

Stocks, Sauces, and Soups

SECTIONS

20.1 Stocks

20.2 Sauces

20.3 Soups

WRITING ACTIVITY

Memo

Imagine that you work in a restaurant that is planning on adding a selection of pastas to the menu. Write a memo to the executive chef explaining what sauces you think might go well with pasta, and why.

Writing Tips

- 1 State the purpose of your memorandum.
- 2 Explain your subjects clearly.
- 3 Organize the paragraphs in a logical way.

EXPLORE THE PHOTO

The right herbs and spices add flavor to a stock. *What do you think stock is used for?*



Stocks

A good stock is the basis for good sauces and soups.

Reading Guide

Before You Read

Preview Understanding causes and effects can help clarify connections. A cause is an event or action that makes something happen. An effect is a result of a cause. Ask yourself, “Why does this happen?” to help you recognize cause-and-effect relationships in this section.

Read to Learn

Key Concepts

- **Identify** the elements of a stock.
- **Explain** the preparation of different varieties of stock.

Main Idea

Stocks are the liquids that form the foundation of sauces and soups. Learning how to make stocks can help you create flavorful sauces and soups.

Graphic Organizer

As you read, use a problem-solution chart like this one to list the three potential problems that could happen when preparing white stock, and how to prevent those problems.

Preparing White Stock

Problem	Solution
1.	
2.	
3.	



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

Content Vocabulary

- stock
- fish stock
- nourishing element
- fumet
- mirepoix
- vegetable stock
- base
- glaze
- white stock
- reduction
- brown stock

Academic Vocabulary

- supplement
- reserve

ACADEMIC STANDARDS



English Language Arts

NCTE 2 Read literature to build an understanding of the human experience.



Mathematics

NCTM Problem Solving Build new mathematical knowledge through problem solving.



Science

NSES B Develop an understanding of the interactions of energy and matter.



Social Studies

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

NCTE National Council of Teachers of English

NCTM National Council of Teachers of Mathematics

NSES National Science Education Standards

NCSS National Council for the Social Studies

Stock Basics

The French word for stock is *fond*, meaning bottom, ground, or base. Since the 16th century, the quality of sauces and soups has depended upon the stocks that are used as their base. Learning the skill of making stocks will allow you to build sauces and soups on a strong foundation.

A **stock** is the liquid that forms the foundation of sauces and soups. Simmering various combinations of bones, vegetables, and herbs extracts their flavors to create this foundation.

Elements of a Stock

A stock is composed of four ingredients: the nourishing element, mirepoix, bouquet garni, and liquid. These ingredients are usually mixed in the following proportions to make most stocks:

- 5 parts nourishing element
- 1 part mirepoix
- bouquet garni
- 10 parts liquid

Nourishing Element

The most important ingredient in a stock is the nourishing element. A nourishing element includes any one or a combination of the following:

- Fresh bones (beef, lamb, chicken, fish, veal, or game)
- Meat trimmings
- Fish trimmings for fish stock
- Vegetables for vegetable stock

The **nourishing element** provides flavor, nutrients, and color. Some nourishing elements may bring other benefits to the stock, such as bones, which add gelatin.

Mirepoix

Mirepoix (mir-'pwä) is a mix of coarsely chopped vegetables that is used in a stock to add flavor, nutrients, and color. The ingredients vary with each recipe, but usually include two parts onions, one part celery, and one part carrots.

Bouquet Garni

French for garnished bouquet, a bouquet garni is a combination of fresh herbs and vegetables, such as carrots, leeks, celery, thyme, and parsley stems, that are tied in a bundle with butcher's twine. This bundle is added directly to the liquid and is allowed to simmer. The bouquet garni is removed before the stock is used in other foods.

Liquid

Liquid, almost always in the form of water, makes up the largest portion of stock. The liquid used to make stock should be cold when you begin to cook. This brings out the maximum flavor of the ingredients and prevents the stock from turning cloudy. When all the ingredients are prepared, the ratio of liquid to the nourishing element should be 2 to 1.

Commercial Stock Bases

Stocks can be purchased in a powdered or concentrated form, called a **base**. Using a commercial base saves time and money. However, what many bases add in convenience, they lose in flavor quality.

When you choose a commercial base, check the list of ingredients. Remember that the ingredients are listed in order from highest weight amount to lowest weight amount. A better-quality commercial stock base will list fish, meat, or poultry extracts rather than salt or sodium first. You can give commercial stock bases a fresher taste by simmering them for a few hours with bones and mirepoix. Then, strain the mixture and use it like a stock.

Some chefs use commercial stock bases to give sauces and soups a stronger flavor. Commercial stock bases can also be added as a **supplement**, or addition, when there is not enough stock available. Recipes must be adjusted when using bases because of the high amount of salt they contain.

