

Department of
Homeland Security

United States
Coast Guard

Food Service Specialist, Third Class Performance Qualification Guide



Tools and Equipment Student Pamphlet

U.S. Coast Guard
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Tools and Equipment

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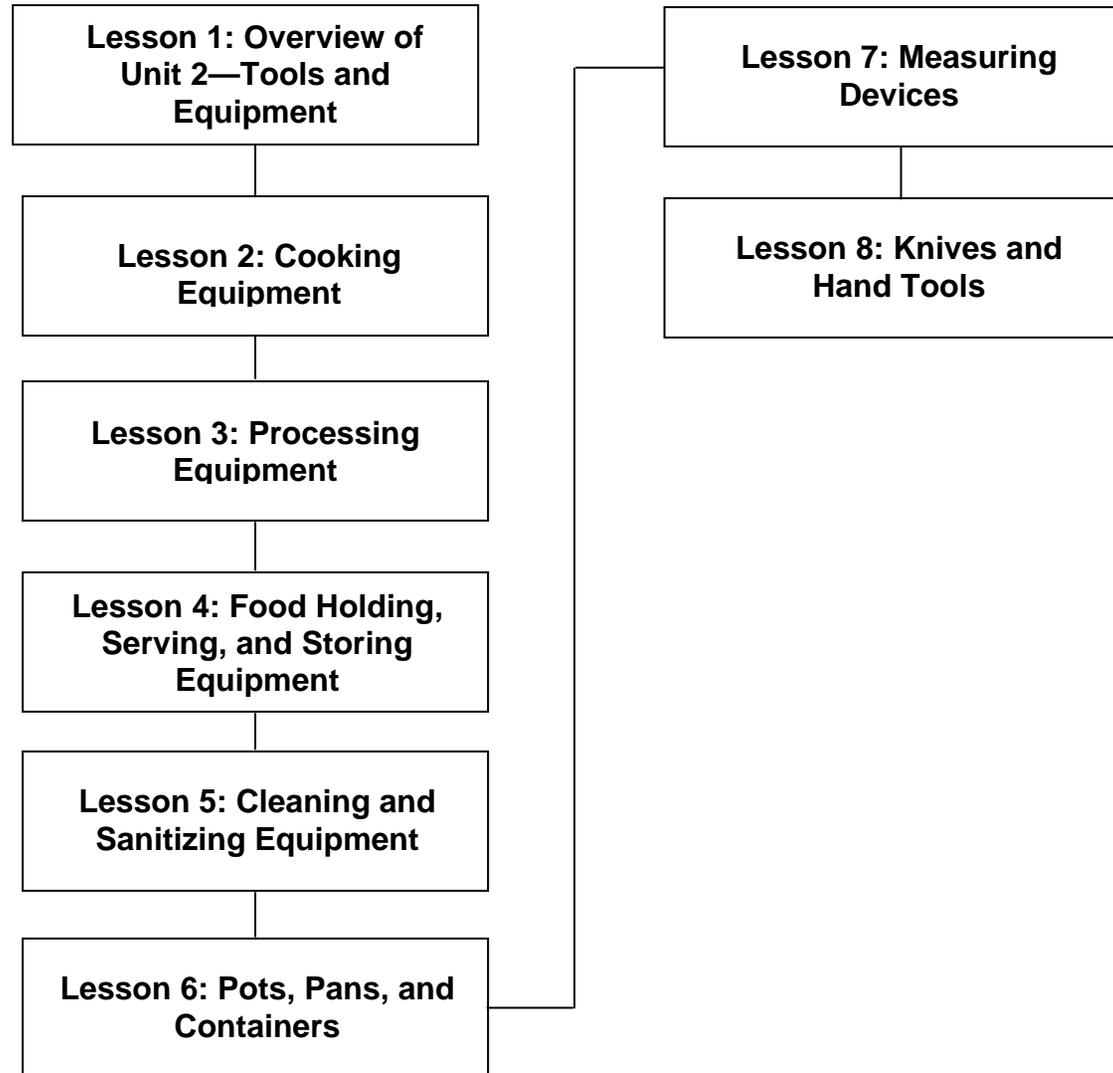
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**QUESTIONS ABOUT THIS TEXT SHOULD BE
ADDRESSED TO THE SUBJECT MATTER SPECIALIST
FOR THE FOOD SERVICE RATING.**



Unit 2: Tools and Equipment



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LESSON 1

Overview of Unit 2—Tools and Equipment

Introduction

Overview Lesson 1 of Unit 2 “sets the stage” for the other lessons of the unit. It introduces the terminology, tools, and references used in the identification and selection of tools and equipment.

This section of the lesson includes:

- 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 or this unit.

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

- Unit structure
 - Lesson contents
 - EPQs covered in the unit
-

Performance Evaluations This unit does not require any Performance Evaluations.

Tools and References The following tools and references are required to successfully complete this unit:

- Food Service Sanitation Manual, COMDTINST M6240.4 (series)
http://cgweb.uscg.mil/g-c/g-ccs/g-cit/g-cim/directives/CIM/CIM_6240_4A.pdf
 - Professional Cooking*, by Wayne Gisslen
 - Unit 1, Appendix C, Glossary of Key Terms
-

Introduction, continued

Topics Covered By This Lesson

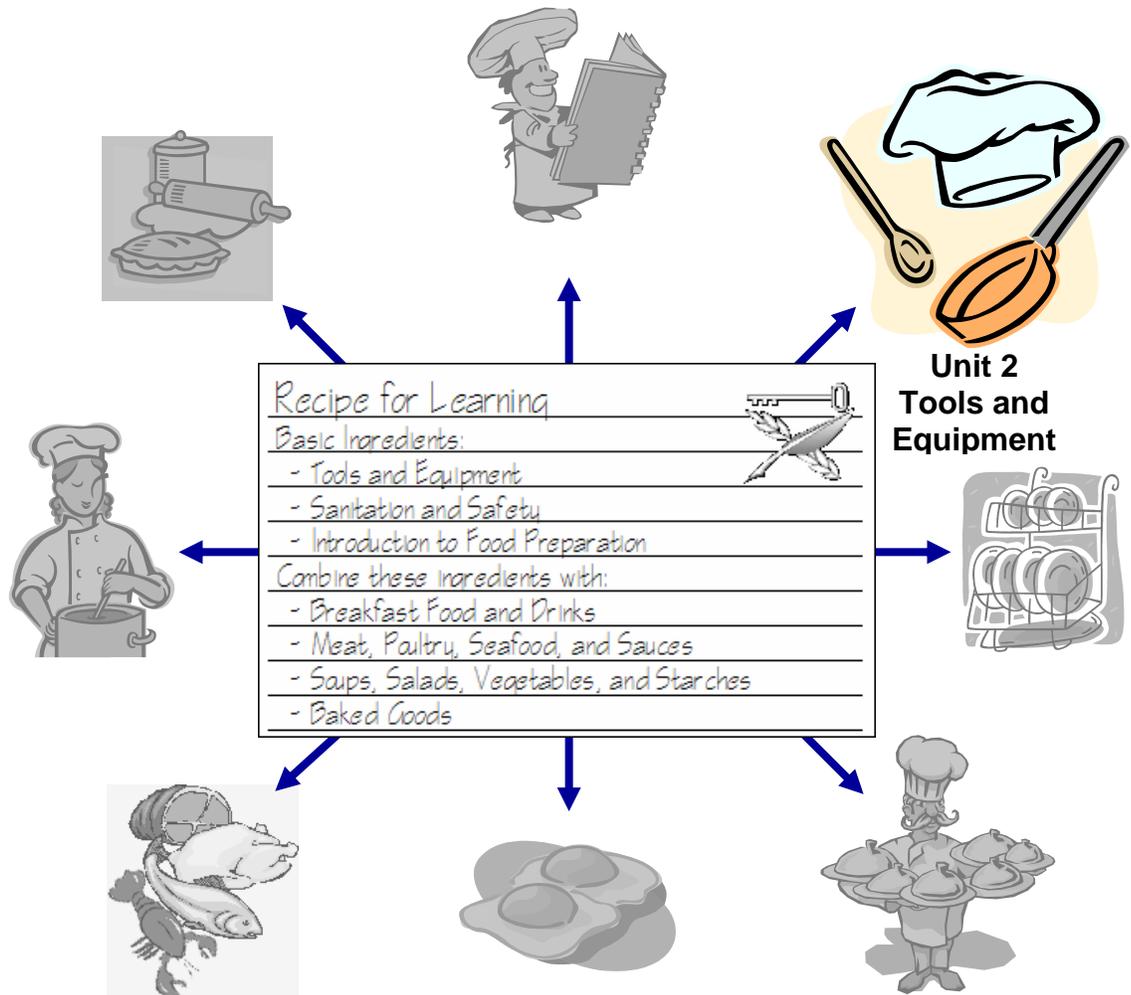
This lesson covers the following topics:

- ❑ Recipe for Learning
 - ❑ Unit Preview
 - Unit Overview
 - Unit Map
 - Enlisted Performance Qualifications
 - Unit Matrix
 - Rules to Live By
-

Recipe for Learning

Recipe for Learning

This unit introduces the tools and equipment used in food preparation: the various types and their uses. This is the second of the basic ingredients called for in the Recipe for Learning.



Unit Preview

Unit Overview

As an FS3, you need to be able to use common food service industry tools and equipment. In this unit you will learn:

- Names of important tools and equipment
 - Important characteristics of the tools and equipment
 - Uses of the tools and equipment
 - Necessary preparation for tools and equipment
-

Unit Map

This unit contains eight lessons as follows:

THE LESSONS OF UNIT 2		
NO.	TITLE	DESCRIPTION
1.	Overview of Unit 2	This gives you the “big picture” of the tools and equipment unit.
2.	Cooking Equipment	This lesson introduces the equipment used for cooking, such as ovens, range tops, and broilers.
3.	Processing Equipment	This lesson introduces the equipment used for processing food, such as mixers and meat slicers.
4.	Food Holding, Serving, and Storing Equipment	This lesson covers steam tables, chilled salad bars, freezers, and refrigerators.
5.	Cleaning and Sanitation Equipment	This lesson covers sinks and dishwashers.
6.	Pots, Pans, and Containers	This lesson covers types of pots, pans, containers and their uses.
7.	Measuring Devices	This lesson covers volume measures, scales, and thermometers.
8.	Knives and Hand Tools	This lesson covers various knives and hand tools such as spatulas and bench scrapers.

Unit Preview, continued

Enlisted Performance Qualifications

This unit does not cover any EPQs. The unit does, however, cover critical information that you must know for performing other tasks required in future units.

Unit Matrix

This unit does not cover any EPQs, therefore there is no Unit Matrix for the unit.

Rules to Live By

The following rules are meant for your safety and the safety of your fellow Coast Guard Food Service Specialists:

- ❑ Before operating an unfamiliar piece of equipment, study the manufacturer's operating manual, or consult with someone who is familiar with the piece of equipment and has operated it recently.
- ❑ Learn how to determine when a piece of equipment is not operating correctly. When equipment malfunctions, shut it down immediately, identify the equipment as being defective, and report the malfunction to a supervisor.
- ❑ Keep the equipment clean. If disassembly of the equipment is possible, consult the manufacturer's operating manual. If an operating manual is not available, consult with someone who has cleaned the equipment in the recent past.
- ❑ Conserve energy by knowing the preheating time required by cooking equipment and by planning the production of food.
- ❑ Know when it is more efficient to use manual means to prepare than to use equipment.

Note: As a general rule, never use a piece of equipment until you are thoroughly familiar with its operation and features.

Lesson Summary

Summary

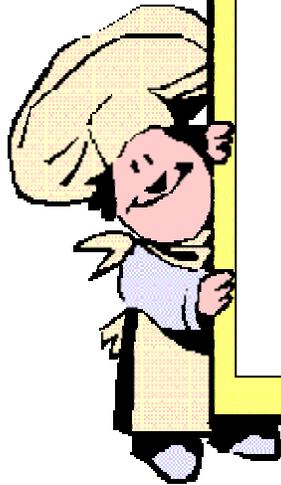
Having completed this lesson, you have learned about the:

- Unit structure
 - Lesson contents
 - EPQs covered in Unit 2
-

Next in this Unit

Following this lesson, you will learn about cooking equipment. Specifically, you will learn to:

- Identify the types of cooking equipment
- Describe the uses of the various types of cooking equipment
- Prepare cooking equipment for use



LESSON 2

Cooking Equipment

Introduction

Overview

This lesson introduces you to the various types of cooking equipment used in the preparation of food and how this cooking equipment is prepared for use.

This section of the lesson includes:

- 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 lesson, you will:

- Identify the types of cooking equipment
 - Describe the uses of the various types of cooking equipment
 - Prepare cooking equipment for use
-

Tools and References

Tools and references for this lesson include:

- Professional Cooking*, by Wayne Gisslen
 - Student Pamphlet: Unit 2
 - Worksheets
 - Unit 1, Appendix C, Glossary of Key Terms
-

Recommended Reading

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

- Professional Cooking*, “Tools and Equipment” (Chapter 3).
-

Introduction, continued

Topics Covered by This Lesson

The lesson covers the following specific topics:

- Basics on tools and equipment used for cooking
- Rangetops
- Ovens
- Broilers and salamanders
- Grills
- Griddles
- Deep fryers
- Tilting skillets
- Steam-jacketed kettles
- Compartment steamers
- Toasters

Note: In some situations, equipment referred to in this guide may not be available to you. In these cases, consult your supervisor for guidance and alternatives as needed.

