Department of
Homeland Security

United States
Coast Guard

Food Service Specialist, Third Class Performance Qualification Guide

Introduction to Food Preparation

Student Pamphlet

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Training Center Petaluma

Introduction to Food Preparation

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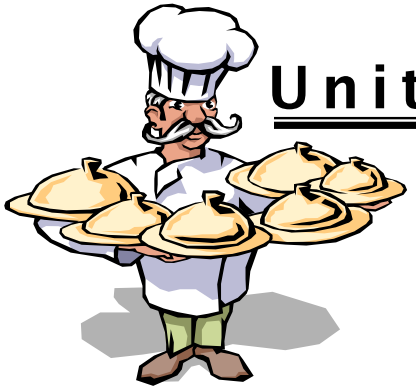
QUESTIONS ABOUT THIS TEXT SHOULD BE ADDRESSED TO THE SUBJECT MATTER SPECIALIST FOR THE FOOD SERVICE RATING.



Unit 4: Introduction to Food Preparation

Lesson 1: Overview of Unit 4—Introduction to Food Preparation

Lesson 2: Basic Cooking Principles

Lesson 3: Introduction to Recipes and Recipe Conversions

Lesson 4: How to Perform Recipe Conversions

Lesson 5: How to Handle Fruits and Vegetables, and Use Basic Cutting Techniques

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Recipe Adjustment Job Aid

Step 1

Obtain the Working Factor.

Divide the quantity of ingredient that you want (WYW) by the quantity of ingredient required by the recipe (RC).

$$\frac{\textbf{WYW}}{\textbf{RC}} = \textbf{WF}$$

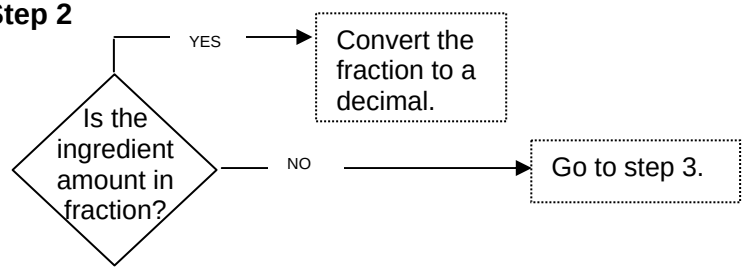
For example:

$$\frac{\text{102 lbs needed (WYW)}}{\textbf{30 lbs} \text{ recipe card calls for}}$$

= **3.40**

$$\frac{\square\ \textbf{WYW}}{\square\ \textbf{RC}} = \square\ \textbf{WF}$$

Step 2

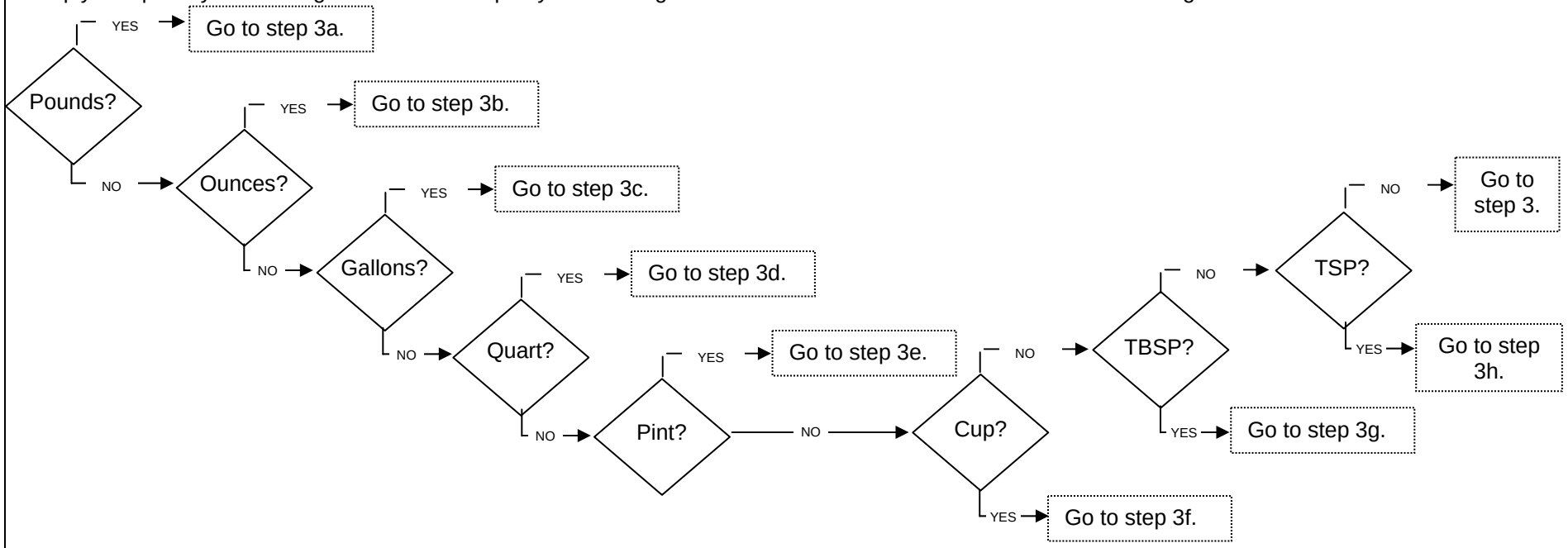


For example:

2½ = 2.50	3⅔ = 3.66	2⅛ = 2.125
3⅔ = 3.66	2¼ = 2.25	2⅜ = 2.375
2⅓ = 2.33	3¾ = 3.75	3⅝ = 3.625
		3⅞ = 3.875

Step 3

Multiply the quantity of each ingredient in the recipe by the working factor. Round off to the nearest measurement or weight.



Recipe Adjustment Job Aid

Step 3a - Pounds

_____(lbs) ❹_____(WF) = ☐ . _____

❹**16 oz**

☐ . _____

Step 3b - Ounces

_____(oz) ❹_____(WF) = ☐ .____

Step 3c - Gallons

____ GAL × _____ W.F. = ☐ .____ × 4 QT = ☐ .____ × 2 PT = ☐ .____ × 2 CUP = ☐ .____ × 16 TBSP = ☐ .____ × 3 TSP = ☐ .___

Step 3d - Quart

____ QT × _____ W.F. = ☐ .____ × 2 PT = ☐ .____ × 2 CUP = ☐ .____ × 16 TBSP = ☐ .____ × 3 TSP = ☐ .___

Step 3e - Pint

____ PT × _____ W.F. = ☐ .____ × 2 CUP = ☐ .____ × 16 TBSP = ☐ .____ × 3 TSP = ☐ .___

Step 3f - Cup

____ Cup × _____ W.F. = ☐ .____ × 16 TBSP = ☐ .____ × 3 TSP = ☐ .___

Step 3g - Spoons

____ TBSP × _____ W.F. = ☐ .____ × 3 TSP = ☐ .___

Step 3h

____ TSP × _____ W.F. = ☐ .____

Step 4

Round off and convert the decimal to a fraction. Use the round chart.

For example:

10 lbs 7.04 ounces **= 10 lbs 7 oz**

13.92 ounces **= 14 oz**

Round Chart

.00 to .12 = 0	.63 to .87 = ¾
.13 to .37 = ¼	.88 to .99 = 1
.38 to .62 = ½	

LESSON 1

Overview of Unit 4—Introduction to Food Preparation

Introduction

Overview

Lesson 1 of Unit 4 "sets the stage" for the other lessons of Unit 4. It introduces the terminology, tools, references, processes, and procedures used for food preparation.

This section of the lesson covers:

- Performance qualifications
- Objectives
- Performance evaluations
- Tools and references
- Topics covered by this lesson

Performance Qualifications

There are no Enlisted Performance Qualifications (EPQs) for this lesson. For the EPQs covered by the unit, refer to the "Unit Preview" section.

Objectives

Upon completion of this lesson, you will be introduced to the:

- Unit structure
- Lesson contents
- Enlisted Performance Qualifications that are covered in the unit

Performance Evaluations

This lesson does not require a Performance Evaluation. However, a Performance Evaluation is required for Lessons 4 and 5. Refer to the "Unit Preview" section for the Performance Evaluations for this unit.

Tools and References

There are no additional tools or references required for this lesson. The following tools and references, however, are required to successfully complete this unit.

- *Professional Cooking*, by Wayne Gisslen
- Armed Forces Recipe Service (AFRS), NAVSUP Publication 7

Continued next page

Introduction, continued

Tools and References, contd.

- ❑ Coast Guard Food Service Manual, COMDTINST M4061.5 (series) http://cgweb.uscg.mil/G-C/G-CCS/G-CIT/G-CIM/DIRECTIVES/CIM/CIM_4061_5.pdf
- ❑ Unit 1, Appendix C, Glossary of Key Terms
- ❑ Handouts

Topics Covered by This Lesson

This lesson covers the following topics:

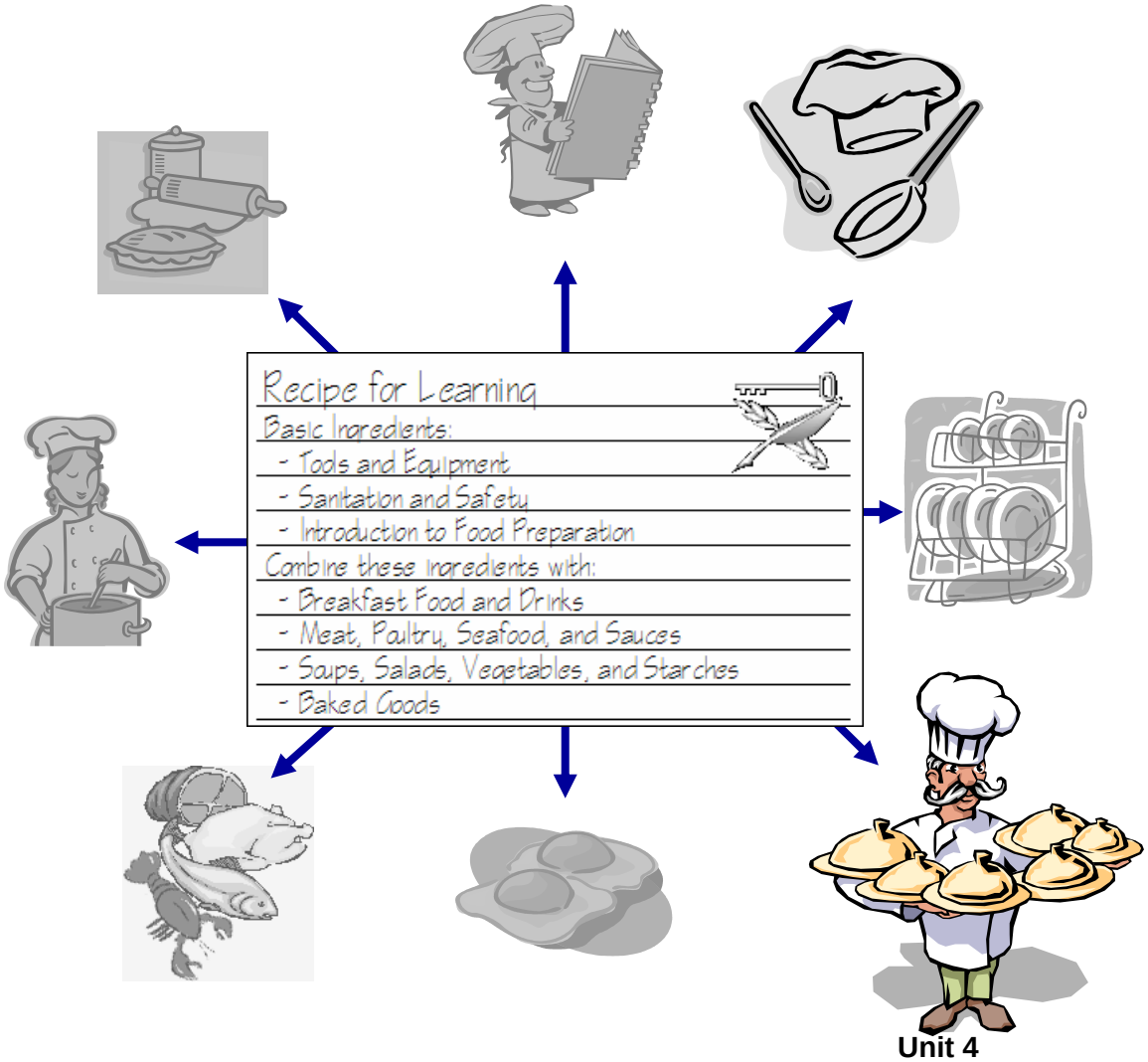
- ❑ Recipe for Learning
- ❑ Unit preview
  - Unit overview
  - Unit objectives
  - Unit map
  - Performance qualifications
  - Unit matrix

Recipe for Learning

Recipe for Learning

This unit introduces the basics of food preparation, and focuses on the pre-preparation of foods (getting foods ready to preparation).

This is the last of the basic ingredients called for in the Recipe for Learning.



Unit 4
Introduction to Food Preparation

Unit Preview

Unit Overview

Unit 4 teaches the major skills and knowledge associated with preparing products for the FS3.

In this unit you will learn about:

- Planning and organizing production
- The effects heat has on food
- The cooking methods
- Rules of flavoring and seasoning
- Basic mathematical skills and procedures for recipe conversions
- Preparing fruits and vegetables
- Cutting techniques

Unit Preview, continued

Unit Map

This unit is divided into five lessons, and each lesson covers the terminology, tools, references, and instructions/guidelines that the FS3 needs to know in order to prepare food.

THE LESSONS OF UNIT 4		
NO.	**TITLE**	**DESCRIPTION**
1.	Overview of Unit 4	This overview of the entire unit provides the "big picture" of preparing food.
2.	Basic Cooking Principles	You will be introduced to the basic cooking principles: food composition, heat transfer, cooking times, cooking methods, and seasoning and flavoring.
3.	Introduction to Recipes and Recipe Conversions	You will learn how to read a recipe and how to choose the appropriate recipe conversion technique for a given situation. In this lesson you will also review how to convert fractions to decimals and decimals to fractions.
4.	How to Perform Recipe Conversions	You will learn how to perform three different recipe conversions—for changes in yield, quantity, and portion size.
5.	How to Handle Fruits and Vegetables, and Use Basic Cutting Techniques	You will learn how to pre-prepare fresh fruits and vegetables, and how to perform basic cutting techniques, such as chopping, dicing, mincing, and slicing.

Unit Preview, continued

Enlisted Performance Qualifications

Enlisted performance qualifications for this unit are listed below. Following this section is a Unit Matrix, which depicts the EPQs and their respective lessons.

4.A.01 Perform the three types of recipe adjustments IAW Armed Forces Recipe Service (AFRS), NAVSUP Publication 7.

4.A.02 Perform the following cutting techniques on at least two different food items IAW "Professional Cooking" by Wayne Gisslen:

- Dice
- Mince
- Chop
- Slice

SupGuide: Member will be required to display two proper techniques using the appropriate knife for each.

4.A.15 Wash fresh fruits and vegetables for consumption IAW "Professional Cooking" by Wayne Gisslen and the Food Service Sanitation Manual, COMDTINST M6240.4 (series).

4.A.18 Prepare a fresh and frozen vegetable product IAW "Professional Cooking" by Wayne Gisslen and Armed Forces Recipe Service (AFRS), NAVSUP Publication 7.

Unit Preview, continued

Unit Matrix

This unit covers four EPQs. For your convenience, the matrix below will help you to identify the lessons in which the EPQs are addressed. Every lesson that introduces an EPQ also contains a Performance Evaluation for that EPQ. Those lessons below that are not marked introduce information that will be used when performing EPQ-related tasks.

EPQS	LESSON 1	LESSON 2	LESSON 3	LESSON 4	LESSON 5
4.A.01 (ADJUST RECIPES)				×	
4.A.02 (USE CUTTING TECHNIQUES)					×
4.A.15 (WASH FRUITS AND VEGETABLES)					×
4.A.18 (PREPARE FRESH AND FROZEN VEGETABLES)					×

Summary

Lesson Summary

In this lesson, you had an overview of Unit 4. You learned about the content and structure and the types of activities that are held throughout the lesson.

You were introduced to the Performance Evaluations that are required in the unit such as:

- Recipe conversion procedures
- Preparation of fruit and vegetables
- Cutting techniques

LESSON 2

Basic Cooking Principles

Introduction

Overview

This lesson introduces you to basic principles used in the preparation of food. This section of the lesson covers:

- Objectives
- Tools and references
- Recommended reading
- Topics covered by this lesson

There are no Enlisted Performance Qualifications (EPQs) for this lesson.

Objectives

At the end of this lesson, you will:

- Identify the components of food and how each is affected by heat.
- Identify the following heat transfer methods by their definitions:
  - Conduction
  - Convection
  - Radiation
  - Induction
- Explain the basic function of microwaves in preparing foods.
- Identify the cooking methods and their classifications.
- Recognize common seasoning and flavoring ingredients.

Tools and References

References for this lesson include:

- *Professional Cooking*, by Wayne Gisslen
- Unit 1, Appendix C, Glossary of Key Terms

Recommended Reading

References for this lesson include:

- *Professional Cooking*, by Wayne Gisslen
- Food Service Sanitation Manual, COMDTINST M6240.4A
- NAVSUP P-486 – Food Service Management

Introduction, continued

Topics Covered by This Lesson

The topics covered by this lesson are:

- Food composition and reactions to heat
- Heat transfer methods
- Cooking methods
- Microwave cooking
- Seasoning and flavoring ingredients

Food Composition and Reactions to Heat

Overview

In this lesson you will be learning about some of the basics of cooking food. You will read general descriptions of cooking methods, including moist-heat and dry-heat methods, and you will learn basics about seasonings and flavorings. It will be important to learn these basics now, because you will need to use them in future lessons when you actually begin cooking. For example, in Unit 6, Lesson 2, you will cook Braised Pork Loin. By the time you leave this lesson, you will know how heat affects pork and what the technique known as braising is.

This section, you will learn about:

- The types and components of food
- How food components are affected by heat
- Proteins
- Carbohydrates
- Fiber
- Fats
- Vitamins and minerals

The Types and Components of Food

Foods come in many types and each type is comprised of several components. The types of food include such items as:

- Meat
- Poultry
- Fish
- Fruits
- Vegetables
- Bread
- Dairy products

These foods are all made up of certain basic components. See the table on the next page for a list of these components.

Continued next page

Food Composition and Reactions to Heat, continued

The Types and Components of Food, contd.

THE COMPONENTS OF FOOD
■ Proteins ■ Carbohydrates ■ Water ■ Fiber ■ Fats ■ Vitamins and minerals, and ■ Other elements

How Food Components Are Affected by Heat

Heat affects each of these food components in different ways. For example, when proteins are heated they become firm. When fibers and fat are heated they both begin to break down. When vitamins are heated, they can be destroyed. Excessive heat depreciates nutrients, but applying heat correctly produces effects that are necessary in order to cook food that is safe and edible.

In the next few sections, you will learn more details about some of the components of food, and how they react to heat.

Proteins

Proteins are a major component of the following food types:

- ❑ Meats
- ❑ Poultry
- ❑ Fish
- ❑ Eggs
- ❑ Milk and milk products

Proteins can be found in large quantities in all animal products. They are also present in smaller amounts in nuts, beans, and grains.

Food Composition and Reactions to Heat, continued

How Proteins React to Heat

Heat firms up proteins; this reaction is called *coagulation*. The greater the heat, the firmer they become, and the more they shrink and lose moisture. Most coagulate at around 160–185 °F.

You can see coagulation of protein take place when you cook an egg. When you fry an egg, you can watch the clear protein gel surrounding the yolk whiten and thicken.

Connective tissues are special proteins found in meats. Meats with a great deal of connective tissue will be tough unless properly prepared. The most common connective tissues are *collagen* and *elastin*.

- Collagen is white in color and will break down and dissolve when cooked slowly in a moist environment.
- Elastin is yellow and does not break down in cooking. It must be cut out.

Moist-heat cooking methods at low temperatures are the most effective for softening connective tissue. Other factors that help tenderize collagen are acids, enzymes, and tenderizers (See pages 2-9 of the Student Pamphlet and page 55 of *Professional Cooking*).

Carbohydrates

Starches and sugars are both carbohydrates. Both of these compounds are found in foods in many forms. They are found in:

- Fruits
- Vegetables
- Grains
- Beans
- Nuts

Meats and fish also contain a small amount of carbohydrates.

Starches are complex carbohydrates, and sugars are simple carbohydrates. These are very important in the cooking process and play many roles.

Food Composition and Reactions to Heat, continued

How Carbohydrates React to Heat

The two most important changes in carbohydrates caused by heat are *caramelization* and *gelatinization*.

- Caramelization is the browning of food when under dry heat. It supplies color, changes texture, and sometimes changes flavor. Some forms of caramelization are the browning of bread and sautéed vegetables.
- Gelatinization occurs when starches absorb water and swell. This process is important in the thickening of sauces. Acids inhibit gelatinization.

Fiber

Fiber is the name of a group of complex substances that give structure and firmness to plants. Fiber consists of cellulose, hemi-cellulose, pectin, gums, mucilage, and lignin. The major sources of fiber are:

- Fruits
- Vegetables

How Fiber Reacts to Heat

When you apply heat to fruits and vegetables, it breaks down fiber, making them soft. When fruit is cooked with sugar, however, it makes fiber firmer, as you can see in the fruit cooked in pies.

Alkalis, such as baking soda, should not be used when cooking vegetables, because it makes them soft and mushy and causes them to lose vitamins.

Fats

Fat is the oily or greasy matter that makes up the bulk of connective tissue in meats and is also found in seeds. Fats are present in:

- Meats
- Poultry
- Fish
- Eggs
- Milk products
- Nuts
- Whole grains

They are also present, to a lesser degree, in fruits and vegetables. Fats are also important as cooking mediums, as when used for frying. Fats can be solid or liquid when at room temperature. Liquid fats are called oils.

Food Composition and Reactions to Heat, continued

How Fats React to Heat

As fats are heated, they break down. Too much heat causes the fat to deteriorate and smoke; this is called the "smoke point."

Note: The melting point of solid fats varies.

Vitamins and Minerals

Vitamins are organic substances that are essential, in small quantities, to the nutrition of most animals and some plants; they are present in natural foodstuffs and are sometimes produced within the body.

Minerals are inorganic substances such as calcium and iron that are needed by the human body for health.

Vitamins and minerals are important to the nutritional quality of foods.

How Vitamins and Minerals React to Heat

High heat and long cooking times dissolve vitamins and minerals away from foods and destroy the pigment (color) in fruits and vegetables.

It is important to select the proper cooking methods that preserve a food's nutrients, appearance, and natural characteristics.

See *Professional Cooking*, "Basic Cooking Principles" for more on the effects of heat on foods.

Heat Transfer Methods

Overview

Now that you understand some of the basics of food composition, we will turn to the basics of heat and heat transfer.

This section covers:

- Methods of heat transfer
- Conduction
- Convection
- Radiation

Methods of Heat Transfer

Heat is a form of energy that results from the rapid movement or vibration of molecules within a substance.

In order for food to be cooked, heat must be transferred to the food and through the food. The more you understand about heat and the heat transfer process, the better able you will be to control the cooking process.

Heat is transferred from an energy source to food in three ways:

- Conduction
- Convection
- Radiation

Conduction

Conduction is a transfer of heat that occurs in one of two ways:

1. Heat moves directly from one item to something touching it, such as from the top of the range to the stock pot placed on top of it, and from there to the contents inside.

2. Heat moves from one part to an adjacent part of the same item, such as when a pot gets hot, and then eventually so does the handle.

Different materials used in the construction of cooking equipment conduct heat at different speeds. Some of the best conductors are:

- Copper
- Aluminum
- Iron

Stainless steel, although it is a high-quality material that resists staining and corrosion, is not a good conductor of heat.

Heat Transfer Methods, continued

Convection

When heat is transferred by convection it is spread by the movement of air, steam, or liquid. Transfer by convection can be either *natural* or *mechanical*.

- Natural convection occurs when hot liquids and gases rise and cool ones sink. This creates a constant circulation that distributes heat. This happens in conventional ovens, deep fat fryers, and steam-jacketed kettles.
- Mechanical convection occurs when a fan speeds air circulation, causing foods to heat more rapidly. This is how convection ovens and steamers work.

Radiation

Radiation is energy transferred by waves. We use radiation to heat food in *infrared* and *microwave* cooking.

- In infrared cooking, flame or electricity heats an element until it gets very hot and gives off infrared radiation. This is how broiling works.
- When using microwaves to heat food, radiation penetrates the food and agitates molecules of water, which generates heat in the food. Moisture is needed to cook using microwaves. This effect only penetrates about two inches into the food; the inside of large products is cooked by conduction.

A Summary Question for Your Consideration

If the food on a plate in a microwave gets hot via radiation, by what method of heat transfer does the plate get hot? Why? (For an expert's opinion, see the "Summary Question Feedback" section at the end of the lesson.)

Cooking Methods

Overview

When preparing foods, it is important to select the correct cooking method for particular items. The various methods of cooking have a direct impact on the outcome of the finished dish.

The cooking methods covered in this section are:

- ❑ Moist-heat cooking methods
- ❑ Dry-heat cooking methods
  - Dry heat without fat
  - Dry heat with fat

Moist-Heat Cooking Methods

The moist-heat cooking methods are those in which the heat is conducted to the food product by water or water-based liquids such as stock and sauces, or by steam.

To learn about the moist-heat cooking methods, read *Professional Cooking*, "Basic Cooking Principles," and complete the summary table below. The first one has been done for you.

