cost and decide on a selling price, you can determine an ideal food cost based on how many items you sell.

Recipe Costing Forms

A recipe costing form helps manage food purchasing and preparation. (See **Figures 14.1** and **14.2** on pages 354 and 355.) There are several parts of a recipe costing form:

Recipe Name The recipe name should be the same as the one listed on the menu.

Portion Size The standard amount of the food item that is served to each customer.

Small Bites

Use The Q Factor? There are many items that the Q factor measures:

- Small amounts of ingredients, such as pepper.
- Measurements of ingredients listed as “to taste.”
- Seasonal changes in food prices.
- Condiments, such as ketchup and mustard.
- The cost of incorrectly measuring ingredients.

Yield The number of servings that one preparation of the recipe yields.

Menu Category The menu category in which the food appears. See Chapter 12 for traditional menu categories.

Ingredients The list of each ingredient used in the recipe.

Edible Portion (EP) The amount of an ingredient left after by-products or waste products have been removed from the as-purchased amount.

As-Purchased (AP) Amount The amount of the product that is purchased.

Unit Purchase Price The price paid for each individual item in a bulk purchase. An item is measured in units such as pounds, gallons, or cans.

Cost per Unit To determine the cost per unit, divide the unit purchase cost by the number of purchase units, or quantity. For example, the mushrooms in the form on page 354 cost \$12.20 for 10 pounds. Therefore, $\$12.20 \div 10 \text{ pounds} = \1.22 .

For some ingredients, you may need to convert the purchase unit to the type of unit used in the recipe. For example, although sugar is purchased in 50-pound bags, the recipe amount is in ounces. To determine the cost of each ounce, first convert pounds to ounces as follows: $50 \text{ pounds} \times 16 \text{ ounces} = 800 \text{ ounces}$. Then, you can determine the cost per unit.

Ingredient Cost To determine the cost for each ingredient used in the recipe, multiply the cost per unit by the AP amount. For

example, the mushroom cost per unit is \$1.22. Therefore, $\$1.22 \times 2 \text{ pounds} = \2.44 , or the ingredient cost for the mushrooms.

Ingredient Total Cost Add together the cost of each ingredient to get the ingredient cost total. For the marinated mushroom salad, the ingredient total cost is \$6.86.

Q Factor (1%-5%) The **Q factor**, or the questionable ingredient factor, is the cost of an ingredient that is difficult to measure. Most foodservice operations have a preset Q factor percentage, such as 5%. That percentage is multiplied by the total cost of ingredients to find the Q factor dollar amount.

Total Recipe Cost To calculate this cost, add the ingredient total cost and the Q factor.

Portion Cost To calculate the portion cost, divide the total recipe cost by the total number of portions that the recipe yields.

Cost per Portion

Once you have completed a recipe costing form, you will want to find the cost of individual portions of that recipe. The **cost per portion** represents the amount you would serve to an individual customer. To find this cost, divide the recipe cost by the number of portions or servings.

The standardized recipe for marinated mushroom salad makes 10 portions. You have added up the ingredient costs and found that the recipe cost is \$7.20. To find the cost per portion, divide \$7.20 by 10.

$$\begin{array}{r} .72 \\ 10 \text{ (portions)} \overline{)7.20 \text{ (recipe cost)}} \\ \underline{70} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

$$.72 = \$0.72 \text{ (cost per portion)}$$

The cost per portion is \$0.72.

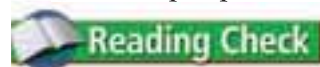
 **Reading Check** **Describe** What situations would require you to use the Q factor?

FIGURE 14.1 Recipe Costing Form

Cost Estimates A recipe costing form can help restaurants determine the individual price of each portion. *Why is this important?*

Recipe Name: Marinated Mushroom Salad

Portion Size: 5 oz.