 **Reading Check** **List** What are the four main ingredients of stocks?



Mirepoix in Stock A mirepoix adds flavor, color, and nutrients to stocks. *What vegetables would you use for a mirepoix?*

Types of Stocks

White, brown, fish, and vegetable stocks are the main types of stocks. They are sometimes referred to by their French names. (See **Figure 20.1**.)

White Stock

A **white stock** is made from chicken, beef, veal, or fish bones simmered with vegetables. White stock is generally colorless while it is cooking. To keep the stock as clear as possible, you may blanch the bones before adding them. However, some chefs think doing so causes flavor to be lost.

Brown Stock

Brown stock is made from either beef, veal, chicken, or game. It gets its color from roasting the ingredients without water, in a

FIGURE 20.1 Stock Names

Stock Sources There are many different types of stocks, which are often referred to by their French names. *Which ingredients can be made into white stocks?*

French Name	English Translation
Fond de boeuf (fän də bf)	Beef stock
Fond de veau (fän də vō)	Veal stock
Fond de volaille (fän də vól-'yā)	Poultry stock
Fond de légume (fän də le-'gūm)	Vegetable stock
Fond d'agneau (fän dän-'yō)	Lamb stock
Fond de poisson (fän də pwä-'sòn)	Fish stock
Fond de gibier (fän də zhē-'byā)	Game stock

hot oven. The browned bones, mirepoix, and tomatoes or tomato product combine to give a brown stock its color. This mixture is then transferred to a stockpot and simmered along with water and herbs.

Brown Stock Preparation

The steps to make white stocks and brown stocks are mostly the same. (See How to Prepare White Stock on page 512.) The main difference is that for brown stocks, the bones and mirepoix are browned by roasting.

Follow these steps for brown stock:

1. Cut the beef or veal bones into 3- to 4-inch pieces.
2. Browning is slowed down by moisture, so do not wash or blanch the bones.
3. Place the bones one layer deep in a roasting pan.
4. Roast bones in the oven at 375°F (191°C) or higher for more than an hour, stirring occasionally. Some chefs lightly oil the bones before browning.

Prepare White Stock

- 1** Cut bones into 3- to 4-inch pieces. Chicken and fish bones do not need to be cut.
- 2** Rinse the bones in cold water to remove any impurities. You can blanch the bones, if desired. Place the bones in a stockpot.
- 3** Add cold water until the bones are completely covered. Cold water dissolves impurities ((,)im'pyür-ə-tēs) and blood in the bones it covers. These impurities will clump and rise to the surface when the water heats, where they can be skimmed off the top. Using hot water will cause the impurities to clump too rapidly. This prevents them from rising to the top and results in a cloudy stock.



- 4** Bring water to a boil. Then, reduce it to a simmer to slowly release the full flavor of the ingredients.
- 5** To keep the stock clear, use a skimmer or ladle to remove any impurities and fat from the surface. Skim as needed.



- 6** Add the mirepoix. Boiling makes the stock cloudy, so keep the water at a simmer.



- 7** Make sure liquid is still completely covering the bones. Bones will not release their flavor unless they are under water, and will darken if exposed to air.



- 8** For the best flavor, simmer stock for the recommended amount of time:

- Fish bones: 30-45 minutes
- Chicken bones: 3-4 hours
- Beef or veal bones: 6-8 hours

- 9** Skim all of the impurities and fat from the stock.

- 10** Strain the stock through a china cap.



- 11** Cool the stock quickly, as discussed later in this section.

5. Place the browned bones in a stockpot and cover with water. Bring the water to a simmer.
6. **Reserve**, or keep, the excess fat from the roasting pan.
7. Deglaze the pan with water. To deglaze means to add a liquid and stir over heat until the drippings are dissolved.
8. Add the deglazed mixture to the stockpot.
9. Combine the mirepoix and reserved fat in a pan, while the bones are beginning to simmer. Brown in the oven or on top of the range.
10. Skim impurities and fat from the stock as it begins to simmer.
11. Add the tomatoes or tomato product and caramelized vegetables to the stockpot, up to three or four hours before the end of cooking. Do not stir the stock or it will become cloudy. Continue following the steps for making white stock.

Fish Stock

Fish stock is made by slowly cooking the bones of lean fish or shellfish. The procedure to make fish stock is the same as to make a white stock, although the cooking time for fish stock is shorter. If lemon juice or other acids are added to the water, the result is a flavorful liquid called a **fumet** (fyü-'mā). A fumet is more strongly flavored than regular fish stock since it is reduced by 50%.

Vegetable Stock

Vegetable stocks, which do not include meat products, are an important addition to many healthful dishes. In addition, vegetable stock forms the base for many vegetarian and vegan dishes. The basic ingredients of a **vegetable stock** are vegetables, herbs, spices, and water. Proportions and kinds of vegetables will vary with different recipes. Vegetable stock needs to be simmered only 30 to 45 minutes.