Basics on Tools and Equipment Used for Cooking

Overview

Cooking tools and equipment are essential for preparing extraordinary foods and drinks—the kinds of meals that keep people coming back for more. When used and maintained properly, your cooking equipment will serve you well. This same equipment however can also be very dangerous. In addition, cooking equipment when used or maintained improperly can become very expensive, adding unnecessary costs of time and money for repair and use of electricity.

This section includes:

- ❑ A word about tools and equipment
 - ❑ On safety and saving energy
-

A Word about Tools and Equipment

Tools and equipment:

- ✓ Can be dangerous
 - ✓ Vary by manufacturer and model
 - ✓ Require cleaning as part of their use
 - ✓ Conserve energy
 - ✓ Are intended to save time, not replace the skills of the Food Service Specialist
-

On Safety and Saving Energy

Equipment can burn, cut, or smash various parts of the body. Make sure you are familiar with all the features of your equipment before using it. Also, be able to recognize signs that equipment isn't working properly, such as noise, scraping, smell, etc.

Only first hand instruction and practice will make you efficient in operating equipment in a safe manner. This course cannot serve as a specific guide for equipment you may encounter; it is only an introduction to some of the most commonly used equipment.

With today's vast array of specialized equipment, demonstrations by experienced personnel and practice are the only sure ways to become efficient at using galley equipment. Some of the hand tools used today may not need specific instruction, though they certainly need practice—these include such items as potato peelers, dough cutters, rolling pins, etc.

Continued next page

Basics on Tools and Equipment Used for Cooking, continued

On Safety and Saving Energy, contd.

Because of today's demand for energy, the chef no longer turns on equipment at the beginning of the day and leaves it on all day. Today's equipment has shorter preheating times, so it is unnecessary. Consult owner's manuals for proper preheating times.

Equipment is for saving time on large projects; it's not intended to replace the required skills of the chef. All FSs must develop good skills.

Note: Remember that your best source of information about how to use a piece of equipment, as well as its safety features and how to clean it, will be the owner's manual and the operating instruction from the manufacturer of the equipment.

Rangetops

Overview

The most important piece of cooking equipment in the galley is the rangetop. Rangetops come in many shapes and sizes, and with different features such as:

- Open elements (or burners)
 - Flattops (lightweight)
 - Flattops (heavy duty)
 - Induction surface
-

Open Element Rangetops

Open element rangetops may be either electric or gas and are:

- Fastest to heat
 - Capable of being turned off after short use
 - Limited to one pot per burner
-

Open Element Rangetop Example

Below is an example of an open element (gas) rangetop (with griddle):



Rangetops, continued

Flattop Ranges

Flattop ranges:

- Have their burners covered with a steel plate
 - Provide more cooking space than open element rangetops
 - Support moderately heavy weights
-

Flattop Range Example

Below is an example of a flattop range:



Heavy-Duty Flattops

Heavy-duty flattops:

- Use heavy cast steel to cover the burners
 - Support many heavy pots
 - Require longer preheating time
 - Allow for setting burners to different heating levels
 - Provide for the adjustment of cooking temperatures by moving pots to different spots on the cooktop
-

Rangetops, continued

Induction Cooktops

Induction cooktops:

- ❑ Work by magnetically agitating the molecules in steel or iron cookware so that the cookware becomes hot
- ❑ Have no hot surfaces or open flames and therefore do not become hot themselves
- ❑ Require no warm-up
- ❑ Can be turned on or off instantly

The disadvantage to induction cooktops is that they can be used only with iron or steel pots: aluminum or copper cookware will not work.

To counteract this disadvantage, some of the newer types of cookware insert aluminum between two layers of stainless steel in order to provide the heat conducting qualities of aluminum with the induction capabilities of steel.

Induction Cooktop Example

Below is an example of an induction cooktop:



Rules for Using Rangetops

The table below provides some guidelines for using rangetops.

RULES FOR USING RANGETOPS	
DO 	DON'T 
<ul style="list-style-type: none"> ■ Make sure gas pilot lights are lighted before turning on gas burners. ■ Adjust the air intake so that gas flames are blue with a white tip for maximum heat. 	<ul style="list-style-type: none"> ■ Keep flattop ranges on high heat for extended periods of time unless items are being cooked.

Ovens

Overview

Ovens are enclosed spaces in which food is heated. In addition to roasting and baking, ovens may perform many of the jobs normally done by the rangetop such as:

- Simmering
- Stewing
- Braising
- Poaching

Like the rangetop, ovens come in many shapes, sizes, and types. The Coast Guard uses the following types of ovens:

- Conventional ovens
 - Convection ovens
 - Combination steamer ovens
 - Microwave ovens
-

Conventional Ovens

Conventional ovens:

- Operate by heating air in an enclosed space
 - May be configured as part of a range unit or as an individual shelf or deck oven or arranged one above the other, each oven deck having its own adjustable temperature
-

Conventional Oven Example

Below is an example of a stack or deck oven:



Ovens, continued

Rules for Using Conventional Ovens

The table below provides some guidelines for using conventional ovens.

RULES FOR USING CONVENTIONAL OVENS	
DO 	DON'T 
<ul style="list-style-type: none"> ■ Be sure the pilot light is on before turning on a gas oven. ■ Leave adequate space between items placed in the oven to allow for better heat circulation. 	<ul style="list-style-type: none"> ■ Preheat the oven longer than necessary (helps avoid excessive use of energy). ■ Open the oven door any more often than necessary (helps avoid losing energy and interrupting the cooking of food).

Convection Ovens

Convection ovens contain fans that circulate the air and distribute the heat rapidly throughout the interior of the oven.

Convection ovens:

- Cook foods more quickly at lower temperatures
- May dry out products or cause ripples on cakes
- Allow pans to be placed closer together without blocking the flow of heat.
- May require the blower to be on when in use

Key points:

- When using a convection oven, the temperature should be reduced by 25 to 50 degrees unless specified differently in the operating instructions or recipe.
- You will reduce our oven temperatures by 50 degrees.

Ovens, continued

Convection Oven Example

Below is an example of a convection oven:



Rules for Using Convection Ovens

The table below provides some guidelines for using convection ovens.

RULES FOR USING CONVECTION OVENS	
DO 	DON'T 
<ul style="list-style-type: none"> ■ Be sure the pilot light is on before turning on gas ovens. ■ Space items well to allow for better heat circulation. 	<ul style="list-style-type: none"> ■ Preheat the oven longer than necessary (to avoid excessive use of energy). ■ Open the oven door any more often than necessary (to avoid losing energy and interrupting the cooking of food).

Combination Steamer Ovens

Combination steamer ovens can be operated in three modes:

1. As a convection oven
2. As a convection steamer
3. As a combination convection oven/steamer or high-humidity oven (which helps reduce shrinkage and drying of meat during roasting)

Ovens, continued

Combination Steamer Oven Example

Below is an example of a combination steamer oven:



Microwave Ovens

Microwave ovens use special tubes for generating microwave radiation to create heat inside the food being cooked. Microwave ovens can be used for primary cooking, but are mostly used for:

- Heating prepared food
- Thawing raw or cooked food items

Points to remember when using a microwave oven:

- Small items will not brown in a standard microwave oven.
- Overcooking of food items is the most common error in microwave cooking.
- Sliced, cooked meats and other items are likely to dry out in the microwave, and therefore should be loosely wrapped in plastic or wax paper, or covered in a sauce or gravy.
- Microwave ovens act only on water molecules and foods with a high water content, such as vegetables. As a result, drier foods, such as cooked meats, take longer to cook.
- Foods at the edge of a dish or plate cook faster than foods at the center of a dish or plate.
- Microwaves do not penetrate metal. As a result, food items wrapped in foil and other metals will not cook.

Ovens, continued

Microwave Oven Example

Below is an example of a microwave oven:



Rules for Using Microwave Ovens

The table below provides some guidelines for using microwave ovens.

RULES FOR USING MICROWAVE OVENS	
DO 	DON'T 
<ul style="list-style-type: none"> ■ Watch timing of the food items carefully, because high energy levels cook small items very rapidly. ■ Turn over large items once or twice to cook the item evenly. ■ Use the on/off cycle for large items to allow heat to be conducted to the interior of the food item being cooked. ■ Use the defrost cycle to thaw frozen foods. 	<ul style="list-style-type: none"> ■ Place large roasts and other large quantities of food in the microwave oven at the same time—the primary advantage of speed in cooking will be lost.

Broilers and Salamanders

Broilers

Broilers generate heat from above with the food items being placed beneath the heat source. Broilers are used to prepare such items as:

- Steaks
 - Chops
 - Chicken
 - Bacon
-

Broiler Example

Below is an example of a heavy-duty broiler:



Broilers and Salamanders, continued

Salamanders

Salamanders are small broilers that may be mounted above a range or under an open burner gas range. Salamanders are primarily used for:

- ❑ Browning or glazing the tops of food items
 - ❑ Broiling small quantities of food items during off-peak hours
-

Salamander Example

Below is an example of a salamander installed over a range:



Grills

Grills

Grills are similar to broilers except that grills generate heat from below the food items rather than from above. Grills may be used to prepare such items as:

- Steaks
- Chops
- Chicken

Grill Example

Below is an example of a grill:



Grill Operation

Points to remember when operating a grill:

- Set the areas of the grill to different temperatures and place food items in the areas with the appropriate cooking temperature.
 - Keep the grill clean (high temperatures can start grease fires).
-

Griddles

Overview

Griddles are flat, smooth, heated surfaces used to cook foods such as:

- ❑ Pancakes
- ❑ French toast
- ❑ Hamburgers and other meats
- ❑ Eggs
- ❑ Potato products

Griddles may be separate, stand-alone units or integrated with other types of cooking equipment such as a rangetop.

Griddle Example

For an example of a griddle, refer to the example of an open burner gas range depicted on page 2-6.

Rules for Using Griddles

The table below provides some guidelines for using griddles.

RULES FOR USING GRIDDLES	
DO 	DON'T 
<ul style="list-style-type: none"> ■ Clean the griddle after each use. ■ Polish the griddle with a griddle stone or griddle cloth until the surface shines. ■ Condition the griddle after each cleaning or before each use. 	<ul style="list-style-type: none"> ■ Go against the grain of the griddle with a griddle stone. ■ Use detergents or cleansers on the griddle surface.

Note: Detergents can be used on the griddle surface, but ONLY if they are food-safe.

Deep Fryers

Deep Fryer Types

Deep fryers come in three varieties:

- ❑ Standard deep fryers are powered by either electricity or gas and use a thermostat to set and maintain temperatures.
- ❑ Automatic fryers automatically remove cooked food after a preset time.
- ❑ Pressure fryers cook foods faster and at lower temperatures by cooking foods under pressure.

Deep Fryer Example

Below is an example of a deep fryer:



Deep Fryers, continued

Rules for Using Deep Fryers

The table below provides some guidelines for using deep fryers.

RULES FOR USING DEEP FRYERS	
DO 	DON'T 
<ul style="list-style-type: none"> ■ Make sure the drain valve is shut before adding fat to an empty deep fryer kettle. ■ Set the thermostat at 250 °F (120 °C) (when filling a deep fryer with solid fats) until the solid fat has melted enough to cover the heating elements. ■ Keep deep fryer kettle filled to the fill line. ■ Check the accuracy of the thermostat regularly by reading the temperature of the fat with a thermometer. 	<ul style="list-style-type: none"> ■ Overload baskets ■ Salt foods over the fat. (salt deteriorates the grease) ■ Fry strong and mild-flavored foods in the same fat.

Tilting Skillets

Overview

The tilting skillet is a large, shallow, flat-bottomed pot that uses a tilting mechanism to pour liquids and other food items out of it. The tilting skillet uses gas or electricity for its power source.

Tilting Skillet Uses

The tilting skillet can be used as a:

- Griddle
 - Fry pan
 - Brazier
 - Stewpot
 - Stockpot
 - Steamer
 - Bain-marie
 - Steam table
-

Tilting Skillet Example

Below is an example of a tilting skillet:



Steam-Jacketed Kettles

Overview

Steam-jacketed kettles are heated not just on the bottom, but on the sides as well, which enables more control over the temperature of the kettle while heating more quickly and more uniformly than a regular pot on a range.

The temperature of the kettle is controlled by regulating the flow of steam into the jacket surrounding the kettle or by adjusting the thermostat. Steam for the kettle may be provided by an external steam source or internally self-generated by kettle.

Steam-Jacketed Kettle Sizes

Steam-jacketed kettles range in capacity from 2 gallons to over 100 gallons. Some large institutional kettles hold as much as 4,000 gallons.

Steam-Jacketed Kettle Types

Types of steam-jacketed kettles include:

- Tilt or trunnion kettles that can be tilted to empty their contents by either turning a wheel or pulling a lever
 - Non-tilt kettles that can be emptied by operating a spigot or drain at the bottom
-

Steam-Jacketed Kettle Example

Below is an example of a steam-jacketed kettle:



Compartment Steamers

Overview

Compartment steamers are used to cook vegetables and many other types of food with a minimum loss of nutrients and flavor. Compartment steamers do not operate under pressure, but rather direct jets of steam at the food to speed up the heat transfer process. Because of this, the door to the compartment steamer can be opened at any time.

Compartment Steamer Capacity

Compartment steamers hold standard-sized counter pans (12 × 20 inches); the number of pans varies from one steamer to another.