SUMMARY OF MOIST-HEAT COOKING METHODS			
COOKING METHOD	**BRIEF DESCRIPTION**	**TEMP. RANGE**	**COMMON FOOD(S) COOKED BY THIS METHOD**
Poaching	*To cook in a liquid, usually a small amount, that is hot but not actually bubbling.*	*160–180 ºF*	*Fish and eggs out of the shell*
Simmering			
Boiling			

Continued next page

Cooking Methods, continued

Moist-Heat Cooking Methods, contd.

COOKING METHOD	BRIEF DESCRIPTION	TEMP. RANGE	COMMON FOOD(S) COOKED BY THIS METHOD
Blanching			
Braising			

Dry-Heat Cooking Methods

The dry-heat cooking methods are those in which the heat is conducted without moisture, that is, by hot air, hot metal, radiation, or hot fat. These are divided into two categories:

- Dry heat without fat
- Dry heat with fat

To learn about the dry-heat cooking methods, read *Professional Cooking*, "Basic Cooking Principles," and complete the summary table below.

SUMMARY OF DRY-HEAT COOKING METHODS (WITHOUT FAT)		
COOKING METHOD	**BRIEF DESCRIPTION**	**COMMON FOOD(S) COOKED BY THIS METHOD**
Roasting		

Continued next page

Cooking Methods, continued

Dry-Heat Cooking Methods, contd.

COOKING METHOD	BRIEF DESCRIPTION	COMMON FOOD(S) COOKED BY THIS METHOD
Baking		
Broiling	*Rapid high-heat cooking using radiant heat from above, sometimes confused with grilling and griddling.*	
Grilling		
Pan-broiling		*Meats, poultry, fish, and some vegetables.*
Griddling		

Cooking Methods, continued

Dry-Heat with Fat Cooking Methods

To learn about the dry-heat cooking methods that use fat, read *Professional Cooking,* pages 59–60 and complete the summary table below.

SUMMARY OF DRY-HEAT COOKING METHODS (WITH FAT)		
COOKING METHOD	**BRIEF DESCRIPTION**	**COMMON FOOD(S) COOKED BY THIS METHOD**
Sautéing		*Vegetables, meats, and fish. Usually cut into small pieces, but sometimes larger.*
Pan-frying	*To cook in a moderate amount of fat in a pan over moderate heat.*	
Deep-frying		

Microwave Cooking

Overview

The phrase "microwave cooking" refers not so much to the method of cooking as to the tool used for cooking. This section will help you learn about microwave cooking. It covers:

- Common uses of the microwave
- Guidelines for using a microwave

Common Uses

Microwave ovens are most commonly used for:

- Heating prepared foods
- Thawing raw or cooked items

Sometimes the microwave is used for primary cooking.

Guidelines for Using a Microwave

Here are some general guidelines for using a microwave oven:

- Small items will not brown.
- Timing is very important; watch timing carefully to prevent overcooking.
- Turn large items once or twice during cooking.
- Wrap items that could dry out.
- Foods cooked in a microwave must contain moisture.
- Sliced, cooked meats, or any item likely to dry out, should be protected by loosely wrapping them in plastic or wax paper.
- Foods at the edge of a dish cook heat faster than foods at the center.

For a more complete list of special points about microwave cooking, see *Professional Cooking*, "Basic Cooking Principles."

Topic Review

Purpose

The intention of this exercise is to give you the opportunity to practice identifying cooking methods found in recipes.

Directions

Test your knowledge of the cooking methods in this lesson by writing the correct answer to each question below.

You will find five questions below, each containing an excerpt(s) from a recipe. Your task is to read the question and identify what cooking method the recipe refers to. See the example that has been completed for you. Use the lesson material and references to assist you as necessary.

When you have finished answering the questions, compare your answers to the correct answers in the "Topic Review Feedback" section at the end of this lesson. Note any differences between your answers and the correct ones so you can learn from them, and discuss them when you meet with your supervisor.

Questions

Ex. If a recipe tells you to "…[cook] the meat on an open grid over charcoal…" and recommends that you "…move the meat to regulate temperature…" and/or "…turn the meat to achieve desired markings…" what cooking method are you likely to be using?

Grilling

1. If a recipe tells you to "…brown the meat thoroughly in a heavy pan…" and then later says to "…combine the meat with the sauce…" what cooking method are you likely to be using?

2. If a recipe tells you to cook "…the meat, uncovered, on the rack …in an oven…" what cooking method are you likely to be using?

3. If a recipe tells you to "place the meat in a stockpot …return the water to a boil, and reduce the heat…" what cooking method are you likely to be using?

Continued next page

Topic Review, continued

Questions, contd.

4. If a recipe tells you to "…cut the meat into thin slices… heat oil in a pan over high heat…[cook] the meat in the oil quickly, until well browned but not overcooked…" what cooking method are you likely to be using?

_____

5. If a recipe tells you to "…place the meat under the [heat source] at least 6 inches from the heat…" what cooking method are you likely to be using?

_____

Seasoning and Flavoring

Overview

One of the cook's most critical tasks is the enhancement and adjustment of flavors. In this section, you will learn about seasoning and flavoring. How ever most of your learning will come from doing, not reading—from tasting and experimenting with different seasonings and flavorings. To help you prepare for this, read this section carefully; it covers:

- Seasoning and flavoring – What's the difference?
- Guidelines for seasoning and flavoring
- Common ingredients
- Herbs and spices – What's the difference?
- Common herbs
- Common spices
- Guidelines for using herbs and spices

Seasoning and Flavoring – What's the Difference?

When you enhance the natural flavor of the food you are cooking without significantly changing its flavor, we call that *seasoning*. The most important of the seasoning ingredients is salt.

When you add a new flavor to a food, and as a result you change or modify the original flavor of the food, we call that *flavoring*.

Seasoning	=	Enhancing the natural flavor of food
Flavoring	=	Changing the original flavor of a food

Note: Here is a basic rule for seasoning and flavoring:

Remember that your main ingredients should be your main source of flavor. Use good-quality main ingredients, handle all foods with care, and employ correct cooking procedures. Herbs, spices, and seasonings are meant to heighten and give extra interest to the natural flavors of foods. They are NOT meant to rescue badly prepared foods or cover up poor natural flavors.

Seasoning and Flavoring, continued

Guidelines for Seasoning and Flavoring

See the tables below for guidelines for seasoning and flavoring.

GUIDELINES FOR SEASONING AND FLAVORING	
TYPE	**GUIDELINES**
Seasoning	■ Add salt and other seasonings at the beginning of cooking, especially for larger pieces of food. ■ Taste and evaluate the product along the way and/or as a last step of the recipe, then adjust the seasoning if necessary. ■ Season liquid foods at the end of the cooking process.
Flavoring	■ Add flavoring ingredients at the beginning, middle, or end of the cooking process. Use what you learn about cooking times, cooking temperatures, and the characteristics of an ingredient to help you know when to add it. ■ Most flavorings need heat to release their flavors and time for the flavors to blend. Whole spices take longest. Ground spices release flavors more quickly.

For more guidelines on when to season and flavor, see *Professional Cooking*, "Basic Cooking Principles."

Seasoning and Flavoring, continued

Common Ingredients

See the table below for some of the most common ingredients used in flavoring and seasoning.

COMMON INGREDIENTS USED FOR FLAVORING AND SEASONING	
TYPE	**INGREDIENTS**
Used for seasoning	■ Salt is the most important seasoning ingredient ■ Pepper (white, black, and green) ■ Red pepper ■ Lemon juice
Used for flavoring	■ Carrots ■ Celery ■ Garlic ■ Grated lemon ■ Onion ■ Orange rind ■ Prepared mustard ■ Shallots ■ Wine, brandy, and other alcoholic beverages

For more on ingredients used for seasoning and flavoring, see the next section on herbs and spices, plus *Professional Cooking*, "Basic Cooking Principles."

Seasoning and Flavoring, continued

Herbs and Spices – What's the Difference?

Herbs are the leaves of certain plants that usually grow in temperate climates.

Spices are the buds, fruits, flowers, bark, seeds, and roots of plants and trees, many of which grow in tropical climates.

Understanding the distinction between herbs and spices is not nearly as important as being familiar with the most common of them. It's more important to know their flavors and aromas, and to use them skillfully, than to know which are herbs and which are spices.

Common Herbs

To help you learn more about common herbs, use *Professional Cooking*, "Basic Cooking Principles," to complete the table below.

EXAMPLES OF COMMON HERBS		
NAME	**IMAGE**	**BRIEF DESCRIPTION**
		Aromatic leaf; member of mint family. Used in tomato dishes, pesto, egg dishes and lamb chops.
Oregano		
		Also known as Chinese parsley; has a delicate texture; assertive, herbaceous aroma and flavor. Used widely in Asian and Southwestern cooking.

Continued next page

Seasoning and Flavoring, continued

Common Herbs, contd.

NAME	IMAGE	BRIEF DESCRIPTION
		Herb and seed with familiar "dill pickle" flavor; seed is more pungent than the herb. Seed is used for pickling, sauerkraut and soups. Herb is used for salads, cheese dishes and fish.
Parsley		

Common Spices

Use *Professional Cooking*, "Basic Cooking Principles" to help you complete the table below and learn more about common spices.

EXAMPLES OF COMMON SPICES		
NAME	**IMAGE(S)**	**BRIEF DESCRIPTION/ USES**
		Small brown berry; flavor resembles blend of cinnamon, cloves and nutmeg. Used in sausages and braised meats.
Black and white pepper	 	

Continued next page

Seasoning and Flavoring, continued

Common Spices, contd.

NAME	IMAGE(S)	BRIEF DESCRIPTION/ USES
		Small seed, light in color; used in curry and chili powders, sausages and meats, egg and cheese dishes.
		Tiny, brown seeds inside a white or green pod; sweet, aromatic; used in pickling, pastries, and curries.
Cinnamon sticks		
		Dried flower buds; pungent, sweet flavor; used whole in marinades, stocks, and sauces; used ground in cakes and pastries.
Nutmeg		

Seasoning and Flavoring, continued

Guidelines for Using Herbs and Spices

Use these guidelines to help you become a knowledgeable and skillful user of herbs and spices:

- Become familiar with each of the most common spices. Get to know each spice's aroma, flavor, and effect on food.
- Store dried herbs and spices in a cool place, tightly covered and in opaque containers.
- Be cautious with the amount of spices you use; the fresher products are more potent.
- Allow adequate cooking time, considering that whole spices take longer to release flavors than ground spices.
- When flavoring a liquid, whole herbs and spices are tied loosely in a piece of cheesecloth (sachet).
- It is better to add less than more. You can always add more, but it is hard to remove.
- Spices should not dominate dishes.
- Herbs and spices added to uncooked foods need several hours for flavors to be released and blended.
- Taste the food before serving. Adjust the seasoning.

Note: Remember, tasting is required when making a product, and should be the last step in any recipe. Taste, season, and taste again.

Lesson Review

Purpose

The intention of this exercise is to help you confirm what you have learned about basic cooking principles.

Directions

Test your knowledge of the concepts and principles of this lesson by matching the items below. Use the lesson material and references to assist you, as necessary.

When you have finished matching the items, compare your answers to the correct answers in the "Lesson Review Feedback" section at the end of this lesson. Note any differences between your answers and the correct ones so you can learn from them, and discuss them when you meet with your supervisor.

Items to Match

Match each term in column A with its corresponding phrase in column B.

COLUMN A		COLUMN B
_____	Convection	a. Can be solid or liquid
_____	Starches and sugars	b. How proteins react when heat is applied
_____	Conduction	c. Special proteins found in meats; most common are collagen and elastin
_____	Fats	d. Carbohydrates
_____	Coagulate, firm up	e. Major sources of fiber
_____	Connective tissue	f. The components of food
_____	Radiation	g. How fiber reacts to heat
_____	Fruits and vegetables	h. "The pot gets hot, and eventually so does the handle."
_____	Breaks down, becomes soft	i. The movement of air, steam, or liquid in order to "spread" heat
_____	Proteins, fats, fiber, carbohydrates, vitamins, and minerals	j. Energy transferred by waves

Practicing What You Have Learned

From Theory to Practice

In order to help you put into practice what you have learned in this lesson, you must move from reading to doing. Meet with your supervisor to discuss how to practice what you have read about in this lesson.

1. Discuss with your supervisor what you have learned, demonstrating your understanding of:
   - ❑ components of food
   - ❑ heat transfer methods
   - ❑ how microwave ovens work
   - ❑ the various cooking methods
   - ❑ identifying and using common seasoning and flavoring ingredients
2. Identify what tools and supplies are available (and not available) for you to examine and use.
3. After observing a demonstration of how to season food, under supervision practice the process of seasoning food using the tools and supplies that are available to you.

Performance Evaluation

There are no performance qualifications for this lesson; therefore, no performance evaluations are included.

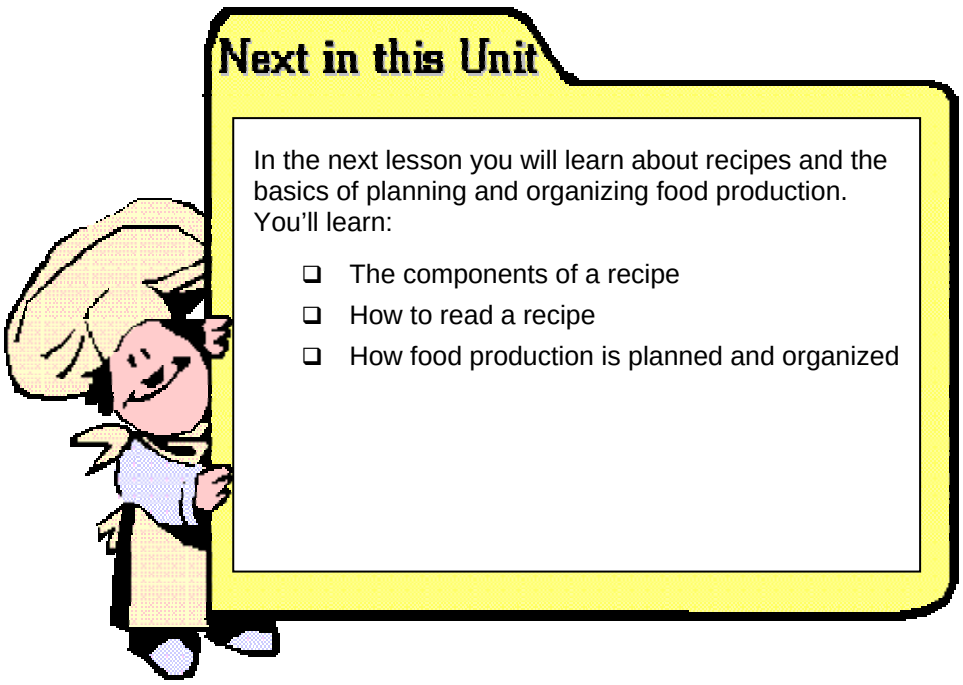
Lesson Summary

Summary

This lesson has introduced the basic cooking principles for food prepared as a preview for the next lessons.

Having completed this lesson, you can:

- ❑ Identify the components of food and how each is affected by heat.
- ❑ Identify the following heat transfer methods by their definitions:
  - Conduction
  - Convection
  - Radiation
  - Induction
- ❑ Explain the basic function of microwaves in preparing foods.
- ❑ Identify the cooking methods and their classifications.
- ❑ Identify common seasoning and flavoring ingredients.



Summary Question Feedback

Directions

Compare your response to the Summary Question to the expert's response below. Note any major differences between your response and the expert's so you can learn from them and discuss them with your supervisor.

An Expert's Response to the Summary Question for Consideration

If the food on a plate in a microwave gets hot via radiation, by what method of heat transfer does the plate get hot? Why?

This is conduction. Conduction is that heat transfer method in which heat moves through matter by kinetic energy, or by touching it. In this case the plate is "touching" the food that was heated by the microwave. The microwave heated the food by radiation (because the food had water molecules in it) and then the food heated the plate by conduction (the plate was not heated by microwave radiation because it didn't have any water molecules in it).

Topic Review Feedback

Directions

Compare your answers in the first Topic Review to the answers below (correct answers are in **bold**). Note any differences between your answers and the text so you can learn from them and discuss them with your supervisor.

Answers

1. If a recipe tells you to "…brown the meat thoroughly in a heavy pan…" and then later says to "…combine the meat with the sauce…" what cooking method are you likely to be using? **(Braising. See, for example, "Braised Pork Loin with Olives" in *Professional Cooking*.)**

2. If a recipe tells you to cook "…the meat, uncovered, on the rack …in an oven…" what cooking method are you likely to be using? **(Roasting. See, for example, "Roast Chicken with Gravy" in *Professional Cooking*.)**

3. If a recipe tells you to "place the meat in a stockpot …return the water to a boil, and reduce the heat…" what cooking method are you likely to be using? **(Simmering. See, for example, "Simmered Beef Brisket" in *Professional Cooking*.)**

4. If a recipe tells you to "…cut the meat into thin slices… heat oil in a pan over high heat…[cook] the meat in the oil quickly, until well browned but not overcooked… remove the meat from the pan…" what cooking method are you likely to be using? **(Sautéing. See, for example, "Sautéed Tenderloin Tips" in *Professional Cooking*.)**

5. If a recipe tells you to "…place the lobster under the [heat source] at least 6 inches from the heat…" what cooking method are you likely to be using? **(Broiling. See, for example, "Broiled Lobster" in *Professional Cooking*.)**

Lesson Review Feedback

Directions

Compare your answers in the Lesson Review to the answers below (correct answers are in **bold**). Note any differences between your answers and the text so you can learn from them and discuss them with your supervisor.

Answers

	COLUMN A		COLUMN B
i.	Convection	a.	Can be solid or liquid
d.	Starches and sugars	b.	How proteins react when heat is applied
h.	Conduction	c.	Special proteins found in meats; most common are collagen and elastin
a.	Fats	d.	Carbohydrates
b.	Coagulate, firm up	e.	Major sources of fiber
c.	Connective tissue	f.	The components of food
j.	Radiation	g.	How fiber reacts to heat
e.	Fruits and vegetables	h.	"The pot gets hot, and eventually so does the handle."
g.	Breaks down, becomes soft	i.	The movement of air, steam, or liquid in order to "spread" heat
f.	Proteins, fats, fiber, carbohydrates, vitamins, and minerals	j.	Energy transferred by waves

LESSON 3

Introduction to Recipes and Recipe Conversions

Introduction

Overview

This lesson introduces you to recipes and prepares you for the next lesson on recipe conversions.

This section of the lesson covers:

- Objectives
- Tools and references
- Recommended reading
- Topics covered by this lesson

There are no Enlisted Performance Qualifications (EPQs) for this lesson.

Objectives

Upon completion of this unit, given job aids and directions, you will:

- Describe the two primary functions of a recipe.
- Identify the components of a recipe.
- Explain the importance of planning and organizing food preparation.
- Convert fractions to decimals and decimals to fractions.
- Given a situation calling for a recipe conversion, choose the appropriate recipe conversion technique for that situation.

Tools and References

The tools and references for this lesson include:

- *Professional Cooking*, by Wayne Gisslen
- Armed Forces Recipe Service (AFRS), NAVSUP Publication 7
- Unit 1, Appendix C, Glossary of Key Terms
- Handouts
- Calculator

Introduction, continued

Recommended Reading

To get the most out of this lesson, be sure to read the following:

- ❑ *Professional Cooking:*
  - "The Recipe – Its Structure and Its Use: The Written Recipe, and Measurement" (Chapter 5, pp. 71–83).
  - "Mise en Place: Planning and Organizing Production" (Chapter 7, pp. 109–112).

Topics Covered by This Lesson

This lesson covers the following topics:

- ❑ Introduction to recipes
- ❑ Planning and organizing food preparation
- ❑ Measurement
- ❑ A review of fractions and decimals
- ❑ Introduction to recipe conversions
- ❑ Recipe conversion tables

Introduction to Recipes

Overview

Most of the planned dishes you will prepare will begin with a recipe. To help you read these recipes, it will be important to know the recipe's functions and components.

This section covers:

- The functions of a recipe
- The components of a recipe
- The Armed Forces Recipe Service

The Functions of a Recipe

Recipes serve two main functions. They provide instructions about the control of quantity and quality.

THE FUNCTIONS OF A RECIPE	
FUNCTION	**DESCRIPTION**
Quantity control	Recipes indicate precise quantities for every ingredient and how they are to be measured. They also indicate yields and serving sizes (also known as portion sizes), and how these are to be measured and portioned out. **Note:** Yield is defined as the amount or quantity of the finished product a recipe produces.
Quality control	Recipes provide specific details to help ensure that the product produced is the same every time it is made, no matter who makes it.

Introduction to Recipes, continued

The Components of a Recipe

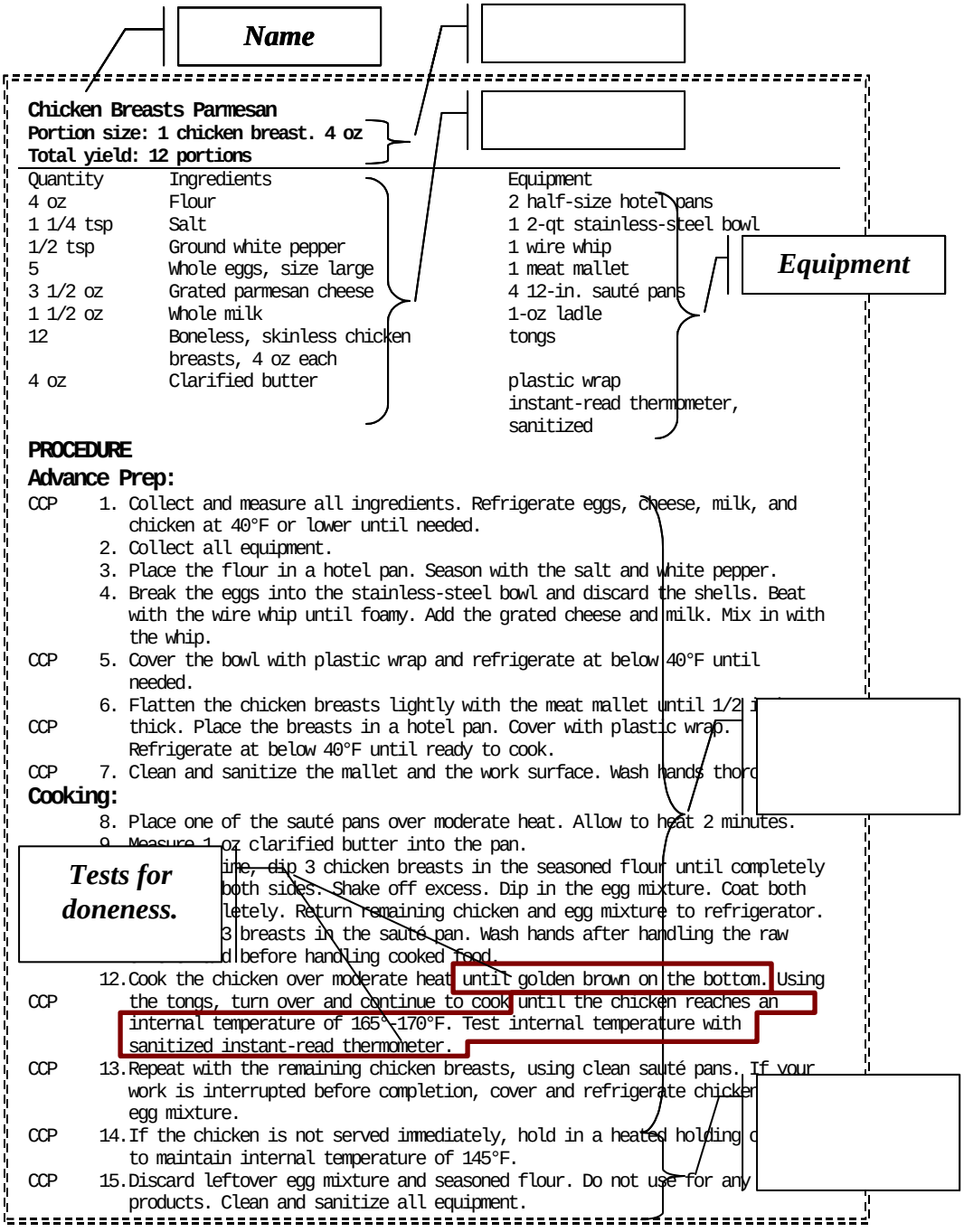
Though recipe formats differ, nearly all recipes try to include as much precise information as possible. Below, you will find a list of components found in a standard recipe.

COMPONENTS OF A STANDARD RECIPE	
COMPONENT	**DESCRIPTION**
Name	The name of the recipe.
Yield	The quantity of product produced by the recipe. This typically includes the total yield, number of portions, and exact portion size.
Ingredients	The ingredients and exact amounts, listed in order of use.
Equipment	The equipment needed to prepare the food product. Includes measuring equipment, pan sizes, portioning equipment, etc.
Preparation directions	The instructions for preparing the dish. These are typically kept as simple as possible.
Times/Tests for Doneness	The preparation and cooking times, and/or tests for doneness.
Other directions	May include the instructions for holding, portioning, plating and garnishing the dish. May also include instructions for breaking down the station, cleaning up, and storing leftovers.

Introduction to Recipes, continued

Anatomy of a Recipe – Exercise

Here's an example of a standard recipe with some of the components labeled. Use the table above to help you complete the remaining open boxes.