Yield: 10 servings

Menu Category: Salad

Ingredients		EP%	AP Amount	Unit Purchase Price		Cost Per Unit	Ingredient Cost
Quantity	Item		Quantity	Cost	Unit		
2 lb.	Button mushrooms, whole	100%	2.00 lb.	\$12.20	10 lbs.	\$1.22	\$2.44
8 oz.	Diced red bell pepper	73%	10.96 oz.	\$25.85	22 lbs.	\$0.07	\$0.77
1 oz.	Lemon juice	100%	1.00 oz.	\$13.32	12 qt.	\$0.03	\$0.03
8 oz.	Olive oil	100%	8.00 oz.	\$14.95	1 gal.	\$0.12	\$0.96
2 oz.	Granulated sugar	100%	2.00 oz.	\$20.50	50 lbs.	\$0.03	\$0.06
1.5 oz.	Fresh basil, chopped	100%	1.50 oz.	\$18.75	2.25 lbs.	\$0.52	\$0.78
1.5 oz.	Fresh oregano, chopped	100%	1.50 oz.	\$4.70	12-oz. bag	\$0.39	\$0.59
1 head	Romaine lettuce, shredded	100%	1.00 head	\$17.95	24 heads	\$0.75	\$0.75
8 oz.	Green peas	100%	8.00 oz.	\$0.89	1 lb.	\$0.06	\$0.48
	Salt & pepper to taste						
Ingredient Cost Total							\$6.86
Q Factor (5%)							\$0.34
Total Recipe Cost							\$7.20
Portion Cost							\$0.72

FIGURE 14.2 Recipe Costing Form

Do the Math With the right information, you can determine the cost per serving of any recipe. *Can you determine the cost per unit and individual ingredient costs for this form?*

Recipe Name: Grilled Chicken Sandwich

Portion Size: 5 oz.

Yield: 4 Sandwiches

Ingredients		AP Amount	Unit Purchase Price	Cost Per Unit	Ingredient Cost
4 oz.	Boneless, skinless chicken breast	1 lb.	\$2.67		
6 oz.	Provolone cheese	1 lb.	\$2.39		
3 oz.	Mushrooms, sliced	1 lb.	\$2.25		
8 slices	Tomato (each tomato = 8 slices)	2 tomatoes = 1 lb.	\$0.53		
4 leaves	Lettuce	1 head = 16 leaves	\$0.77		
4 oz.	Low-fat avocado dressing	1 gal.	\$7.85		
8 slices	Bread, 7-grain	1 loaf = 24 oz./2 slices	\$1.54		
4 oz.	Pickles, sliced, drained	6 oz.	\$0.25		

SECTION 14.1 After You Read

Review Key Concepts

- Explain** how standardized recipes can help foodservice establishments manage portion control.
- Describe** how product yield affects unit cost.
- Summarize** how the cooking loss test is performed.
- Explain** how to find the cost per portion of a recipe.

Practice Culinary Academics



Mathematics

- If 12 ounces of raw bacon weighs just 4.5 ounces after cooking, what is the shrinkage percentage? If the bacon cost \$3.95 last week but costs \$3.50 this week, what is the percent of decrease in price?

Math Concept

Percent of Decrease Calculate the amount of decrease by subtracting the new number from the original number. Divide this amount by the original number to find the percent of decrease.

Starting Hint Shrinkage is really another name for a percent of decrease problem. Shrinkage deals with food weights. Calculate both problems the same way, using this formula: (original number – new number) ÷ original number.

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



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

Manage Food Cost Factors

Reading Guide

Before You Read

Prior Knowledge Look over the Key Concepts at the beginning of the section. Write down what you already know about each concept and what you want to find out by reading the lesson. As you read, find examples for both categories.

Read to Learn

Key Concepts

- **Evaluate** the factors involved in purchasing.
- **Describe** the procedure for receiving goods.
- **Outline** how foodservice businesses control inventory and minimize waste.

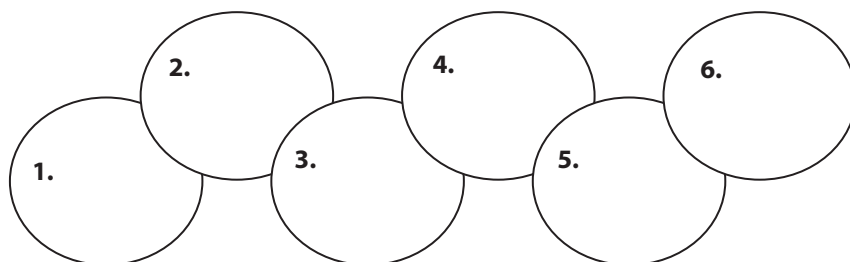
Main Idea

Management and control of food cost factors is essential to run a foodservice operation. These factors include purchasing, receiving, storage and issuing.

Graphic Organizer

There are six steps in foodservice purchasing. Use a chain of events diagram like the one below to list those steps.

Purchasing Steps



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

Manage expenses to make your restaurant successful.

ACADEMIC STANDARDS

English Language Arts

NCTE 12 Use language to accomplish individual purposes.

Mathematics

NCTM Data Analysis and Probability Select and use appropriate statistical methods to analyze data.