Example of a Compartment Steamer

Below is an example of a compartment steamer:



Toasters

Overview

There are two types of toasters:

- ❑ Pop-up
 - ❑ Conveyor
-

Pop-Up Toasters

Pop-up toasters allow for a maximum of up to four slices of bread, English muffins, and bagels to be toasted at once.

Pop-Up Toaster Example

Below is an example of a pop-up toaster:



Conveyor Toasters

Conveyor toasters allow for multiple slices of bread, English muffins, and bagels to be toasted in a sequential fashion.

Conveyor Toaster Example

Below is an example of a conveyor toaster:



Lesson Review

Purpose The intention of this exercise is to give you the opportunity to clarify and/or confirm your understanding of cooking equipment.

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. The following picture is an example of a:
 - a. Pop-up toaster
 - b. Broiler
 - c. Conveyor toaster
 - d. Induction cooktop



2. Because of the forced air of a convection oven:
 - a. Foods cook more quickly at lower temperatures
 - b. Oven pans can be placed closer together without blocking the flow of heat
 - c. A and B
 - d. None of the above
3. Before turning on a gas burner or gas oven, you should make sure the gas pilot light is lighted.
 - a. True
 - b. False

Continued next page

Lesson Review, continued

**Questions,
contd.**

4. The rangetop that is the fastest to heat is the heavy-duty flattop.
 - a. True
 - b. False
5. Place a checkmark next to all of the following items that are true for cooking with a microwave oven:
 - Small items will not brown in a microwave oven.
 - Foods at the edge of a dish or plate cook faster than foods at the center of the dish or plate.
 - Large roasts and other large items should be placed in the microwave oven at the same time to achieve the primary advantage of speed of cooking.
 - Overcooking of food items is the most common error in microwave cooking.
 - Food items placed in foil and other metals will not cook.
 - Large items need not be turned over once or twice in order to cook the item evenly.
6. Food items cooked by the broiler include:
 - a. Chicken
 - b. Steaks
 - c. Chops
 - d. All of the above
7. The tilting skillet can be used as a griddle.
 - a. True
 - b. False
8. Steam-jacketed kettles range in capacity from 2 gallons to over 100 gallons.
 - a. True
 - b. False
9. Compartment steamers cook vegetables and other types of food with a minimum loss of flavor and nutrients.
 - a. True
 - b. False

Continued next page

Lesson Review, continued

**Questions,
contd.**

10. The following picture is an example of a:
- Conventional oven
 - Compartment steamer
 - Convection oven
 - Grill



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.

Consult with your supervisor and do the following:

1. Discuss what you have learned, including describing the types of cooking equipment and their uses.
 2. Identify what equipment is available (and not available) for you to examine and prepare for use.
 3. Ask your supervisor to discuss safety precautions with you and demonstrate the preparation and use of the equipment.
 4. After observing a demonstration of how to prepare cooking equipment for use, under supervision prepare cooking equipment that is available to you.
-

Performance Evaluation



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

Lesson Summary

Summary

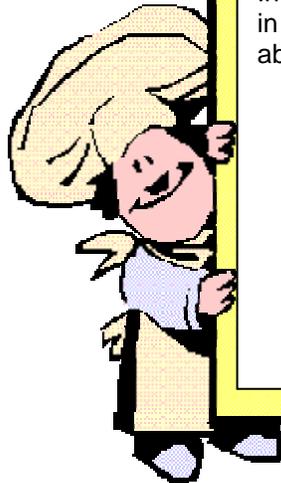
Having completed this lesson, you can:

- Identify the types of cooking equipment
 - Describe the uses of the various types of cooking equipment
 - Prepare cooking equipment for use
-

Next in this Unit

In the next lesson you will learn about equipment used in the processing of food. In particular, you will learn about:

- Mixers
- Meat slicers
- Food processors, and
- Proof boxes



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

5. The following picture is an example of a:
- Pop-up toaster
 - Broiler
 - Conveyor toaster**
 - Induction cooktop



6. Because of the forced air of a convection oven:
- Foods cook more quickly at lower temperatures
 - Oven pans can be placed closer together without blocking the flow of heat
 - A and B**
 - None of the above
7. Before turning on a gas burner or gas oven, you should make sure the gas pilot light is lighted.
- True**
 - False
8. The rangetop that is the fastest to heat is the heavy-duty flattop.
- True
 - False**

Continued next page

Lesson Review Feedback, continued

Answers, contd.

9. Place a checkmark next to all of the following items that are true for cooking with a microwave oven:
- Small items will not brown in a microwave oven.
 - Foods at the edge of a dish or plate cook faster than at the center of the dish or plate.
 - Large roasts and other large items should be placed in the microwave oven at the same time to achieve the primary advantage of speed of cooking.
 - Overcooking of food items is the most common error in microwave cooking.
 - Food items placed in foil and other metals will not cook.
 - Large items need not be turned over once or twice in order to cook the item evenly.
10. Food items cooked by the broiler include:
- a. Chicken
 - b. Steaks
 - c. Chops
 - d. All of the above**
11. The tilting skillet can be used as a griddle.
- a. True**
 - b. False
12. Steam-jacketed kettles range in capacity from 2 gallons to over 100 gallons.
- a. True**
 - b. False
13. Compartment steamers cook vegetables and other types of food with a minimum loss of flavor and nutrients.
- a. True**
 - b. False

Continued next page

Lesson Review Feedback, continued

**Answers,
contd.**

14. The following picture is an example of a:
- Conventional oven
 - Compartment steamer
 - Convection oven**
 - Grill



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LESSON 3

Processing Equipment

Introduction

Overview

This lesson introduces you to the various types of food processing equipment used in the preparation of food and explains how this processing equipment is prepared for use. Processing equipment is defined as equipment used to process or prepare food for cooking.

This section of the lesson includes:

- 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, you will:

- Identify the types of processing equipment
 - Describe the various types of processing equipment and their uses
 - Prepare processing equipment for use
-

Tools and References

Tools and references for this lesson include:

- Professional Cooking*, by Wayne Gisslen
 - Student Pamphlet: Unit 2
 - Handouts
 - Unit 1, Appendix C, Glossary of Key Terms
-

Recommended Reading

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

- Professional Cooking*, “Tools and Equipment: Processing Equipment” (Chapter 3).
-

Introduction, continued

Topics Covered by This Lesson

The lesson covers the following topics:

- Mixers
 - Meat slicers
 - Food processors
 - Proof boxes
-

Mixers

Overview

Mixers come in many shapes and sizes including:

- ❑ Bench models
 - ❑ Floor models
-

Bench Model Mixers

Bench model mixers range in capacity from 5 to 20 quarts. This is an example of a small bench model mixer:



Floor Model Mixers

Floor model mixers range in capacity up to 140 quarts. This is an example of a floor model mixer:



Mixers, continued

Mixer Attachments

Mixers use three main attachments:

- ❑ Dough arm – used for mixing and kneading yeast doughs
- ❑ Paddle – a flat blade used for general mixing
- ❑ Wire whip – used for beating cream and eggs and making mayonnaise

Below are examples of some attachments:



Dough Arm



Paddle



Wire Whip

Rules for Using Mixers

The table below shows some guidelines for using mixers.

RULES FOR USING MIXERS	
DO'S 	DON'TS 
<ul style="list-style-type: none"> ■ Make sure the attachment being used matches the size of the mixing bowl (sizes of attachments are marked on the top of the attachment, and bowl sizes are marked on the sides of the bowl). ■ Make sure the bowl and mixing attachment are firmly in place before turning on the machine. ■ Turn off the machine before changing speeds. ■ Turn off the machine before scraping down the bowl or inserting a spoon, scraper, or hand into the bowl. 	<ul style="list-style-type: none"> ■ Scrape down the bowl or stick a hand in the bowl while it is on or moving. ■ Fill the bowl more than 1/2 full. ■ Wear loose clothing (such as aprons) when operating mixers.

Meat Slicers

Overview

Meat slicers are valuable for reducing cutting costs and maintaining portion control by slicing food more evenly than cutting by hand.

There are two types of meat slicers:

- ❑ Manual – requires the operator to move the carriage back and forth to slice food
- ❑ Automatic – the carriage is moved back and forth by an electric motor

Meat Slicer Example

Below is an example of a meat slicer:



Meat Slicers, continued

Rules for Using Meat Slicers

The table below provides some guidelines for using meat slicers.

RULES FOR USING MEAT SLICERS	
DO 	DON'T 
<ul style="list-style-type: none"> ■ Make sure the slicer is properly assembled before using. ■ Use the end weight to hold the food against the blade. ■ Set the thickness control knob to zero (so the blade is flush) when cleaning the slicer or when the slicer is not in use. ■ Unplug the slicer before cleaning or dismantling. ■ Use sharpening stones provided with the slicer to sharpen the blade. 	<ul style="list-style-type: none"> ■ Wear loose clothing (such as aprons) when operating slicers. ■ Attempt to catch the sliced product when it falls from the blade.

Food Processors

Overview

Food processors are the workhorses of the galley/kitchen. When specialized tasks are required, the food processor is used to:

- Shred
- Dice
- Slice
- Grate
- Julienne

Food Processor Example

Below is an example of a Robot Coupe food processor:



Rules for Using Food Processors

The table below provides some guidelines for using food processors.

RULES FOR USING FOOD PROCESSORS	
DO 	DON'T 
<ul style="list-style-type: none"> ■ Make sure the machine is properly assembled before use. ■ Watch processing times carefully. ■ After turning off the machine, allow blades to come to a full stop before opening the cover of the bowl. ■ Keep the blades sharp using the sharpening stones provided. 	<ul style="list-style-type: none"> ■ Allow blades to become dull (dull blades bruise food).

Proof Boxes

Overview

The proof box is used to create a constant warm, moist environment to help expedite the proofing process of raised dough.

Proof Box Example

Below is an example of a proof box:



Rules for Using Proof Boxes

The table below provides some guidelines for using proof boxes.

RULES FOR USING PROOF BOXES	
DO 	DON'T 
<ul style="list-style-type: none"> ■ Make sure water is added to the proof box before it is used. ■ Monitor the temperature of the proof box at regular intervals using a thermometer. 	<ul style="list-style-type: none"> ■ Allow the proof box to run out of water.

Lesson Review

Purpose The intention of this exercise is to give you the opportunity to clarify and/or confirm your understanding of food processing equipment.

Directions Test your knowledge of the important concepts and principles of this lesson by choosing the best, most correct answer to each question below. Some questions require you to create answers or fill in blanks. 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

- Match each mixer attachment with its use.

Dough arm	_____	a. Used for beating cream and eggs and making mayonnaise
Paddle	_____	b. Used for mixing and kneading yeast doughs
Wire whip	_____	c. Used for general mixing
 - When working with a mixer, you should never wear loose clothing.
 - True
 - False
 - Food processors are used for which of the following tasks?
 - Slicing
 - Dicing
 - Grating
 - All of the above
 - It is not necessary to turn off the mixer before changing speeds.
 - True
 - False
 - The proof box is used to create a constant _____, _____ environment to help expedite the proofing process of raised dough. (Fill in the blanks)
-

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've read about in the lesson.

Consult with your supervisor and do the following:

1. Discuss what you have learned, including describing the types of processing equipment and their uses.
 2. Identify what equipment is available (and not available) for you to examine and prepare for use.
 3. Ask your supervisor to discuss safety precautions with you and demonstrate the preparation and use of the equipment.
 4. Observe a demonstration of how to prepare processing equipment for use. Then, under supervision, prepare processing equipment that is available to you.
-

Performance Evaluation



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

Lesson Summary

Summary

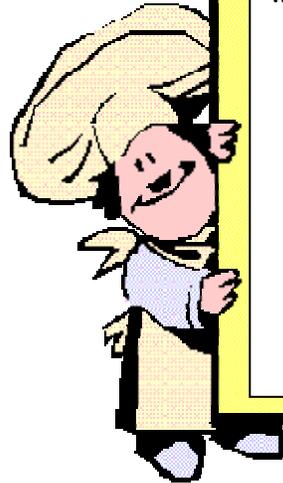
Having completed this lesson, you can:

- Identify the types of processing equipment
 - Describe the various types of processing equipment and their uses
 - Prepare processing equipment for use
-

Next in this Unit

In the next lesson you will learn about equipment used in the holding, serving, and storage of food. You will learn about:

- Food warmers
- Steam tables
- Bains-marie
- Overhead heat lamps
- Chilled salad bars, and
- Refrigerators



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.

Questions

- Match each mixer attachment with its use.

Dough arm	<u>b.</u>	a. Used for beating cream and eggs and making mayonnaise
Paddle	<u>c.</u>	b. Used for mixing and kneading yeast doughs
Wire whip	<u>a.</u>	c. Used for general mixing
 - When working with a mixer, you should never wear loose clothing.
 - True**
 - False
 - Food processors are used for which of the following tasks?
 - Slicing
 - Dicing
 - Grating
 - All of the above**
 - It is not necessary to turn off the mixer before changing speeds.
 - True
 - False**
 - The proof box is used to create a constant **warm**, **moist** environment to help expedite the proofing process of raised dough.
-

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LESSON 4

Food Holding, Serving, and Storing Equipment

Introduction

Overview

This lesson introduces you to the various types of equipment used in the holding, serving, and storing of food and how this equipment is prepared for use.