If you want a particular flavor of vegetable stock, use more of that vegetable. Then, add



Fish Dish A fish stock is made with the bones of lean fish or shellfish. *What other ingredients can be added to a fish stock?*

neutral-tasting vegetables such as celery and onions to round out the flavor. All-purpose vegetable stock does not include strongly flavored vegetables, such as artichokes, brussels sprouts, or cauliflower. These vegetables tend to overpower other flavors. Some dark-green, leafy vegetables, such as spinach, develop an unpleasant odor when they are cooked for too long.

Glazes

A **glaze** is a stock that is reduced and concentrated. This results in a flavorful, thick, and syrupy liquid that turns solid when it is refrigerated. Glazes are created through reduction. **Reduction** is the process of evaporating part of a stock's water through simmering or boiling. Small amounts of glaze can be used to flavor sauces, vegetables, meat, poultry, and fish.

Prepare a Glaze

- 1 Place a large quantity of stock in a heavy pan.
- 2 Bring the stock to a simmer.
- 3 Skim the surface as needed.
- 4 Clean the sides of the pan with a moistened, natural-bristle brush as the stock reduces and becomes syrupy.
- 5 Transfer the stock to a smaller pan when reduced by half to two-thirds.
- 6 Continue to reduce until the stock coats a spoon.
- 7 Strain the stock through a chinois, or china cap, and pour into containers.
- 8 Follow recommended procedures for cooling stock; then label, date, and refrigerate or freeze the containers.



Cooling and Storing Stocks

Always cool stock before you store it. There are three ways to cool stock. You can use Rapi-Kool®, which is a brand of container that can be filled with water and then frozen. This frozen container is then put into the stock to speed up the cooling process. Another method is to pour the stock into a container that is less than 4 inches deep and place it in the refrigerator. Stock should never be cooled in the refrigerator. A refrigerator is not meant to cool hot foods. The stock will cool too slowly in a refrigerator. This could allow bacteria to grow, making the stock unsafe to eat.

A third cooling method is explained below:

1. First, place the stockpot on a rack or on blocks in an empty sink. Make sure the stockpot is balanced and will not spill.

This is called venting. It will allow cold water to move beneath and around the pot as the sink fills with water.

2. Insert an overflow pipe over the drain to allow the water to circulate.
3. Next, turn on the cold water tap.
4. Continue to run cold water into the sink, forcing the extra water to drain out the overflow pipe as it becomes warm from the stockpot.

When the stock is cool, transfer it to a plastic container with a tight-fitting lid, and label and date it. Never place hot stock in a refrigerator to cool it. The steam and heat may damage other foods. It may also damage your refrigerator, and can raise the overall temperature inside the refrigerator. Stock can be stored for several days in a walk-in or reach-in refrigerator.

A TASTE OF HISTORY

1847

The canning of tomatoes is first documented

1848

The first Women's Rights Convention takes place in Seneca Falls, New York

You Say Tomato

It is hard to imagine Italian sauces without tomatoes as a main ingredient. Yet, the tomato was not introduced to Italy until the 16th century. Tomatoes are native to Central America, and not to Europe. Cousin to the potato, the tomato was discovered by Spanish explorers during their travels to Mexico and Peru. Today, the United States is the world's leading producer of tomatoes.

History Application

In addition to being packed with taste, tomatoes are nutritionally loaded. Write a short ode to the tomato. In your ode, include nutritional information and some ways tomatoes can be enjoyed.

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

Stock that has not been cooled correctly can spoil within six to eight hours. Discard stock if you are unsure of its freshness.

Remove the layer of fat before you use the stock. Fat rises to the surface and becomes solid when a stock chills. This fat layer acts as a preservative, keeping the stock below it fresh. However, the fat layer must be scraped or lifted off before you reheat the stock. The fat will not incorporate back into the stock when it is heated. Stock may also be strained through cheesecloth to remove additional fat.

Like other foods, stock should be reheated properly to help avoid foodborne illness. Reheat stock to a temperature of 165°F (74°C) for at least 15 seconds. Hold stock at a temperature of 135°F (57°C) or above when it is to be used for service.



Reading Check

Explain What is the purpose of the fat layer in a cooled and stored stock?

SECTION 20.1

After You Read

Review Key Concepts

1. **Identify** items that can be nourishing elements.
2. **Explain** the preparation of fish stock

Practice Culinary Academics

English Language Arts

3. Do you remember the fable of Stone Soup? Find a version of the fable and read it. Compare the soup made in the story to the instructions given for making stocks. Write a paragraph to describe how you think the stone soup would compare to a stock.

NCTE 2 Read literature to build an understanding of the human experience.

Science

4. **Procedure** Try cooking a stock first by adding ingredients to boiling water, then by starting with ingredients in cold water and heating gradually.
Analysis Does the stock started in boiling water become cloudy? Write a summary.