Social Studies

NCSS V B Individuals, Groups, and Institutions Analyze group and institutional influences on people, events, and elements of culture in both historical and environmental settings.

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

Cost Control and Purchasing Goods

How can you keep costs under control in a foodservice operation? You might be surprised by how many factors affect cost control. Menu pricing is important. But purchasing, receiving, issuing, and storing methods are just as important. **Issuing** is the process of delivering foods from storage to the kitchen as needed for use. Kitchen waste and customer service can also impact an operation's profits. You must know how to properly manage and control each of these factors to be successful in the foodservice industry.

Purchasing involves more than buying products for a foodservice operation. It also involves elements that can directly affect a business's cost control. To make smart purchases, you must:

- Develop written specs for all items purchased.
- Determine the quantity of products needed.
- Assess inventory levels.

- Decide how much of each item to buy based on your current inventory and your projected needs.

Once you have done this, you can begin the purchasing process. Foodservice purchasing involves six steps:

1. Develop the order.
2. Get price quotes from vendors.
3. Select the vendor and place the order.
4. Receive and store the order.
5. Evaluate and follow up on any errors, if necessary.
6. Issue products to the production team in the kitchen.

Consistent purchasing procedures can help a foodservice operation in several ways. They allow a facility to keep enough products on hand at the lowest possible cost. This can improve customer service, as menu items will be available when customers ask for them. Purchasing procedures also ensure that high-quality products are purchased at the best price. For example, a purchaser might use USDA grading systems to ensure that the food that is purchased is of the right quality.



Product Storage Foodservice operations purchase many types of food products.
How should semiperishable items be stored?

A TASTE OF HISTORY

1999

The common currency of Europe, the euro, debuts

2004

868-pound bagel is baked for the New York State Fair

Weigh the Options

Foodservice operators know that it is essential to have consistent portion sizes to maximize customer satisfaction and profits. Quite often, and especially in the baker's kitchen, this would be impossible to do without the use of a scale.

The oldest type of scale is the balance scale. Balance scales measure an object's weight and mass (how much material the object contains). Balance scales were first used in ancient Egypt around 7000 BC. A stick hung by a cord tied around its middle. Objects to be weighed were hung on cords tied to either end of the stick. If the weights were equal, the stick stayed parallel to the ground. The baker's scale that is used today is an example of a balance scale.

History Application

Research international measuring standards, such as the International System of Units. Create a chart to show the advantages of having such an organization with regard to trade and commerce.

NCS VB Individuals, Groups, and Institutions Analyze group and institutional influences on people, events, and elements of culture in both historical and environmental settings.

Using the grading system can help the purchaser compare foods from different suppliers.

Types of Products Purchased

In the foodservice industry, there are four types of products that a foodservice business can purchase: perishable foods, semi-perishable foods, nonperishable foods, and nonedibles.

Perishable items have a relatively short shelf life. These include products such as fresh fruits, vegetables, meat, poultry, and seafood. Perishable foods spoil easily. They should be purchased in quantities that will be used quickly, and stored properly as soon as they are received. Perishable items vary in price.

Semiperishable products are perishable food items that contain an inhibitor (in-'hi-bə-tər) An **inhibitor** is a substance that slows down the chemical breakdown of the food. This increases the products' shelf life. Semiperishable products include smoked fish, processed meats, and pickled vegetables.

Nonperishable foods, such as canned goods and flour, have a long shelf life. The quality of these items is unchanged when they are stored for up to one year.

A **nonedible** is a nonfood product. Nonedibles include cleaning materials and paper goods.

Food Specifications

A specification, or spec, is a written, detailed description of the products and supplies that a foodservice operation needs to purchase. (See **Figure 14.3**.) A spec acts as a quality control tool. It helps a commercial kitchen purchase exactly what is needed. Specs also tell vendors exactly what a foodservice operation expects to receive, both in quantity and in quality.

Foodservice operations usually have a spec sheet for nonperishable products as well. The specs usually include the following information:

- Name of the supplier
- Package size, quantity, or item count
- Form of the item to purchase
- Costs and quality limitations

Determine Purchase Quantities

There are several methods that can help you determine exactly how much of a product to purchase. First, you must know how much of each product the chef expects to use to prepare menu items for a given sales cycle. The **sales cycle** is the period of time between supply deliveries. The sales cycle varies for different foodservice operations.