Chicken Breasts Parmesan
Portion size: 1 chicken breast. 4 oz
Total yield: 12 portions

Quantity	Ingredients	Equipment
4 oz	Flour	2 half-size hotel pans
1 1/4 tsp	Salt	1 2-qt stainless-steel bowl
1/2 tsp	Ground white pepper	1 wire whip
5	Whole eggs, size large	1 meat mallet
3 1/2 oz	Grated parmesan cheese	4 12-in. sauté pans
1 1/2 oz	Whole milk	1-oz ladle
12	Boneless, skinless chicken breasts, 4 oz each	tongs
4 oz	Clarified butter	plastic wrap instant-read thermometer, sanitized

PROCEDURE

Advance Prep:

CCP 1. Collect and measure all ingredients. Refrigerate eggs, cheese, milk, and chicken at 40°F or lower until needed.
2. Collect all equipment.
3. Place the flour in a hotel pan. Season with the salt and white pepper.
4. Break the eggs into the stainless-steel bowl and discard the shells. Beat with the wire whip until foamy. Add the grated cheese and milk. Mix in with the whip.
CCP 5. Cover the bowl with plastic wrap and refrigerate at below 40°F until needed.
6. Flatten the chicken breasts lightly with the meat mallet until 1/2 i
CCP thick. Place the breasts in a hotel pan. Cover with plastic wrap. Refrigerate at below 40°F until ready to cook.
CCP 7. Clean and sanitize the mallet and the work surface. Wash hands thoro

Cooking:

8. Place one of the sauté pans over moderate heat. Allow to heat 2 minutes.
9. Measure 1 oz clarified butter into the pan.
ime, dip 3 chicken breasts in the seasoned flour until completely
both sides. Shake off excess. Dip in the egg mixture. Coat both
letely. Return remaining chicken and egg mixture to refrigerator.
3 breasts in the sauté pan. Wash hands after handling the raw
d before handling cooked food.
12. Cook the chicken over moderate heat until golden brown on the bottom. Using
CCP the tongs, turn over and continue to cook until the chicken reaches an internal temperature of 165°-170°F. Test internal temperature with sanitized instant-read thermometer.
CCP 13. Repeat with the remaining chicken breasts, using clean sauté pans. If your work is interrupted before completion, cover and refrigerate chicken egg mixture.
CCP 14. If the chicken is not served immediately, hold in a heated holding c to maintain internal temperature of 145°F.
CCP 15. Discard leftover egg mixture and seasoned flour. Do not use for any products. Clean and sanitize all equipment.

Introduction to Recipes, continued

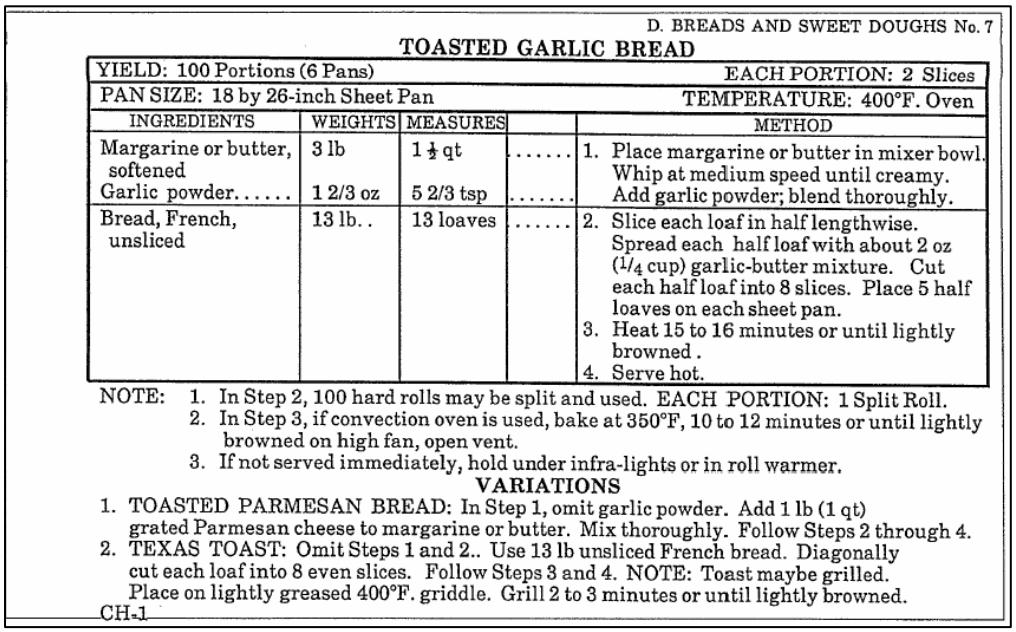
The Armed Forces Recipe Service (AFRS)

An important source of recipes for the U.S. Coast Guard is the Armed Forces Recipe Service (AFRS). The AFRS is a reviewed and approved recipe source issued for the purpose of standardizing and improving food prepared and served in military food service operations.

According to the introductory remarks provided by the service, it is "…a consolidated index of recipes…issued as an adjunct to assist food service personnel in planning and writing well balanced and varied menus."

You will have other sources of recipes, but the AFRS is one with which you should be familiar. Ask your supervisor about it.

Here is an example of a simple one-page recipe from the AFRS.



D. BREADS AND SWEET DOUGHS No. 7

TOASTED GARLIC BREAD

YIELD: 100 Portions (6 Pans) — EACH PORTION: 2 Slices

PAN SIZE: 18 by 26-inch Sheet Pan — TEMPERATURE: 400°F. Oven

INGREDIENTS	WEIGHTS	MEASURES		METHOD
Margarine or butter, softened	3 lb	1 ½ qt	.....	1. Place margarine or butter in mixer bowl. Whip at medium speed until creamy.
Garlic powder.....	1 2/3 oz	5 2/3 tsp	.....	Add garlic powder; blend thoroughly.
Bread, French, unsliced	13 lb..	13 loaves	.....	2. Slice each loaf in half lengthwise. Spread each half loaf with about 2 oz (1/4 cup) garlic-butter mixture. Cut each half loaf into 8 slices. Place 5 half loaves on each sheet pan. 3. Heat 15 to 16 minutes or until lightly browned. 4. Serve hot.

NOTE: 1. In Step 2, 100 hard rolls may be split and used. EACH PORTION: 1 Split Roll.
2. In Step 3, if convection oven is used, bake at 350°F, 10 to 12 minutes or until lightly browned on high fan, open vent.
3. If not served immediately, hold under infra-lights or in roll warmer.

VARIATIONS

1. TOASTED PARMESAN BREAD: In Step 1, omit garlic powder. Add 1 lb (1 qt) grated Parmesan cheese to margarine or butter. Mix thoroughly. Follow Steps 2 through 4.
2. TEXAS TOAST: Omit Steps 1 and 2.. Use 13 lb unsliced French bread. Diagonally cut each loaf into 8 even slices. Follow Steps 3 and 4. NOTE: Toast maybe grilled. Place on lightly greased 400°F. griddle. Grill 2 to 3 minutes or until lightly browned.

CH-1

Planning and Organizing Food Preparation

Overview

Your supervisor will do much of the high-level planning of your food preparation work—planning menus, purchasing food, performing cost analyses, those kinds of things. You must, however, even if you are preparing only one simple recipe, do some pre-preparation work. You will need to assemble your tools; assemble your ingredients; wash, trim, cut, and prepare your raw materials; and prepare your equipment.

This section covers:

- Mise en place
- Pre-preparation planning

Mise en Place

Mise en place, pronounced MEEZ ahn plahs, is a French term meaning "everything put in place." It refers to an important principle held by food service professionals. Essentially it means this:

Everything runs better, smoother, and faster, when advance preparation has been done thoroughly and systematically. In order to be successful, to get a significantly large amount of work done with only a limited number of hands, AND be ready by service time, you must be organized and thorough in your preparations.

For now it is enough to know that you must be thorough and systematic in your preparations. A large part of your days may be spent doing mise en place—sharpening knives, trimming vegetables, breading poultry, preparing sauces, cutting meats, etc. This means a large part of learning to cook means learning to do mise en place.

Pre-Preparation Planning

Here is the classic problem for food service personnel:

THE PROBLEM
There is too much work to be done in the kitchen to leave it until the last minute, so some work must be done ahead of time. — AND — Most foods are at their best quality immediately after preparation. And they deteriorate as they are held.

So, how do the pro's solve this problem? They plan the pre-preparation carefully. See the table on the next page for planning steps that will help you solve this problem.

Continued next page

Planning and Organizing Food Preparation, continued

Pre-Preparation Planning, contd.

Pre-preparation planning generally follows these steps:

THE SOLUTION (PRE-PREPARATION PLANNING)		
NO.	**STEP**	**DESCRIPTION**
1.	Break each menu item down into its stages of preparation.	■ In any recipe, you will find that the procedures are divided into a sequence of steps that must be done in a certain order. ■ You will need to be sure you have a sequence of steps planned for the menu items you are preparing.
2.	Determine which stages may be done in advance.	■ The first step of any recipe is always assembling and preparing the ingredients. ■ Other steps may be done in advance provided the foods can then be held without loss of quality. ■ When considering the order in which items of a menu should be completed, often dessert items are prepared ahead of other items.
3.	Determine the best way to hold the item at its final stage of pre-preparation.	■ Sauces and soups are frequently kept hot. ■ Vegetables should only be kept hot for short periods of time. ■ Perishable meats, fish, and vegetables are often kept refrigerated before final cooking or reheating.

Continued next page

Planning and Organizing Food Preparation, continued

Pre-Preparation Planning, contd.

NO.	STEP	DESCRIPTION
4.	Determine how long it takes to prepare each stage of a recipe and plan a preparation schedule around that.	■ Begin the preparation schedule with the preparations that take the longest. ■ Remember that many tasks can be carried out at once. It may take 6 hours to make a stock, but you don't have to stand there and watch it the whole time!
5.	Examine recipes to see if they might be revised for better efficiency and quality as served.	■ For example, instead of preparing a full batch of green peas and holding them for service in a steam table, you might blanch and chill them, and then reheat portions as needed in a steamer or microwave oven. ■ Caution: Unless you are in charge of the kitchen, do not change a recipe without authorization from your supervisor.

For more on mise en place and the planning and organization of food preparation, see *Professional Cooking*, Chapter 7.

Topic Review

Purpose

The intention of this exercise is to give you the opportunity to confirm your understanding of recipes and the planning and organization of food preparation.

Directions

Test your knowledge of the topics covered by this lesson so far by completing the items below. Some of the questions require you to fill in blanks or create answers. Use the lesson material and references to assist you as necessary.

When you have finished completing the items, compare your answers to the correct answers in the "Topic Review Feedback" section at the end of this lesson. Note any differences between your answers and the correct ones so you can learn from them, and discuss them when you meet with your supervisor.

Questions

1. List five of the seven components of a recipe.

   (1) _____

   (2) _____

   (3) _____

   (4) _____

   (5) _____

2. Recipes serve two main functions: they control _____ and _____.

3. Which of the following is the best definition for the AFRS:

   a. It is a recipe creation guide for military personnel.
   b. It is a book of food service planning techniques.
   c. It is a consolidated index of recipes.
   d. It is the handbook of the American Food and Restaurant Service.

4. In ten words or less, describe what the phrase "mise en place" means.

   _____

   _____

Measurement

Overview

Careful measurement is one of the most important tasks in food preparation. When you are careful and accurate in your measurements, the quality of the food items you produce will be more consistent and the facility you are working with will be better able to control their costs.

This section covers:

- ❑ Two types of measurement
- ❑ Ingredient measurement
- ❑ Serving size control
- ❑ Measurement systems
  - The U.S. system
  - The metric system

Two Types of Measurement

During the food preparation process, there are two times when accuracy of measurement is important: (1) when you are preparing ingredients, we call this *ingredient measurement*, and (2) when you are serving a patron (or preparing a dish for service), we call this *portion measurement* or *portion control*.

TYPES OF MEASUREMENT	
TYPE OF MEASUREMENT	**DESCRIPTION**
Ingredient Measurement	A measurement used during the preparation of ingredients. May be one of three types: weight, volume, or count.
Portion Measurement (*Serving Size Control)*	The measurement of portions to ensure that the correct amount of an item is served.

The next two sections focus on these measurements.

Ingredient Measurement

You will measure ingredients in one of three ways:

- ❑ Weight
- ❑ Volume
- ❑ Count

Continued next page

Measurement, continued

Ingredient Measurement, contd.

Measuring by Weight

Among these methods, *weighing* is the most accurate. It is the method used for most solid ingredients.

To be able to weigh ingredients, you must observe the difference between AP (as purchased) weight and EP (edible portion) weight.

Type of Weight		Description
AP Weight	=	As purchased weight
EP Weight	=	Edible product weight

AP weight is the weight of the item BEFORE any trimming is done. EP weight is the weight after all the inedible or non-servable parts are trimmed off.

Sometimes recipes specify which type of weight they are referring to. If not, you will have to infer the type. For example, if the recipe calls for "2 lbs peeled, diced potatoes", you know the recipe is referring to the EP weight. You will have to start with more than 2 lbs (AP weight) to get 2 lbs EP.

Measuring by Volume

Volume measures are used most often for liquids. Measuring a liquid by volume is usually faster than weighing it, and accuracy is reasonably good. Dry ingredients such as flour or sugar are usually weighed in the bakeshop, but are often measured by volume in the kitchen.

Measuring by Count

You will measure by *count* in these two circumstances:

1. When units are in fairly standard sizes (for example, 6 eggs, 3 parsley stems, 2 bay leaves, 30 chicken breasts) or

2. When serving portions are determined by numbers of units (for example, 1 baked apple per portion, 6 shrimp per portion).

Measurement, continued

Serving Size Control

Serving size control is important when you are preparing (measuring ingredients) and when you are plating.

The control of serving sizes begins with the measuring of ingredients. If the initial ingredient measuring is not done correctly then the yield of the recipe will be thrown off.

When plating, or portioning for service, here are some techniques you can use. (Use *Professional Cooking*, "The Recipe: Its Structure and Its Use" to help you complete the table below.)

TECHNIQUES FOR SERVING SIZE CONTROL DURING PLATING	
TECHNIQUE	**EXAMPLE**
	"Use 5 shrimp per order."
Weight	
	"Ladle 2 oz of sauce over the chicken."
	"Cut the pie into eight equal wedges."
Standard fill	

Measurement, continued

Systems of Measurement

There are two systems of measurement you will need to know when working in food service: the *U.S. system* and the *metric system*. The U.S. system is more complicated than the metric system and you will need to know it fairly well. You will not be using the metric system that much; still, it will be helpful to know some basics about it.

The U.S. System

The tables in this section show common abbreviations and equivalents in the U.S. system of measurement. If you do not already know all of these basic units, you should become familiar with them.

U.S. SYSTEM OF MEASUREMENT – BASIC UNITS AND ABBREVIATIONS

TYPE	UNIT	ABBREVIATION
Weight	Ounce	oz
	Pound	lb
Volume	Gallon	gal
	Quart	qt
	Pint	pt
	Cup	c
	Fluid Ounce	oz (or fl oz)
	Tablespoon	tbsp
Length	Inch	in
	Foot	ft

Continued next page

Measurement, continued

The U.S. System, contd.

Some of the most common equivalents you will need to know are listed below. You will be able to make simple calculations faster and easier in the future if you memorize this table.

U.S. SYSTEM OF MEASUREMENT – COMMON EQUIVALENTS			
TYPE	**UNIT**		**EQUIVALENT**
Weight	1 pound	=	16 ounces
	1 ounce	=	0.06 pound
Volume	1 gallon	=	4 quarts
	1 quart	=	2 pints or 4 cups or 32 (fluid) ounces*
	1 pint	=	2 cups or 16 (fluid) ounces
	1 cup	=	8 (fluid) ounces
	1 (fluid) ounce	=	2 tablespoons
	1 tablespoon	=	3 teaspoons
Length	1 foot	=	12 inches

*One fluid ounce (usually called “ounce”) of water weighs 1 ounce. One pint of water weighs 1 pound.

Measurement, continued

The Metric System

The units of measure in the metric system are as follows:

METRIC SYSTEM OF MEASURMENT – BASIC UNITS		
TYPE	**BASIC UNIT**	**ABBR.**
Weight	Gram	g
Volume	Liter	L
Length	Meter	m
Temperature	Degree Celsius	ºC

In the metric system, larger and smaller units are made by multiplying or dividing by 10s and are expressed by prefixes. See the table below for these prefixes and examples.

METRIC SYSTEM OF MEASURMENT – DIVISIONS AND MULTIPLES			
PREFIX	**MEANING**	**ABBREVIA-TION**	**EXAMPLE**
Kilo-	1000	k	A kilogram (kg) = 1000 grams
Deci-	1/10	d	A deciliter (dL) = 0.1 liter
Centi-	1/100	c	A centimeter (cm) = 0.01 meter
Milli-	1/1000	m	A millimeter (mm) = 0.001 meter

Continued next page

Measurement, continued

The Metric System, contd.

Should you need to do some conversions from the U.S. system to the metric system, or metric system to U.S. system, here's a table of metric conversion factors.

METRIC CONVERSION FACTORS	
TYPE	**U.S. SYSTEM TO METRIC SYSTEM**
Weight	1 ounce = 28.35 grams
	1 pound = 454 grams
Volume	1 fluid ounce = 29.57 milliliters
	1 cup = 237 milliliters
	1 quart = 946 milliliters
Length	1 inch = 25.4 millimeters
Temp	32 ºF = 0 ºC (the freezing point of water) 212 ºF = 100 ºC (the boiling point of water) To convert ºF to ºC: subtract 32, then multiply by 5/9 (or .556)
	METRIC SYSTEM TO U.S. SYSTEM
Weight	1 gram = 0.035 ounce
	1 kilogram = 2.2 pounds
Volume	1 milliliter = 0.034 ounce
	1 liter = 33.8 fluid ounces
Length	1 centimeter = 0.39 inch
	1 meter = 39.4 inches
Temp	0 ºC = 32 ºF (the freezing point of water) 100 ºC = 212 ºF (the boiling point of water) To convert ºC to ºF, multiply by 5/9 (or .556), then add 32.

A Review of Fractions and Decimals

Overview

Before learning about recipe conversions, you may wish to review the basic math operations of fractions and decimals. Often recipe conversions will require you to:

- Convert fractions to decimals
- Convert decimals to fractions

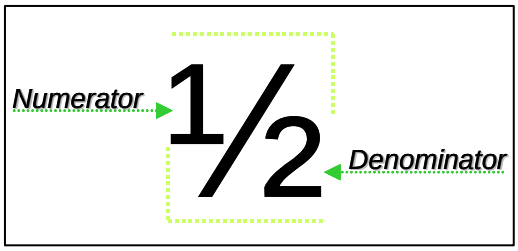
If you are good at converting fractions to decimals, and decimals to fractions, then skip this section and go on to the next, "Introduction to Recipe Conversion".

Converting Fractions to Decimals

A fraction is composed of a *numerator* and a *denominator*.

- The denominator, found on the bottom of the fraction, represents how many equal sized pieces a group or a whole is broken into.
- The numerator, found on top of the fraction, represents how many of those equal sized pieces are there.

In the example on the right, you can say about it that there are two pieces total, and this fraction represents one of those pieces, or half of the total.



Fractions are really divisions. To convert a fraction to a decimal, you simply divide the numerator of the fraction by the denominator, and round the answer to the desired number of decimal points.

Here's a procedure to follow.

HOW TO CONVERT A FRACTION TO A DECIMAL		
STEP	**ACTION**	**EXAMPLE**
1.	Consider the fraction and note the numerator and the denominator.	**1/2**
2.	Begin dividing the numerator by the denominator.	$2\overline{)1.0}$ Because one is smaller than 2, place a decimal point after the 1, and add a zero, then bring the decimal above the division symbol.
		Continued next page

A Review of Fractions and Decimals, continued

Converting Fractions to Decimals, contd.

STEP	ACTION	EXAMPLE
3.	Complete the division	$2\overline{)1.0}\ .5$ $2\overline{)1.0}\ .5$ $\frac{10}{00}$ $\frac{1}{2}=.5$ Solve as in a long division problem, paying no attention to the decimal point. You can continue to add zeros to the right of the decimal, because 1 has the same value as 1.0, which has the same value as 1.00.
End of procedure		

Converting Decimals to Fractions

Converting decimals to fractions is essentially the opposite of converting fractions to decimals. Here's a procedure to follow.

HOW TO CONVERT A DECIMAL TO A FRACTION		
STEP	**ACTION**	**EXAMPLE**
1.	Consider the decimal, noting how many digits appear to the right of the decimal point.	.25 Note that in this example two digits appear to the right of the decimal point.
2.	Write out the decimal divided by 1.	$\frac{.25}{1}$
3.	Remove the decimal point by multiplying both the numerator and denominator by a 1 followed by a 0 for every number in the decimal that is to the right of the decimal point.	$\frac{25}{100}$ In this case, there were two digits beyond the decimal point, so we change the denominator from 1 to 100.
		Continued next page

A Review of Fractions and Decimals, continued

Converting Decimals to Fractions, contd.

STEP	ACTION	EXAMPLE
4.	Reduce (or simplify) the fraction.	$\frac{25}{100} \frac{(\div 25)}{(\div 25)} = \frac{1}{4}$

Introduction to Recipe Conversion

Overview

In the next lesson you will learn how to perform three recipe conversions (also known as adjustments[1]). This section explains those conversions, what they are, and why they are important.

This section covers:

- Converting recipes
- The three conversions
- Working factors

Converting Recipes

The recipes in the AFRS provide instructions for serving groups of 100 people. It will be rare, however, that you find yourself preparing meals for exactly 100 people. In most cases, you will have to adjust a recipe in at least one of several ways in order to obtain accurate numbers for the quantities of ingredients you will use or the portions you will make. You will find yourself, for example, with a recipe for 100 servings of Swiss steak, but you will need only 65 servings. How will you handle that?

After considering the example above, you can begin to see the importance of mastering recipe conversion techniques. This is a skill you will probably need to use many times during your work in this course.

Granted, it is not that difficult to double recipes or cut them in half, but it gets a little more complicated when you try to change from 10 to 18 portions, or from 50 to 35.

The Three Conversions

Let's look now at the three recipe conversions:

- The yield adjustment
- The quantity adjustment
- The serving size adjustment

The Yield Adjustment

When you have a recipe written for a total yield of 100 servings (that is to say the recipe is designed to feed 100 people) yet you know you need a yield of something different (170 people, for example) that is when you will need to use the *yield adjustment* technique. Put another way, you will "adjust for yield" when you need to feed a group larger or smaller than the total yield in a recipe.

Continued next page

[1] Generally speaking, the phrase "recipe conversion" is used to refer collectively to all three adjustments. The word "adjustment" is used when referring to one of the three recipe conversions.

Introduction to Recipe Conversion, continued

The Three Conversions, contd.

The Quantity Adjustment

Let's say that a recipe calls for 15 lb of sugar, but you only have 11 lb on hand. You don't have to go get a new recipe, or have a panic attack, you can adjust it, and generate a new recipe that will yield roughly two thirds of the original recipe. We call this *adjusting for quantity*. Simply defined, "adjusting for quantity" means adjusting a recipe that calls for more or less ingredients than are available so that it matches the ingredients you have.

The Serving Size Adjustment

You will use the serving size adjustment when you are faced with a problem of this nature: The crew of the ship complains that the portions they are getting on a particular dish are too small, and the senior officer decides to respond saying, "OK, let's change the size from 3 oz to 7.5 oz." You now have to take a recipe and adjust it so that your serving sizes are 2½ times (150% greater than) the original portion sizes written in the recipe. We call this *adjusting for serving size*.

Use the table below to help you summarize these techniques.

RECIPE CONVERSIONS – SUMMARY TABLE	
TYPE	**DESCRIPTION**
1. Yield adjustment	Used when working with a recipe that has a total yield larger or smaller than what is required. Helps you match a recipe to the population size you will be feeding.
2. Quantity adjustment	Used when working with a recipe that calls for more or less ingredients than are available. Helps you match a recipe to the quantity of ingredients on hand.
3. Serving size adjustment	Used when there is a requirement for a larger or smaller serving size (portion size) than what the recipe produces. Helps you adjust a recipe to match a certain serving size.

Introduction to Recipe Conversion, continued

The Working Factor

The next lesson focuses exclusively on the recipe conversions. In order to learn how to perform these conversions, you will need to be familiar with the term *working factor*.

A working factor, also known as an "adjustment factor" or a "conversion factor" is the number that you will use to multiply ingredients when performing an adjustment. The easiest way to think about this is to consider a recipe that will be doubled. In a case where a recipe is doubled, the working factor is two—all ingredients are multiplied by two.

> Working Factor – When adjusting a recipe, this is the quantity by which another given quantity is multiplied or divided in order to indicate a difference in measurement. For example, in a recipe that is doubled (to serve twice as many people), the working factor is two.

Compared to doubling a recipe, the prospect of adjusting a recipe that serves 12 people to serve 19, may seem complex. But it's not that difficult. You just multiply by a different number. The process of discovering that "different number" is called *determining the working factor*. You will learn more about this in the next lesson.

Recipe Conversion Tables

Overview

This section contains a few tables you may find helpful when performing recipe conversions:

- Converting weight in ounces to decimals of a pound
- Rounding decimals
- Volume measure equivalents

Weight in Ounces to Decimals of a Pound

Use this table to convert ounces to decimals of a pound and vice versa.

CONVERTING WEIGHT IN OUNCES TO DECIMALS OF A POUND	
WEIGHT IN OUNCES	**WEIGHT IN DECIMALS OF A POUND**
1	.06
2	.13
3	.19
4 ($^1/_4$ lb)	.25 ($^1/_4$ lb)
5	.31
6	.38
7	.44
8 ($^1/_2$ lb)	.50 ($^1/_2$ lb)
9	.56
10	.63
11	.69
12 ($^3/_4$ lb)	.75 ($^3/_4$ lb)
13	.81
14	.88
15	.94
16 (1 lb)	1.00 (1 lb)

For example, this table helps you determine that 2 lb 7 oz equals 2.44 lb.

Recipe Conversion Tables, continued

Rounding Decimals to Nearest Quarter Whole

Use this chart to help you convert small ingredient quantities (such as ounces and teaspoons) ending in a decimal to the nearest quarter of a whole number.