NSES B Develop an understanding of the interactions of energy and matter.

Mathematics

5. In a 12-inch diameter stockpot, you pour 10 quarts (577.5 cubic inches) of water over fish bones and trimmings. If the resulting mixture is 8 inches high in the pot, what was the volume of the fish parts?

Math Concept Volume of a Cylinder Calculate the volume (V) of a cylinder as $V = \pi r^2 h$, where r = the radius of the circular base, and h is the cylinder's height. Use 3.14 for π .

Starting Hint The volume of the fish parts equals the volume of the mixture (which you can calculate using the formula above, with $r = 6$ inches) minus the volume of the water alone (577.5 cubic inches).

NCTM Problem Solving Build new mathematical knowledge through problem solving.



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

Sauces

Reading Guide

Before You Read

Look It Up As you read this section, keep a dictionary nearby in addition to the glossary at the back of the book. If you hear or read a word that you do not know, look it up in the glossary or the dictionary. Before long, the practice will become a habit. You will be amazed at how many new words you learn.

Read to Learn

Key Concepts

- **List** the main ingredients in a sauce.
- **Distinguish** between the five mother sauces.
- **Outline** the steps to prepare a roux.

Main Idea

Sauces are flavored, thickened liquids. They can add flavor and excitement to a dish that is otherwise bland.

Content Vocabulary

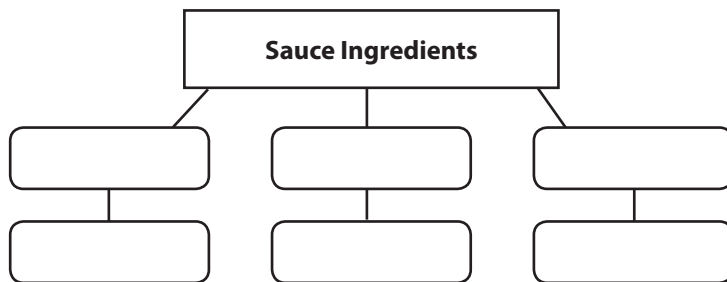
- sauce
- thickening agent
- Béchamel
- hollandaise sauce
- gelatinization
- coulis
- cheesecloth
- mother sauces
- sauce espagnole
- demi-glace
- tomato sauce
- roux
- velouté
- marinara sauce
- gravy
- compound butters
- clarified butter


Academic Vocabulary

- mediocre
- clarity

Graphic Organizer

As you read, use a category tier organizer like this one to list the three different types of sauce ingredients in the second-tier boxes. Then, list specific examples of those ingredients in the third-tier boxes.



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

What kinds of sauces can you name?

ACADEMIC STANDARDS



Mathematics

NCTM Measurement

Apply appropriate techniques, tools, and formulas to determine measurements.



Science

NSES B Develop an understanding of the interactions of energy and matter.



Social Studies

NCSS I B Culture Predict how data and experiences may be interpreted by people from diverse cultural perspectives and frames of reference.

NCTE National Council of Teachers of English

NCTM National Council of Teachers of Mathematics

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Sauce Basics

One of the best ways to add flavor and excitement to any dish is with a good sauce. In fact, a good sauce can turn a **mediocre**, or average, dish into a memorable one. People enjoy sauces with a variety of foods, from chicken to vegetable dishes. Learning to make a good sauce is a basic step toward becoming a great cook.

Generally, a **sauce** is a flavored, thickened liquid. It is usually formed by adding a thickening agent, seasonings, and flavorings to stock. A **thickening agent** is an ingredient, such as cornstarch, that adds body to the sauce. Two sauces that are not made with stock are **béchamel** (*ˌbā-shə-ˈmɛl*), a basic French white sauce made with milk and a thickener, and hollandaise sauce. **Hollandaise** (*ˌhɑ-lən-ˈdāz*) **sauce** is made from lemon juice, butter, and eggs.

Sauces are meant to complement the foods they accompany. They should never overpower or detract from the food. It takes a lot of time to make a good sauce. Many restaurants use condensed or powdered commercial bases mixed with water to create stocks. The stocks and sauces then do not need to be reduced, since there is no gelatin in these commercial bases. Although quality may be a concern, these bases do guarantee a consistent flavor and texture. Premade sauces are also available, but they may not have the flavor of freshly made sauces.

Sauce Ingredients

Sauces are made of liquid ingredients, thickening agents, and seasonings and flavorings. Classic sauces rely on combinations of a few basic ingredients.

Liquid Ingredients

The liquid ingredient in most sauces serves as the base, or body. You will commonly use some type of stock as the base for a sauce. You may use white stock made from chicken, veal, or fish. Other sauces call for brown stock.

Vinegar or tomato products may be added to sauces for acidity. Sometimes milk is used as a base. Clarified or drawn butter is another liquid ingredient in sauces.