This section of the lesson includes:

- 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 lesson, you will:

- Identify the types of equipment used for holding, serving, and storing food
 - Describe the various uses of equipment used to hold, serve, and store food
 - Prepare food holding, serving, and storage equipment for use
-

Tools and References

Tools and references for this lesson include:

- Professional Cooking*, by Wayne Gisslen
 - Student Pamphlet: Unit 2
 - Handouts
 - Unit 1, Appendix C, Glossary of Key Terms
-

Recommended Reading

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

- Professional Cooking*, “Tools and Equipment” (Chapter 3).
-

Introduction, continued

Topics Covered in This Lesson

The types of food holding, serving, and storing equipment included in this lesson are:

- ❑ Hot food holding and serving equipment
 - Food warmers
 - Steam tables
 - Bains-marie
 - Overhead heat lamps
 - ❑ Cold food storage equipment
 - Chilled salad bars
 - Refrigerators
 - Freezers
 - Ice machines
-

Hot Food Holding and Serving Equipment

Overview

Several types of equipment are used to keep food hot for service. This equipment is designed to hold foods above 140 °F in order to prevent the growth of bacteria that can cause disease. Because food continues to cook at these temperatures, it should be held for as short a time as possible.

In this section, you will learn about the following pieces of equipment:

- Food warmers
- Steam tables
- Bains-marie
- Overhead heat lamps

Food Warmers

Food warmers come in many shapes and sizes and may be found in the galley, on the serving line, or in the mess deck.

Food warmers, as the name implies, are used to keep food warm for serving.

Here's an example of a food warmer:



Hot Food Holding and Serving Equipment, continued

Steam Tables

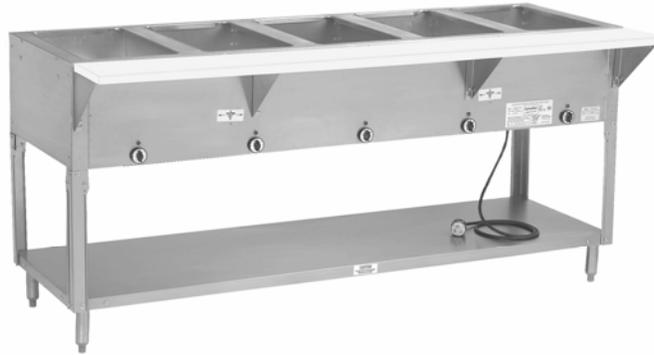
Steam tables come in many shapes and sizes and may be powered by either electricity or gas. They come in two types:

- Bench models
- Floor models

When operating a steam table, you must periodically:

- Check the temperature of the steam table to ensure the proper temperature is maintained
- Check the level of water to ensure steam is being created

Here is an example of a floor model steam table:



Bains-Marie

A bain-marie is a hot-water bath—literally, in French, it means “bath of Maria”. It consists of a pan or container of hot water in which a cooking container is placed for slow cooking or holding for service. Bains-marie are heated by electricity, gas, or steam. They are usually found in production and self-service areas rather than on the serving line.

Note: Exercise caution not to overfill the bain-marie. Use only enough water to fill the bain-marie when the insert is placed in the heated water, and no more.

Continued next page

Hot Food Holding and Serving Equipment, continued

Bains-Marie, contd.

Here is an example of a bain-marie:



Overhead Heat Lamps

Overhead heat lamps are used in service areas for keeping large roasts and fish warm. Overhead heat lamps are also used for keeping plated food warm before the service staff picks up the food.

Here is an example of an overhead heat lamp:



Cold Food Storage Equipment

Overview

The quality of the food you serve depends to a large extent on refrigeration equipment. By keeping foods cold, usually below 41 °F, the refrigerator guards against spoilage and bacterial growth.

This section addresses cold food storage equipment. In it you will learn about:

- ❑ Chilled salad bars
 - ❑ Refrigerators
 - ❑ Freezers
 - ❑ Ice machines
-

Chilled Salad Bars

Chilled salad bars are normally found in the mess deck.

Chilled salad bars are used to keep fruits, vegetables, and condiments chilled at temperatures below the danger zone (but not frozen).

Here is an example of a chilled salad bar:



Cold Food Storage Equipment, continued

Refrigerators

Refrigerated storage units must:

- Be constructed in accordance with current National Sanitation Foundation (NSF) standards and bear the NSF seal
 - Allow for the storage of items in such a way as to provide for adequate air circulation
 - Be provided with thermometers mounted on the unit's exterior and another placed inside the unit
 - Be equipped with a numerically scaled thermometer accurate to 3 °F (plus or minus) located in the warmest part of the facility to measure air temperature and mounted where it can be easily read
 - Be monitored and recorded using temperature logs with accurate entries being made daily
 - Maintain potentially hazardous foods that require refrigeration at a temperature at or below 41 °F (5 °C)
 - Have emergency escape latches on all doors to allow anyone trapped inside to get out
-

Types of Refrigerators

Refrigerators come in two types:

- Walk-in
 - Reach-in
-

Walk-In Refrigerators

Walk-in refrigerators provide for the cold storage of food items and do not allow for the storage of food items on the deck or less than six inches above the deck.

Here is an example of a walk-in refrigerator:



Cold Food Storage Equipment, continued

Reach-In Refrigerators

Reach-in refrigerators have the same temperature requirements as walk-in refrigerators (they must maintain potentially hazardous foods that require refrigeration at a temperature at or below 41 °F), and require that items are stored in such a way as to provide for adequate air circulation.

In addition, reach-in refrigerators do not allow for the storage of food items on the lowest surface or less than six inches above the lowest surface.

Here is an example of a reach-in refrigerator:



Freezers

Freezer storage units must:

- Be constructed in accordance with current National Sanitation Foundation (NSF) standards and bear the NSF seal
 - Be provided with thermometers mounted on the unit's exterior and another placed inside the unit
 - Be equipped with a numerically scaled thermometer accurate to plus or minus 3 °F located in the warmest part of the facility to measure air temperature and mounted where it can be easily read
 - Be monitored and recorded using temperature logs with accurate entries being made daily
 - Maintain frozen foods at a temperature of 0 °F or below
 - Have emergency escape latches on all doors to allow anyone trapped inside to get out
-

Cold Food Storage Equipment, continued

Types of Freezers

Freezers come in two types:

- Walk-in
 - Reach-in
-

Walk-In Freezers

Walk-in freezers provide for the storage of frozen food items and do not allow for the storage of these items on the deck or less than six inches above the deck.

Here is an example of a walk-in freezer:



Reach-In Freezers

Reach-in freezers have the same temperature requirements (maintain frozen foods that require refrigeration at a temperature at or below 0 °F) as walk-in freezers, and require that items are stored in such a way as to provide for adequate air circulation.

In addition, reach-in freezers do not allow for the storage of food items on the lowest surface or less than six inches above the lowest surface.

Continued next page

Cold Food Storage Equipment, continued

Reach-In Freezers, contd.

Here is an example of a reach-in freezer:



Ice Machines

Ice machines must:

- ❑ Be located, installed, operated, and maintained in a sanitary manner to prevent contamination
- ❑ Be cleaned and inspected periodically by refrigeration personnel to ensure proper operation
- ❑ Be inspected weekly for evidence of cockroach infestation within the motor and insulation areas
- ❑ Be provided with air gaps between the ice storage bin and drains
- ❑ Be equipped with sanitary racks or stowage trays for hoses or lines used to fill freezing trays
- ❑ Be provided with overflow pipes for defrosting tanks in order to prevent contamination of ice with water used for defrosting

Continued next page

Cold Food Storage Equipment, continued

Ice Machines, contd.

Here is an example of an ice machine:



Rules for Using Ice Machines

See the table below for rules when using an ice machine.

RULES FOR USING ICE MACHINES	
NO.	RULE
1.	Ensure non-potable water inlets do not become submerged.
2.	Dispense ice only with scoops, tongs, other ice-dispensing utensils, or through automatic self-service ice dispensing equipment.
3.	Store ice-dispensing utensils and ice receptacles in a way that protects them from contamination and <i>not</i> in ice making machines.

Lesson Review

Purpose The intention of this exercise is to give you the opportunity to clarify and/or confirm your understanding of food processing equipment.

Directions Test your knowledge of the important concepts and principles of this lesson by choosing the best, most correct answer to each question below. Some questions require you to create answers or fill in blanks. 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 For items 1–6, match the following descriptions of food holding, serving, and storage equipment with their names. Some items may have more than one correct answer. The first one has been completed for you.

FOOD HOLDING, SERVING, AND STORING EQUIPMENT		
	DESCRIPTION	EQUIPMENT
<u> </u> <i>c</i>	Ex. General purpose equipment used to keep food warm.	a. Bain-marie insert
<u> </u>	1. Powered by electricity or steam.	b. Refrigerator
<u> </u>	2. Come in two types: walk-ins and reach-ins.	c. Food warmer
<u> </u>	3. Used to keep large roasts, fish, and plated food warm.	d. Chilled salad bar
Continued next page		

Lesson Review, continued

Questions, contd.

	DESCRIPTION	EQUIPMENT
_____	4. Used to keep fruits, vegetables, and condiments chilled at temperatures below the danger zone (but not frozen).	e. Steam table
_____	5. Have emergency escape latches on all doors to allow anyone trapped inside to get out.	f. Overhead heat lamp
_____	6. Is a tall cylindrical stainless steel container used for storing foods or holding them in a hot water bath.	g. Freezer

7. Hot food handling equipment (e.g., steam tables, bains-marie, or overhead infrared lamps) _____.
 - a. often encourage the growth of bacteria
 - b. are designed to maintain food at above 180 °F
 - c. continue to cook food as it is being held for service
 - d. all of the above
8. When filling a bain-marie with water, you should _____.
 - a. be careful not to overfill it
 - b. maximize the water level by filling it full, placing the insert in it, and letting the water overflow slowly until it stops
 - c. be careful not to close the lid too tightly
 - d. be sure to wipe up any spillage from the filling
9. Refrigerators should maintain potentially hazardous foods at or below what temperature?
 - a. 32 °F
 - b. 37 °F
 - c. 41 °F
 - d. 46 °F
10. Freezers should maintain frozen foods at or below what temperature?
 - a. -5 °F
 - b. 0 °F
 - c. 5 °F
 - d. 10 °F

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've read about in the lesson.

Consult with your supervisor and do the following:

1. Discuss what you have learned, including describing the types of holding, serving, and storing equipment and their uses.
 2. Identify what equipment is available (and not available) for you to examine and prepare for use.
 3. Ask your supervisor to discuss safety precautions with you and demonstrate the preparation and use of the equipment.
 4. Observe a demonstration of how to prepare processing equipment for use. Then, under supervision, prepare processing equipment that is available to you.
-

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.

Consult with your supervisor and do the following:

1. Discuss what you have learned, including describing the types of equipment used for holding, serving, and storing food.
 2. Identify what equipment is available (and not available) for you to examine, prepare, and use.
 3. Ask your supervisor to discuss safety precautions with you and demonstrate the preparation and use of the equipment.
 4. Observe a demonstration of how to prepare holding, serving, and storage equipment for use. Then, under supervision, prepare equipment that is available to you.
-

Performance Evaluation



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

Lesson Summary

Summary

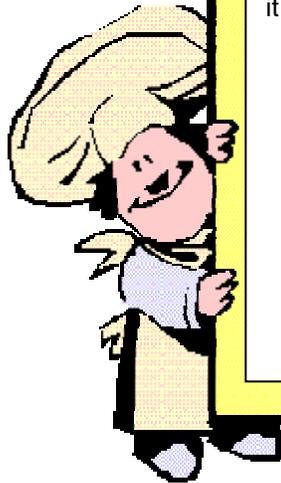
Having completed this lesson, you can:

- ❑ Identify the types of equipment used for holding, serving, and storing food
 - ❑ Describe the various uses of equipment used to hold, serve, and store food
 - ❑ Prepare food holding, serving, and storage equipment for use
-

Next in this Unit

In the next lesson you will learn about equipment used to clean and sanitize the food service facility and its contents. More specifically, you will learn about:

- Manual cleaning and sanitizing equipment (sinks, drying areas)
- Mechanical cleaning equipment (dishwashers), and
- Tools and hardware used for cleaning food preparation areas (swabs, brushes, etc.)



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

FOOD HOLDING, SERVING, AND STORING EQUIPMENT		
	DESCRIPTION	EQUIPMENT
<u>c</u>	Ex. General purpose equipment used to keep food warm.	a. Bain-marie insert
<u>e</u>	1. Powered by electricity or steam.	b. Refrigerator
<u>b and g</u>	2. Come in two types: walk-ins and reach-ins.	c. Food warmer
<u>f</u>	3. Used to keep large roasts, fish, and plated food warm.	d. Chilled salad bar
<u>b and d</u>	4. Used to keep fruits, vegetables, and condiments chilled at temperatures below the danger zone (but not frozen).	e. Steam table
<u>b and g</u>	5. Have emergency escape latches on all doors to allow anyone trapped inside to get out.	f. Overhead heat lamp
<u>a</u>	6. Is a tall cylindrical stainless steel container used for storing foods or holding them in a hot water bath.	g. Freezer

Lesson Review Feedback, continued

**Answers,
contd.**

7. Hot food handling equipment (e.g., steam tables, bains-marie, or overhead infrared lamps) _____.
 - a. often encourage the growth of bacteria
 - b. are designed to maintain food at above 180 °F
 - c. continue to cook food as it is being held for service**
 - d. all of the above
 8. When filling a bain-marie with water, you should _____.
 - a. be careful not to overfill it**
 - b. maximize the water level by filling it full, placing the insert in it, and letting the water overflow slowly until it stops
 - c. be careful not to close the lid too tightly
 - d. be sure to wipe up any spillage from the filling
 9. Refrigerators should maintain potentially hazardous foods at or below what temperature?
 - a. 32 °F
 - b. 37 °F
 - c. 41 °F**
 - d. 46 °F
 10. Freezers should maintain frozen foods at or below what temperature?
 - a. -5 °F
 - b. 0 °F**
 - c. 5 °F
 - d. 10 °F
-

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LESSON 5

Cleaning and Sanitizing Equipment

Introduction

Overview

This lesson introduces you to the various types of equipment used to clean and sanitize the food service facility and its contents.