ROUNDING DECIMALS TO NEAREST QUARTER WHOLE NUMBER	
OUNCES OR TEASPOONS ENDING IN THIS DECIMAL…	**MAY BE ROUNDED TO THIS QUARTER WHOLE NUMBER…**
.01–.12	0
.13–.37	1/4
.38–.62	1/2
.63–.87	3/4
.88–.99	1

For example, 2.36 ounces may be rounded to 2 ¼ ounces.

Volume Measure Equivalents

Use this chart to help you determine volume equivalents. It will tell you, for example, how many pints are in a gallon and how many cups are in a quart.

VOLUME MEASURE EQUIVALENTS						
	GAL	**QT**	**PT**	**C**	**TBSP**	**TSP**
GAL	1	4	8	16	256	768
QT	4	1	2	4	64	192
PT	8	2	1	2	32	96
C	16	4	2	1	16	48
TBSP	256	64	32	16	1	3
TSP	768	192	96	48	3	1

Lesson Review

Purpose

The intention of this exercise is to help you confirm what you have learned about recipes and recipe conversion.

Directions

Test your knowledge of the concepts and principles of this lesson by completing the items below. Use the lesson material and references to assist you, as necessary.

When you have finished completing the items, compare your answers to the correct answers in the "Lesson Review Feedback" section at the end of this lesson. Note any differences between your answers and the correct ones so you can learn from them, and discuss them when you meet with your supervisor.

Questions

Locate and use one of the conversion tables to complete the following tables.

Exercise 1

Convert the decimal representations of ounces and teaspoons into quarter whole numbers (fractions rounded to nearest quarter).

	OZ OR TSP AS DECIMAL		OZ OR TSP AS FRACTION
Ex.	1.26 oz	=	*1 ¼ oz*
1.	2.77 tsp	=	
2.	1.67 oz	=	
3.	4.385 tsp	=	
4.	3.065 oz	=	

Continued next page

Lesson Review, continued

Questions, contd.

Exercise 2

Convert the following fractions to decimals. Round to the nearest hundredth.

	FRACTION		DECIMAL
Ex.	$2\ ^{1}/_{6}$ lb	=	*2.17 lb*
5.	$^{3}/_{4}$ gal	=	
6.	$3\ ^{1}/_{8}$ c	=	
7.	$1\ ^{3}/_{8}$ lb	=	
8.	$7\ ^{7}/_{16}$ lb	=	

Exercise 3

Use what you know so far about the types of recipe conversions to identify which recipe conversion type will be used for each of the situations below.

Ex. A recipe calls for 30 portions of chopped carrots, 7 ounces each, and you need 40 portions, 6 ounces each.

Yield and serving size adjustments

9. A recipe calls for 10 portions of Chicken Breast Parmesan, and you need 25 portions.

_____

10. A recipe calls for 25 portions of Prime Rib (16 oz). You have only 15 portions and they're smaller (12 oz).

_____

11. A recipe calls for 20 lb of fresh, coarsely shredded cabbage. You have only 15 lb.

_____

Continued next page

Lesson Review, continued

Questions, contd.

12. A recipe calls for 35 portions of sliced ham, 4 ounces each, and you need 25 portions, 3 ounces each.

Practicing What You Have Learned

From Theory to Practice

In order to help you put into practice what you have learned in this lesson, you must move from reading to doing. Meet with your supervisor to discuss how to practice what you have read about in this lesson.

1. Discuss with your supervisor what you have learned, including the following:
   - ❑ Describe the functions of a recipe
   - ❑ Identify the components of a recipe
   - ❑ Explain the importance of planning and organizing food preparation
2. Ask your supervisor to demonstrate for you how s/he performs these steps relating to recipe conversions:
   - ❑ How to convert fractions to decimals
   - ❑ How to converting decimals to fractions
   - ❑ How to choose appropriate recipe conversion techniques
3. After observing a demonstration of how to convert fractions and decimals, practice this yourself.
4. Ask your supervisor to give you possible or likely scenarios that require recipe conversions, so you can practice choosing the appropriate recipe conversion techniques for given situations.

Performance Evaluation

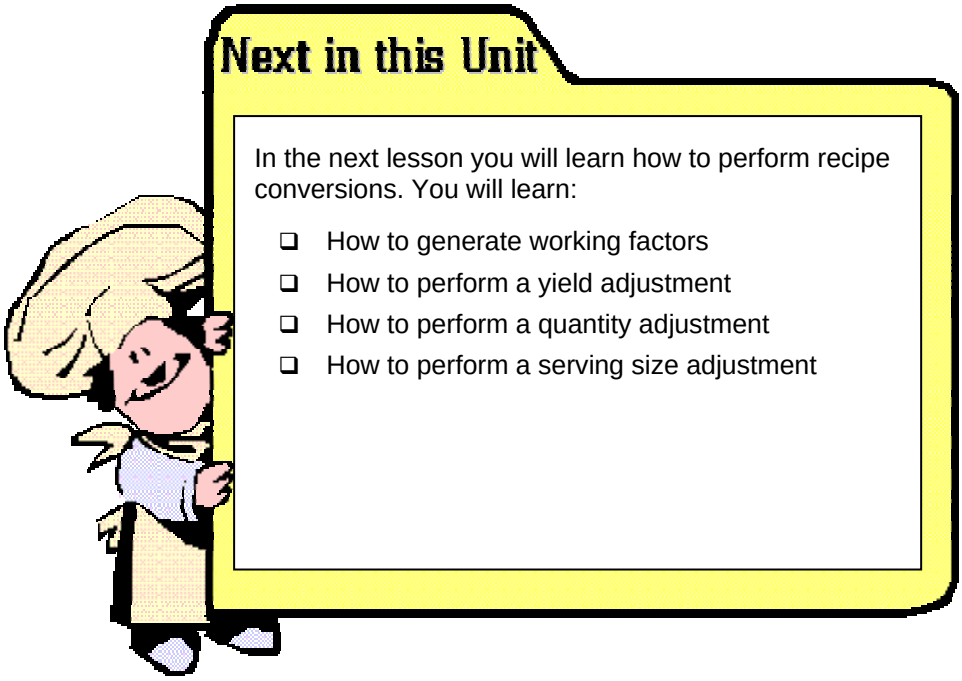
There are no performance qualifications for this lesson; therefore, no performance evaluations are included.

Lesson Summary

Summary

This lesson introduced the basics of recipes and recipe conversions. You can now:

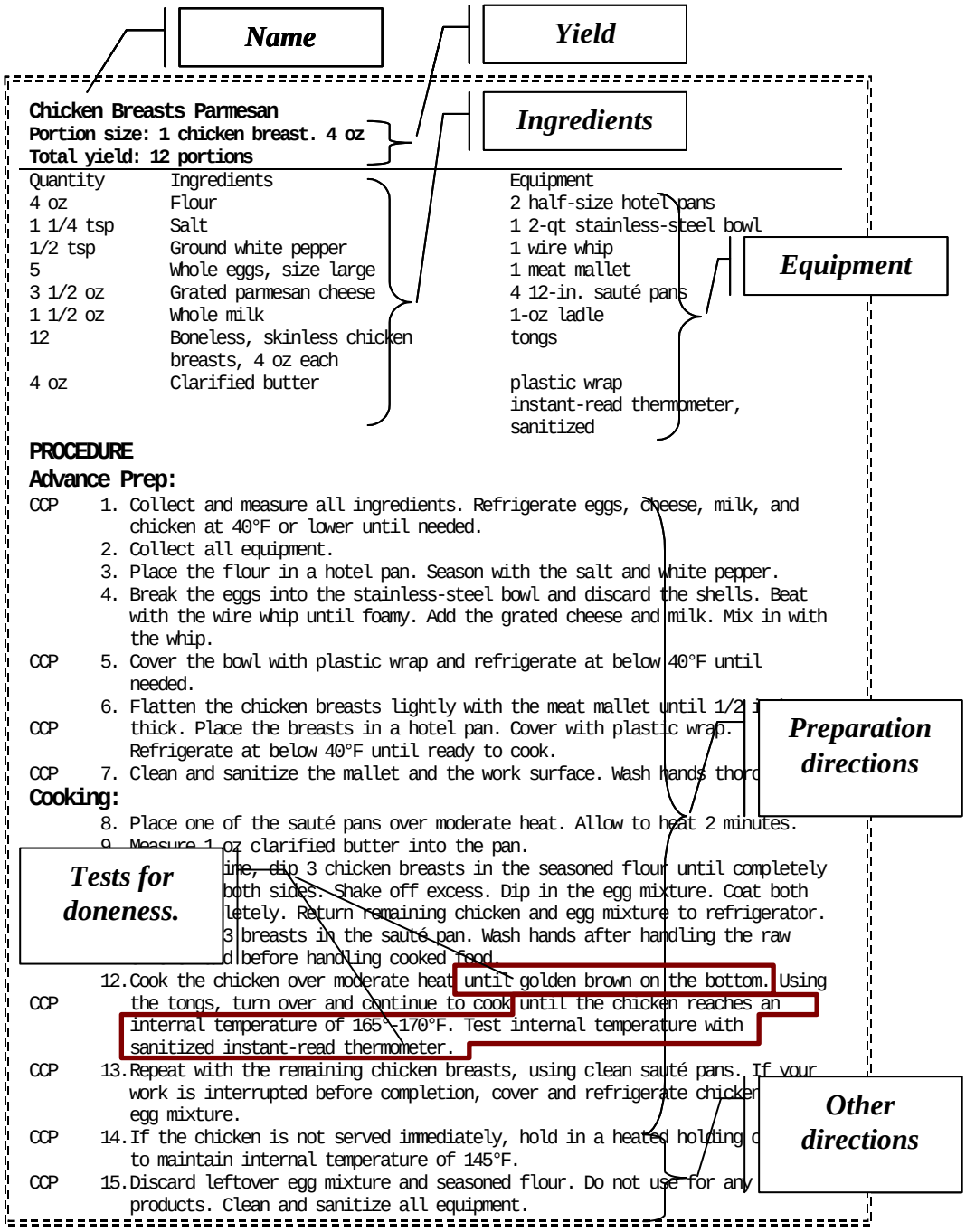
- Describe the two primary functions of a recipe.
- Identify the components of a recipe.
- Explain the importance of planning and organizing food preparation.
- Convert fractions to decimals and decimals to fractions.
- Given a situation calling for a recipe conversion, choose the appropriate recipe conversion technique for that situation.



Anatomy of a Recipe Exercise Feedback

Answers

This page holds the answers to the Anatomy of a Recipe exercise.



Chicken Breasts Parmesan
Portion size: 1 chicken breast. 4 oz
Total yield: 12 portions

Quantity	Ingredients
4 oz	Flour
1 1/4 tsp	Salt
1/2 tsp	Ground white pepper
5	Whole eggs, size large
3 1/2 oz	Grated parmesan cheese
1 1/2 oz	Whole milk
12	Boneless, skinless chicken breasts, 4 oz each
4 oz	Clarified butter

Equipment
2 half-size hotel pans
1 2-qt stainless-steel bowl
1 wire whip
1 meat mallet
4 12-in. sauté pans
1-oz ladle
tongs

plastic wrap
instant-read thermometer, sanitized

PROCEDURE

Advance Prep:

CCP 1. Collect and measure all ingredients. Refrigerate eggs, cheese, milk, and chicken at 40°F or lower until needed.
2. Collect all equipment.
3. Place the flour in a hotel pan. Season with the salt and white pepper.
4. Break the eggs into the stainless-steel bowl and discard the shells. Beat with the wire whip until foamy. Add the grated cheese and milk. Mix in with the whip.
CCP 5. Cover the bowl with plastic wrap and refrigerate at below 40°F until needed.
6. Flatten the chicken breasts lightly with the meat mallet until 1/2 i
CCP thick. Place the breasts in a hotel pan. Cover with plastic wrap. Refrigerate at below 40°F until ready to cook.
CCP 7. Clean and sanitize the mallet and the work surface. Wash hands thorc

Cooking:

8. Place one of the sauté pans over moderate heat. Allow to heat 2 minutes.
9. Measure 1 oz clarified butter into the pan.
ime, dip 3 chicken breasts in the seasoned flour until completely both sides. Shake off excess. Dip in the egg mixture. Coat both letely. Return remaining chicken and egg mixture to refrigerator. 3 breasts in the sauté pan. Wash hands after handling the raw d before handling cooked food.
12. Cook the chicken over moderate heat until golden brown on the bottom. Using
CCP the tongs, turn over and continue to cook until the chicken reaches an internal temperature of 165°-170°F. Test internal temperature with sanitized instant-read thermometer.
CCP 13. Repeat with the remaining chicken breasts, using clean sauté pans. If your work is interrupted before completion, cover and refrigerate chicken egg mixture.
CCP 14. If the chicken is not served immediately, hold in a heated holding c to maintain internal temperature of 145°F.
CCP 15. Discard leftover egg mixture and seasoned flour. Do not use for any products. Clean and sanitize all equipment.

Topic Review Feedback

Directions

Compare your answers in the Topic Review to the answers below (correct answers are in **bold**). Note any differences between your answers and the text so you can learn from them and discuss them with your supervisor.

Answers

1. List five of the seven components of a recipe.

   Possible answers include: Name, Yield, Ingredients, Equipment, Time/tests for doneness, Preparation directions, Other directions

2. Recipes serve two main functions: they control **quality** and **quantity**.

3. Which of the following is the best definition for the AFRS:

   a. It is a recipe creation guide for military personnel.
   b. It is a book of food service planning techniques.
   c. It is a consolidated index of recipes.
   d. It is the handbook of the American Food and Restaurant Society.

4. In ten words or less, describe what the phrase "mise en place" means.

   Everything put in place; preparing thoroughly and systematically.

Lesson Review Feedback

Directions Compare your answers in the Lesson Review to the answers below (correct answers are in **bold**). Note any differences between your answers and the text so you can learn from them and discuss them with your supervisor.

Answers

Exercise 1

Convert the decimal representations of ounces and teaspoons into quarter whole numbers (fractions rounded to nearest quarter).

	OZ OR TSP AS DECIMAL		OZ OR TSP AS FRACTION
1.	2.77 tsp	=	**2 3/4 tsp**
2.	1.67 oz	=	**1 3/4 oz**
3.	4.385 tsp	=	**4 1/2 tsp**
4.	3.065 oz	=	**3 oz**

Exercise 2

Convert the following fractions to decimals. Round to the nearest hundredth.

	DECIMAL		FRACTION
5.	3/4 gal	=	**.75 gal**
6.	3 1/8 c	=	**3.13 c**
7.	1 3/8 lb	=	**1.38 lb**
8.	7 7/16 lb	=	**7.44 lb**

Continued next page

Lesson Review Feedback, continued

Answers, contd.

Exercise 3

Use what you know so far about the types of recipe conversions to identify which recipe conversion type will be used for each of the examples below.

9. A recipe calls for 10 portions of Chicken Breast Parmesan, and you need 25 portions.

   Yield adjustment

10. A recipe calls for 25 portions of Prime Rib (16 oz). You have only 15 portions and they're smaller (12 oz).

    Serving size and yield adjustments

11. A recipe calls for 20 lb of fresh, coarsely shredded cabbage. You have only 15 lb.

    Quantity adjustment

12. A recipe calls for 35 portions of sliced ham, 4 ounces each, and you need 25 portions, 3 ounces each.

    Serving size and yield adjustments

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LESSON 4

How to Perform Recipe Conversions

Introduction

Overview

This lesson covers the three recipe conversions. It explains how to perform the conversions and gives you the opportunity to practice them.

This section of the lesson covers:

- Performance qualifications
- Objectives
- Performance evaluation
- Tools and references
- Recommended reading
- Topics covered by this lesson

Performance Qualifications

This lesson consists of one Enlisted Performance Qualification (EPQ):

4.A.01 Perform the three types of recipe adjustments IAW Armed Forces Recipe Service (AFRS), NAVSUP Publication 7.

Objectives

Upon completion of this lesson, you will:

- Given a recipe conversion situation requiring a yield adjustment, perform the yield adjustment.
- Given a recipe conversion situation requiring a quantity adjustment, perform the quantity adjustment.
- Given a recipe conversion situation requiring a serving size adjustment, perform the serving size adjustment.

Performance Evaluation

There will be a performance evaluation in this lesson. This evaluation will cover the EPQ 4.A.01 as listed above.

Introduction, continued

Tools and References

The tools and references for this lesson include:

- ❑ *Professional Cooking*, by Wayne Gisslen
- ❑ Armed Forces Recipe Service (AFRS), NAVSUP Publication 7
- ❑ Unit 1, Appendix C, Glossary of Key Terms
- ❑ Calculator

Recommended Reading

To get the most out of this lesson, be sure to read the following:

- ❑ *Professional Cooking*, "The Recipe – Its Structure and Its Use" (Chapter 5, pp. 79–83).
- ❑ Armed Forces Recipe Service (AFRS), Section A. General Information, No. 1 (1–2).

Topics Covered by This Lesson

This lesson explains the three recipe conversions. It covers the following topics:

- ❑ Yield adjustments
  - Introduction to the yield adjustment
  - Determining the WF (working factor) for a yield adjustment
  - Converting the ingredients in a yield adjustment
  - Yield adjustment practice
- ❑ Quantity adjustments
  - Introduction to the quantity adjustment
  - Determining the WF for a quantity adjustment
  - Converting the ingredients in a quantity adjustment
  - Quantity adjustment practice
- ❑ Serving size adjustments
  - Introduction to serving size adjustment
  - Determining the WF for a serving size adjustment
  - Converting the ingredients in a serving size adjustment
  - Serving size adjustment practice
- ❑ Problems with recipe conversions

Introduction to the Yield Adjustment

About the Procedure

In the last lesson you learned that you must perform a *yield adjustment* when you have a yield that is different (meaning there are more or fewer people to feed) than that which is stated in the recipe.

To adjust a recipe from one yield to another, you will perform two major steps:

Step 1 - Obtain the working factor (WF) for the yield adjustment.

Step 2 - Multiply the quantity of each ingredient listed in the recipe by the WF.

These steps are a little more complex than they seem at first glance, so you will break them down and address each separately. Then you will come back and do a complete example, showing all the steps and sub-steps combined.

Take a look at how to obtain the yield adjustment WF first.

Determining the WF for a Yield Adjustment

Overview

The first step in adjusting the yield of a recipe is to determine the yield adjustment WF.

This section covers:

- How to determine the WF for a yield adjustment
- Step-by-step demonstration
- Practice activity

How to Determine the WF for a Yield Adjustment

The table below shows the sub-steps for determining the yield adjustment WF.

STEP 1 – DETERMINE THE WORKING FACTOR (WF) FOR A YIELD ADJUSTMENT	
SUB-STEP	**ACTION**
1.	Determine the desired number of servings (new yield).
2.	Determine the number of servings in the recipe (old yield).
3.	Divide the new yield by the old yield. The result is your working factor (WF) for a yield adjustment.
End of procedure	

On the next page you will find an example of how to do this with a recipe.

Determining the WF for a Yield Adjustment, continued

Step-by-step Demonstration

Here is an example of how this works with a recipe.

THE SITUATION
A recipe calls for 10 servings of Broccoli Mornay. You need 15 servings.

Given this situation, here is how you perform the sub-steps.

STEP 1 – DETERMINE THE WF FOR A YIELD ADJUSTMENT	
SUB-STEP	**ACTION**
1.	Determine the desired number of servings (new yield). The new yield = 15
2.	Determine the number of servings in the recipe (old yield). The old yield = 10
3.	Divide the new yield by the old yield. The result is your WF for a yield adjustment. $WF = \frac{\text{new yield}}{\text{old yield}} = \frac{15}{10} = 1.5$
End of procedure	

On the next page, you will find a practice scenario.

Determining the WF for a Yield Adjustment, continued

Yield Adjustment WF Practice Activity

Now it's your turn. Here is an example for you to work with.

THE SITUATION
A recipe calls for 80 servings of chicken breasts. You need 140 servings.

Given this situation, determine the WF for a yield adjustment.

STEP 1 – DETERMINE THE WF FOR A YIELD ADJUSTMENT	
SUB-STEP	**ACTION**
1.	Determine the desired number of servings (new yield). The new yield = ☐
2.	Determine the number of servings in the recipe (old yield). The old yield = ☐
3.	Divide the new yield by the old yield. The result is your WF for a yield adjustment. $WF = \frac{\text{new yield}}{\text{old yield}} = \frac{\quad}{\quad} =$ ☐
End of procedure	

You can find answers for this example at the end of this lesson.

Converting the Ingredients in a Yield Adjustment

Overview

In this section, you will examine how to perform step two in the yield adjustment:

Step 2 - Multiply the quantity of each ingredient listed in the recipe by the WF.

Step two involves two sub-steps:

- Converting the fractions to decimals
- Multiplying each ingredient

Take a look at how the fractions are converted to decimals first.

Converting the Fractions to Decimals

The recipe description you looked at earlier had some details that were missing. Take a look at it with the details added.

THE SITUATION
A recipe calls for 10 servings of Broccoli Mornay requiring 3 lb 4 oz AP broccoli and $2^{1}/_{2}$c Mornay Sauce. You need 15 servings.

Now that you have the WF, 1.5, you need to multiply each ingredient by that factor. It's much easier to do this, especially with a long list of ingredients, when the fractions in the ingredients have been converted to decimals. Go ahead and convert the two ingredients mentioned here to decimals.

Note: When rounding, in order to be as accurate as possible, round to two decimal places only at the beginning and end of an adjustment. In all other cases, keep the trailing decimals.

STEP 2, SUB-STEP 1 – CONVERT THE FRACTIONS TO DECIMALS	
INGREDIENT AS IS	**INGREDIENT EXPRESSED AS A DECIMAL**
3 lb 4 oz broccoli	3.25 lb broccoli
$2^{1}/_{2}$c Mornay Sauce	2.50c Mornay Sauce

Converting the Ingredients in a Yield Adjustment, continued

Multiplying Each Ingredient

Now that the ingredients are shown as decimals it makes it easier to multiply them by the WF. In the new quantity, note that

STEP 2, SUB-STEP 2 – MULTIPLY EACH INGREDIENT BY THE WF					
INGREDIENT	**OLD QUANTITY (AS DECIMAL)**	**×**	**WF**	**=**	**NEW QUANTITY**
Broccoli	3.25 lb	×	1.5	=	4.875 lb (or 4 lb 14 oz)
Mornay Sauce	2.50c	×	1.5	=	3.75c (or 3c 12 tbsp)

Once you have inserted the new quantities for all ingredients, you have a complete, adjusted recipe and you are ready to begin preparing the ingredients.

Use the tables introduced in the previous lesson to help you convert the new quantities back to meaningful quantities (e.g., to change quantities expressed in hundredths or thousandths of a pound into ounces).

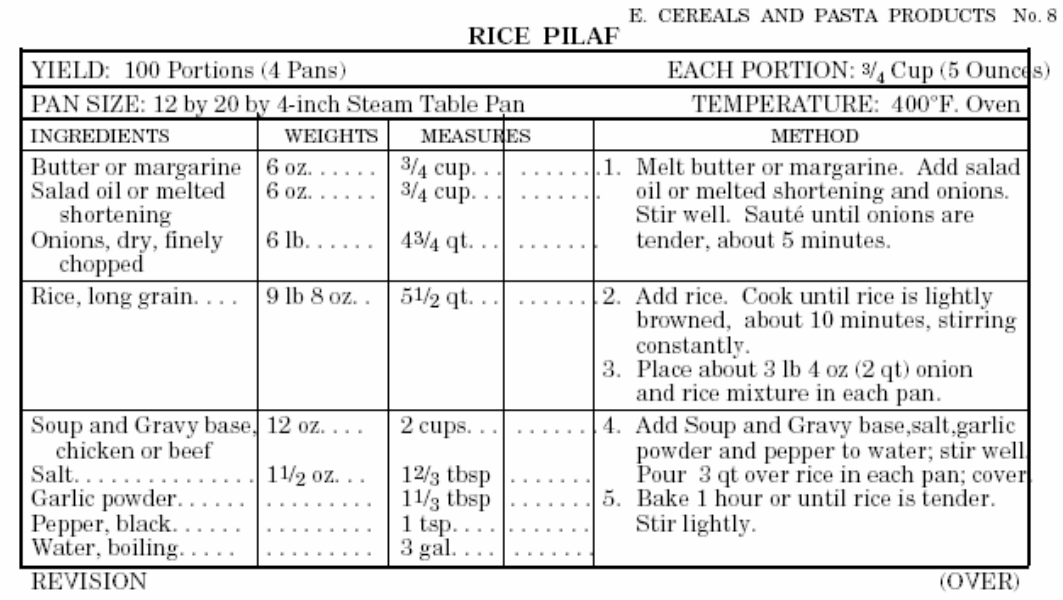
Note: In the new quantity column, the first figure is left at three decimal points (4.875) because you are still in the middle of the conversion. Once the figure 0.875 is multiplied by 16, in order to get the number of ounces, you no longer need the decimal points.

A Complete Example of a Yield Adjustment

Step-by Step Demonstration

This section shows a yield adjustment in its entirety.

THE SITUATION
Here is a recipe from the AFRS, in which the yield is 100 servings. You need to adjust the recipe to serve 45.