The amount of available storage space and factors such as how perishable the food ordered is, how it will be used, and the cost of

FIGURE 14.3 Food Purchasing Spec Order

Receiving List A food spec tells vendors exactly what the foodservice operation expects to receive. *What is this foodservice establishment expecting to receive?*

Food Purchasing Specification Order	
Exact Product Name:	Oranges
Packer Name:	N/A
Intended Use:	N/A
U.S. Grade:	Fancy
Product Size:	88 count
Type of Packaging:	Bulk
Package Size:	35-lbs. box
Form:	Fresh
Degree of Ripeness:	N/A
Additional Notes:	Firm and heavy in hand
Receiving Indicator:	No mold or chalk-white coating
Acceptable Substitute:	Navel for Valencia or Valencia for Navel
Point of Origin:	CA or FL
Price Per Unit:	
Comments:	

the food influence how much of a food product to purchase. Remember that perishable and semiperishable items are relatively expensive. Be careful when you order larger quantities. They may not be used before they spoil.

Common Purchasing Practices

Purchasers may buy food and supplies from vendors directly, or from distributing companies that sell products and equipment from many different vendors. Foodservice operations may use several purchasing methods. Two of the most common are:

- **Open-market buying** is the most common purchasing method. A foodservice operation gets price quotes for identical items from several vendors,

and then chooses the vendor based on price and delivery history. A formal price quote from a vendor is often called a **bid**. Open-market buying is often used for purchasing perishable foods.

- In **single-source buying**, a foodservice operation purchases most of its products from a single vendor. A discount is usually given to a foodservice purchaser when a large amount of goods or supplies are purchased at one time.

Yield Tests

In Section 14.1, you learned how to calculate yield percentage (the ratio of the edible portion of food to the amount of food that was purchased). The results of yield testing will have an impact on your purchasing



Take a Count It is important that employees frequently help managers take inventory. *Why is this important?*

decisions. They tell how much food you should purchase to end up with the right serving of food on each customer's plate. Yield tests must be performed accurately to help you plan correctly.

Vendor Relationships

Good relationships with vendors are very important. The relationship between a foodservice operation and its vendors must be

based on mutual trust, honesty, and good business ethics. A foodservice operation must choose vendors that it trusts will not inflate prices or reduce the quality of the products delivered. Foodservice operations also must choose vendors that have a good record of delivering supplies on time, and based on the operation's specifications.

To maintain a good relationship with vendors, foodservice operators must schedule regular meetings with vendors and carefully study their supply catalogs. It is also a good idea to visit vendor showrooms, arrange for occasional on-site visits from vendors, and attend foodservice industry trade shows to view new products and equipment.

Small Bites

Receiving Tools and Equipment Make sure that the proper tools and equipment are available for receiving. You will waste time if you must go looking for them. Proper tools and equipment include:

- Heavy-duty gloves with nonslip fingertips
- Scales of the proper size; check that the scales are properly calibrated before use
- A calculator to check total costs or add up total weights
- Cutting devices for opening containers, packages, and boxes
- Thermometer

Reading Check List What are the four types of products a foodservice operation purchases?

Receiving Goods

After products have been purchased, the next important function in a foodservice business is receiving.

Many foodservice establishments have formal guidelines for receiving goods. These guidelines help ensure that the products received are sanitary and that they are correct as ordered.

Check Purchase Orders and Invoices

One of the most important steps during the receiving process is to make sure that the items that have been received are the ones that appear on the purchase order. The purchase order lists the products the purchasing agent ordered. A purchase order should include:

- The type of product ordered
- The amount of product ordered and/or its weight
- Sometimes the unit price and total costs

In addition, you should **confirm**, or make sure, that the items that are listed on the invoice are the same ones that have actually been delivered. Immediately report any differences to a supervisor or manager.



Physical Inspection of Goods

Just because products show up on the receiving dock, it does not mean that they should be automatically accepted by the foodservice establishment.

First, you must visually inspect products. Check each package for quality, freshness, and signs of damage:

- Packages should be intact and clean, and have no evidence of stains or water damage.
- Packages should not have a strange odor.
- Foods such as raw meat should be checked for cross-contamination.
- Temperatures of foods should be checked by placing a thermometer between or underneath packages. Perishables must be received at 41°F (5°C) or below. Frozen foods must be received at 0°F (18°C) or below. If these temperatures are not met, bacteria may have a chance to grow. Depending on the product, you might also need to check for:

◀ **Formal Guidelines** Restaurants usually have formal guidelines set in place for how they want inventory figures kept. *Why is this important?*

- Product tampering or mishandling.
- Improper storage practices. For example, look for evidence that packages have thawed and been refrozen, such as ice crystals or stains.
- Pest or rodent infestation.
- Dented, leaking, or misshapen cans.