This section of the lesson includes:

- 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 lesson, you will:

- Identify the types of equipment used for cleaning and sanitizing the food service facility and its contents
 - Describe the various uses of cleaning and sanitizing equipment
 - Prepare cleaning and sanitizing equipment for use
-

Tools and References

Tools and references for this lesson include:

- Professional Cooking*, by Wayne Gisslen
 - Food Service Sanitation Manual, COMDTINST M6240.4A
 - Student Pamphlet: Unit 2
 - Unit 1, Appendix C, Glossary of Key Terms
-

Introduction, continued

Recommended Reading

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

- ❑ *Professional Cooking*, “Safety and Sanitation” (Chapter 2, pp. 13–24)
 - ❑ *Food Service Management General Messes*, NAVSUP PUB486 Part C, Appendix I, p. I-22 (<http://www.nll.navsup.navy.mil/nll/filedetail.cfm?id=5483>)
 - ❑ *Food Service Sanitation Manual*,
 - Chapter 5, p. 2, Table 5-1, and
 - Enclosure 2 (at the back of the book)
-

Topics Covered by This Lesson

This lesson covers the following topics:

- ❑ Manual cleaning and sanitizing equipment
 - ❑ Mechanical cleaning and sanitizing equipment
 - ❑ Other cleaning and sanitizing equipment
-

Manual Cleaning and Sanitizing Equipment

Overview

Manual cleaning requires the use of a three-compartment sink for washing dishes, glassware, and eating utensils by hand. Pans and cloths for washing food and non-food contact surfaces may be cleaned by this method as well.

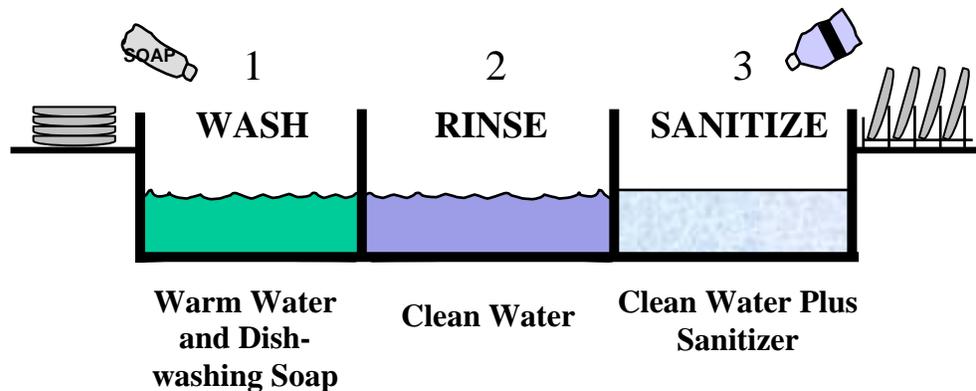
Three-Compartment Sink Requirements

Three-compartment sinks:

- Must be cleaned prior to each use
 - Must be equipped with hot and cold potable running water for each compartment
 - Are used for the complete immersion of pots, pans, containers, and utensils too large for the dishwasher
-

Three-Compartment Sink Example

Below is a diagram of a three-compartment sink set up for manual dishwashing:



Manual Cleaning and Sanitizing Equipment, continued

Prepare a Three-Compartment Sink for Use

Prepare a three-compartment sink according to the following steps:

PREPARING A THREE-COMPARTMENT SINK		
STEP	ACTION	
1.	Fill the sinks with potable water to the desired level at the temperatures listed in the table below:	
	SINK	USED FOR
	#1	Washing
	#2	Rinsing
		TEMPERATURES OF
		Not less than 110 °F
		120–140 °F
		171 °F or greater (a gas or electric heating element is needed to hold water at this temperature)
2.	Verify water temperatures in the sinks using a numerically scaled indicating thermometer accurate to plus or minus 3 °F.	
3.	Add detergent to washing sink (sink #1), as per manufacturer’s directions.	
4.	Determine sanitizing method.	
	IF SANITIZING SINK USES...	THEN...
	A heating element,	Continue to step 5.
Chemicals,	Refer to the Food Service Sanitation Manual (COMDTINST M6240.4A), Enclosure 2, pages 5.2–5.3 and skip to step 7.	
5.	Turn on the heating element.	
Continued next page		

Manual Cleaning and Sanitizing Equipment, continued

Prepare a Three-Compartment Sink for Use, contd.

STEP	ACTION	
6.	Verify that the heating element is operational.	
	IF THE HEATING ELEMENT...	THEN...
	Is operational,	Continue to step 7.
	Is not operational,	Follow procedures for chemical sanitation and refer the heating element problem to your supervisor.
7.	Continue with the procedure to wash dishes manually.	
End of procedure		

For more details, see the *Food Service Sanitation Manual*, Chapter 5, p. 2, Table 5-1 and Enclosure 2.

Mechanical Cleaning and Sanitizing Equipment

Overview

Mechanical cleaning and sanitizing requires the use of a spray-type, immersion, or other type of machine that thoroughly cleans and sanitizes equipment and utensils.

Mechanical Dishwasher Example

Below is an example of a mechanical dishwasher:



Preparing Mechanical Cleaning Equipment

To prepare (assemble) the mechanical cleaning equipment (dishwasher), follow the steps below:

STEP	ACTION
1.	Verify that the dishwasher is plugged into an AC outlet.
2.	Replace the sprinkler manifold end caps on all (upper and lower) sprinkler manifolds.
3.	Insert the upper sprinkler manifold on the right side.
4.	Insert the upper sprinkler manifold on the left side.
5.	Replace the bottom end tray near the output.
6.	Replace drain tubes at the front.
7.	Replace the two bottom trays at the rear.
8.	Replace the two notched bottom trays at the front.
Continued next page	

Mechanical Cleaning and Sanitizing Equipment, continued

Preparing Mechanical Cleaning Equipment, contd.

STEP	ACTION
9.	Replace the two rectangular catch trays (strainers) in the bottom.
10.	Insert the lower sprinkler manifold on the right side.
11.	Insert the lower sprinkler manifold on the left side.
12.	Replace the curtains (four long and one short) in their proper positions.
13.	Close the levers (push downward) inside the front of the dishwasher to keep the water from draining.
14.	Close the dishwasher doors.
15.	Turn the Vent switch to “On.”
16.	Turn the Power switch to “On” to: <ul style="list-style-type: none"> <input type="checkbox"/> Fill the wash and rinse tanks <input type="checkbox"/> Charge the wash tank with dishwashing compound <input type="checkbox"/> Fill the sanitizing tank
17.	Wait fifteen minutes to allow the tanks to fill.
18.	Turn the Motor switch to “On” for two minutes to mix detergent.
19.	Turn the Water and Steam (booster heater) switch to “On.”
20.	Verify the temperature ranges for sprays, detergent, and jet dry according to the values below: <ul style="list-style-type: none"> a) Wash temperature range: 150–160 °F b) Rinse temperature range: 160–180 °F c) Final rinse temperature range: 180–194 °F
21.	In the event of an emergency (alarm conditions), check detergent levels, the drain plug, and notify your supervisor.
End of procedure	

Other Cleaning and Sanitizing Equipment

Overview

Other cleaning and sanitation equipment includes:

- Swabs
 - Brushes
 - Wash rags (towels)
 - Pans
-

Preparing Pans for the Two-Pan Method of Cleaning and Sanitizing

For cleaning and sanitizing food preparation and food processing equipment too large for the dishwasher or three-compartment sink (such as rangetops, ovens, steam-jacketed kettles, etc.), use the two-pan method of cleaning and sanitizing. To prepare the pans for the two-pan method, follow the steps in the table below:

STEP	ACTION
1.	Obtain two stainless steel pans or colored plastic buckets. Red is for sanitizing and green is for cleaning.
2.	Fill pan #1 (green) with 2 tablespoons of liquid detergent for each gallon of hot water.
3.	Fill pan #2 (red) with hot, clear water or a sanitizing solution.
4.	Obtain two wash cloths: one to be used only with the cleaning solution in pan #1 and one to be used only with the clear, hot water or sanitizing solution in pan #2.
End of procedure	

Other Cleaning and Sanitizing Equipment, continued

Do's and Don'ts of Storing Cleaning and Sanitation Equipment

The table below provides some guidelines for storing cleaning and sanitation equipment.

RULES FOR STORING CLEANING AND SANITATION EQUIPMENT	
DO 	DON'T 
<ul style="list-style-type: none"> ■ Store cleaning gear and supplies ONLY in areas designated specifically for that purpose. 	<ul style="list-style-type: none"> ■ Store cleaning gear and supplies in food preparation areas, storage cabinets, or on food shelves. ■ Store cleaning gear and supplies in the same cabinet or locker used to store insecticides (may create a fire hazard).

Lesson Review

Purpose The intention of this exercise is to give you the opportunity to clarify and/or confirm your understanding of cleaning and sanitation equipment.

Directions Test your knowledge of the important 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 For items 1 through 3, review the following actions related to cleaning and sanitizing, and mark whether they are OK (appropriate) or NOT OK (inappropriate). An example has been completed for you.

ACTION	OK	NOT OK
Ex. Chef Pref stored cleaning gear and supplies in a brown paper bag in the middle of the lake.		X
1. Chef Jeff stored cleaning gear and supplies in a food preparation area.		
2. Chef Clef stored cleaning gear and supplies in a locker used to store insecticides.		
3. Chef Ref stored cleaning gear and supplies in an area designated specifically for that purpose.		

4. When should the three-compartment sink be cleaned?
- Before each use
 - During each use
 - After each use
 - All of the above

Continued next page

Lesson Review, continued

**Questions,
contd.**

5. What cleaning method is used for food preparation and food processing equipment too large for the dishwasher or three-compartment sink?
 - a. The two-pan method
 - b. The four-pan method
 - c. The large-pan method
 - d. The pan flute method
-

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.

Consult with your supervisor and do the following:

1. Discuss what you have learned, including describing the tools and equipment used for cleaning and sanitizing a food service facility and its contents.
 2. Identify what cleaning and sanitizing equipment is available (and not available) for you to examine and prepare for use.
 3. Ask your supervisor to discuss safety precautions with you and demonstrate the preparation and use of the cleaning and sanitizing equipment.
 4. Observe a demonstration of how to prepare cleaning and sanitizing equipment for use. Then, under supervision, prepare equipment that is available to you.
-

Performance Evaluation



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

Lesson Summary

Summary

Having completed this lesson, you can:

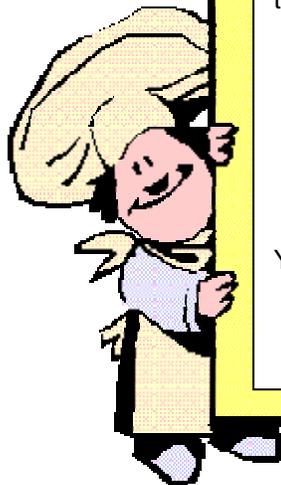
- Identify the types of equipment used for cleaning and sanitizing the food service facility and its contents
 - Describe the various uses of cleaning and sanitizing equipment
 - Prepare cleaning and sanitizing equipment for use
-

Next in this Unit

In the next lesson you will learn about the tools used to prepare, serve, and store food. You'll learn about:

- Pots
- Pans
- Containers

You will learn what they are and when to use them.



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

For items 1 through 3, review the following actions related to cleaning and sanitizing, and mark whether they are OK (appropriate) or NOT OK (inappropriate).

ACTION	OK	NOT OK
1. Chef Jeff stored cleaning gear and supplies in a food preparation area.		X
2. Chef Clef stored cleaning gear and supplies in a locker used to store insecticides.		X
3. Chef Ref stored cleaning gear and supplies in an area designated specifically for that purpose.	X	

4. When should the three-compartment sink be cleaned?

- a. **Before each use**
- b. During each use
- c. After each use
- d. All of the above

5. What cleaning method is used for food preparation and food processing equipment too large for the dishwasher or three-compartment sink?

- a. **The two-pan method**
 - b. The four-pan method
 - c. The large-pan method
 - d. The pan flute method
-

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LESSON 6

Pots, Pans, and Containers

Introduction

Overview

This lesson introduces you to the tools used to prepare, serve, and store pots, pans and containers for food.

This section of the lesson includes:

- 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:

- Identify the types of pots, pans and containers used for preparing, serving, and storing food
 - Describe the uses of containers, pots and pans
 - Given a need for preparation, serving, or storage, select the proper pot, pan, or container for that need.
-

Tools and References

Tools and references for this lesson include:

- Professional Cooking*, by Wayne Gisslen
 - Student Pamphlet: Unit 2
 - Unit 1, Appendix C, Glossary of Key Terms
 - Index Cards
-

Recommended Reading

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

- Professional Cooking*, “Tools and Equipment: Pots, Pans, and Containers” (Chapter 3, pp. 42–44).
-

Introduction, continued

Topics Covered by This Lesson

The lesson covers the following topics:

- Pots
 - Pans
 - Containers
-

Pots

Overview

A good cooking utensil distributes heat evenly and uniformly. Pots are often made of aluminum since it is lightweight and a good heat conductor. The size and shape determine the possible uses for the pot.