Thickening Agents

A major difference between stocks and sauces is that a sauce must be thickened. Most thickening agents are forms of starch. Starch granules will absorb moisture when placed in a liquid, a process called **gelatinization** (*ˌjə-ˌlɑ-tə-nə-ˈzā-shən*). Most sauces use this process in thickening. A good sauce will have these four characteristics:

- No lumps
- A flavor that is not floury or pasty
- Sticks to the back of a spoon
- Will not break apart when it cooks down

Thickening agents include flour, cornstarch, arrowroot, instant starches, bread crumbs, and vegetable purées.

Flour Bread or all-purpose flour is most often used to thicken the fat from the pan in which the entrée has been sautéed. Flour may also be combined with butter that has just been melted as a quick way to thicken a sauce or soup.

Cornstarch Cornstarch is a powdery, dense flour with almost twice the thickening power of flour. It is often used in desserts and sweet sauces. A sauce made with cornstarch will be almost clear in appearance and have a glossy texture.

Arrowroot Arrowroot is similar to cornstarch, but more expensive. It is made from the roots of several tropical plants. Arrowroot creates a clearer sauce than cornstarch does. It is also used in frozen foods because the sauce will not break down when it is frozen and then reheated.

Instant Starches Instant starches have been dried after being cooked. They can thicken a liquid without being heated. They are used more commonly in baking than in sauce making.

Bread Crumbs Because they are cooked, bread crumbs can thicken a liquid quickly.

Keep in mind, however, that a sauce that is thickened with bread crumbs will not be smooth.

Vegetable Purées A purée is a food that has been mashed, strained, or finely chopped into a smooth pulp. Purées can be used to thicken sauces. A vegetable, such as potatoes, or a combination of vegetables may be cooked with herbs, spices, and other flavorings and then puréed. If you need to thin a purée, add water, cream, or stock. A **coulis** (kü-'lē) is a sauce made from a fruit or vegetable purée. Vegetable purées and coulis are healthful choices because they do not rely on the fat content of the heavier sauces.

Seasonings and Flavorings

The liquid ingredients may make up the basic flavor of most sauces, but the seasonings and flavorings you include will add the finishing touches. You can change the character of your sauce simply by changing an ingredient or two.

You already know that seasonings and flavorings can be used to enhance the flavors of a dish. Salt, pepper, mustard, vinegar, spices, and herbs can all change the flavor of a sauce.

Thickening by Reduction

Sauces are also thickened by reduction, the process of simmering down a liquid. A liquid can be cooked down to one-half or one-fourth of its original amount. This concentrates the flavor even more, because the amount of water is reduced.

Use several layers of cheesecloth and a china cap to strain the sauce for the greatest smoothness. **Cheesecloth** is a loose-woven cotton cloth used in cheesemaking and cooking. Straining will also remove the stems and leaves of any spices, herbs, or other seasonings. This will not remove the flavor.

Sauces will be judged by their quality in the following categories:

- Appearance, for shine and color
- Flavor

Science à la Carte

The Science of Thickening

Starches, such as flour and cornstarch, are often used to thicken sauces. Starch is made up of many granules of glucose molecules that are bonded together. Because of the large structure of a starch molecule, it normally does not dissolve in cold water. As the water is heated, however, the molecules that make up the starch get more active. This weakens the bonds between the starch molecules, and they absorb the water. The hotter the water gets, the more the granules absorb, until they begin to swell. This is called gelatinization. Near the boiling point of the liquid, between 160°F to 180°F (71°C to 82°C), the granules have absorbed so much water that each granule finally pops. Starch rushes into the sauce and the sauce thickens.

Procedure

Follow your teacher's instructions to form Team One and Team Two. Each team will start with 1 pint of chicken broth, one small sauce pot and 2 tablespoons of bread flour. Team Two will also have a ½-cup container with a cover. Complete the following experiment.

- **Team One** Pour 1 pint of chicken broth into a pot and heat it until it becomes very hot. Add 2 tablespoons of bread flour to the broth. Stir and continue heating.
- **Team Two** Pour 1 pint of chicken broth into a pot and heat it until it becomes very hot. Place 2 tablespoons of bread flour into the ½-cup container and add ¼ cup of water. Cover and shake well. Pour this mixture into the broth, stir, and continue heating.

Analysis

Compare both teams' findings. What was different about each broth mixture? Share your ideas on why there were differences. See if you can come to one conclusion. Use this conclusion to write a cooking tip on the best way to thicken hot soup or sauce.

NSES B Develop an understanding of the interactions of energy and matter.

- Texture, or smoothness
- Thickness, as appropriate to the type of sauce
- **Clarity** ('kler-ə-tē), or how clear it is

Storage

Sauces are generally prepared to be used the same day. If a sauce must be stored, pour melted butter on top or cover the sauce with oiled parchment paper before storing. This will reduce the amount of fat that will come to the surface of the sauce. Sauces should be labeled, dated, and kept refrigerated. Place the sauce in a plastic storage container with a tight-fitting lid.