Next, weigh the products that have been received to make sure their weights match what was ordered. Notify a manager immediately if you find errors.

 **Reading Check** Explain What is included on the purchase order?

Inventory Control

A foodservice establishment must control inventory to control costs. If an establishment fails to control costs, it will find itself out of business very soon. Inventory should include everything that is needed to operate the business. For example, items such as food products, tableware, and equipment should all be monitored in inventory. A **physical inventory** is a list of everything that an operation has on hand at one time.

As soon as items are received, you must update the inventory control system. Many facilities use a perpetual inventory to track inventory. A **perpetual inventory** is a continuously updated record of what a business has on hand for each item. Many facilities have their perpetual inventories stored on a computer. Some use perpetual inventory cards, although computerized systems are more common. (See **Figure 14.4**.)

Computerized point-of-sale systems help update food inventories as food items are sold. At a glance you can see what products you have plenty of and what products need to be reordered. Remember to always keep a backup copy of all computerized records off site, for safe keeping.


There is a delicate balance between having too much of a product in stock and too little. The amount of stock that will cover a facility's needs from one supply delivery to the next is called **parstock**. Product shortages, delivery delays, and even the weather can affect when food and supplies will arrive, and how much they will cost. Staple products for foodservice establishments, such as coffee, sugar, and rice, must be kept on hand at all times.

 **FIGURE 14.4** Perpetual Inventory Card

Name *Rice (white long-grain)*
Supplier *Lee Import co.*

Brand *China Rose*
Size *5 lb. sacks*

Date Rec'd	Quantity Rec'd	Date Issued	Quantity Issued	On-Hand	New Balance
9/26	10 5-lb. sacks			7 5-lb. sacks	17 5-lb. sacks
		9/28	1 5-lb. sack		16 5-lb. sacks
		10/2	3 5-lb. sacks		13 5-lb. sacks
		10/9	2 5-lb. sacks		11 5-lb. sacks
		10/13	3 5-lb. sacks		8 5-lb. sacks

 **Inventory Control** A perpetual inventory card can help keep track of inventory amounts on hand. *Do you think this foodservice establishment will need to order more rice soon?*

Small Bites

Taking Inventory Counting of food and supplies on hand should be done regularly and often. This is called taking inventory. Most establishments determine their own standards, but there are some general guidelines to use when you take inventory:

- Accurately count or weigh all of the products.
- Record the information according to standards of the establishment.
- Report the numbers to the supervisor.

One way to decide how much to purchase is to use the periodic-ordering method. With the **periodic-ordering method**, a purchaser decides how much product will be used in a given time period. The purchaser then reviews the amount of product that is on hand, what will be needed, and how much parstock of the product is needed. This helps the purchaser decide how much to purchase that specific time.

To use the periodic-ordering method, add the parstock to the production needs, and subtract the amount on hand. This will give you the order amount:

parstock + production needs – stock on hand = order amount

Storing and Issuing Goods

As soon as goods are received and the inventory control system is updated, perishable and semiperishable goods need to be properly and immediately stored. Label, date, and store perishable and semiperishable products.

Some facilities use a bar code and computer system to keep track of inventory. A **bar code** is a series of bars, spaces, and sometimes numbers that contain coded information and are designed to be scanned into a computer.

With this method, all items are given a bar code sticker when they are received. This helps track the item through the inventory system.

Storeroom Controls

Food and supplies should always be kept in the proper storage areas to help prevent spoilage, waste, and contamination. In general, the longer a food product is stored, the more its quality may **deteriorate**, or become worse. To effectively manage the inventory and storage of food products, they must be rotated so that older items are used before newer ones.

The system of rotating stock is called first in, first out (FIFO). To **rotate stock** means to place stored items in an orderly way so that older items are used first. Items that are stored first should be used first. Foodservice facilities each have their own procedures for how to rotate food on storage shelves to ensure that the FIFO system is followed.

Issuing Controls

Some facilities follow an issuing system that uses a requisition. A **requisition** is an internal invoice that allows management to track the physical movement of inventory through a business. A foodservice employee fills out a requisition each time food or supplies need to be taken from storage. A requisition also helps calculate the cost of the food that is used each day.

❖ Nutrition Notes ❖

Nutrient Storage

Advances in food processing and storage, such as irradiation techniques and improved raw food storage containers, can help keep food fresh longer. They also can help maintain the nutritional value of food.

CRITICAL THINKING *How can keeping food fresh for longer help maintain nutritional value?*

You should fill out requisition forms carefully. Record each item that you remove from storage before you remove it. Accurate records are critical to maintaining profits and keeping enough food and supplies on hand.