The pots discussed in this section are:

- ❑ Stockpot
 - ❑ Saucepot
 - ❑ Brazier
-

Stockpot

A stockpot is a large, deep, straight-sided pot used for preparing stocks and simmering large quantities of liquids.

Below is an example of a stockpot:



Stockpots with spigots allow liquid to be drained off without disturbing the solid contents or lifting the pot.

Below is an example of a stockpot with a spigot:



Pots, continued

Saucepot

A saucepot is a round pot of medium depth. It is similar to a stockpot but shallower. This makes stirring or mixing easier.

Use saucepots for soups, sauces, and other liquids. They come in sizes from 6 to 60 quarts.

Here is an example of a saucepot:



Brazier

A brazier is a round, broad, heavy-duty pot with straight sides. Use it for browning, braising, and stewing meats. It comes in sizes from 11 to 30 quarts.

Here is an example of a brazier:



Pans

Overview

Pans are made out of aluminum, stainless steel, cast iron, porcelain, or glass. Commercial kitchens prefer metal pans because they do not break.

In this section you will learn about:

- Saucepan
- Sauté pan, straight-sided
- Sauté pan, slope-sided
- Cast-iron skillet
- Double boiler
- Sheet pan
- Bake pan
- Roasting pan
- Hotel pan

Saucepan

A saucepan is similar to a small, light saucepot but with one long handle instead of two loop handles. It has straight or slanted sides and you use it for general range-top cooking. It comes in sizes from 1 1/2 to 15 quarts (or liters).

Here is an example of a saucepan:



Pans, continued

Sauté Pan, Straight-Sided

Straight-sided sauté pans are similar to shallow, straight-sided saucepans but are heavier. Because of the broad surface area, use sauté pans for cooking sauces and other liquids when rapid reduction is required. They can also be used for browning, sautéing and frying. Sizes range from 2 1/2 to 5 inches deep and 6 to 16 inches in diameter.

Below is an example of a straight-sided sauté pan:



Sauté Pan, Slope-Sided

Slope-sided sauté pans are also known as fry pans. Use these pans for general sautéing and frying of meats, fish, vegetables and eggs. The sloping sides make it easier to flip and toss items. Sizes range from 6 to 14 inches top diameter.

Below is an example of a slope-sided sauté pan:



Cast-Iron Skillet

Cast-iron skillets are very heavy, thick-bottomed fry pans. Use them for frying when very steady, even heat is desired.

Below is an example of a cast-iron skillet:



Pans, continued

Double Boiler

The lower section of a double boiler is similar to a stockpot and holds boiling water. The top section holds foods that must be cooked at low temperatures and cannot be cooked over direct heat. The top section ranges in sizes from 4 to 36 quarts.

Below is an example of a double boiler:



Sheet Pan or Bun Pan

A sheet pan or bun pan is a shallow rectangular pan for baking cakes, rolls, and cookies, and for baking or broiling meats and fish. These pans are typically 1 inch deep and come in two different sizes:

- ❑ Full pan – 18 × 26 inches
- ❑ Half pan – 18 × 13 inches

Below is an example of a sheet pan:

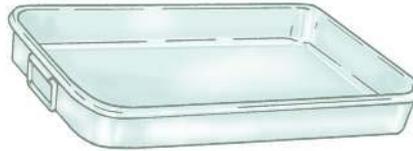


Pans, continued

Bake Pan

A bake pan is a rectangular pan about 2 inches deep. It is used for general baking and comes in a variety of sizes.

Below is an example of a bake pan:



Roasting Pan

A roasting pan is similar to a bake pan but deeper and heavier. It is used for roasting meats and poultry.

Below is an example of a roasting pan:



Hotel Pan

A hotel pan is also known as a counter pan, steam table pan, or service pan. It's a rectangular pan, usually made of stainless-steel. It's designed to hold food in service counters and can also be used for baking and steaming. When used for baking and steaming, the food can be served in the same pan in which it was prepared.

The standard size is 12 inches wide, 20 inches long, and 2 1/2 inches deep. Fractions of this size (1/2, 1/3 etc.) are available. Deeper sizes are available also.

Here is an example of a hotel pan:



Containers

Overview

Containers are used for food storage and preparation. This section discusses the following containers:

- ❑ Bain-marie insert
 - ❑ Stainless steel bowl
-

Bain-Marie Insert

The bain-marie insert is a tall, cylindrical stainless-steel container used for storage and for holding foods in a water bath (bain-marie). The sizes range from 1 to 36 quarts.

Below are examples of bain-marie inserts:



Stainless-Steel Bowls

Stainless-steel bowls are round-bottomed and are used for mixing and whipping. They are also used for making hollandaise, mayonnaise, whipped cream, and egg white foams. The rounded bottom enables the whip to reach all areas. Stainless-steel bowls come in many sizes.

Here is an example of a stainless-steel bowl being used for whipping:



Pots, Pans, and Containers Job Aid

Directions

Use this job aid to help in selecting the proper pot, pan, or container for preparing, serving, or storing food.

Selecting a Pot, Pan, or Container Job Aid

Select the proper pot, pan, or container to use.

IF YOU WANT TO...	THEN SELECT A...
Prepare 8 to 200 quarts of stocks or simmer large quantities of liquids,	Stockpot.
Prepare 6 to 60 quarts of soups, sauces or other liquids,	Saucepot.
Prepare 11 to 30 quarts of browned, braised or stewed meats,	Brazier.
Prepare 1 1/2 to 15 quarts of liquids on the range top,	Saucepan.
Brown, sauté, fry, or reduce cooking sauces and other liquids,	Sauté pan, straight-sided.
Sauté or fry meats, fish, vegetables, or eggs,	Sauté pan, slope-sided.
Fry food with an even, steady heat,	Cast-iron skillet.
Cook foods over a low, and not direct heat,	Double boiler.
Bake cakes, rolls, cookies, certain kinds of meat, or fish,	Sheet pan or bun pan.
Broil certain meats or fish,	Sheet pan or bun pan.
Perform general baking,	Bake pan.
Roast meats or poultry,	Roasting pan.
Bake, steam, or hold foods in service counters,	Hotel pan
Hold and store 1 to 36 quarts of food for service,	Bain-marie.
Mix and whip for production, hollandaise, mayonnaise, whipped cream, or egg white foams,	Stainless-steel bowl.

Lesson Review

Purpose The intention of this exercise is to give you the opportunity to clarify and/or confirm your understanding of cleaning and sanitation equipment.

Directions Test your knowledge of pots, pans, containers and their uses by matching each “use” in the table below with its corresponding pot, pan or container. 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 In the table below, you will find three columns—a column for answers, a column of “uses,” and a column of pots, pans, and containers. Your task is to read each use and correctly match it with its pot, pan, or container. Write the letter for your answer in the column on the left. The first one has been completed for you.

POTS, PANS, AND CONTAINERS		
	USE	POT, PAN, CONTAINER
g.	<p>Example: Used for general range-top cooking. Similar to a saucepot but with one long handle instead of two loop handles.</p>	<p>a. Double Boiler</p> 
_____	<p>1. Used to hold food in steam tables. Standard size is 12 × 20 × 2.5.</p>	<p>b. Saucepot</p> 
Continued next page		

Lesson Review, continued

Items to Match, contd.

	USE	POT, PAN, CONTAINER
_____	2. Used to prepare stocks and simmer large quantities of liquid.	c. Bake Pan 
_____	3. Used for frying when very steady, even heat is required.	d. Hotel Pan 
_____	4. Tall, cylindrical stainless steel container used for storage and holding foods.	e. Sheet Pan 
_____	5. Used for cooking meats and poultry. Similar to bake pan but deeper and heavier.	f. Stainless Steel Bowl 
_____	6. Used for baking cakes, rolls and cookies. Comes in 2 sizes—half and full.	g. Saucepan 
_____	7. Used for general baking. Rectangular. Comes in a variety of sizes.	h. Bain-Marie Inserts 

Continued next page

Lesson Review, continued

Items to Match, contd.

	USE	POT, PAN, CONTAINER
_____	8. Used to prepare foods that must be cooked at low temperatures and cannot be cooked over direct heat.	i. Stockpot 
_____	9. Used to prepare soups, sauces and smaller quantities of liquids.	j. Roasting Pan 
_____	10. Used for mixing and whipping.	k. Cast-Iron Skillet 

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 types of pots, pans, containers and their uses.
2. Ask your supervisor to discuss safety precautions with you, if any, and help you to identify the most-often-used pots, pans, and containers that are available to you. You may wish to perform the following exercise with your supervisor, if he or she is available, or do it on your own once you have located the available pots/pans.

Review Exercise (Optional)

In order to perform this exercise you will need 10–15 index cards (or scraps of paper), access to pots, pans, and containers in a local kitchen, and something to write with.

REVIEW EXERCISE	
STEP	ACTION
1.	Using the descriptions of the uses of pots, pans, and containers in this lesson and in <i>Professional Cooking</i> , write each “use” on one side of its own individual index card. On the other side of the index card write the name of the pot, pan, or container.
2.	Shuffle the cards, and set them down so that the “uses” sides are facing up.
3.	Choose a card and read the “use.” If that pot or pan is available to you, locate and identify it in the kitchen, and then check yourself by reading the name of the pot or pan on the back of the index card. If you were correct, mark an X next to the name of the pot or pan on the index card. If you were incorrect, mark an O next to the name. If the pot or pan is not available to you, simply state the name of the pot or pan, describe it, and then check yourself.
4.	Repeat steps 2 and 3 until you have at least two Xs next to each name of a pot or pan.

Performance Evaluation



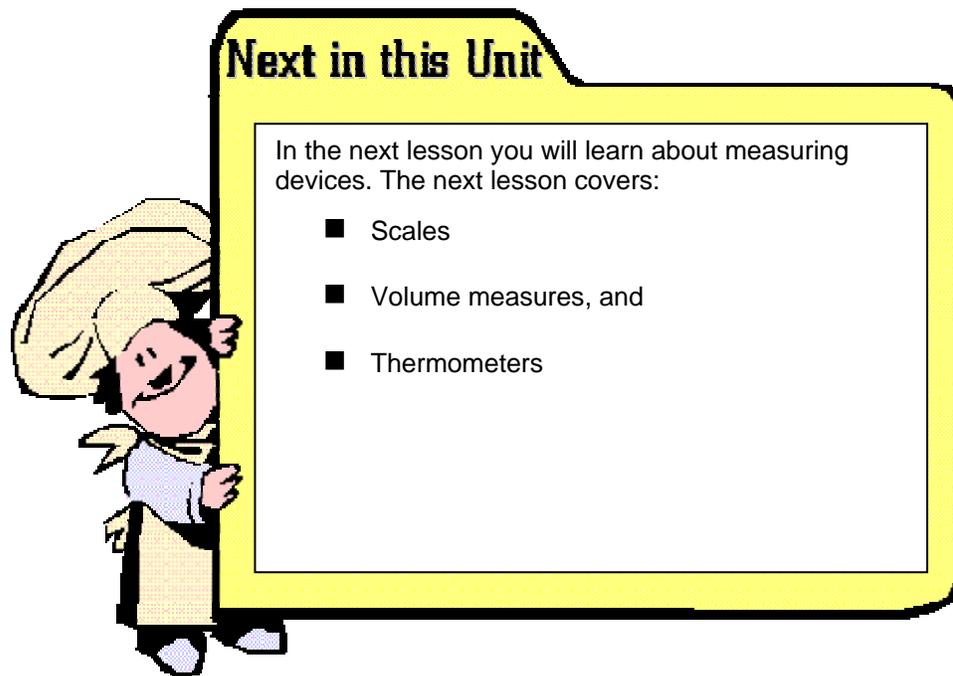
There are no performance qualifications for this lesson; therefore, no performance evaluations are included.

Lesson Summary

Summary

Having completed this lesson, you can:

- ❑ Identify the types of containers, pots, and pans used for preparing, serving, and storing food
 - ❑ Describe the uses of containers, pots and pans
 - ❑ Select the proper pot, pan or container for preparation, serving, or storage
-



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

POTS, PANS, AND CONTAINERS		
	USE	POT, PAN, CONTAINER
<u>g.</u>	<p>Example: Used for general range-top cooking. Similar to a saucepot but with one long handle instead of two loop handles.</p>	<p>a. Double Boiler</p> 
<u>d.</u>	<p>1. Used to hold food in steam tables. Standard size is 12 × 20 × 2.5.</p>	<p>b. Saucepot</p> 
<u>i.</u>	<p>2. Used to prepare stocks and simmer large quantities of liquid.</p>	<p>c. Bake Pan</p> 
<u>k.</u>	<p>3. Used for frying when very steady, even heat is required.</p>	<p>d. Hotel Pan</p> 
<u>h.</u>	<p>4. Tall, cylindrical stainless steel container used for storage and holding foods.</p>	<p>e. Sheet Pan</p> 
Continued next page		

Lesson Review Feedback, continued

Answers, contd.