Reading Check **Explain** What is the best way to store sauces?

Mother Sauces

The five basic sauces are known as **mother sauces**, or grand sauces. These sauces are all made by combining a liquid with a thickening agent. Compound sauces are made from these mother sauces. For example, a mother sauce such as béchamel forms the basis for an additional five sauces.



Thickened Sauces Many sauces are thickened with a form of starch. *How can you tell if a sauce has been sitting too long?*

Sauce Espagnole

Made from thickened brown stock, **sauce espagnole** (*es-pan-'yöl*), which is French for Spanish sauce, also contains some type of tomato product. In general, this type of sauce has few added seasonings. **Demi-glace** (*'de-mē-glas*) is made from sauce espagnole. It is half espagnole sauce and half brown stock that has been reduced by half. Demi-glace comes from the French for half-glaze. Demi-glace forms the basis for many compound brown sauces. Some chefs use demi-glace more often than they use espagnole sauce as an individual sauce.

Tomato Sauce

Tomato sauce is made by simmering a tomato product with flavorings, seasonings, and stock or another liquid. Although basic tomato sauce is made with vegetables only, some variations add meat. Tomato sauce is a very versatile sauce.

Béchamel Sauce

Also known as a cream sauce or a white sauce, this mother sauce is made by thickening milk with a white roux (rū), seasonings, and flavorings. A **roux** is a cooked mixture made from equal parts of fat and flour by weight.

Velouté

From the French word for velvety, **velouté** (və-|lü-'tā) sauce, also known as blond sauce, is made by thickening a light-colored stock with a light-colored roux. The sauce is named after the type of stock it contains.

Hollandaise Sauce

From the French word for Dutch, hollandaise sauce is made from emulsified egg yolks, clarified butter, seasonings, and often lemon juice. Emulsifying takes place when substances, such as water and oil, are mixed with an emulsifier like egg yolks. Once mixed, these substances will not separate.

Other Sauces


From the five basic mother sauces come hundreds of different compound sauces. For example, adding olive oil and herbs to a basic tomato sauce creates a **marinara sauce**.

Not all sauces, however, come from these mother sauces. Some sauces are made from a purée of fruits or vegetables. Other sauces are made from meat juices or butter.

Salsa Salsas can include a combination of raw vegetables or fruits, spices, onions, and chiles. They can be used for more than dipping vegetables or chips, however. Salsas can also be used as sauces for potatoes, poultry, meat, or fish entrées.

Relishes Relishes are another type of sauce. Often made with fruits or vegetables, this sauce may be used as a condiment or a sauce for meat, poultry, and fish. The sauce may be cooked or pickled, meaning preserved in a seasoned solution of vinegar or brine. Relishes may be sweet, savory, or spicy. They also vary in texture from smooth to chunky.




 **Colorful Salsa** Salsa is a colorful and tasty addition to many foods. *What foods do you think salsa would complement?*

Gravy **Gravy** is a type of sauce made from meat or poultry juices; a liquid such as milk, cream, or broth; and a thickening agent such as a roux. Pan gravy is made from the deglazed pan drippings of roasted meat or poultry. The pan gravy is served with the meat. You may also serve gravy with a side dish such as mashed potatoes.

Compound Butters You can make a **compound butter** by adding seasonings to softened butter. You may have eaten at a restaurant where herbs, such as basil, chives, or parsley, have been blended into the butter served with the bread. Sometimes a compound butter is placed on top of a piece of fish or meat just before serving it. As the butter melts, it flavors the food. It also makes an elegant presentation.

Independent Sauces Applesauce, cocktail sauce, sweet and sour sauce, and barbecue sauce are four common examples of independent sauces. These sauces may be served hot or cold.

 **Reading Check** **Contrast** What are the differences between béchamel and velouté sauces?

Roux Preparation

Many sauces are formed from a stock and roux. A roux is the most commonly used thickening agent. Many chefs use 60% flour and 40% fat to decrease the calories and fat in sauces. Being able to make a good roux is a very important skill.

Equal parts of fat and flour by weight form a paste when they are cooked together. Roux can be white, blond, or brown, depending in part on how long it is cooked.

Roux Ingredients

The following cooking fats can be used to make roux:

- **Clarified Butter** Also known as drawn butter, **clarified butter** is purified butterfat. This means that the butter is melted with the water and milk solids removed. Clarified butter is preferred for making roux because the water in unclarified butter changes the consistency of the roux. One pound of clarified butter results from 1¼ pounds of butter. Clarified butter must be made ahead of time.