E. CEREALS AND PASTA PRODUCTS No. 8

RICE PILAF

YIELD: 100 Portions (4 Pans) EACH PORTION: 3/4 Cup (5 Ounces)

PAN SIZE: 12 by 20 by 4-inch Steam Table Pan TEMPERATURE: 400°F. Oven

INGREDIENTS	WEIGHTS	MEASURES		METHOD
Butter or margarine Salad oil or melted shortening Onions, dry, finely chopped	6 oz. 6 oz. 6 lb.	3/4 cup 3/4 cup 4 3/4 qt		1. Melt butter or margarine. Add salad oil or melted shortening and onions. Stir well. Sauté until onions are tender, about 5 minutes.
Rice, long grain	9 lb 8 oz	5 1/2 qt		2. Add rice. Cook until rice is lightly browned, about 10 minutes, stirring constantly. 3. Place about 3 lb 4 oz (2 qt) onion and rice mixture in each pan.
Soup and Gravy base, chicken or beef Salt Garlic powder Pepper, black Water, boiling	12 oz 1 1/2 oz 	2 cups 12/3 tbsp 1 1/3 tbsp 1 tsp 3 gal		4. Add Soup and Gravy base, salt, garlic powder and pepper to water; stir well. Pour 3 qt over rice in each pan; cover. 5. Bake 1 hour or until rice is tender. Stir lightly.

REVISION (OVER)

HOW TO PERFORM A YIELD ADJUSTMENT	
STEP	**ACTION**
1.	Obtain the WF by dividing the new yield by the old yield. $WF = \frac{\text{new yield}}{\text{old yield}} = \frac{45}{100} = .45$
2.	Multiply each ingredient by the WF. (See the table on the next page for the results of this step.)
End of procedure	

Continued next page

A Complete Example of a Yield Adjustment, continued

Step-by Step Demonstra-tion, contd.

ADJUSTED QUANTITIES					
INGREDIENT	**OLD QUANTITY (AS DECIMAL)**	**×**	**WF**	**=**	**NEW QUANTITY**
Butter	6.00 oz	×	.45	=	2.70 oz (or 2 3/4 oz)
Salad Oil	0.75c	×	.45	=	0.3375c (or 5 tbsp 1¼ tsp)
Onions, chopped	6.00 lb	×	.45	=	2.70 lb (or 2 lb 11 ¼ oz)
Rice	9.50 oz	×	.45	=	4.275 oz (or 4 1/4 oz)
Soup and gravy base	12.00 oz	×	.45	=	5.4 oz (or 5 1/2 oz)
Salt	1.67 tbsp	×	.45	=	.7515 tbsp (or 2 ¼ tsp)
Garlic power	1.33 tbsp	×	.45	=	.5985 tbsp (or 1 ¾ tsp)
Pepper, black	1.00 tsp	×	.45	=	.45 tsp (or 1/2 tsp)
Water	3.00 gal	×	.45	=	1.35 gal (or 1 gal 1 qt 1c 9 tbsp 1 ¾ tsp)

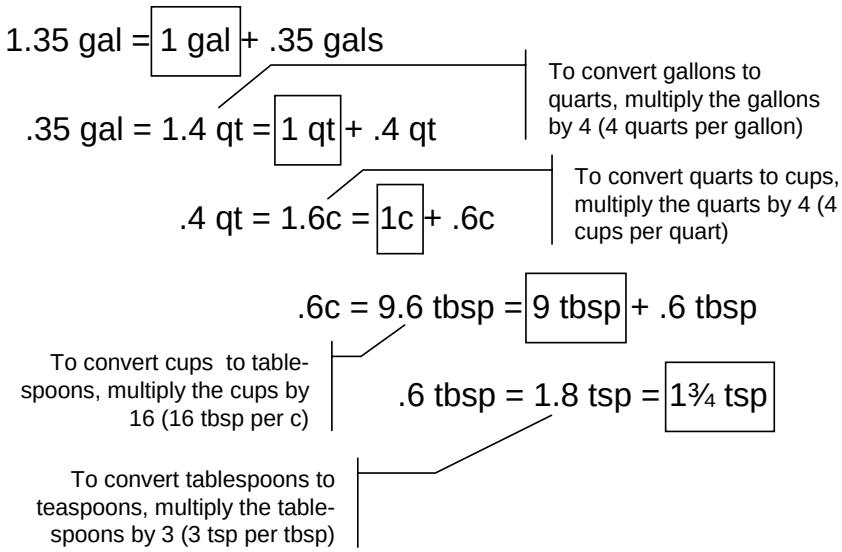
Use the example on the next page to try this yourself. Also, see the Recipe Conversion (RC) Job Aid at the end of the lesson to help you convert partial measurements (gallons expressed in decimals or fractions) into whole measurements (full gallons, quarts, cups, etc.)

Continued next page

A Complete Example of a Yield Adjustment, continued

Note: Sometimes, expressing the new quantity as a whole volume measurement can get a little complex, as seen above in the new quantity for the ingredient water. Because it's very difficult to measure 1.35 gallons of water, you express the 1 as a gallon and the 0.35 in the largest whole measurements possible. In this case, it breaks down to 1 gallon, 1 quart, 1 cup, 9 tbsp and 1 ¾ tsp. See the example below to see how this is done.

How do you express 1.35 gallons as whole measurements?



So, 1.35 gallons = 1 gal + 1 qt + 1c + 9 tbsp + 1¾ tsp

-OR- 1 gal 1 qt 1c 9 tbsp 1¾ tsp

Yield Adjustment Practice

Yield Adjustment Practice Activity

In this section, you will have an opportunity to practice performing a yield adjustment.

THE SITUATION
You have been given the recipe below from the AFRS, in which the yield is 100 servings. Adjust the recipe to serve 60.

99 L MEAT, FISH, AND POULTRY No. 038 03 (1)

SPAGHETTI WITH MEAT SAUCE, R-T-U SAUCE, (GROUND BEEF)

Yield 100 Portions **Pan Size** STEAM JACKETED KETTLE ( ) Pans ° F.

Each Portion 1 Cup (8 oz) Meat Sauce & 1 Cup (5 1/2 oz) Spaghetti

Calories	Carb.	Protein	Fat	% Cal / Fat	Cholesterol	Sodium	Fiber	Calcium
440 cal	56 g	24 g	13 g	26 %	47 mg	1226 mg	0 g	5 mg

Ingredients	Weight	Measure	Issue
BEEF, GROUND 90% LEAN THAWED	16 lb		
SPAGHETTI SAUCE, MEATLESS, CANNED, RTU	45 1/2 lb	5 1/4 gal	
SALT	2 1/2 oz	3 2/3 tbsp	
WATER, BOILING	80 lb	10 gal	
SPAGHETTI	12 lb		

Note: Use the "measures" column for calculating new quantities on spaghetti sauce, salt, and water.

HOW TO PERFORM A YIELD ADJUSTMENT	
STEP	**ACTION**
1.	Obtain the WF by dividing the new yield by the old yield. $WF = \frac{\text{new yield}}{\text{old yield}} = \frac{\quad}{\quad} = \boxed{\quad}$
2.	Multiply each ingredient by the WF. (Use the table on the next page to show the results of this step.)
End of procedure	

Continued next page

Yield Adjustment Practice, continued

Yield Adjustment Practice Activity, contd.

ADJUSTED QUANTITIES					
INGREDIENT	**OLD QUANTITY (AS DECIMAL)**	**×**	**WF**	**=**	**NEW QUANTITY**
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	

Answers for this exercise are provided at the end of the lesson.

Introduction to the Quantity Adjustment

About the Procedure

The procedure for adjusting a recipe for quantity (sometimes called a "quantity-on-hand adjustment") is very similar to the procedure for adjusting for yield. Remember that you will adjust a recipe for quantity when you have an ingredient quantity stated in the recipe that is larger (or smaller, in some cases) than the quantity you have available.

To adjust a recipe from one quantity to another, you will perform two major steps:

Step 1 - Obtain the WF for the quantity adjustment.

Step 2 - Multiply the quantity of each ingredient listed in the recipe by the WF.

The main difference between this conversion and the previous one is that the WF is arrived at slightly differently.

Take a look now at step one.

Determining the WF for a Quantity Adjustment

Overview

The first step in adjusting a recipe for quantity is to determine the quantity adjustment WF.

This section covers:

- How to determine the WF for a quantity adjustment
- Step-by-step demonstration
- Practice activity

How to Determine the WF for a Quantity Adjustment

The table below shows the sub-steps for step one.

STEP 1 – DETERMINE THE WF FOR A QUANTITY ADJUSTMENT	
SUB-STEP	**ACTION**
1.	Determine the desired quantity or quantity-on-hand (new quantity).
2.	Determine the quantity in the recipe (old quantity).
3.	Divide the new quantity by the old quantity. The result is your WF for a quantity adjustment.
End of procedure	

On the next page you will find an example of how to do this with a recipe.

Determining the WF for a Quantity Adjustment, continued

Step-by-step Demonstration

Here is an example of how this works with a recipe.

THE SITUATION
A cake recipe calls for 4 lb 12 oz of granulated sugar, but you only have 3 lb.

Given this situation, here is how you calculate the quantity adjustment WF.

STEP 1 – DETERMINE THE WF FOR A QUANTITY ADJUSTMENT	
SUB-STEP	**ACTION**
1.	Determine the desired quantity or quantity-on-hand (new quantity). The new quantity = 3.00
2.	Determine the quantity in the recipe (old quantity). The old quantity = 4.75
3.	Divide the new quantity by the old quantity. The result is your WF for a quantity adjustment. $WF = \frac{\text{new quantity}}{\text{old quantity}} = \frac{3.00}{4.75} = .6316 = .63$
End of procedure	

On the next page, you will find a practice scenario.

Determining the WF for a Quantity Adjustment, continued

Quantity Adjustment WF Practice Activity

Now it is your turn. Here is an example for you to work with.

THE SITUATION
A soup recipe calls for 9 quarts of milk, but you only have 6 quarts.

Given this situation, determine the WF for a quantity adjustment.

STEP 1 – DETERMINE THE WF FOR A QUANTITY ADJUSTMENT	
SUB-STEP	**ACTION**
1.	Determine the desired quantity or quantity-on-hand (new quantity). The new quantity = ☐
2.	Determine the quantity in the recipe (old quantity). The old quantity = ☐
3.	Divide the new quantity by the old quantity (round to the nearest hundredth). The result is your WF for a quantity adjustment. $WF = \frac{\text{new quantity}}{\text{old quantity}} = \frac{\quad}{\quad} =$ ☐
End of procedure	

You can find answers for this example at the end of this lesson.

Converting the Ingredients in a Quantity Adjustment

Overview

In this section, you will examine how to perform step two in the quantity adjustment:

Step 2 - Multiply the quantity of each ingredient listed in the recipe by the WF.

This step is identical to step two in the yield adjustment. It involves two sub-steps:

- Converting the fractions to decimals
- Multiplying each ingredient

Because you already know how to convert fractions to decimals, you are going to jump straight to an example and the multiplication of the ingredients.

Multiplying Each Ingredient

The recipe description you looked at earlier had some details that were missing. Take a look at it again now with the details added.

THE SITUATION
A cake recipe designed to feed 100 people calls for 4 lb 12 oz of granulated sugar, but you only have 3 lb. Other ingredients include flour, wheat (4 lb 8 oz); cocoa ($3\ ^{1}/_{4}$ cups); baking soda (4 tbsp 2 tsp); salt (1 tbsp 2 tsp); salad oil ($3\ ^{3}/_{4}$ cups); vinegar ($^{2}/_{3}$ cup); vanilla (3 tbsp); water (2 qt 1 pt)

Now that you have the quantity adjustment WF, .63, you need to multiply each ingredient by that factor. Remember that it's much easier to do this, especially with a long list of ingredients, when the fractions in the ingredients have been converted to decimals.

Continued next page

Converting the Ingredients in a Quantity Adjustment, continued

Multiplying Each Ingredient, contd.

See the table below for an example of how this is done with the ingredients above.

STEP 2 – MULTIPLY EACH INGREDIENT BY THE WF					
INGREDIENT	**OLD QUANTITY (AS DECIMAL)**	**×**	**WF**	**=**	**NEW QUANTITY**
Flour, wheat	4.50 lb	×	.63	=	2.835 lb (or 2 lb 13 ½ oz)
Sugar, granulated	4.75 lb	×	.63	=	2.9925 lb (or 3 lb)
Cocoa	3.25c	×	.63	=	2.0475c (or 2c ¼ tsp)
Baking soda	4.67 tbsp	×	.63	=	2.9421 tbsp (or 2 tbsp 2 ¾ tsp)
Salt	1.67 tbsp	×	.63	=	1.0521 tbsp (or 1 tbsp ¼ tsp)
Salad oil	3.75c	×	.63	=	2.3625c (or 2c 5 tbsp 2 ½ tsp)
Vinegar	.67c	×	.63	=	.4221c (or 6 tbsp 2 ¼ tsp)
Vanilla	3.00 tbsp	×	.63	=	1.89 tbsp (or 1 tbsp 2 ¾ tsp)
Water	2.5 qt	×	.63	=	1.575 qt (or 1 qt 1 pt 4 tbsp 2½ tsp)

Once you have inserted the new quantities for all ingredients, you have a complete converted recipe and you are ready to begin preparing the ingredients.

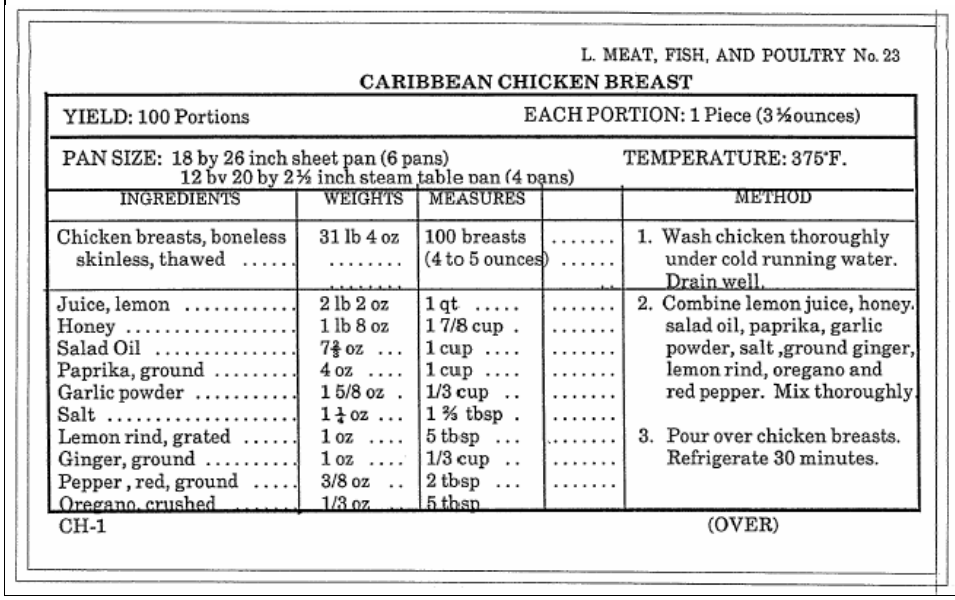
Quantity Adjustment Practice

Quantity Adjustment Practice Activity

In this section, you will have an opportunity to practice performing a quantity adjustment.

THE SITUATION

You have been given the recipe below. It calls for 100 chicken breasts. You have 40 lb of chicken on hand (128 pieces) and permission to prepare the extra pieces. Adjust the recipe for this new quantity.



L. MEAT, FISH, AND POULTRY No. 23

CARIBBEAN CHICKEN BREAST

YIELD: 100 Portions — EACH PORTION: 1 Piece (3 ½ ounces)

PAN SIZE: 18 by 26 inch sheet pan (6 pans) 12 by 20 by 2½ inch steam table pan (4 pans) — TEMPERATURE: 375°F.

INGREDIENTS	WEIGHTS	MEASURES		METHOD
Chicken breasts, boneless skinless, thawed	31 lb 4 oz	100 breasts (4 to 5 ounces)		1. Wash chicken thoroughly under cold running water. Drain well.
Juice, lemon	2 lb 2 oz	1 qt		2. Combine lemon juice, honey, salad oil, paprika, garlic powder, salt, ground ginger, lemon rind, oregano and red pepper. Mix thoroughly.
Honey	1 lb 8 oz	1 7/8 cup		
Salad Oil	7⅞ oz	1 cup		
Paprika, ground	4 oz	1 cup		
Garlic powder	1 5/8 oz	1/3 cup		
Salt	1 ¼ oz	1 ⅔ tbsp		
Lemon rind, grated	1 oz	5 tbsp		3. Pour over chicken breasts. Refrigerate 30 minutes.
Ginger, ground	1 oz	1/3 cup		
Pepper, red, ground	3/8 oz	2 tbsp		
Oregano, crushed	1/3 oz	5 tbsp		

CH-1 (OVER)

Note: Use the "measures" column for calculating new quantities on all ingredients.

HOW TO PERFORM A QUANITY ADJUSTMENT

STEP	ACTION
1.	Obtain the WF by dividing the new quantity by the old quantity. $WF = \frac{\text{new quantity}}{\text{old quantity}} = \frac{\quad}{\quad} = \boxed{\quad}$
2.	Multiply each ingredient by the WF. (Use the table on the next two pages to show the results of this step.)
End of procedure	

Continued next page

Quantity Adjustment Practice, continued

Quantity Adjustment Practice Activity, contd.

ADJUSTED QUANTITIES					
INGREDIENT	**OLD QUANTITY (AS DECIMAL)**	**×**	**WF**	**=**	**NEW QUANTITY**
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	

Continued next page

Quantity Adjustment Practice, continued

Quantity Adjustment Practice Activity, contd.

INGREDIENT	OLD QUANTITY (AS DECIMAL)	×	WF	=	NEW QUANTITY
		×		=	
		×		=	

Answers for this exercise are provided at the end of the lesson.

Introduction to the Serving Size Adjustment

Overview

Remember that you will need to adjust a recipe for serving size when you have a desired serving size that is different than the serving size stated in the recipe.

This section covers:

- About the procedure
- How to determine the WF for a serving size adjustment
- Step-by-step demonstration
- Practice activity

About the Procedure

To convert a recipe from one serving size to another, you will perform two major steps:

Step 1 - Obtain the WF for the serving size adjustment.

Step 2 - Multiply the quantity of each ingredient listed in the recipe by the WF.

These steps seem simple enough—you have done them twice with the two other conversions. There is a tricky thing, however, about serving size adjustments. Serving size adjustments usually occur alongside and in addition to yield adjustments. This means that what you find in this situation is not as simple as "you have a recipe that calls for 8 oz chicken strips, but you need to serve 6 oz strips."

It's usually something more like this:

"You have a recipe that calls for you to serve 8 oz. chicken strips to 100 people, but you need to serve 6 oz. strips to 75 people."

So, instead of doing one conversion, you suddenly find yourself doing two: one for a yield adjustment (with which you are already familiar) and one for a serving size adjustment.

The good news is that this is not that difficult, you simply find two WFs—one for yield and one for serving size—and multiply them together. This allows you to use only one, combined WF when multiplying the individual ingredients.

Continued next page

Introduction to the Serving Size Adjustment, continued

About the Procedure, contd.

So, rewritten, the steps will look like this:

Step 1 - Obtain the WF for the serving size adjustment, using the following sub-steps:

Sub-step 1 - Obtain the serving size WF (WF1).

Sub-step 2 - Obtain the yield WF (WF2).

Sub-step 3 - Obtain the combined WF by multiplying WF1 and WF2.

Step 2 - Multiply the quantity of each ingredient listed in the recipe by the WF.

Take a look at step one and an example.

Determining the WF for a Serving Size Adjustment

How to Determine the WF for a Serving Size Adjustment

This table explains the procedure for determining the WF in a serving size adjustment (inclusive of a yield adjustment).

STEP 1 – DETERMINE THE WF FOR A SERVING SIZE ADJUSTMENT	
SUB-STEP	**ACTION**
Generate a Serving Size WF	
1.	Divide the new serving size by the old serving size. The result is your serving size WF. You will call this WF 1 (WF1).
Generate a Yield WF	
2.	Divide the new yield by the old yield. The result is your yield WF. You will call this WF 2 (WF2).
Generate the Combined WF	
3.	Multiply the two WFs (WF1 × WF2) and round to the nearest hundredth (second decimal place).
End of procedure	

On the next page you will find an example of how to do this with a recipe.

Step-by-step Demonstration

Here is an example of how this works with a recipe.

THE SITUATION
A recipe calls for 20 servings of hollandaise sauce, at 4 ounces each, and you need 30 servings at 5 ounces each.

Continued next page

Determining the WF for a Serving Size Adjustment, continued

Step-by-step Demonstration, contd.

Given this situation, here is how you determine the serving size WF.

STEP 1 – DETERMINE THE WF FOR A SERVING SIZE ADJUSTMENT	
SUB-STEP	**ACTION**
Generate a Serving Size WF	
1.	Divide the new serving size by the old serving size. The result is your serving size WF (WF1). $\text{WF1 (serving size)} = \frac{\text{new serving size}}{\text{old serving size}} = \frac{5}{4} = 1.25$
Generate a Yield WF	
2.	Divide the new yield by the old yield. The result is your yield WF (WF2). $\text{WF2 (yield)} = \frac{\text{new yield}}{\text{old yield}} = \frac{30}{20} = 1.5$
Generate the Combined WF	
3.	Multiply the two WFs (WF1 × WF2) and round to the nearest hundredth. $\text{WF (combined)} = \frac{1.25}{\text{WF1}} \times \frac{1.5}{\text{WF2}} = 1.88$
End of procedure	

On the next page, you will find a practice scenario.

Determining the WF for a Serving Size Adjustment, continued

Serving Size Adjustment WF Practice Activity

Now it's your turn. Here is an example for you to work with.

THE SITUATION
A recipe for Rice Pilaf calls for 100 servings of rice, long grain, at $^{3}/_{4}$ cup each, and you need 55 servings at 1 cup each.

Given this situation, determine the WF for a serving size adjustment.

STEP 1 - DETERMINE THE WF FOR A SERVING SIZE ADJUSTMENT	
SUB-STEP	**ACTION**
Generate a Serving Size WF	
1.	Divide the new serving size by the old serving size. The result is your serving size WF. $WF1 = \frac{\text{new serving size}}{\text{old serving size}} = \frac{\quad}{\quad} = \boxed{\quad}$
Generate a Yield WF	
2.	Divide the new yield by the old yield. The result is your yield WF. $WF2 = \frac{\text{new yield}}{\text{old yield}} = \frac{\quad}{\quad} = \boxed{\quad}$
Generate the Combined WF	
3.	Multiply the two WFs (WF1 × WF2) and round to the nearest hundredth. $WF\ (combined) = \underset{(WF1)}{\quad} \times \underset{(WF2)}{\quad} = \boxed{\quad}$
End of procedure	

You can find answers for this example at the end of the lesson.

Converting the Ingredients in a Serving Size Adjustment

Overview

In this section, you will examine how to perform step two in the serving size adjustment.

Step 2 - Multiply the quantity of each ingredient listed in the recipe by the WF.

This step is identical to step two in the other two conversions. It involves two sub-steps:

- Converting the fractions to decimals
- Multiplying each ingredient

Because you already know how to convert fractions to decimals, you are going to jump straight to an example and the multiplication of ingredients.

Multiplying Each Ingredient

The situation for your serving size adjustment example is as follows:

THE SITUATION
You have received the recipe below with instructions to increase serving sizes from 7 ounces to 10 ounces (from 2 to 4 ribs per serving to 3 to 5 ribs per serving) and modify it to serve 170 people.

BRAISED SPARERIBS

YIELD: 100 Portions (3 Pans)				EACH PORTION: 7 Ounces
PAN SIZE: 18 by 24-inch Roasting Pan				TEMPERATURE: 400° F. Oven; 350° F. Oven
INGREDIENTS	WEIGHTS	MEASURES		METHOD
Pork, spareribs, thawed	75 lb. . . .	. . . . .	. . . . .	1. Cut ribs into serving size portions (2 to 4 ribs) 10 to 12 ounce raw total weight. Overlap ribs in rows, fat side up, in pans. Bake at 400°F. 30 minutes or until golden brown. 2. Drain or skim off excess fat.
Onions, dry, finely chopped	5 lb.	3 3/4 qt. . .	. . . . .	3. Sprinkle onions, salt and pepper over ribs. Add water to cover bottom of each pan. Cover. 4. Bake at 350°F. 2 to 2 1/2 hours or until tender.
Salt.	3 oz.	4 2/3 tbsp	. . . . .	
Pepper, black. . . .	1/2 oz. . .	2 tbsp. . .	. . . . .	
Water.	. . . . .	3 qt.	. . . . .	

Serving size WF (WF1) = 10/7 = 1.43

Yield WF (WF2) = 170/100 = 1.70

Combined WF = WF1 x WF2 =

1.43 x 1.70 = 2.43

The WF (serving size and yield combined) is 2.43.

Converting the Ingredients in a Serving Size Adjustment, continued

Multiplying Each Ingredient, contd.

This table shows the new quantities.

STEP 2 – MULTIPLYING EACH INGREDIENT BY THE WF					
INGREDIENT	**OLD QUANTITY (AS DECIMAL)**	**×**	**WF**	**=**	**NEW QUANTITY**
Pork, spareribs	75 lb	×	2.43	=	182 lb 4 oz
Onions, dry, chopped	5 lb	×	2.43	=	12 lb 2 1/2 oz
Salt	4.67 tbsp	×	2.43	=	11 tbsp 1 tsp
Pepper, black	2 tbsp	×	2.43	=	4 tbsp 2 ½ tsp
Water	3 qt	×	2.43	=	1 gal 3 qt 1 c 2 tbsp 1 ¾ tsp

Once you have inserted the new quantities for all ingredients, you have a complete converted recipe and you are ready to begin preparing the ingredients.

Serving Size Adjustment Practice

Overview

In this section, you will have an opportunity to practice performing a serving size adjustment. Remember the major steps for the conversion are:

Step 1 - Obtain the WF for the serving size adjustment.

Sub-Step 1 - Obtain the serving size WF (WF1).

Sub-Step 2 - Obtain the yield WF (WF2).

Sub-step 3 - Obtain the combined WF by multiplying WF1 and WF2.

Step 2 - Multiply the quantity of each ingredient listed in the recipe by the WF.