For the most effective issuing control, limit the access to storage areas to as few people as possible. Theft is a problem for many foodservice operations. Keep the storage doors locked and issue keys only to authorized employees.

Minimize Waste

The more food that is thrown out unused, the more profit that is lost. A well-designed menu will allow chefs to use leftovers for a variety of food products. This reduces food waste.

Another way to reduce waste is to track the history of food products as they are prepared each day. Many commercial kitchens use a **Daily Production Report** form to show how much food product was used, how much was sold, and how much was unused, or left over. Knowing exactly what was unused or left over at the end of the day will allow you

Small Bites

Something for Nothing Some foodservice facilities offer incentives for customers to return, such as free beverage refills, discounted or free birthday dinners, and huge desserts. The benefits of satisfied, repeat customers often outweigh the costs of offering these free items.

to prepare menus the following day that will use those foods.

Following the first in, first out (FIFO) inventory program will also help you to minimize waste. By clearly labeling and dating food, and properly storing it, you are able to use the food before its shelf life expires. Properly storing cooked foods and raw ingredients will eliminate the chances of cross-contamination. This will allow all of your food products to be used.

Reading Check **Describe** What are two ways to minimize waste while foods are being stored?

SECTION 14.2 After You Read

Review Key Concepts

1. **Describe** the different methods of purchasing used by foodservice operations.
2. **List** the proper tools and equipment for receiving goods.
3. **Explain** how limiting storage access can help control costs.

Practice Culinary Academics



English Language Arts

4. Examine your school's restaurant or cafeteria menu. Choose one dish from the menu, and list three ingredients used in that dish. Practice writing food purchasing specification sheets for those three ingredients. For this exercise, you will need to purchase enough of each ingredient for 100 servings total.

NCTE 12 Use language to accomplish individual purposes.



Mathematics

5. Your purchasing agent has gotten price quotes for a case of 40 frozen hamburger patties. One vendor quoted \$35, a second vendor quoted \$42, a third vendor quoted \$46, and a fourth vendor quoted \$39. What is the average price?

Math Concept **Finding the Mean** When you have a series of values, calculate the statistical measure mean, or average, by finding the sum of all of the values, and dividing that sum by the total number of values.

Starting Hint There are four different price quotes. Calculate the average by adding the four prices together, and dividing by the number of price quotes (4). If necessary, round to the nearest cent.

NCTM Data Analysis and Probability Select and use appropriate statistical methods to analyze data.



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

Chapter Summary

One way for a foodservice operation to cover costs and improve customer satisfaction is through portion control. You can control portions by smart purchasing procedures. Follow specifications, follow standardized recipes, and use portioning tools and equipment. Proper

receiving procedures and storeroom controls can control losses caused by damaged or spoiled products. Businesses should take inventory regularly. Controlled kitchen waste and excellent customer service also can help a foodservice operation control costs.

Content and Academic Vocabulary Review

1. Label each of these vocabulary terms as a noun, verb, or adjective.

Content Vocabulary

- specification (p. 348)
- scoop (p. 349)
- bulk (p. 349)
- flat (p. 349)
- as-purchased (AP) price (p. 349)
- unit cost (p. 349)
- trim (p. 350)
- debone (p. 350)
- product yield (p. 350)
- as-served (AS) portion (p. 350)
- edible portion (EP) (p. 350)
- yield test (p. 350)
- yield percentage (p. 350)
- by-products (p. 351)
- AP weight (p. 351)
- trim loss (p. 351)
- yield weight (p. 351)
- total weight as served (p. 352)
- Q factor (p. 353)
- cost per portion (p. 353)
- issuing (p. 357)
- semiperishable (p. 358)
- inhibitor (p. 358)
- nonedible (p. 358)
- sales cycle (p. 358)
- open-market buying (p. 359)
- bid (p. 359)
- single-source buying (p. 359)
- physical inventory (p. 362)
- perpetual inventory (p. 362)
- parstock (p. 362)
- periodic-ordering (p. 363)
- bar code (p. 363)
- rotate stock (p. 363)
- requisition (p. 363)
- Daily Production Report (p. 364)

Academic Vocabulary

- implement (p. 348)
- aspect (p. 349)
- confirm (p. 361)
- deteriorate (p. 363)

Review Key Concepts

2. **Explain** how foodservice establishments manage portion control.
3. **Describe** how to calculate unit cost.
4. **Examine** the factors that affect yield percentages.
5. **Summarize** how to cost a recipe.
6. **Evaluate** the factors involved in purchasing.
7. **Describe** the procedure for receiving goods.
8. **Outline** how foodservice businesses control inventory and minimize waste.