	USE	POT, PAN, CONTAINER
<u> </u> j.	5. Used for cooking meats and poultry. Similar to bake pan but deeper and heavier.	f. Stainless Steel Bowl 
<u> </u> e.	6. Used for baking cakes, rolls and cookies. Comes in 2 sizes—half and full.	g. Saucepan 
<u> </u> c.	7. Used for general baking. Rectangular. Comes in a variety of sizes.	h. Bain-Marie Inserts 
<u> </u> a.	8. Used to prepare foods that must be cooked at low temperatures and cannot be cooked over direct heat.	i. Stockpot 
<u> </u> b.	9. Used to prepare soups, sauces and smaller quantities of liquids.	j. Roasting Pan 
<u> </u> f.	10. Used for mixing and whipping.	k. Cast-Iron Skillet 

LESSON 7

Measuring Devices

Introduction

Overview

Measuring devices—including such items as scales, measuring cups, and thermometers—play a critical role in food preparation. When used properly, they will help you combine proper amounts of ingredients while preparing food and control portions while serving food. This lesson will introduce you to measuring devices.

This section of the lesson includes:

- Performance qualifications
- Objectives
- Performance evaluation
- 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 lesson, you will:

- Identify the types of scales, volume measures and thermometers used for preparing and serving food
 - Describe the uses of scales, volume measures, and thermometers
-

Tools and References

Tools and references for this lesson include:

- Professional Cooking*, by Wayne Gisslen
 - Student Pamphlet: Unit 2
 - Unit 1, Appendix C, Glossary of Key Terms
-

Introduction, continued

Recommended Reading

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

- ❑ *Professional Cooking*:
 - Tools and Equipment: Measuring Devices (Chapter 3) and
 - Bakeshop Production: Procedure for Using a Baker's Scale (Chapter 26).
-

Topics Covered By This Lesson

The topics covered by this lesson are:

- ❑ Scales
 - ❑ Volume measures
 - ❑ Thermometers
-

Scales

Overview

Scales measure weight of ingredients and food portions. Weight is usually considered a more accurate measure than volume when preparing and serving food.

The most common scales are:

- Portion scale
- Baker's scale

Portion Scale

Portion scales are used for measuring ingredients as well as portioning servings.

Using a Portion Scale

Use these general steps to weigh with a portion scale. You will receive specific instructions and practice later in the course as you use the scale to measure ingredients and portion servings.



USING A PORTION SCALE	
STEP	ACTION
1.	Place a receiving container on the scale, if you need a container to hold the ingredients.
2.	Set the scale so it reads zero.
3.	Add the item being weighed to the container until the scale reads the desired weight.
End of procedure	

Scales, continued

Baker's Scale

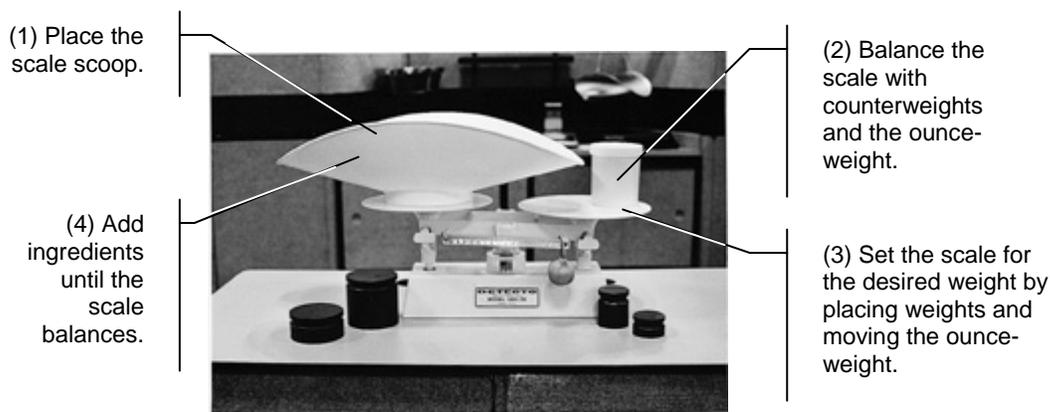
A baker's scale is used to measure ingredients for baking. It assists the baker in making very accurate weight measurements and is often used instead of measuring by volume.

Balancing a Baker's Scale

Follow the steps below to balance a baker's scale.

HOW TO BALANCE A BAKER'S SCALE	
STEP	ACTION
1.	Set the scale scoop or other container on the left side of the scale.
2.	Balance the scale by placing counterweights on the right side and/or adjusting the ounce weight on the horizontal bar.
3.	Set the scale for the desired weight by placing weight(s) on the right side, and moving the ounce-weight.
4.	Add the ingredient being scaled to the left side until the scale balances.
End of procedure	

Note: The scale must balance before setting the weights, and it must balance again after scaling.



Volume Measures

Overview

There are several different devices used to measure volume of ingredients or food portions. In this section you will cover:

- Liquid volume measures
 - Measuring cups
 - Measuring spoons
 - Ladles
 - Scoops
-

Liquid Volume Measures

Liquid volume measures have lips for easy pouring. They come in sizes such as:

- Pint
- Quart
- Half gallon
- Gallon



Each size is marked off into fourths by ridges on the side.

Measuring Cups

Measuring cups can be used for both liquid and dry ingredients. They are available in these sizes.

- 1 cup
- $\frac{1}{2}$ cup
- $\frac{1}{3}$ cup
- $\frac{1}{4}$ cup



Measuring Spoons

Measuring spoons are used for measuring very small volumes, mostly spices and seasonings. The common sizes are:

- 1 tablespoon
- 1 teaspoon
- $\frac{1}{2}$ teaspoon
- $\frac{1}{4}$ teaspoon



Volume Measures, continued

Ladles

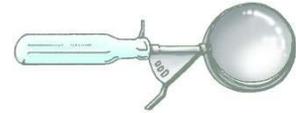
Ladles are used for measuring and portioning liquids. The size is usually stamped on the handle. Common ladles sizes are:

- 1 oz.
- 1 1/2 oz.
- 2 oz.
- 3 oz.
- 4 oz.
- 6 oz.
- 8 oz.
- 12 oz.



Scoops

Scoops come in standard sizes and often have levers for mechanical release. They are used for portioning soft solid foods. The number of the scoop indicates the number of level scoopfuls per quart.



Thermometers

Overview

Thermometers measure temperature. The thermometers covered in this section include:

- ❑ Meat thermometers
- ❑ Instant-read thermometers
- ❑ Candy/deep fry thermometers
- ❑ Appliance thermometers

In addition, this section will explain the two methods of calibrating thermometers:

- ❑ Ice-point method
- ❑ Boiling-point method

Meat Thermometer

A meat thermometer indicates internal temperature of meats. It is inserted before cooking and left in the product during cooking.



Instant-Read Thermometer

Instant-read thermometers give readings within a few seconds of being inserted in a food product. Carry this type of thermometer in your pocket like a pen and do not leave it in meats during roasting.

Below are examples of instant-read thermometers.

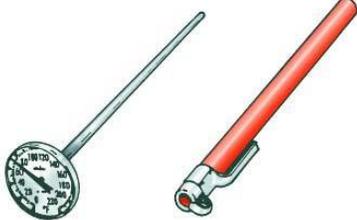
 <p>Analog</p>	 <p>Digital</p>
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Image courtesy of Thermometer Manufacturing, Atkins Technical, Gainesville FL

Thermometers, continued

Candy/Deep Fry Thermometers

Candy/deep fry thermometers test temperatures of sugar syrups and frying fats.

- ❑ To use a candy/deep fry thermometer, stand it upright in the candy syrup or fat so the bulb is completely immersed.
- ❑ Don't let the bulb touch the bottom of the pan or the temperature readout could be affected.
- ❑ Stoop down so you can read the thermometer at eye level.
- ❑ Watch the thermometer carefully. It can look like it's not moving for several minutes, and then surprise you by shooting up above the necessary temperature.



Refrigerator/Freezer Thermometers

A refrigerator/freezer thermometer can be kept in the refrigerator or freezer to monitor the temperature at all times. This can be critical in the event of a power outage. When the power goes back on, if the refrigerator is still 40 °F and the freezer is 0 °F or below, the food is safe.



Oven Thermometers

An oven thermometer can be left in the oven to verify that the oven is heating to the desired temperatures. They can measure temperatures from 100 °F to 600 °F.



Griddle Thermometers

A griddle thermometer gives accurate readings of the griddle's surface temperature.

Thermometers, continued

Calibrating Thermometers

The ice-point method calibrates the thermometer to the freezing point.

ICE-POINT CALIBRATION METHOD	
STEP	ACTION
1.	Fill a container with crushed ice and water.
2.	Submerge the sensing area of stem in the ice water for thirty seconds.
3.	Adjust the calibration nut until the thermometer reads 32 °F (0 °C).

The boiling-point method calibrates the thermometer to the boiling point.

BOILING-POINT CALIBRATION METHOD	
STEP	ACTION
1.	Bring a pan of water to a boil.
2.	Submerge the sensing area of stem in the boiling water for thirty seconds.
3.	Adjust the calibration nut until the thermometer reads 212 °F (100 °C)

Lesson Review

Purpose The intention of this exercise is to give you the opportunity to clarify and/or confirm your understanding of measuring tools.

Directions Test your knowledge of the important 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 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.

Questions to Answer and Items to Match

1. What type of measuring device measures food portions most accurately?
 - a. Scales
 - b. Volume measures
 - c. Thermometers
 - d. Measuring cups

2. Of the following thermometers, which one can read up to 600 °F?
 - a. Meat
 - b. Instant-read
 - c. Oven
 - d. Fat and candy

In the table below, you will find three columns—a column for answers, a column of “uses,” and a column of measurement devices. Your task is to read each “use” and correctly match it with its measuring device. Write the letter for your answer in the column on the left. The first one has been completed for you.

MEASURING DEVICES		
	USE	MEASURING DEVICE
<u>f.</u>	<p>Example: Used when accuracy of weight is critical.</p>	<p>a. Ladle</p> 
Continued next page		

Lesson Review, continued

Questions to Answer and Items to Match, contd.

	USE	MEASURING DEVICE
_____	3. Used for weighing ingredients and portioning products for service.	b. Scoop 
_____	4. Used for measuring liquid by volume. Sizes are typically pints, quarts, half-gallons and gallons.	c. Measuring cups 
_____	5. Used for both liquid and dry measures. Typical sizes are 1-, 1/2-, 1/3-, and 1/4-cup.	d. Liquid volume measure 
_____	6. Used for measuring and portioning liquids. Sizes are stamped on handles.	e. Portion Scale 
_____	7. Used to indicate internal temperature, is inserted before cooking and left in the product during cooking.	f. Baker's Scale 
_____	8. Used for portioning soft solid foods.	g. Meat Thermometer 

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.

Consult with your supervisor and do the following:

1. Discuss what you have learned, including describing the types of scales, volume measures, and thermometers.
 2. Identify what measuring devices are available (and not available) for you to examine and use.
 3. Ask your supervisor to discuss safety precautions with you, if any, and demonstrate the use of measuring devices that are available to you.
 4. After observing a demonstration of how to use measuring devices, under supervision practice using the measuring devices that are available to you.
-

Performance Evaluation



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

Lesson Summary

Summary

Having completed of this lesson, you can:

- ❑ Identify the types of scales, volume measures and thermometers used for preparing and serving food
 - ❑ Describe the uses of scales, volume measures, and thermometers
-

Next in this Unit

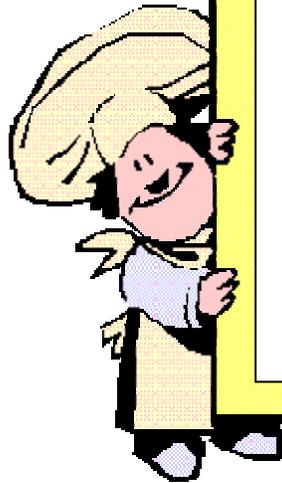
In the next lesson you will learn about:

- Knives

Knives include items such as utility knives, cleavers, slicers, and vegetable peelers.

- Hand Tools

Hand tools include items such as spatulas, tongs, slotted spoons and strainers.



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 type of measuring device measures food portions most accurately?
 - a. **Scales**
 - b. Volume measures
 - c. Thermometers
 - d. Measuring cups

2. Of the following thermometers, which one can read up to 600 °F?
 - a. Meat
 - b. Instant-read
 - c. **Oven**
 - d. Fat and candy

MEASURING DEVICES		
	USE	MEASURING DEVICE
<u>f.</u>	<p>Example: Used when accuracy of weight is critical.</p>	<p>a. Ladle</p> 
<u>e.</u>	<p>3. Used for weighing ingredients and portioning products for service.</p>	<p>b. Scoop</p> 
<u>d.</u>	<p>4. Used for measuring liquid by volume. Sizes are typically pints, quarts, half-gallons and gallons.</p>	<p>c. Measuring cups</p> 
Continued next page		

Lesson Review Feedback, continued

Answers, contd.

	USE	MEASURING DEVICE
<u>c.</u>	5. Used for both liquid and dry measures. Typical sizes are 1-, 1/2-, 1/3-, and 1/4-cup.	d. Liquid volume measure 
<u>a.</u>	6. Used for measuring and portioning liquids. Sizes are stamped on handles.	e. Portion Scale 
<u>g.</u>	7. Used to indicate internal temperature, is inserted before cooking and left in the product during cooking.	f. Baker's Scale 
<u>b.</u>	8. Used for portioning soft solid foods.	g. Meat Thermometer 

LESSON 8

Knives and Hand Tools

Introduction

Overview

This lesson introduces you to more tools used to prepare and serve food. In particular, you will learn to identify knives and hand tools.