Serving Size Adjustment Practice Activity

THE SITUATION
You have been given the recipe below for Rice Pilaf. It calls for 100 servings of rice, long grain (9 lb 8 oz), at $^{3}/_{4}$ cup each. Adjust the recipe to feed 55 patrons, using servings of 1 cup each.

E. CEREALS AND PASTA PRODUCTS No. 8

RICE PILAF

YIELD: 100 Portions (4 Pans) EACH PORTION: $^{3}/_{4}$ Cup (5 Ounces)

PAN SIZE: 12 by 20 by 4-inch Steam Table Pan TEMPERATURE: 400°F. Oven

INGREDIENTS	WEIGHTS	MEASURES		METHOD
Butter or margarine	6 oz.	$^{3}/_{4}$ cup. . .	. . . . .	1. Melt butter or margarine. Add salad oil or melted shortening and onions. Stir well. Sauté until onions are tender, about 5 minutes.
Salad oil or melted shortening	6 oz.	$^{3}/_{4}$ cup. . .	. . . . .	
Onions, dry, finely chopped	6 lb.	$4^{3}/_{4}$ qt. . .	. . . . .	
Rice, long grain. . . .	9 lb 8 oz. .	$5^{1}/_{2}$ qt. . .	. . . . .	2. Add rice. Cook until rice is lightly browned, about 10 minutes, stirring constantly. 3. Place about 3 lb 4 oz (2 qt) onion and rice mixture in each pan.
Soup and Gravy base, chicken or beef	12 oz. . . .	2 cups. . .	. . . . .	4. Add Soup and Gravy base,salt,garlic powder and pepper to water; stir well. Pour 3 qt over rice in each pan; cover.
Salt.	$1^{1}/_{2}$ oz. . .	$12/_{3}$ tbsp	. . . . .	
Garlic powder.	. . . . .	$1^{1}/_{3}$ tbsp	. . . . .	5. Bake 1 hour or until rice is tender. Stir lightly.
Pepper, black.	. . . . .	1 tsp. . . .	. . . . .	
Water, boiling.	. . . . .	3 gal. . . .	. . . . .	

REVISION (OVER)

Continued next page

Serving Size Adjustment Practice, continued

Serving Size Adjustment Practice Activity, contd.

Use this page to generate the combined WF.

Note: Use the "measures" column for calculating new quantities on all ingredients except butter, onions, and rice.

DETERMINE THE WF

Continued next page

Serving Size Adjustment Practice, continued

Serving Size Adjustment Practice Activity, contd.

Use this page to generate new quantities.

MULTIPLY EACH INGREDIENT BY THE WF					
INGREDIENT	**OLD QUANTITY (AS DECIMAL)**	**×**	**WF**	**=**	**NEW QUANTITY**
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	
		×		=	

Answers can be found at the end of the lesson.

Problems with Recipe Conversions

Overview

Before ending this lesson, it is important for you to take a look at some of the problems that occur when converting recipes.

For the most part, these recipe conversion techniques work well. However, sometimes the conversion process breaks down a bit, leaving you to your wits and your own good judgment to produce a food product that looks and tastes good.

Here are a few of examples: Let's say you have a recipe for 10, but you are tasked to serve 400, or you have a recipe for 500 and you are tasked to serve 6, or the original recipe calls for a saucepan, but now you have to use a tilt skillet. In each of these cases, if you use a recipe generated from one of these techniques exactly "as is" you are likely to run into problems.

This section helps you explore five recipe conversion problems:

- Measurement problems
- Surface and volume differences
- Equipment needs
- Cooking time changes
- Recipe flaws

In *Professional Cooking*, Chapter 5, Wayne Gisslen addresses each of these common problems. Use the spaces below to help you summarize his important points about them. In each space write two or three principles or precautions you learn from reading about these problems.

Measurement Problems

Use this space to write your notes about measurement problems. See *Professional Cooking,* "The Recipe: Its Structure and Its Use."

MEASUREMENT PROBLEMS

Problems with Recipe Conversions, continued

Surface and Volume Differences

Use this space to write your notes about surface and volume differences. See *Professional Cooking,* "The Recipe: Its Structure and Its Use."

SURFACE AND VOLUME DIFFERENCES

Equipment Needs

Use this space to write your notes about equipment needs. See *Professional Cooking,* "The Recipe: Its Structure and Its Use."

EQUIPMENT NEEDS

Problems with Recipe Conversions, continued

Cooking Times

Use this space to write your notes about cooking times. See *Professional Cooking,* "The Recipe: Its Structure and Its Use."

COOKING TIMES

Recipe Flaws

Use this space to write your notes about recipe flaws. See *Professional Cooking,* "The Recipe: Its Structure and Its Use."

RECIPE FLAWS

Practicing What You Have Learned

From Theory to Practice

In order to help you put into practice what you have learned in this lesson, you must move from reading to doing. Meet with your supervisor to discuss how to practice what you have read about in the lesson.

Consult with your supervisor and do the following:

1. Discuss what you have learned, including describing the three types of recipe conversions.

2. Ask your supervisor to demonstrate for you how s/he performs these recipe conversions.

3. After observing a demonstration of the three recipe conversions, perform the adjustments yourself using recipes supplied by your supervisor. Discuss your performance.

Performance Evaluation

Once you have completed this lesson—meaning you have read the material, completed the activities, observed demonstrations of the core tasks, and then practiced the core tasks enough to be moderately competent in them—you are ready to demonstrate the tasks for sign-off.

Your supervisor will discuss this sign-off process with you. It will involve your demonstrating the core tasks under the supervisor's observation, so that he or she can determine whether or not you are able to perform the tasks in a satisfactory manner. Using the Performance Evaluation sheets as a guide, he or she will mark "go" for tasks you perform well and "no go" for tasks where you need improvement. Performing the core tasks well enough to receive a "go" from your supervisor will mean that you met the Enlisted Performance Qualification (EPQ) associated with the lesson. If you receive a "no go," you must practice the core tasks, receive feedback, and practice again until you are able to perform the tasks well enough for sign-off.

The EPQ/core task for this lesson is:

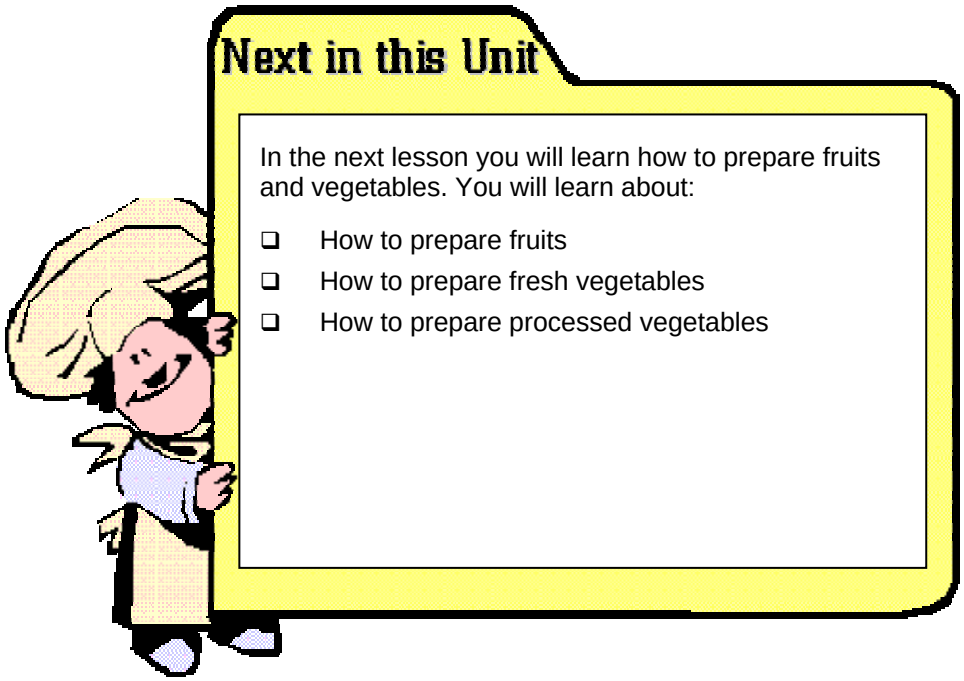
- ❑ 4.A.01 – Perform the three types of recipe adjustments:
  - Yield
  - Quantity
  - Portion size

Lesson Summary

Summary

Having completed this lesson, you can:

- Given a recipe conversion situation requiring a yield adjustment, perform the yield adjustment.
- Given a recipe conversion situation requiring a quantity adjustment, perform the quantity adjustment.
- Given a recipe conversion situation requiring a serving size adjustment, perform the serving size adjustment.



Activity Feedback

Overview

This section contains the correct answers to the following activities:

- Yield adjustment WF practice activity
- Yield adjustment practice activity
- Quantity adjustment WF practice activity
- Quantity adjustment practice activity
- Serving size adjustment WF practice activity
- Serving size adjustment practice activity

Yield Adjustment WF Practice Activity – Answers

THE SITUATION
A recipe calls for 80 servings of chicken breasts. You need 140 servings.

Given this situation, determine the WF for a yield adjustment.

STEP 1 – DETERMINE THE WF FOR A YIELD ADJUSTMENT	
SUB-STEP	**ACTION**
1.	Determine the desired number of servings (new yield). The new yield = **140**
2.	Determine the number of servings in the recipe (old yield). The old yield = **80**
3.	Divide the new yield by the old yield. The result is your WF for a yield adjustment. $WF = \frac{\text{new yield}}{\text{old yield}} = \frac{\mathbf{140}}{\mathbf{80}} =$ **1.75**
End of procedure	

Activity Feedback, continued

Yield Adjustment Practice Activity – Answers

THE SITUATION
You have been given the recipe below from the AFRS, in which the yield is 100 servings. Adjust the recipe to serve 60.

99 L MEAT, FISH, AND POULTRY No. 038 03 (1)

SPAGHETTI WITH MEAT SAUCE, R-T-U SAUCE, (GROUND BEEF)

Yield 100 Portions **Pan Size** STEAM JACKETED KETTLE ( ) Pans ° F.

Each Portion 1 Cup (8 oz) Meat Sauce & 1 Cup (5 1/2 oz) Spaghetti

Calories	Carb.	Protein	Fat	% Cal / Fat	Cholesterol	Sodium	Fiber	Calcium
440 cal	56 g	24 g	13 g	26 %	47 mg	1226 mg	0 g	5 mg

Ingredients	Weight	Measure	Issue
BEEF, GROUND 90% LEAN THAWED	16 lb		
SPAGHETTI SAUCE, MEATLESS, CANNED, RTU	45 1/2 lb	5 1/4 gal	
SALT	2 1/2 oz	3 2/3 tbsp	
WATER, BOILING	80 lb	10 gal	
SPAGHETTI	12 lb		

HOW TO PERFORM A YIELD ADJUSTMENT	
STEP	**ACTION**
1.	Obtain the WF by dividing the new yield by the old yield. $WF = \frac{\text{new yield}}{\text{old yield}} = \frac{\mathbf{60}}{\mathbf{100}} = \boxed{\mathbf{.60}}$
2.	Multiply each ingredient by the WF. (Use the table on the next page to show the results of this step.)
End of procedure	

Continued next page

Activity Feedback, continued

Yield Adjustment Practice Activity – Answers, contd.

ADJUSTED QUANTITIES					
INGREDIENT	**OLD QUANTITY (AS DECIMAL)**	×	**WF**	=	**NEW QUANTITY**
Beef, ground	16.00 lb	×	**.60**	=	**9.60 lb (or 9 lb 9 ½ oz)**
Spaghetti sauce	5.25 gal	×	**.60**	=	**3.15 gal (or 3 gal 1 pt 6 tbsp 1 ¼ tsp)**
Salt	3.67 tbsp	×	**.60**	=	**2.202 tbsp (or 2 tbsp 3/4 tsp)**
Water	10.00 gal	×	**.60**	=	**6 gal**
Spaghetti	12.00 lb	×	**.60**	=	**7.20 lb (or 7 lb 3 ¼ oz)**

Activity Feedback, continued

Quantity Adjustment WF Practice Activity – Answers

THE SITUATION
A soup recipe calls for 9 quarts of milk, but you only have 6 quarts.

Given this situation, determine the WF for a quantity adjustment.

STEP 1 – DETERMINE THE WF FOR A QUANTITY ADJUSTMENT	
SUB-STEP	**ACTION**
1.	Determine the desired quantity or quantity-on-hand (new quantity). The new quantity = **6**
2.	Determine the quantity in the recipe (old quantity). The old quantity = **9**
3.	Divide the new quantity by the old quantity (round to the nearest hundredth). The result is your WF for a quantity adjustment. $WF = \frac{\text{new quantity}}{\text{old quantity}} = \frac{6}{9} =$ **.67**
End of procedure	

Activity Feedback, continued

Quantity Adjustment Practice Activity – Answers

THE SITUATION
You have been given the recipe below from the AFRS. It calls for 100 chicken breasts. You have 40 lb of chicken on hand (128 pieces) and permission to prepare the extra pieces. Adjust the recipe for this new quantity.

L. MEAT, FISH, AND POULTRY No. 23

CARIBBEAN CHICKEN BREAST

YIELD: 100 Portions — EACH PORTION: 1 Piece (3 ½ ounces)

PAN SIZE: 18 by 26 inch sheet pan (6 pans) 12 by 20 by 2½ inch steam table pan (4 pans) — TEMPERATURE: 375°F.

INGREDIENTS	WEIGHTS	MEASURES		METHOD
Chicken breasts, boneless skinless, thawed	31 lb 4 oz	100 breasts (4 to 5 ounces)		1. Wash chicken thoroughly under cold running water. Drain well.
Juice, lemon	2 lb 2 oz	1 qt		2. Combine lemon juice, honey, salad oil, paprika, garlic powder, salt, ground ginger, lemon rind, oregano and red pepper. Mix thoroughly.
Honey	1 lb 8 oz	1 7/8 cup		
Salad Oil	7⅞ oz	1 cup		
Paprika, ground	4 oz	1 cup		
Garlic powder	1 5/8 oz	1/3 cup		
Salt	1¼ oz	1 ⅔ tbsp		
Lemon rind, grated	1 oz	5 tbsp		3. Pour over chicken breasts. Refrigerate 30 minutes.
Ginger, ground	1 oz	1/3 cup		
Pepper, red, ground	3/8 oz	2 tbsp		
Oregano, crushed	1/3 oz	5 tbsp		

CH-1 (OVER)

Note: Use the "measures" column for calculating new quantities on all ingredients.

HOW TO PERFORM A QUANITY-ON-HAND RECIPE CONVERSION	
SUB-STEP	**ACTION**
1.	Obtain the WF by dividing the new quantity by the old quantity. $WF = \frac{\text{new quantity}}{\text{old quantity}} = \frac{\mathbf{128}}{\mathbf{100}} = \boxed{\mathbf{1.28}}$
2.	Multiply each ingredient by the WF. (Use the table on the next page to show the results of this step.)
End of procedure	

Continued next page

Activity Feedback, continued

Quantity Adjustment Practice Activity – Answers, contd.

ADJUSTED QUANTITIES					
INGREDIENT	**OLD QUANTITY (AS DECIMAL)**	**×**	**WF**	**=**	**NEW QUANTITY**
Chicken breasts	**100 breasts**	×	**1.28**	=	**128 breasts (or 40 lb)**
Lemon juice	**1.00 qt**	×	**1.28**	=	**1.28 qt (or 1 qt 1c 1 tbsp 2 ¾ tsp)**
Honey	**1.88 c**	×	**1.28**	=	**2.4064c (or 1 pt 6 tbsp 1 ½ tsp**
Salad oil	**1.00 c**	×	**1.28**	=	**1.28c (or 1 c 4 tbsp 1 ½ tsp)**
Paprika, ground	**1.00 c**	×	**1.28**	=	**1.28c (or 1 c** 4 tbsp **1 ½ tsp)**
Garlic powder	**0.33 c**	×	**1.28**	=	**0.4224c (or 6 tbsp 2 ¼ tsp)**
Salt	**1.67 tbsp**	×	**1.28**	=	**2.1376 tbsp (or 2 tbsp ½ tsp)**
Lemon rind, grated	**5.00 tbsp**	×	**1.28**	=	**6.4 tbsp (or 6 tbsp 1¼ tsp)**
Ginger, ground	**0.33 c**	×	**1.28**	=	**0.4224c (or 6 tbsp 2 ¼ tsp)**
Pepper, red, ground	**2.00 tbsp**	×	**1.28**	=	**2.56 tbsp (or 2 tbsp 1 ¾ tsp)**
Oregano, crushed	**5.00 tbsp**	×	**1.28**	=	**6.40 tbsp (or 6 tbsp 1 ¼ tsp)**

Activity Feedback, continued

Serving Size Adjustment WF Practice Activity – Answers

THE SITUATION
A recipe for Rice Pilaf calls for 100 servings of rice, long grain, at $^{3}/_{4}$ cup each, and you need 55 servings at 1 cup each.

Given this situation, determine the WF for a serving size adjustment.

DETERMINE THE WF – SERVING SIZE ADJUSTMENT	
STEP	**ACTION**
Generate a Serving Size WF	
1.	Divide the new serving size by the old serving size. The result is your serving size WF. $WF1 = \frac{\text{new serving size}}{\text{old serving size}} = \frac{\mathbf{1.00}}{\mathbf{0.75}} = \boxed{\mathbf{1.33}}$
Generate a Yield WF	
2.	Divide the new yield by the old yield. The result is your yield WF. $WF2 = \frac{\text{new yield}}{\text{old yield}} = \frac{\mathbf{55}}{\mathbf{100}} = \boxed{\mathbf{0.55}}$
Generate the Combined WF	
3.	Multiply the two WFs (WF1 × WF2) and round to the nearest hundredth. WF (combined) = **1.33** (WF1) × **0.55** (WF2) = **0.73**
End of procedure	

Activity Feedback, continued

Serving Size Adjustment Practice Activity – Answers

THE SITUATION
You have been given the recipe below for Rice Pilaf. It calls for 100 servings of rice, long grain (9 lb 8 oz), at $^{3}/_{4}$ cup each. Adjust the recipe to feed 55 patrons, using servings of 1 cup each.

RICE PILAF

YIELD: 100 Portions (4 Pans) EACH PORTION: $^{3}/_{4}$ Cup (5 Ounces)

PAN SIZE: 12 by 20 by 4-inch Steam Table Pan TEMPERATURE: 400°F. Oven

INGREDIENTS	WEIGHTS	MEASURES		METHOD
Butter or margarine Salad oil or melted shortening Onions, dry, finely chopped	6 oz. 6 oz. 6 lb.	$^{3}/_{4}$ cup. $^{3}/_{4}$ cup. 4 $^{3}/_{4}$ qt.		1. Melt butter or margarine. Add salad oil or melted shortening and onions. Stir well. Sauté until onions are tender, about 5 minutes.
Rice, long grain.	9 lb 8 oz.	5 $^{1}/_{2}$ qt.		2. Add rice. Cook until rice is lightly browned, about 10 minutes, stirring constantly. 3. Place about 3 lb 4 oz (2 qt) onion and rice mixture in each pan.
Soup and Gravy base, chicken or beef Salt Garlic powder Pepper, black Water, boiling	12 oz. 1 $^{1}/_{2}$ oz. 	2 cups. 2 $^{2}/_{3}$ tbsp 1 $^{1}/_{3}$ tbsp 1 tsp. 3 gal.		4. Add Soup and Gravy base,salt,garlic powder and pepper to water; stir well. Pour 3 qt over rice in each pan; cover. 5. Bake 1 hour or until rice is tender. Stir lightly.

REVISION (OVER)

DETERMINE THE WF
Serving size WF (WF1) = 1.00/0.75 = 1.33 *Yield WF (WF2) = 55/100 = 0.55* *Combined WF = WF1 x WF2 =* *1.33 x 0.55 = 0.73*

Continued next page

Activity Feedback, continued

Serving Size Adjustment Practice Activity – Answers, contd.

MULTIPLYING EACH INGREDIENT BY THE WF					
INGREDIENT	**OLD QUANTITY (AS DECIMAL)**	**×**	**WF**	**=**	**NEW QUANTITY**
Butter	**6.0 oz**	×	**.73**	=	**4.38 oz (or 4 1/2 oz)**
Salad oil	**0.75 c**	×	**.73**	=	**.5475c (or 8 tbsp 2 ¼ tsp)**
Onions	**6.0 lb**	×	**.73**	=	**4.38 lb (or 4 lb 6 oz)**
Rice	**9.5 lb**	×	**.73**	=	**6.935 lb (or 6 lb 15 oz)**
Soup and gravy base	**2.0 c**	×	**.73**		**1.46c (or 1c 7 tbsp 1 tsp)**
Salt	**1.67 tbsp**	×	**.73**		**1.2191 tbsp (or 1 tbsp ¾ tsp)**
Garlic powder	**1.33 tbsp**	×	**.73**		**.9709 tbsp (or 1 tbsp)**
Pepper, black	**1.0 tsp**	×	**.73**		**.73 tsp (or 3/4 tsp)**
Water	**3.0 gal**	×	**.73**	=	**2.19 gal (or 2 gal 1 pt 1c 2 tsp)**

Recipe Adjustment Job Aid

Converting pounds to ounces

_____ lb × _____ (WF) = ____.____ lb

0.____ lb

× 16.0 oz

____.____ oz (or _____ oz)

Converting pounds to ounces (example)

12.6 lb × 0.73 (WF) = 9.198 lb

0.198

× 16.0 oz

3.168 oz (or 3¼ oz)

Converting gallons to largest whole measurements

___ gal × ___ (WF) = [___ gal] + 0.___gal

Multiply x 4 for quarts

0.___ gal = [___ qt] + 0.___ qt

x 2 for pints

0.___ qt = [___ pt] + 0.___ pt

x 2 for cups

0.___ pt = [___c] + 0.___c

x 16 for tablespoons

0.___c = [___ tbsp] + 0.___ tbsp

x 3 for teaspoons

0.___ tbsp = ___.___ tsp = [____ tsp]

Example

3 gal × 0.45 (WF) = [1 gal] + 0.35 gals

0.35 gal = [1 qt] + 0.4 qt

0.4 qt = [1c] + 0.6c

0.6c = [9 tbsp] + 0.6 tbsp

0.6 tbsp = 1.8 tsp = [1¾ tsp]

1.35 gal = 1 gal 1 qt 1c 9 tbsp 1 ¾ tsp

Conversions from quarts, pints, cups and tablespoons are done in the same manner.

Rounding Table for Ounces and Teaspoons

Examples:

1.8 tsp = 1¾ tsp
2.12 tsp = 2 tsp
0.88 tsp = 1 tsp

14.7 oz = 14¾ oz
0.3867 oz = ½ oz
14.88 oz = 15 oz

Ounces or teaspoons ending in this decimal…	May be rounded to this…
.01–.12	0
.13–.37	1/4
.38–.62	1/2
.63–.87	3/4
.88–.99	1

PERFORMANCE EVALUATION 4.4.1

Recipe Conversion: Yield Adjustment

Goal

The student will adjust a recipe for yield

Process

Given a recipe and a requirement to adjust the yield of the recipe, the student will perform the following:

- Obtain the working factor for a yield adjustment
- Apply the yield adjustment procedure.

Directions

Using a calculator and a job aid(s), you will:

1. Obtain the working factor.
2. Convert fractions to decimals and/or ounces to decimal portions of pounds.
3. Multiply the quantity of each ingredient listed in the recipe by the working factor.

Checklist

Fill in your name on the Unit 4, Lesson 4 Performance Evaluation Checklist and hand it to your supervisor prior to completing the performance evaluation.

Feedback

Your supervisor will review your performance for accuracy and completeness and provide any comments directly to you.

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PERFORMANCE EVALUATION 4.4.1

Recipe Conversions: Yield Adjustment

Location _____ _____	**Completed by:** _____ (Enter your name) **Reviewed by:** _____ (Obtain Supervisor's signature)

EPQ
4.A.01 PERFORM the three types of recipe adjustments IAW Armed Forces Recipe Service (AFRS), NAVSUP Publication 7.

Criteria **Accuracy:** • Quantity of all ingredients adjusted to correct values (with 100% accuracy) • Convert all fractions to decimals	**Safety:** • Use the correct procedure

TASK	**COMMENTS**								
	Y	**N**	**1st Attempt** _____/_____/_____ **Date**	**Y**	**N**	**2nd Attempt** _____/_____/_____ **Date**	**Y**	**N**	**3rd Attempt** _____/_____/_____ **Date**
1. The performer obtained the working factor for a yield adjustment.	☐	☐		☐	☐		☐	☐	
2. The performer converted fractions to decimals and/or ounces to decimal portions of pounds, as necessary.	☐	☐		☐	☐		☐	☐	
3. The performer multiplied the quantity of each ingredient listed in the recipe by the working factor.	☐	☐		☐	☐		☐	☐	
			☐ Go ☐ No Go			☐ Go ☐ No Go			☐ Go ☐ No Go

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PERFORMANCE EVALUATION 4.4.2

Recipe Conversions: Quantity Adjustment

Goal

The student will adjust a recipe for quantity.

Process

Given a recipe and a requirement to adjust the quantity of ingredients used, you will apply the quantity adjustment procedure.

Directions

Using the calculator and job aids, you will:

1. Obtain the working factor.
2. Convert fractions to decimals and/or ounces to portions of pounds
3. Multiply the quantity of each ingredient by the working factor other ingredients by the working factor.

Checklist

Fill in your name on the Unit 4, Lesson 4 Performance Evaluation Checklist and hand it to your supervisor prior to completing the performance evaluation.

Feedback

Your supervisor will review your performance for accuracy and completeness and provide any comments directly to you.