Critical Thinking

9. **Decide** how ignoring portions could impact a foodservice operation. What might happen if a cook decided to ignore portion control guidelines?
10. **Describe** the elements of a good vendor relationship. What are some ways that a new vendor could gain the trust of a foodservice operation?

Academic Skills

**English Language Arts**

- 11. Create a Procedure** Create a procedure to keep track of inventory in a small restaurant. The procedure should attempt to minimize waste and loss of profits. Once you have created your procedure, create a training manual that outlines your procedure for other employees. Write your procedure as if you were explaining it to first-time foodservice employees. Make sure it is easy to follow and organized logically.

NCTE 4 Use written language to communicate effectively.

**Science**

- 12. Determine Cooking Yield** Cooking yield can affect how much you will need to purchase of certain foods.

Procedure Shape 4 ounces of ground beef into a ½-inch thick patty. Cook the patty to a minimum internal temperature of 165°F (74°C). Weigh the cooked patty. Repeat, but replace 1 ounce of the meat with cooked wild rice.

Analysis Compare the weight of the two cooked patties, the weight of the drippings from the patties, the yield percentage, and the tenderness. Write a summary of your findings.

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

**Mathematics**

- 13. Calculate Food Costs** On a typical night, your restaurant serves 27 9-ounce (AS) portions of roast beef. Assume that the roast beef loses 25% of its weight while cooking, and that before it is cooked you trim and discard fat equal to 10% of its AP weight. If you are able to purchase the beef at \$4.50 per pound, what is your daily roast beef food cost? If the restaurant serves dinner an average of 24 nights each month, what is your monthly food cost?

Math Concept Undoing Percent Calculations

If you know that a value was decreased by a certain percentage, and you know the ending value but not the original value, you can determine the original value by dividing the ending value by 1 minus the percentage.

Starting Hint Work backwards to determine the total weight of beef that you need to purchase each day. Since the AS weight of 9 ounces represents the precooking weight decreased by 25%, find the precooking weight by dividing 9 ounces by $(1 - 25\%)$, or $9 \div 0.75$. Perform a similar calculation to get from the precooking weight to the AP weight. Divide the total ounces by 16 to convert to pounds.

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

Certification Prep

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

- 14.** What is the ratio of edible food to the amount purchased called?
- product yield
 - edible portion
 - unit cost
 - trim loss
- 15.** What is the amount of stock needed to cover between deliveries called?
- requisition
 - parstock
 - perpetual inventory
 - physical inventory

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

Test-Taking Tip

Try taking a few breaks during the exam by stopping for a moment, shutting your eyes, and taking some deep breaths. This can help you relax and focus.

Real-World Skills and Applications

Interpersonal and Collaborative Skills

- 16. Develop Systems** Follow your teacher's instructions to divide into groups and work together to develop systems for purchasing, receiving, storing, and inventory. Once you have finalized each system as a group, create a checklist for foodservice employees.

Communication Skills

- 17. Customer Service** Divide into pairs at the direction of your teacher and take turns playing the role of a vendor and a foodservice purchaser. The vendor should try to convince the purchaser to become a customer by explaining the benefits of the company's products and services.

Technology Applications

- 18. Use Recipe Software** Visit this book's Online Learning Center glencoe.com for links to recipe software. Use the software to create a recipe and then use it to increase the yield to double the amount produced. Then, determine the cost per portion of the original recipe, and analyze the nutritional value of the recipe if possible.

Financial Literacy

- 19. Calculate Costs** Calculate the following:
- 1) A facility pays \$25.50 for a 30-dozen case of eggs. Find the unit cost of each egg.
 - 2) The total recipe cost for pecan pie, which yields 8 servings, is \$4.67. Find the cost per portion for pecan pie.

Culinary Lab

Conduct a Yield Test

- 20. Test Foods in Teams** Working in groups as directed by your teacher, you will conduct a yield test on 10 carrots, 4 apples, 1 bunch of celery, 4 oranges, 1 head cabbage, 4 bananas, 4 onions, and 1 coconut.
- A. Weigh your foods.** Weigh each food product on a food scale. This is the AP weight. Record this number on a sheet of paper.
 - B. Trim your foods.** Clean and trim the food product of unusable parts and weigh those parts. This is the trim loss. Record this number.
 - C. Calculate yield weight.** Subtract the trim loss from the AP weight. This is the yield weight. Record the yield weight, then divide it by the AP weight. This is the yield percentage. Record this number.
 - D. Create menu items.** Follow your teacher's instructions to form two teams: a vegetable team and a fruit team. Create a menu item based on the fruits or vegetables as prepared. Prepare a single portion of the menu item and serve it to the other team.
 - E. Calculate portions.** Use the yield weights of the combined food products to figure out how much of each ingredient you would need to purchase to make two servings.