In this lesson, you will *not* learn about using, cleaning and maintaining knives and hand tools — you will do that in Unit 3, Sanitation and Safety.

This section of the lesson includes:

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

Objectives

Upon completion of this lesson, you will:

- Identify the types of knives and hand tools used for preparing, serving, and storing food
 - Describe the uses of knives and hand tools
-

Tools and References

Tools and references for this lesson include:

- Professional Cooking*, by Wayne Gisslen
 - Student Pamphlet: Unit 2
 - Unit 1, Appendix C, Glossary of Key Terms
-

Recommended Reading

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

- Professional Cooking*, “Tools and Equipment: Knives, Hand Tools, and Small Equipment” (Chapter 3).
-

Introduction, continued

**Topics Included
In This Lesson** The topics included in this lesson are:

- Knives
 - Hand tools
-

Knives

Overview

This section covers:

- Knife materials
 - Knife handles
 - Knife chart
-

Knife Materials

The metals in knives must be able to take and hold an edge. The most common materials used for making knives are:

- Carbon steel
- Stainless-steel alloys
- High-carbon stainless steel

See the table below to learn about each.

KNIFE MATERIALS AND THEIR CHARACTERISTICS	
MATERIAL	CHARACTERISTICS
Carbon steel	<ul style="list-style-type: none"> ■ Can be easily honed to an extremely sharp edge ■ Corrodes and discolors easily ■ May leave a metallic taste
Stainless-steel alloys	<ul style="list-style-type: none"> ■ Will not rust or corrode ■ Harder to sharpen
High-carbon stainless steel	<ul style="list-style-type: none"> ■ Takes an edge almost as well as carbon steel ■ Will not rust corrode or discolor

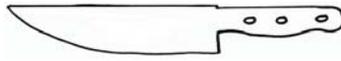
Knives, continued

Knife Handles

The tang is the portion of the metal blade that is inside the handle. The highest-quality, most durable knives have a full tang.



Partial Tang



Full Tang



Full Tang with Handle

Knife Chart

The following chart lists the knives most frequently employed in the kitchen along with their primary use.

KNIVES	
ITEM	USE
<p>French knife or chef's knife</p> 	<p>Most frequently used knife in the kitchen. Used for general-purpose chopping, slicing, dicing and so on.</p>
<p>Utility knife</p> 	<p>Used mostly for pantry work such as cutting and preparing lettuce, fruits, and so on. Also used to carve roast chicken and duck.</p>
<p>Paring knife</p> 	<p>Used for trimming and paring vegetables and fruits.</p>
<p>Boning/Fillet knife</p> 	<p>Used for boning raw meats and poultry, and for filleting fish.</p>
<p>Slicer</p> 	<p>Used for carving and slicing cooked meats.</p>
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Knives, continued

**Knife Chart,
contd.**

ITEM	USE
Serrated slicer 	Used to cut breads, cakes and similar items.
Butcher knife 	Used for cutting, sectioning, and trimming raw meats in the butcher shop.
Cleaver 	Used for cutting through bones.
Oyster knife 	Used for opening oysters.
Clam knife 	Used for opening clams.
Vegetable peeler 	Used for peeling vegetables and fruits.
Steel 	Used for truing and maintaining knife edges.
Cutting Board 	Used whenever you are using a knife.

Hand Tools

Overview

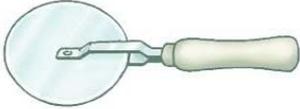
Along with knives, cooks use a variety of hand tools. Use the following chart to help you learn the names of hand tools and their uses.

Hand Tools Chart

HAND TOOLS	
ITEM	USE
Ball cutter 	Ball cutters, also known as melon ball scoops or parisienne knives, are used to cut fruits.
Cook's fork 	A cook's fork is used to lift or turn heavy meats and other items.
Straight spatula 	A straight spatula or palette knife is used to mix and spread icing on cakes. It is also used to scrape bowls.
Sandwich spreader 	Used to spread fillings and spreads on sandwiches.
Offset spatula 	Used for turning and lifting eggs, pancakes and meats on griddles, grills, and sheet pans. Also used as a scraper to clean worktables or griddles.
Rubber spatula 	Used to scrape bowls and pans. Also used for folding in egg foams or whipped cream.
Pie server 	Used for lifting pie wedges from a pan.
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Hand Tools, continued

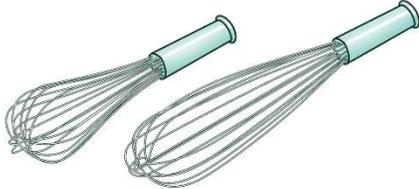
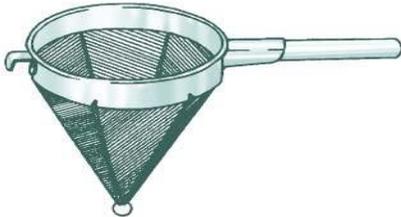
**Hand Tools
Chart, contd.**

ITEM	USE
<p>Bench scraper</p> 	<p>Used to cut pieces of dough and to scrape worktables.</p>
<p>Pastry wheel or wheel knife</p> 	<p>Used for cutting rolled-out doughs and pastry and baked pizza.</p>
<p>Spoons: solid, slotted and perforated</p> 	<p>Used for stirring, mixing, and serving. Slotted and perforated spoons are used when liquid must be drained from solids.</p>
<p>Skimmer</p> 	<p>Used for skimming froth from liquids and for removing solid pieces from soups, stocks, and other liquids.</p>
<p>Tongs</p> 	<p>Spring-type or scissors-type tools used to pick up and handle foods.</p>

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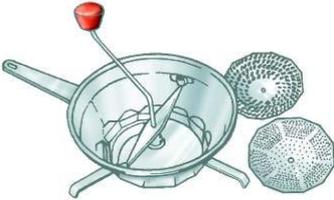
Hand Tools, continued

**Hand Tools
Chart, contd.**

ITEM	USE
<p>Wire whip</p> 	<p>Heavy whips are used for general mixing, stirring, and beating, especially heavy liquids.</p> <p>Balloon whips or piano-wire whips are used for whipping eggs, cream and hollandaise, and for mixing thinner liquids.</p>
<p>China cap</p> 	<p>Used for straining stocks, soups, sauces, and other liquids.</p>
<p>Fine china cap or chinois</p> 	<p>A china cap with very fine mesh is used when great clarity or smoothness is required in a liquid.</p>
<p>Strainer</p> 	<p>Used for straining pasta, vegetables, and so on.</p>
<p>Sieve</p> 	<p>Used for sifting flour and other dry ingredients.</p>
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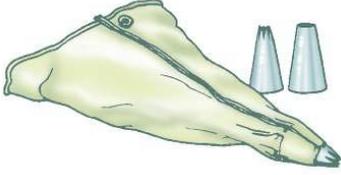
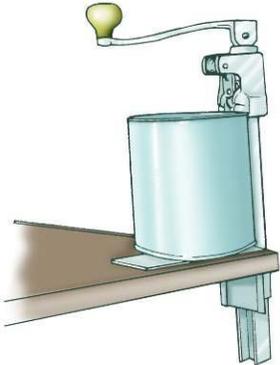
Hand Tools, continued

**Hand Tools
Chart, contd.**

ITEM	USE
<p>Colander</p> 	<p>Used to drain washed or cooked vegetables, salad greens, pasta, and other foods.</p>
<p>Food mill</p> 	<p>Used for puréeing foods.</p>
<p>Grater</p> 	<p>Used for shredding and grating vegetables, cheese, citrus rinds, and other foods.</p>
<p>Zester</p> 	<p>Used to remove the colored part of citrus peels in thin strips.</p>
<p>Channel knife</p> 	<p>Used for decorative work.</p>
<p>Continued next page</p>	

Hand Tools, continued

**Hand Tools
Chart, contd.**

ITEM	USE
<p>Pastry bags and tips</p> 	<p>Used for shaping and decorating items such as cake icing, whipped cream, duchesse potatoes, and soft dough.</p>
<p>Pastry brush</p> 	<p>Used to brush items with egg wash, glaze, etc.</p>
<p>Can opener</p> 	<p>Heavy-duty can openers are used to open large cans.</p>

Lesson Review

Purpose The intention of this exercise is to give you the opportunity to clarify and/or confirm your understanding of knives and hand tools.

Directions Test your knowledge of the important concepts and principles of this lesson by choosing the best, most correct answer to each question below. Some questions require you to create answers or fill in blanks. 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 and Questions to Answer

1–6. In the table below, you will find three columns – a column for answers, a column of “uses”, and a column of knives and hand tools. Your task is to read each “use” and correctly match it with its knife or hand tool. Write the letter for your answer in the column on the left. The first one has been completed for you.

KNIVES AND HAND TOOLS		
	USE	KNIFE OR HAND TOOL
<u>f.</u>	Ex. Used for removing froth from liquids and solid pieces from soups and stocks.	a. Boning Knife 
_____	1. Used mostly for pantry work, cutting and preparing lettuce and fruits. Also useful for carving roast chicken and duck.	b. Cleaver 
_____	2. Used for cutting breads, cakes, and similar items.	c. Slicer 
_____	3. Used for cutting, sectioning, and trimming raw meats.	d. Utility Knife 
Continued next page		

Lesson Review, continued

Items to Match and Questions to Answer

	USE	KNIFE OR HAND TOOL
_____	4. Used for cutting through bones.	e. Butcher Knife 
_____	5. Used to remove the bones from meats, poultry, and fish.	f. Skimmer 
_____	6. Used for carving and slicing cooked meats.	g. Serrated Slicer 

7–10. For each knife or hand tool, what is its name and its use? The first one has been completed for you.

NAMES AND USES OF KNIVES AND HAND TOOLS	
ITEM	DESCRIPTION
Ex. 	Name <i>Pastry Brush</i> Use <i>Used to brush pastry items with egg wash, glaze, etc.</i>
7. 	Name _____ Use _____ _____ _____
Continued next page	

Lesson Review, continued

**Items to Match
and Questions
to Answer,
contd.**

ITEM	DESCRIPTION
<p>8.</p> 	<p>Name _____</p> <p>Use _____</p> <p>_____</p> <p>_____</p>
<p>9.</p> 	<p>Name _____</p> <p>Use _____</p> <p>_____</p> <p>_____</p>
<p>10.</p> 	<p>Name _____</p> <p>Use _____</p> <p>_____</p> <p>_____</p>

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.

Consult with your supervisor and do the following:

1. Discuss what you have learned, including describing the types of knives and hand tools, and how they are used to prepare and serve food.
 2. Identify what knives and hand tools are available (and not available) for you to examine.
 3. Ask your supervisor to discuss safety precautions with you.
-

Performance Evaluation



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

Lesson Summary

Summary

Having completed this lesson, you can:

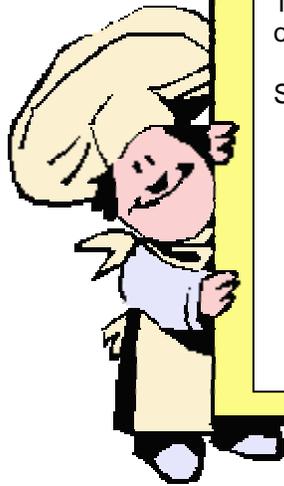
- ❑ Identify the types of knives and hand tools used for preparing, serving, and storing food
 - ❑ Describe the uses of knives and hand tools
-

Next in this Course

This is the last lesson of this unit. In the next unit, Unit 3, you will learn about sanitation and safety. The first lesson of Unit 3 will provide you with an overview of the unit.

Some of the topics covered in Unit 3 include:

- How to keep food safe
- How to clean and sanitize the galley
- Safety in the workplace
- How to sharpen and maintain knives



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

1–6. Matching

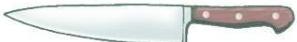
KNIVES AND HAND TOOLS		
	USE	KNIFE OR HAND TOOL
<u>f.</u>	Ex. Used for removing froth from liquids and solid pieces from soups and stocks.	a. Boning Knife 
<u>d.</u>	1. Used mostly for pantry work, cutting and preparing lettuce and fruits. Also useful for carving roast chicken and duck.	b. Cleaver 
<u>g.</u>	2. Used for cutting breads, cakes, and similar items.	c. Slicer 
<u>e.</u>	3. Used for cutting, sectioning, and trimming raw meats.	d. Utility Knife 
<u>b.</u>	4. Used for cutting through bones.	e. Butcher Knife 
<u>a.</u>	5. Used to remove the bones from meats, poultry, and fish.	f. Skimmer 
Continued next page		

Lesson Review Feedback, continued

Answers, contd.

	USE	KNIFE OR HAND TOOL
<u>c.</u>	6. Used for carving and slicing cooked meats.	g. Serrated Slicer 

7–10 For each knife or hand tool, what is its name and its use? The first one has been completed for you.

NAMES AND USES OF KNIVES AND HAND TOOLS	
ITEM	DESCRIPTION
7. 	Name Steel <hr style="width: 80%; margin-left: 0;"/> Use Used for truing and maintaining knife edges.
8. 	Name Offset Spatula <hr style="width: 80%; margin-left: 0;"/> Use Used for turning and lifting eggs, pancakes, and meats on griddles, grills and sheet pans. Also, may be used as a scraper.
9. 	Name Chef's Knife <hr style="width: 80%; margin-left: 0;"/> Use Used for general-purpose work, including chopping, slicing and dicing. Most frequently used knife.
10. 	Name Strainer <hr style="width: 80%; margin-left: 0;"/> Use Used to strain pasta and vegetables.