 **Mother Sauces** The mother sauces pictured here are demi-glace (espagnole), tomato, and béchamel. *Why are they called mother sauces?*

Béchamel Sauce

YIELD: 1 GAL.
SERVING SIZE: 2 OZ.

Ingredients

4 qts.	Milk
1 each	Onion clouté, cut in half
6 oz.	Clarified butter
6 oz.	All-purpose flour, sifted
	Salt and ground white pepper, to taste
	Nutmeg, to taste

Method of Preparation

1. In a saucepan, heat the milk with the onion clouté, and simmer for 10 minutes.
2. In another saucepan, heat the clarified butter over moderate heat.
3. Gradually add flour to the butter to make a blonde roux. Using a spoon, mix the roux thoroughly, and cook it approximately 5 to 6 minutes. Remove from the heat, and cool slightly.
4. Remove the onion clouté from the milk.
5. Gradually add the hot milk to the roux, whisking constantly. Heat to a boil. Reduce to a simmer. Simmer for 20 minutes or until the proper flavor and consistency are achieved.
6. Season to taste.
7. Strain through a fine chinois into a suitable container. Hold at 135°F (57°C) or above, or cool to an internal temperature of 41°F (5°C) or below. Label, date, and refrigerate.
8. Reheat to 165°F (74°C) for 15 seconds.

International Flavor

It is believed that Béchamel sauce originated in France in the 18th century. Many countries use similar ingredients to create white sauce. Research these recipes, and create a chart showing the differences in ingredients and cooking techniques used.

- Alfredo sauce (Italy)
- White gravy (United States)
- Crema Mexicana (Mexico)

Cooking Technique

Simmer

1. Heat the cooking liquid to the proper temperature.
2. Submerge the food product completely.
3. Keep the cooked product moist and warm.

Chef Notes

The sauce is ready when the proper thickness has been achieved and the floury taste is cooked away. To prevent a dried surface (skin) from forming while holding the sauce in a bain marie, cover the surface with plastic wrap.

Substitutions

- To lower the fat content, use low-fat milk or nonfat half-and-half.
- Try adding lemon or cheese for additional flavor and interest.

Glossary

Clouté studded with cloves
Chinois cone-shaped strainer
Bain marie hot-water bath

HACCP

- Hold at 135°F (57°C) or above
- Cool to an internal temperature of 41°F (5°C) or below
- Reheat to 165°F (74°C) for 15 seconds

Hazardous Foods

- Milk
- Butter

Nutrition

Calories 90 Calories from fat 35
Total Fat 4g
 Saturated Fat 2.5g
 Trans Fat 0g
Cholesterol 10mg
Sodium 85mg
Total Carbohydrate 10g
 Fiber 0g
 Sugars 6g
Protein 4g
 • Vitamin A 2% • Vitamin C 0%
 • Calcium 15% • Iron 2%

- **Margarine** Because of its low cost, margarine is often used instead of butter. Although the quality of margarine varies, it does not generally make as good of a sauce as butter does.
- **Animal Fats** These fats include lard, butter, and the fats that come directly from an animal, such as chicken fat. Use these fats to flavor sauces. For example, use veal fat in veal velouté and chicken drippings in chicken gravy.
- **Vegetable Oil** These oils include those specific oils that come from plants as well as blends of different vegetable oils, including corn, safflower, and soybean. Because these oils do not add flavor to a sauce, they are not recommended for making sauces.
- **Shortening** This white, solid fat has no flavor and a high melting point. This makes shortening better for frying or baking than for sauce making.

Starch content plays an important role in the thickening power of flour. Because bread flour contains less starch than cake flour, 10 ounces of bread flour has the same thickening power as 8 ounces of cake flour.

Bread flour is used to thicken sauces in most commercial kitchens. That is why the

recipes for most sauces are based on using bread flour or all-purpose flour, which has about the same thickening power as bread flour. If you use a different kind of flour, be sure to adjust the ratio of roux to liquid. For example, Cajun ('kā-jən) recipes may call for browned flour. This flour has been browned in an oven. Browned flour has less thickening power than unbrowned flour.

Proportions of Roux Ingredients

Remember that you must use equal parts of fat and flour to make a good roux. Test this by making sure that there is enough fat to coat all the granules of starch. If too much fat is used, the excess will rise to the top and must be skimmed off. The right consistency for a roux is stiff, not runny.

Roux Tips

Roux can be tricky to prepare well. Keep the following in mind when you prepare roux:

- Do not use aluminum cookware. It will give the roux a metallic taste and make light-colored sauces gray. Instead, use heavy stainless steel pots. They will keep the sauces from burning or scorching, or tasting metallic.



◀ **More Mother Sauces** These mother sauces are velouté and hollandaise. *How is velouté named?*

Make a Roux

- 1 Heat the fat, usually clarified butter, in a heavy saucepan so that the fat will not scorch.
- 2 Make a paste by adding all of the bread flour and stirring.