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PERFORMANCE EVALUATION 4.4.2

Recipe Conversions: Quantity Adjustment

Location	**Completed by:** _____ (Enter your name) **Reviewed by:** _____ (Obtain Supervisor's signature)

EPQ
4.A.01 PERFORM the three types of recipe adjustments IAW Armed Forces Recipe Service (AFRS), NAVSUP Publication 7.

Criteria	**Safety:**
Accuracy: • Quantity of all ingredients adjusted to correct values (with 100% accuracy) • Convert all fractions to decimals	• Use the correct procedure.

TASK	**COMMENTS**								
	Y	**N**	**1st Attempt** _____/_____/_____ **Date**	**Y**	**N**	**2nd Attempt** _____/_____/_____ **Date**	**Y**	**N**	**3rd Attempt** _____/_____/_____ **Date**
1. The performer obtained the working factor for a quantity adjustment.	☐	☐		☐	☐		☐	☐	
2. The performer converted fractions to decimals and/or ounces to decimal portions of pounds, as necessary.	☐	☐		☐	☐		☐	☐	
3. The performer multiplied the quantity of each ingredient listed in the recipe by the working factor.	☐	☐		☐	☐		☐	☐	
			☐ Go ☐ No Go			☐ Go ☐ No Go			☐ Go ☐ No Go

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PERFORMANCE EVALUATION 4.4.3

Recipe Conversions: Serving Size Adjustment

Goal

The student will adjust a recipe for serving size.

Process

Given a recipe and a requirement to adjust the serving sizes in the recipe, the student will perform the following:

- Obtain the working factor for a serving size adjustment (this may or may not include a yield adjustment).
- Apply the serving size adjustment procedure.

Directions

Using a calculator and a job aid(s), you will:

1. Obtain the working factor (or combination of working factors).
2. Convert fractions to decimals and/or ounces to decimal portions of pounds.
3. Multiply the quantity of each ingredient listed in the recipe by the working factor.

Checklist

Fill in your name on the Unit 4, Lesson 4 Performance Evaluation Checklist and hand it to your supervisor prior to completing the performance evaluation.

Feedback

Your supervisor will review your performance for accuracy and completeness and provide any comments directly to you.

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PERFORMANCE EVALUATION 4.4.3

Recipe Conversions: Serving Size Adjustment

Location _____ _____	**Completed by:** _____ (Enter your name) **Reviewed by:** _____ (Obtain Supervisor's signature)

EPQ
4.A.01 PERFORM the three types of recipe adjustments IAW Armed Forces Recipe Service (AFRS), NAVSUP Publication 7.

Criteria **Accuracy:** • Quantity of all ingredients adjusted to correct values (with 100% accuracy) • Convert all fractions to decimals	**Safety:** • Use the correct procedure

TASK	**COMMENTS**								
	Y	**N**	**1st Attempt** _____/_____/_____ **Date**	**Y**	**N**	**2nd Attempt** _____/_____/_____ **Date**	**Y**	**N**	**3rd Attempt** _____/_____/_____ **Date**
1. The performer obtained the working factor for a serving size adjustment. (This may include finding and combining/multiplying an additional working factor for a yield adjustment.)	☐	☐		☐	☐		☐	☐	
2. The performer converted fractions to decimals and/or ounces to decimal portions of pounds, as necessary.	☐	☐		☐	☐		☐	☐	
3. The performer multiplied the quantity of each ingredient listed in the recipe by the working factor.	☐	☐		☐	☐		☐	☐	
			☐ Go ☐ No Go			☐ Go ☐ No Go			☐ Go ☐ No Go

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LESSON 5

How to Handle Fruits and Vegetables, and Use Basic Cutting Techniques

Introduction

Overview

This lesson will help you learn to get vegetables and fruits ready for preparation. This is called pre-preparation. It will also help you learn to use the basic cutting techniques necessary for food preparation.

This section of the lesson covers:

- Performance qualifications
- Objectives
- Performance evaluation
- Tools and references
- Recommended reading
- Topics covered by this lesson

Performance Qualifications

This lesson consists of three Enlisted Performance Qualifications (EPQs):

4.A.02 Perform the following cutting techniques on at least two different food items IAW "Professional Cooking" by Wayne Gisslen:

- Dice
- Mince
- Chop
- Slice

SupGuide: Member will be required to display two proper techniques using the appropriate knife for each.

4.A.15 Wash fresh fruits and vegetables for consumption IAW "Professional Cooking" by Wayne Gisslen and the Food Service Sanitation Manual, COMDTINST M6240.4 (series).

4.A.18 Prepare a fresh and frozen vegetable product IAW "Professional Cooking" by Wayne Gisslen and Armed Forces Recipe Service (AFRS), NAVSUP Publication 7.

Introduction, continued

Objectives

Upon completion of this lesson, you will:

- Identify and apply steps for getting vegetables and fruits ready for preparation.
- Use basic cutting techniques to get vegetables ready for preparation.

Performance Evaluation

There will be a performance evaluation in this lesson. This evaluation will cover the EPQs 4.A.02, 4.A.15 and 4.A.18 as listed above.

Tools and References

References for this lesson include:

- *Professional Cooking*, by Wayne Gisslen
- Armed Forces Recipe Service (AFRS), NAVSUP Publication 7.
- Unit 1, Appendix C, Glossary of Key Terms

Recommended Reading

To get the most out of this lesson, be sure to read the following:

- *Professional Cooking:*
  - "Understanding Vegetables: Handling Vegetables" (Chapter 16)
  - "Salads and Salad Dressings: Table 19.1 – Fresh Fruit Pre-preparation" (Chapter 19)
  - "Mise En Place: Using the Knife" (Chapter 7)
- Armed Forces Recipe Service (AFRS), Section A. General Information, No. 31 (1–2)

Introduction, continued

Topics Covered by This Lesson

The ultimate goal of this lesson is to have you properly chopping, dicing, mincing, and slicing vegetables and fruits.

In order to practice these basic cutting techniques, however, you must have some clean food items pre-prepared, that is to say, ready for preparation. So, you will examine how to pre-prepare vegetables and fruits first, and then come back around to the cutting techniques.

This lesson covers:

- Pre-preparing fresh vegetables
- Pre-preparing processed vegetables
- Pre-preparing fruits
- How to handle a kitchen knife
- Basic cuts, shapes, and cutting techniques

Pre-Preparing Fresh Vegetables

Overview

In addition to providing important nutrients, vegetables bring variety, flavor, eye appeal, elegance, and sophistication to menus.

The next two sections will address guidelines for getting the following items ready for preparation:

- Leafy vegetables
- Non-leafy vegetables

Leafy Vegetables

The table below holds general guidelines for the pre-preparation of leafy vegetables.

GENERAL GUIDELINES FOR PRE-PREPARING LEAFY VEGETABLES	
NO.	**GUIDELINE**
1.	When sorting and discarding damaged salad greens, keep as many outer salad green leaves as possible. These can be used to make salads more attractive, and they provide nutrients and vitamins.
2.	Core, stem, and separate salad greens before washing.
3.	Wash greens by running water over them.
4.	Soak any wilted greens in ice water for 10 minutes or only until crisp.
5.	Drain greens thoroughly to prevent watery salad. Place heads of lettuce (core side down) to drain.
6.	Tear or cut salad greens into bite-size pieces or as otherwise directed in the recipe.
7.	Remove outer iceberg lettuce leaves for use as lettuce cups with individual salads.

Continued next page

Pre-Preparing Fresh Vegetables, continued

Leafy Vegetables, contd.

This table provides specific pre-preparation guidelines for common types of leafy vegetables.

GUIDELINES FOR PRE-PREPARING COMMON LEAFY VEGETABLES	
TYPE	**GUIDELINES**
Iceberg lettuce	1. Remove core. 2. Hit each head (core side directly down) on counter. 3. Lift or twist out core; or cut out.
Big Boston	1. Remove base core. 2. Separate leaves.
Cabbage and Chinese cabbage	1. Trim wilted outer leaves. 2. Cut in quarters. 3. Remove hard core (leave enough of the core to hold the head together).
Romaine, endive and escarole	1. Remove base core. 2. Separate leaves.
Collards, kale, parsley, and spinach	1. Remove tough stems.

See *Professional Cooking*, "Salads and Salad Dressings" (Chapter 19), Ingredients, and the *AFRS* for more details on the pre-preparation of lettuce and other salad greens.

Pre-Preparing Fresh Vegetables, continued

Non-Leafy Vegetables

This table provides general guidelines for the pre-preparation of non-leafy vegetables.

GENERAL GUIDELINES FOR PREPARING NON-LEAFY VEGETABLES	
NO.	**GUIDELINE**
1.	Wash and scrub thoroughly to remove dirt.
2.	Use a vegetable brush for cleaning celery, carrots, and potatoes when they are not peeled.
3.	Trim bruised and blemished parts.
4.	Cut tomatoes in slices or wedges shortly before using.
5.	Radishes, carrots, celery, and cucumbers may be crisped in ice water.
6.	Drain before using.

This table provides specific guidelines for the pre-preparation of some common non-leafy vegetables.

GUIDELINES FOR PRE-PREPARING COMMON NON-LEAFY VEGETABLES			
NO.	**GUIDELINE**		
	IF PREPARING…	**THEN…**	**AND…**
1.	Beans, green,	Trim ends,	Remove strings.
2.	Broccoli,	Cut off tough ends,	Remove tough, outer leaves, separate into flowerets.
3.	Carrots,	Trim tops,	Pare.
4.	Cauliflower,	Trim end,	Separate into flowerets.
5.	Corn,	Remove cornhusks and silk,	Keep cold. DO NOT soak.
6.	Cucumbers,	Pare.	—

Continued next page

Pre-Preparing Fresh Vegetables, continued

Non-Leafy Vegetables, contd.

NO.	GUIDELINE		
	IF PREPARING…	**THEN…**	**AND…**
7.	Onions, dry,	Trim ends,	Peel off outer skin.
8.	Squash, fall or winter type,	Cut as recipe indicates,	Remove seeds.
9.	Tomatoes,	Cut out stem end.	—
10.	Tomatoes, cherry,	Remove stems.	—

For more a more details on pre-preparation techniques for fresh vegetables see *Professional Cooking*, "Understanding Vegetables," Table 16.2 and *AFRS*, No 31 (1).

Pre-Preparing Processed Vegetables

Overview

Processed vegetables are those that have been partially or completely prepared or processed by the manufacturer. The next few sections will cover the following types of processed vegetables:

- Frozen vegetables
- Dried or dehydrated vegetables
- Canned vegetables

Frozen Vegetables

Most frozen vegetables do not require thawing. In order to prepare them you should follow directions on the package. A few exceptions to this include corn on the cob and vegetables that freeze into a solid block, such as spinach and squash. These should be thawed in the cooler first for more even cooking.

Dried or Dehydrated Vegetables

Follow the manufacturer's directions when reconstituting dried or dehydrated vegetables. Many of these will need to be soaked in cold or warm water for specific lengths of time. Remember that they continue to absorb water as they are simmered.

Canned Vegetables

Because canned vegetables have already been cooked, they only need to be heated and seasoned.

GENERAL GUIDELINES FOR PRE-PREPARING CANNED VEGETABLES	
NO.	**GUIDELINE**
1.	Before you open a can, wipe the top of the can clean.
2.	Use a clean can opener.
3.	Drain the vegetables and place half the liquid in a cooking pot.

For more on the handling of processed vegetables, see *Professional Cooking*, "Understanding Vegetables," Processed Vegetables.

Storing Vegetables

Guidelines for Storing Vegetables

When storing vegetables, here are some guidelines to follow.

GENERAL GUIDELINES FOR STORING VEGETABLES	
TYPE	**GUIDELINE**
Fresh	Potatoes, onions, and winter squash are stored at cool temperatures (50–65 °F) in a dry dark place.
	Refrigerate other vegetables. Keep them covered or wrapped to prevent drying.
	Cover or wrap peeled and cut vegetables, and use them quickly to prevent spoilage.
	Store all fresh vegetables for as short a time as possible.
Frozen	Store at 0 °F or colder, in original container until ready for use.
	Do not refreeze thawed vegetables.
Dried or dehydrated	Store in a cool (less than 75 °F), dry, well-ventilated place.
	Keep well-sealed and off the floor.
Canned	Keep in a cool, dry place, away from sunlight, and six inches off the floor.
	Discard cans that show signs of damage or spoilage (swollen, badly dented, or rusted cans).

For more on vegetable storage, see *FS Sanitation Manual*, 2–D - Food Storage.

Topic Review (1 of 2)

Purpose

The intention of this exercise is to help you confirm what you have learned about how to get vegetables ready for preparation.

Directions

Test your knowledge of the concepts and principles of this lesson by answering the questions below. Use the lesson material and references to assist you as necessary.

When you have finished answering the questions, compare your answers to the correct answers in the "Topic Review (1 of 2) Feedback" section at the end of this lesson.

Questions

1–4. Open *Professional Cooking*, "Understanding Vegetables" (Chapter 16), and locate the recipe for Clear Vegetable Soup. Using this recipe, and the Fresh Vegetable Pre-preparation table in the same chapter, answer this question for each vegetable listed in the table below:

- What must you do to get this vegetable ready for preparation and how will it be prepared /cooked?

Write your answers in the spaces provided in the table below.

PREPARING FRESH VEGETABLES			
NO.	**VEGETABLE**	**PRE-PREPARATION ACTIVITIES**	**PREPARATION/ COOKING ACTIVITIES**
Ex.	Onions	*Cut off root and stem ends. Peel. Wash. Dice small.*	*Sweat with other veggies in butter over low heat until about half-cooked. Add stock and simmer until barely tender.*
1.	Carrots		

Continued next page

Topic Review (1 of 2), continued

Questions, contd.

NO.	VEGETABLE	PRE-PREPARATION ACTIVITIES	PREPARATION/ COOKING ACTIVITIES
2.	Turnip		
3.	Tomatoes (canned)		
4.	Peas (frozen)		

Pre-Preparing Fruits

Overview

Fruits are used in many different ways—as garnishes, as filling for pies or cakes, and in salads.

In this section, we will look at:

- General guidelines for pre-preparing fruit
- Guidelines for preparing common fresh fruits

General Guidelines for Pre-Preparing Fruit

Follow these general guidelines to get fruit ready for preparation.

GENERAL GUIDELINES FOR PRE-PREPARING FRUIT	
NO.	**GUIDELINE**
1.	Wash thoroughly to remove dirt.
2.	Trim bruised and blemished parts.
3.	Remove stems, seeds, and any part that will not be used.

Specific Guidelines for Preparing Common Fresh Fruits

Here are some guidelines for preparing some of the most common fresh fruits.

GUIDELINES FOR PREPARING COMMON FRESH FRUITS				
NO.	**GUIDELINE**			
	IF PREPARING…	**THEN…**	**AND…**	**OR…**
1.	Apples,	Cut,	Core,	Pare (if recipe indicates).
2.	Bananas,	Peel,	DO NOT refrigerate.	—
3.	Cherries (sweet),	Remove stems and pits,	DO NOT soak.	—
4.	Grapefruit,	Pare,	Section,	Cut as recipe indicates.

Continued next page

Pre-Preparing Fruits, continued

Specific Guidelines for Preparing Common Fresh Fruits, contd.

NO.	GUIDELINE			
	IF PREPARING…	THEN…	AND…	OR…
5.	Lemons/Limes,	Grate rind,	Cut in half to squeeze juice,	Cut as recipe indicates.
6.	Oranges,	Peel,	Section,	Cut as recipe indicates.
7.	Peaches,	Pare if recipe indicates,	Remove pit.	—
8.	Pears,	Pare if recipe indicates,	Core.	—
9.	Tangerines,	Peel,	Section,	Cut as recipe indicates.
10.	Watermelons,	Pare and seed if recipe indicates,	Cut as recipe indicates.	—

For more on the pre-preparation of fresh fruit, see *Professional Cooking*, "Salads and Salad Dressings" (Chapter 19).

Topic Review (2 of 2)

Purpose

The intention of this exercise is to help you confirm what you have learned about how to get fruit ready for preparation.

Directions

Test your knowledge of the concepts and principles of this lesson by answering the questions below. Use the lesson material and references to assist you as necessary.

When you have finished answering the questions, compare your answers to the correct answers in the "Topic Review (2 of 2) Feedback" section at the end of this lesson.

Questions

5–6. Open *Professional Cooking* and locate the recipe for Fruit Salsa in "Stocks and Sauces" (Chapter 8). Using this recipe and the Fresh Fruit Pre-Preparation table in "Salads and Salad Dressings" (Chapter 19), answer this question for each fruit listed in the table below:

- What must you do to get this fruit ready for preparation and how will it be prepared?

Write your answers in the spaces provided in the table below.

PREPARING FRESH VEGETABLES			
NO.	**FRUIT**	**PRE-PREPARATION ACTIVITIES**	**PREPARATION ACTIVITIES**
Ex.	Papaya	*Wash. Cut in half lengthwise and scrape out seeds. Peel. Dice finely. Save juices.*	*Combine with other ingredients. Salt to taste. Refrigerate.*
5.	Honeydew melon		

Continued next page

Topic Review (2 of 2), continued

Questions, contd.

NO.	VEGETABLE	PRE-PREPARATION ACTIVITIES	PREPARATION/ COOKING ACTIVITIES
6.	Mango		

How to Handle a Kitchen Knife Properly

Overview

To get the best use out of a kitchen knife, you must learn to keep it sharp and to handle it properly. There are two things you should observe when using a knife:

- The Grip
- The Guiding Hand

The Grip

The type of grip you use depends, in part, on the job you are doing and the type of knife. A proper grip:

- Gives you maximum control over the knife.
- Increases your cutting accuracy and speed.
- Prevents slipping.
- Lessens the chance of an accident.

Grasping the blade of the knife between the thumb and forefinger gives the worker good control over the blade. This is the most frequently used grip for general cutting and slicing when using a chef's knife.

The Guiding Hand

While one hand controls the knife, the other hand controls the product being cut. Proper positioning of the hand achieves three goals:

1. Holds the item being cut. The guiding hand holds the item so that it will not slip.
2. Guides the knife. The knife blade slides against the fingers, while the position of the hand controls the cut.
3. Protects the hand from cuts. Finger tips are curled under, out of the way of the blade.

Basic Cuts, Shapes, and Cutting Techniques

Overview

Cutting food products into uniform shapes and sizes is important because it ensures even cooking and enhances the appearance of the product. This accuracy is achieved by performing the appropriate procedure and techniques.

This section covers:

- Basic cuts and shapes
- Other cutting techniques
- Chopping
- Dicing
- Mincing
- Slicing

Basic Cuts and Shapes

When the recipe calls for a specific shape or size, the way you handle the food product depends on the product characteristics (shape and texture). It could be a round, long, tender, firm, or leafy product.

In order to perform the appropriate procedure and technique that the recipe calls for, you should learn to identify the basic shapes and cuts.

Use *Professional Cooking*, p. 115, to help you identify the following basic cuts and shapes:

- Tourné
- Dice (large, medium, and small)
- Brunoise (*broo-NWHAZ*)
- Batonnet
- Julienne
- Paysanne

Basic Cuts, Shapes, and Cutting Techniques, continued

Other Cutting Techniques

Use *Professional Cooking* to complete this table and learn some of the other basic cutting techniques.

OTHER CUTTING TECHNIQUES	
CUTTING TECHNIQUE	**DEFINITION**
	To cut into irregularly shaped pieces
Concasser (con-cas-say)	
Dice	To cut into small cubes.
Emincer (em-man-say)	
	To chop into very fine pieces
Peel	To strip off the outer layer
	To cut into thin strips, either with the coarse blade of a grater (manual or power) or with a chef's knife.
Slice	To cut into slices

Basic Cuts, Shapes, and Cutting Techniques, continued

Chopping

When you *chop* a food item, you cut it into irregularly shaped pieces. This technique is used when no specific shape is needed.

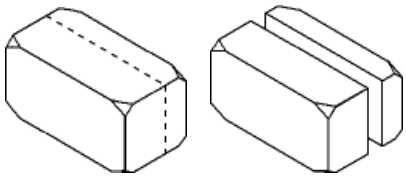
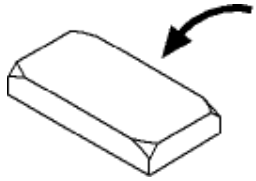
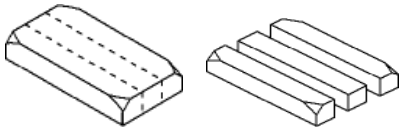
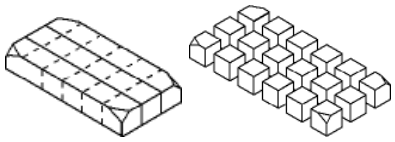
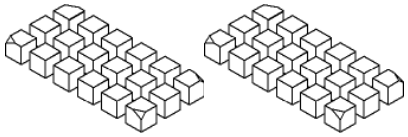
HOW TO CHOP	
STEP	**ACTION**
1.	Place and hold the food item on the cutting board.
2.	Hold the tip of the knife against the cutting board.
3.	Depending on the type of food item, if necessary, place your guiding hand on the item.
4.	Rock the knife rapidly up and down. At the same time, gradually move the knife sideways across the product on the board so that the cuts pass through all parts of the pile of food.
5.	After several cuts, redistribute the pile, and repeat steps 2 through 4. Continue until the product is chopped to the degree of fineness required by the recipe.

Note: Remember to grip the knife properly and use the guiding hand for your safety.

Basic Cuts, Shapes, and Cutting Techniques, continued

Dicing

To *dice* a food item means to cut it into small, cube-shaped pieces. In the tables below, you will find two different methods for dicing. The first method is based on the technique for dicing a potato and the second for dicing an onion.

HOW TO DICE – METHOD 1 (POTATO)		
STEP	**ACTION**	**IMAGE**
1.	Cut the item lengthwise to the thickness required by the recipe. (For example, the recipe might say $^1/_4$-inch diced potatoes, so this first piece should be $^1/_4$-inch thick.)	
2.	Lay the smaller of the two pieces (the $^1/_4$-inch piece in our example) on the cutting board, cut side down.	
3.	Cut the piece lengthwise into strips of the same width (in our example, we would make these strips $^1/_4$-inch thick). These long strips are called *batonnets*.	
4.	Pile the batonnets together and cut crosswise into even smaller pieces (cubes) of similar thickness. (In our example, these cubes would be $^1/_4$-inch square.)	
5.	Repeat steps 1 through 4 with the piece left.	

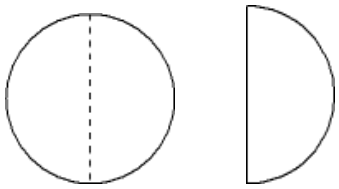
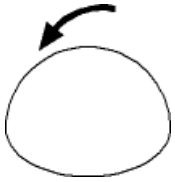
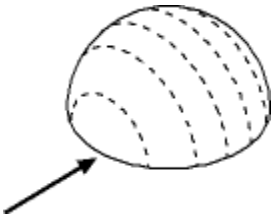
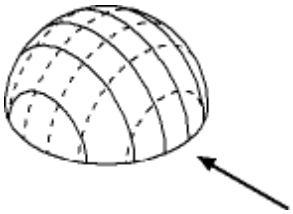
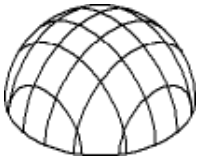
For more details and photos of this method, see *Professional Cooking*, "Mise en Place" (Chapter 7).

Continued next page

Basic Cuts, Shapes, and Cutting Techniques, continued

Dicing, contd.

The following method is used for dicing a layered item such as an onion.

HOW TO DICE – METHOD 2 (ONION)		
STEP	**ACTION**	**IMAGE**
1.	Cut the peeled onion in half lengthwise through the root end.	
2.	Place one half on the cutting board, cut side down.	
3.	With the root end away from you, make a series of vertical lengthwise cuts. (Do not cut through the root end.) The closer you make the cuts the smaller the dice will be.	
4.	Holding the onion carefully at the top, make a few horizontal cuts toward but not through the root end, which is holding the onion together.	
5.	Slice across the onion to separate it into dice. Again, the closer the cuts, the smaller the dice. Continue making slices almost to the root end.	

For more details and photos of this method, see *Professional Cooking*, "Mise en Place" (Chapter 7).

Note: Remember to grip the knife properly and use the guiding hand for your safety.

Basic Cuts, Shapes, and Cutting Techniques, continued

Mincing

To mince a food item means to cut it or chop it into very small pieces. The technique is the same as chopping, only the end product is smaller.

HOW TO MINCE	
STEP	**ACTION**
1.	Place and hold the food item on the cutting board.
2.	Hold the tip of the knife against the cutting board.
3.	Depending on the type of food item, if necessary, place your guiding hand on the item.
4.	Rock the knife rapidly up and down. At the same time, gradually move the knife sideways across the product on the board so that the cuts pass through all parts of the pile of food.
5.	After several cuts, redistribute the pile, and repeat steps 2 through 4. Continue chopping/mincing until the product is minced to the degree of fineness required by the recipe.

Note: Remember to grip the knife properly and use the guiding hand for your safety.

Basic Cuts, Shapes, and Cutting Techniques, continued

Slicing

To *slice* a food item means to cut it into thin pieces, or slices. This may also mean cutting a wedge-shaped piece out of a larger, usually circular object such as a pie.