Use the culinary skills you have learned in this chapter.

Create Your Evaluation

Create a chart that contains the results from each team. Compare and evaluate the results. Notice how the results differ and how they are the same. Discuss possible reasons for results that differ from team to team. Write an analysis under the chart that explains possible reasons for the differing results in the chart.

Banquets and Catering

These professionals make sure that the food, setting, and service for special events go off without a hitch.

Careers in banquets and catering require strict attention to detail and the ability to transform a customer's wishes into an event to remember. A culinary background is helpful in understanding customer needs and communicating those needs to the kitchen staff. Being multilingual is often helpful.

Strong interpersonal and listening skills are keys to successful catering operations. The ability to work diplomatically alongside different personalities is crucial. Maintaining excellent customer service is a top priority in this business.



Brandon Marshall, Catering Director

Q What is your current position?

A I am the Director of Catering for the Quorum Hotel Tampa.

Q Describe your job.

A My team and I are responsible for the food and beverage sales and marketing. I oversee two full-time catering sales/convention servicepeople, do administrative work, and work closely with the Director of Sales Marketing on marketing and advertising campaigns.

Q How did you find your current job?

A I came up through the food and beverage ranks, from washing dishes, to cooking, to kitchen management, to front of the house, to operations management, to sales, and now to director.

Q What education did you receive?

A I majored in Hospitality Management at Johnson & Wales University and received a Bachelor of Science in Hospitality Sales and Meeting Management. My education gave me real-world experience that has been the basis for my career.

Q Describe your on-the-job training.

A My first experience working in a hotel was at the Radisson Airport Hotel. It was fast-paced. I worked directly with clients, and we had a really fun, hard-working team. My experience there helped prepare me for my current position.

Q Describe a typical work day.

A I meet with our sales team daily to discuss sales initiatives, but otherwise, no two days are alike. I meet with clients, attend networking events, and work with our chef and operations team to design creative menus, decor, and set-ups. I also forecast and budget food and beverage sales.

Q What job skills are important?

A My job affects the entire hotel, so understanding how all of the other departments work is incredibly important.

Career Ingredients

Education or Training	Most employers require a culinary degree and completion of business, accounting, and management courses. Restaurant experience is a plus.
Academic Skills Required	English Language Arts, Mathematics
Aptitudes, Abilities, and Skills	Knowledge of the foodservice industry; excellent interpersonal, leadership, planning, organizational, and computer skills; background in business math, accounting, and marketing.
Workplace Safety	Basic kitchen and dining room safety, sanitation, and food handling rules must be followed and enforced.
Career Outlook	Openings will be plentiful in years to come as the foodservice industry continues to expand.
Career Path	Advancement depends on skill, training, and work experience.

Career Pathways

Banquet captains	Often host catered events and greet guests. Maintain contact with clients to make sure they are pleased before, during, and after the event. Other duties include overseeing table set-up and service.
Banquet managers	Responsible for arranging and carrying out the foodservice plan. They help prepare menus, order equipment, coordinate room set-up, and schedule staff.
Chefs	Oversee food preparation activities and the kitchen staff for banquets and large catered events.
Catering directors	Ensure that all aspects of a catered event are carried out in a timely and orderly manner, making sure that all departments perform on schedule.
Catering sales managers	Work with customers in planning all aspects of an event, such as menus, table arrangements, and decorations.
Head servers	Coordinate all of the dining room activities for an event. They also supervise the service staff and assist with executing banquet plans.
Menu planners	Work closely with the executive chef to select the menu items that will be offered. A working knowledge of cost control, food preparation, and customer needs is essential.

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



Many culinary certification programs focus on menu design and presentation. Develop a main dish for a menu that is appropriate for a 100-guest wedding. Be sure the dish is healthful, balanced, and suitable for the occasion.

COMPETITION PRACTICE

Further develop your menu idea for a 100-guest wedding from the Get Certified practice. Create a three-course menu, considering all aspects, including the menu items, decorations, table set-up, design, and presentation. Evaluate your efforts based on the following rating scale:

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

Judge your menu on:

- The appearance of the menu and its design.
- Menu items selected and menu balance.
- Appropriateness for the occasion and number of guests.