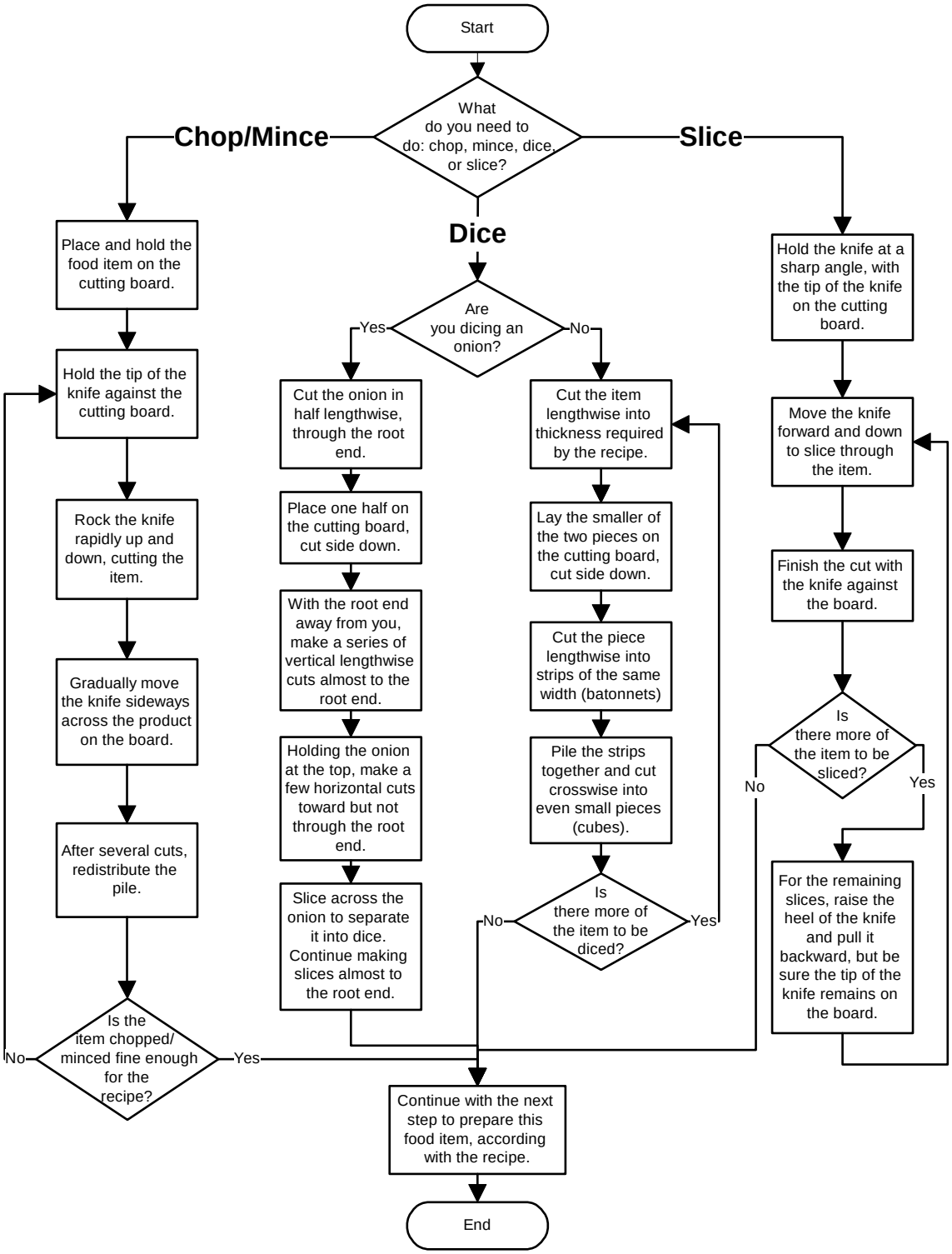
When slicing, the best motion begins by initiating the cut with the tip of the knife and pushing the knife forward across the food until you reach the heel.

HOW TO SLICE		
STEP	**ACTION**	**IMAGE**
1.	Hold the knife at a sharp angle, with the tip of the knife on the cutting board.	
2.	Move the knife forward and downward, slicing though the item.	
3.	Finish the cut with the knife against the board. For the second slice, raise the heel of the knife and pull it backward, but be sure the tip always stays on the board.	

For more details and photos of cutting techniques, see *Professional Cooking*, “Mise en Place” (Chapter 7).

Basic Cutting Techniques Job Aid

How to Chop, Dice, Mince, or Slice



Lesson Review

Purpose

The intention of this exercise is to help you confirm what you have learned about how to get vegetables and fruits ready for preparation and how to use the basic cutting techniques.

Directions

Test your knowledge of the concepts and principles of this lesson by choosing the best, most correct answer to each question below. Use the lesson material and references to assist you as necessary.

When you have finished answering the questions, compare your answers to the correct answers in the "Lesson Review Feedback" section at the end of this lesson. Note any differences between your answers and the correct ones so you can learn from them, and discuss them when you meet with your supervisor.

Questions

1. What tool do you use to clean celery, carrots, and potatoes when they are not peeled?

   a. Cheese cloth
   b. Tooth brush
   c. Vegetable brush
   d. Wire brush

2. What can radishes, carrots, celery, and cucumbers be crisped in?

   a. An oven set on low (180 ºF)
   b. Ice
   c. Ice water
   d. Lemon or lime juice

3. How do you remove the core of a head of Iceberg lettuce?

   a. Cut it out with a paring knife
   b. Hit it on the counter and twist it out
   c. Pull the leaves off from around it
   d. Call the sheriff

4. When trimming artichoke bottoms, what do you use the melon ball cutter for?

   a. Shaving off the bottom leaves
   b. Defrapulating the brunoise
   c. Cutting melon balls
   d. Scraping out the fuzzy choke

Continued next page

Lesson Review, continued

Questions, contd.

5. Is this statement true or false? “Most frozen vegetables do not require thawing, and in order to prepare them you should follow the instructions on the package.”

   a. True
   b. False

6. Which of these basic shapes is smaller?

   a. Batonnet
   b. Julienne

7. If you’re asked to “mince” a food item, what will you be doing?

   a. Chopping it into very fine pieces
   b. Cutting it into very thin slices
   c. Cutting it into small cubes
   d. Chopping it quickly

8. A small dice is roughly what size?

   a. $^{1}/_{2}$ in × $^{1}/_{2}$ in
   b. $^{1}/_{4}$ in × $^{1}/_{4}$ in
   c. $^{1}/_{8}$ in × $^{1}/_{8}$ in
   d. $^{1}/_{16}$ in × $^{1}/_{16}$ in

Practicing What You Have Learned

Overview

This lesson covers material associated with three EPQs, and there are three performance evaluations for you to complete. Before you attempt to pass the performance evaluations, however, we recommend that you practice the core tasks of the lesson:

- ❑ Pre-preparing vegetables and fruits
  - Washing
  - Scrubbing
  - Removing leaves, stems, seeds, etc.
- ❑ Using basic cutting techniques
  - Chopping
  - Mincing
  - Dicing
  - Slicing

Practicing the Core Tasks

Once you have finished reading the lesson and have completed the lesson review, you should meet with your supervisor and observe a demonstration of the core tasks listed above.

After observing the demonstration, you should, under supervision, perform the tasks yourself and receive corrective feedback about your performance from your supervisor.

Performance Evaluation

Once you have completed this lesson—meaning you have read the material, completed the topic and lesson reviews, observed demonstrations of the core tasks, and then practiced the core tasks enough to be moderately competent in them—you are ready to demonstrate the tasks for sign-off.

Your supervisor will discuss this sign-off process with you. It will involve your demonstrating the core tasks under the supervisor's observation, so that he or she can determine whether or not you are able to perform the tasks in a satisfactory manner. Using the Performance Evaluation sheets as a guide, he or she will mark "go" for tasks you perform well and "no go" for tasks where you need improvement. Performing the core tasks well enough to receive a "go" from your supervisor will mean that you met the Enlisted Performance Qualifications (EPQs) associated with the lesson. If you receive a "no go," you must practice the core tasks, receive feedback, and practice again until you are able to perform the tasks well enough for sign-off.

The EPQs/core tasks for this lesson are:

- ❑ 4.A.02 – Perform the following cutting techniques on at least two different food items:
  - Dice
  - Mince
  - Chop
  - Slice

  SupGuide: Member will be required to display two proper techniques using the appropriate knife for each.
- ❑ 4.A.15 – Wash fresh fruits and vegetables for consumption.
- ❑ 4.A.18 – Prepare a fresh and frozen vegetable product.

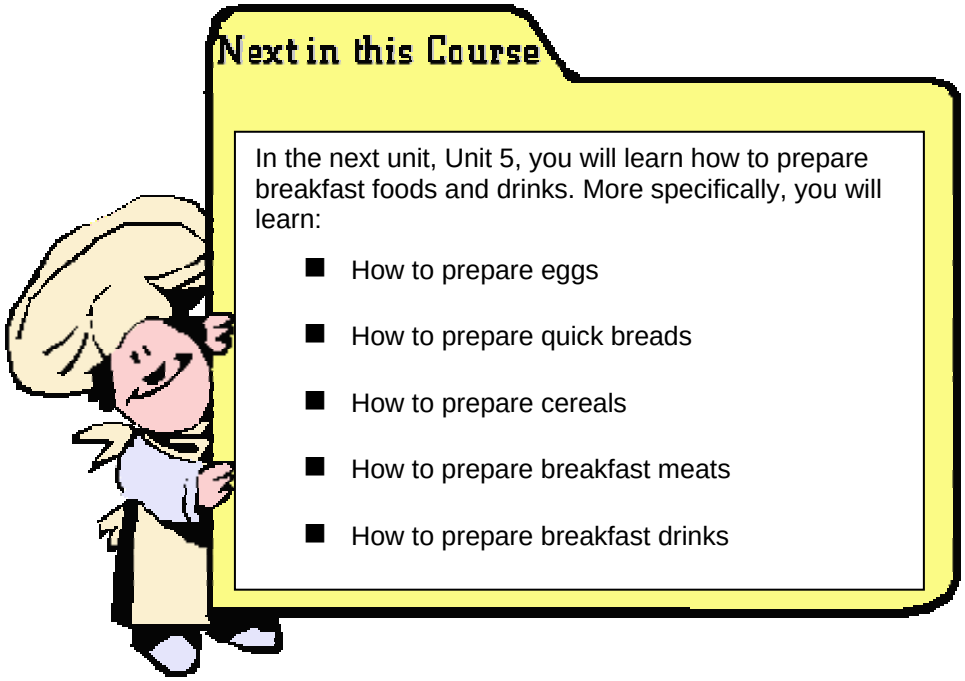
Note: You will also work on the preparation of fresh and frozen vegetable products in Unit 7.

Lesson Summary

Summary

Having completed this lesson, you can:

- Identify and apply steps for getting vegetables and fruits ready for preparation.
- Use basic cutting techniques to get vegetables ready for preparation.



Topic Review (1 of 2) Feedback

Directions

Compare your answers in the Topic Review (1 of 2) to the answers below (correct answers are in **bold**). Note any differences between your answers and the text so you can learn from them and discuss them with your supervisor.

Answers

1–4. *Professional Cooking*, page 178, Clear Vegetable Soup.

PREPARING FRESH VEGETABLES			
NO.	**VEGETABLE**	**PRE-PREPARATION ACTIVITIES**	**PREPARATION/ COOKING ACTIVITIES**
1.	Carrots	**Trim top and bottom ends. Pare with hand peeler or in machine. Dice small.**	**Sweat with other veggies in butter over low heat until about half cooked. Add stock and simmer until barely tender.**
2.	Turnip	**Peel heavily by hand or in machine to remove thick skin. Rinse.**	**Sweat with other veggies in butter over low heat until about half cooked. Add stock and simmer until barely tender.**
3.	Tomatoes (canned)	**Drain. Chop coarsely.**	**Add to stock and simmer.**
4.	Peas (frozen)	**Thaw (following manufacturer's instructions)**	**Add just before serving.**

Topic Review (2 of 2) Feedback

Directions

Compare your answers in the Topic Review (2 of 2) to the answers below (correct answers are in **bold**). Note any differences between your answers and the text so you can learn from them and discuss them with your supervisor.

Answers

5–6. *Professional Cooking*, page 164, Fruit Salsa.

PREPARING FRESH VEGETABLES			
NO.	**FRUIT**	**PRE-PREPARATION ACTIVITIES**	**PREPARATION ACTIVITIES**
5.	Honeydew melon	**Wash. Cut in half and remove seeds and fibers. Slice into thin wedges and remove rinds. Dice finely. Save juices.**	**Combine with other ingredients. Salt to taste. Refrigerate.**
6.	Mango	**Peel and cut flesh away from the center stone. Dice finely. Save juices.**	**Combine with other ingredients. Salt to taste. Refrigerate.**

Lesson Review Feedback

Directions

Compare your answers in the Lesson Review to the answers below (correct answers are in **bold**). Note any differences between your answers and the text so you can learn from them and discuss them with your supervisor.

Answers

1. What tool do you use to clean celery, carrots, and potatoes when they are not peeled?

   a. Cheese cloth
   b. Tooth brush
   c. Vegetable brush
   d. Wire brush

2. What can radishes, carrots, celery, and cucumbers be crisped in?

   a. An oven set on low (180 ºF)
   b. Ice
   c. Ice water
   d. Lemon or lime juice

3. How do you remove the core of a head of Iceberg lettuce?

   a. Cut it out with a paring knife
   b. Hit it on the counter and twist it out
   c. Pull the leaves off from around it
   d. Call the sheriff

4. When trimming artichoke bottoms, what do you use the melon ball cutter for?

   a. Shaving off the bottom leaves
   b. Defrapulating the brunoise
   c. Cutting melon balls
   d. Scraping out the fuzzy choke

5. Is this statement true or false? “Most frozen vegetables do not require thawing, and in order to prepare them you should follow the instructions on the package.”

   a. True
   b. False

6. Which of these basic cuts is smaller?

   a. Batonnet
   b. Julienne

Continued next page

Lesson Review Feedback, continued

Answers, contd.

7. If you're asked to "mince" a food item, what will you be doing?

   a. Chopping it into very fine pieces
   b. Cutting it into very thin slices
   c. Cutting it into small cubes
   d. Chopping it quickly

8. A small dice is roughly what size?

   a. $^{1}/_{2}$ in × $^{1}/_{2}$ in
   b. $^{1}/_{4}$ in × $^{1}/_{4}$ in
   c. $^{1}/_{8}$ in × $^{1}/_{8}$ in
   d. $^{1}/_{16}$ in × $^{1}/_{16}$ in

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PERFORMANCE EVALUATION 4.5.1

Prepare Fruits, Vegetables and Perform Basic Cutting Techniques

Goal

The student will perform the following:

- Wash fresh fruits and vegetables for consumption
- Get fresh vegetables ready for preparation
- Chop food items according to the recipe
- Dice food items according to the recipe
- Mince food items according to the recipe
- Slice food items according to the recipe

Process

Given a recipe based on fruits and/or vegetables dishes, you will perform the cutting techniques on two different food items.

Directions
Hands-on

Using the recipe as a guideline, as well as reference material and job aids as necessary, you will:

1. Follow the safety and sanitation rules properly.
2. Interpret the recipe.
3. Identify the required cut shape called for in the recipe.
4. Identify the proper knife to be used.
5. Gather the products, tools, and equipment needed.
6. Prepare the fruit/vegetable product.
7. Perform the cutting technique that the recipe calls for that food product.

When you have completed the practice, see your supervisor for further instructions.

Preparing Fruits, Vegetables and Performing the Cutting Techniques

Checklist

Fill in your name on the Unit 4 Performance Evaluation checklists and hand it to your supervisor prior to completing the hands-on exercise.

Feedback

Your supervisor will review your performance for accuracy and completeness and provide any comments directly to you.

PERFORMANCE EVALUATION 4.5.1A

Preparing Fruits and Vegetables

Location _____ _____	**Completed by:** _____ **(Enter your name)** **Reviewed by:** _____ **(Obtain Supervisor's signature)**

EPQs

4.A.15 **WASH** fresh fruits and vegetables for consumption IAW "Professional Cooking" by Wayne Gisslen and the Food Service Sanitation Manual, COMDTINST M6240.4 (series).

4.A.18 **PREPARE** a fresh and frozen vegetable product IAW "Professional Cooking" by Wayne Gisslen and Armed Forces Recipe Service (AFRS), NAVSUP Publication 7.

Criteria

Accuracy:

- Follow the proper sanitation and food handling procedure.
- Washed and prepared fruits correctly.
- Prepared vegetables correctly, according with the proper procedure.
- Proper equipment selected 100% of the time.

Safety:

- Follow the quality indicators and preparation procedure correctly.
- Knife **and** tools used correctly 100% of the time.
- Proper equipment selected 100% of the time.

TASK	**COMMENTS**								
	Y	**N**	**1st Attempt** _____/_____/_____ **Date**	**Y**	**N**	**2nd Attempt** _____/_____/_____ **Date**	**Y**	**N**	**3rd Attempt** _____/_____/_____ **Date**
1. The performer gathered the equipment and ingredients to be used.	☐	☐		☐	☐		☐	☐	
2. The performer prepared the area.	☐	☐		☐	☐		☐	☐	
3. The performer washed and scrubbed the fruit or vegetable according to the fruit or vegetable being prepared.	☐	☐		☐	☐		☐	☐	
4. The performer trimmed bruised and blemished parts.	☐	☐		☐	☐		☐	☐	
5. The performer removed leaves, stems, seeds, and any part that would not be used.	☐	☐		☐	☐		☐	☐	

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Location _____ _____	**Completed by:** _____ **(Enter your name)** **Reviewed by:** _____ **(Obtain Supervisor's signature)**								
6. The performer prepared the fruit and vegetable according to the recipe.	☐	☐		☐	☐		☐	☐	
			☐ Go ☐ No Go			☐ Go ☐ No Go			☐ Go ☐ No Go

PERFORMANCE EVALUATION 4.5.1B

Chopping

Location _____ _____	**Completed by:** _____ (Enter your name) **Reviewed by:** _____ (Obtain Supervisor's signature)

EPQ
4.A.02 PERFORM the following cutting techniques on at least two different food items IAW "Professional Cooking" by Wayne Gisslen: Dice, Chop, Mince, Slice. **SupGuide:** Member will be required to display two proper techniques using the appropriate knife for each.

Criteria

Accuracy:
- Proper equipment selected 100% of the time.
- Washed fruits and vegetables prepared and stored correctly.
- The 90% of food item should be chopped into irregular shape and same size.

Safety:
- Follow the quality indicators and pre-preparation procedure correctly.
- Knife used correctly 100% of the time.

TASK	COMMENTS								
	Y	N	1st Attempt _____/_____/_____ Date	Y	N	2nd Attempt _____/_____/_____ Date	Y	N	3rd Attempt _____/_____/_____ Date
1. The performer placed and, as necessary, held the food item on the cutting board.	☐	☐		☐	☐		☐	☐	
2. The performer held the tip of the knife against the cutting board.	☐	☐		☐	☐		☐	☐	
3. The performer rocked the knife rapidly up and down cutting the item. At the same time, s/he gradually moved the knife sideways across the product so that the cuts passed through all parts of the pile of food.	☐	☐		☐	☐		☐	☐	

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TASK	COMMENTS								
	Y	**N**		**Y**	**N**		**Y**	**N**	
4. After several cuts, the performer redistributed the pile and repeated steps 2 through 4, continuing until the product was chopped to the degree of fineness required by the recipe.	☐	☐		☐	☐		☐	☐	
			☐ Go ☐ No Go			☐ Go ☐ No Go			☐ Go ☐ No Go

PERFORMANCE EVALUATION 4.5.1C

Mincing

Location _____ _____	**Completed by:** _____ (Enter your name) **Reviewed by:** _____ (Obtain Supervisor's signature)

EPQ
4.A.02 PERFORM the following cutting techniques on at least two different food items IAW "Professional Cooking" by Wayne Gisslen: Dice, Chop, Mince, Slice. **SupGuide:** Member will be required to display two proper techniques using the appropriate knife for each.

Criteria

Accuracy:
- Proper equipment selected 100% of the time.
- Washed fruits and vegetables prepared and stored correctly.
- The 90% of food item should be chopped into irregular shape and same size.

Safety:
- Follow the quality indicators and pre-preparation procedure correctly.
- Knife used correctly 100% of the time.

TASK	COMMENTS								
	Y	N	1st Attempt _____/_____/_____ Date	Y	N	2nd Attempt _____/_____/_____ Date	Y	N	3rd Attempt _____/_____/_____ Date
1. The performer placed and, as necessary, held the food item on the cutting board.	☐	☐		☐	☐		☐	☐	
2. The performer held the tip of the knife against the cutting board.	☐	☐		☐	☐		☐	☐	
3. The performer rocked the knife rapidly up and down cutting the item. At the same time, s/he gradually moved the knife sideways across the product so that the cuts passed through all parts of the pile of food.	☐	☐		☐	☐		☐	☐	

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TASK	COMMENTS								
	Y	**N**		**Y**	**N**		**Y**	**N**	
4. After several cuts, the performer redistributed the pile and repeated steps 2 through 4, continuing until the product was minced/chopped to the degree of fineness required by the recipe.	☐	☐		☐	☐		☐	☐	
			☐ Go ☐ No Go			☐ Go ☐ No Go			☐ Go ☐ No Go

PERFORMANCE EVALUATION 4.5.1D

Dicing – Method 1

Location _____ _____	**Completed by:** _____ (Enter your name) **Reviewed by:** _____ (Obtain Supervisor's signature)

EPQ
4.A.02 PERFORM the following cutting techniques on at least two different food items IAW "Professional Cooking" by Wayne Gisslen: Dice, Chop, Mince, Slice. **SupGuide:** Member will be required to display two proper techniques using the appropriate knife for each.

Criteria	
Accuracy: • Proper equipment selected 100% of the time. • Washed fruits and vegetables prepared and stored correctly. • The 90% of food item should be diced into even pieces.	**Safety:** • Follow the quality indicators and pre-preparation procedure correctly. • Knife used correctly 100% of the time. • Proper equipment selected 100% of the time.

TASK	**COMMENTS**								
	Y	**N**	**1st Attempt** _____/_____/_____ **Date**	**Y**	**N**	**2nd Attempt** _____/_____/_____ **Date**	**Y**	**N**	**3rd Attempt** _____/_____/_____ **Date**
1. The performer cut the item lengthwise to the thickness required by the recipe.	☐	☐		☐	☐		☐	☐	
2. The performer laid the smaller of the two pieces on the cutting board, cut side down.	☐	☐		☐	☐		☐	☐	
3. The performer cut the piece lengthwise into strips/batonnets of the same width.	☐	☐		☐	☐		☐	☐	
4. The performer piled the batonnets together and cut crosswise into even smaller pieces (cubes) of similar thickness.	☐	☐		☐	☐		☐	☐	
5. The performer repeated steps 1 through 4 with the remaining piece(s).	☐	☐		☐	☐		☐	☐	
			☐ Go ☐ No Go			☐ Go ☐ No Go			☐ Go ☐ No Go

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PERFORMANCE EVALUATION 4.5.1E

Dicing – Method 2 (Onion)

Location _____ _____	**Completed by:** _____ (Enter your name) **Reviewed by:** _____ (Obtain Supervisor's signature)

EPQ
4.A.02 **PERFORM** the following cutting techniques on at least two different food items IAW "Professional Cooking" by Wayne Gisslen: Dice, Chop, Mince, Slice. **SupGuide:** Member will be required to display two proper techniques using the appropriate knife for each.

Criteria
Accuracy:
- Proper equipment selected 100% of the time.
- Washed fruits and vegetables prepared and stored correctly.
- The 90% of food item should be diced into even pieces.

Safety:
- Follow the quality indicators and pre-preparation procedure correctly.
- Knife used correctly 100% of the time.
- Proper equipment selected 100% of the time.

TASK	COMMENTS								
	Y	N	1st Attempt _____/_____/_____ Date	Y	N	2nd Attempt _____/_____/_____ Date	Y	N	3rd Attempt _____/_____/_____ Date
1. The performer cut the peeled onion in half lengthwise, through the root end.	☐	☐		☐	☐		☐	☐	
2. The performer placed one half on the cutting board, cut side down.	☐	☐		☐	☐		☐	☐	
3. With the root end away from him or her, the performer made a series of vertical lengthwise cuts almost to the root end.	☐	☐		☐	☐		☐	☐	
4. Holding the onion carefully at the top, the performer made a few horizontal cuts toward but not through the root end.	☐	☐		☐	☐		☐	☐	
5. The performer sliced across the onion separating it into dice, and continued making slices almost to the root end.	☐	☐		☐	☐		☐	☐	
			☐ Go ☐ No Go			☐ Go ☐ No Go			☐ Go ☐ No Go

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PERFORMANCE EVALUATION 4.5.1F

Slicing

Location _____ _____	**Completed by:** _____ (Enter your name) **Reviewed by:** _____ (Obtain Supervisor's signature)

EPQ
4.A.02 PERFORM the following cutting techniques on at least two different food items IAW "Professional Cooking" by Wayne Gisslen: Dice, chop, mince, slice. **SupGuide:** Member will be required to display two proper techniques using the appropriate knife for each.

Criteria **Accuracy:** • Proper equipment selected 100% of the time. • Washed fruits and vegetables, and prepared and stored correctly. • The 90% of item should be sliced correctly.	**Safety:** • Follow the quality indicators and pre-preparation procedure correctly. • Knife used correctly 100% of the time. • Proper equipment selected 100% of the time.

TASK	**COMMENTS**								
	Y	**N**	**1st Attempt** _____/_____/_____ **Date**	**Y**	**N**	**2nd Attempt** _____/_____/_____ **Date**	**Y**	**N**	**3rd Attempt** _____/_____/_____ **Date**
1. The performer held the knife at a sharp angle, with the tip of the knife on the cutting board.	☐	☐		☐	☐		☐	☐	
2. The performer moved the knife forward and downward, to slice though the item.	☐	☐		☐	☐		☐	☐	
3. The performer finished the cut with the knife against the board.	☐	☐		☐	☐		☐	☐	
4. For the second slice, the performer raised the heel of the knife and pulled it backward.	☐	☐		☐	☐		☐	☐	
			☐ Go ☐ No Go			☐ Go ☐ No Go			☐ Go ☐ No Go

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