- 3 Using medium heat, cook the paste until it is the consistency of wet sand and the right color. Stir roux often to keep it from burning. Burnt roux will add an unpleasant flavor and dark spots to the liquid. It will not thicken properly. When finished, the roux should be stiff.



- Do not use very high or very low temperatures. A roux that is very hot can spatter and burn someone as it is mixed into a liquid. A roux that is colder than room temperature will cause the fat to solidify. An ice-cold roux will solidify.
- Do not over thicken. A sauce must almost reach the boiling point before the roux begins to thicken it. Add 1 pound of roux per gallon of sauce for a medium consistency.

The color of a sauce depends on the length of time a roux is cooked. To create a white, blond, or brown roux, use the cooking times in **Figure 20.2**.

To avoid creating lumps when you mix a roux and a liquid base together, use one of the following methods:

- Add cold stock to the hot roux. Use a whisk to stir briskly.

- Dissolve the cold roux with warm or hot liquid before you add it to a hot stock. This will prevent lumps from forming. Stir briskly.

Cook the sauce mixture for at least 20 minutes after it begins to boil. The final cooking will take away any floury taste.



Reading Check


Describe How can you avoid lumps when you mix a roux and a liquid base together?

FIGURE 20.2 Roux Cooking Times

Roux Timetable Different types of roux require different cooking times. *How do you create a brown roux?*

Roux Color	Cooking Time
White	4 to 6 minutes
Blond	6 to 8 minutes
Brown	15 to 20 minutes



 **Roux Consistency** Stir a roux so that it will not scorch. *What consistency should a finished roux have?*

SECTION 20.2

After You Read

Review Key Concepts

1. **List** the items that can be used as thickening agents.
2. **Describe** a sauce espagnole.
3. **Outline** the guidelines to remember when you prepare a roux.

Practice Culinary Academics



Social Studies

4. Research traditional sauces used in another country. Write a description of at least two sauces from the country of your choice, and then compare and contrast them to the mother sauces that you learned about in this section.

NCSS IB Culture Predict how data and experiences may be interpreted by people from diverse cultural perspectives and frames of reference.



Mathematics

5. A restaurant offers French fries with a variety of dipping sauces served in paper cones. If the cones are 3 inches tall and 3 inches in diameter, how many fluid ounces of sauce can they hold?

Math Concept **Volume of a Cone** The volume (V) of a cone or pyramid is $\frac{1}{3}$ times base times height. Since the base of a cone is a circle, $V = (\frac{1}{3})(\pi r^2)(h)$. Use 3.14 for π .

Starting Hint Use the volume formula to find the volume of a cone, with h = the cone's height and r = half of the cone's diameter. Convert to fluid ounces by dividing by 1.8.

NCTM Measurement Apply appropriate techniques, tools, and formulas to determine measurements.



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

Soups

Reading Guide

Before You Read

Use Color As you read this section, try using different colored pens to take notes. This can help you learn new material and study for tests. You could use red for vocabulary words, blue for explanations, and green for examples.

Read to Learn

Key Concepts

- **Give examples** of various types of soups.
- **Illustrate** proper soup presentation and storage.

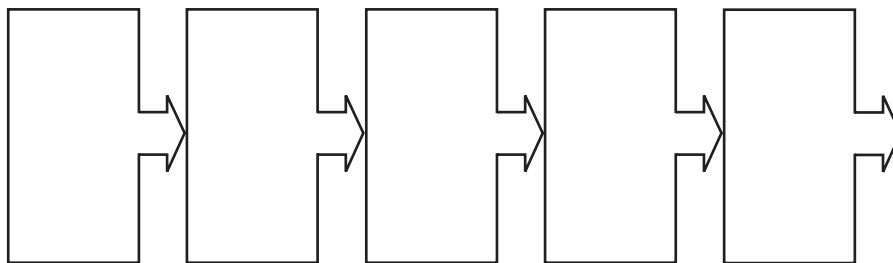
Main Idea

Soups provide both flavor and nutrition. Once you understand the basic procedures for preparing soups, you can create a variety of classic and creative soups.

Graphic Organizer

There are five steps to making a clear soup. As you read, use a sequence chart like the one below to record these steps.

Making a Clear Soup



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

You can let your creativity flow when you make soups!

ACADEMIC STANDARDS



English Language Arts

NCTE 1 Read texts to acquire new information.



Mathematics

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



Science

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

NCTE National Council of Teachers of English

NCTM National Council of Teachers of Mathematics

NSES National Science Education Standards

NCSS National Council for the Social Studies

Types of Soups

Soup is a popular menu choice as an appetizer or as a main course. Customers like the variety of flavors and nutrition that different soups provide. This section introduces you to the skills involved in making soups. Once you understand the basic procedures for preparing soups, you will be able to make a wide variety of nourishing meals. You may even create some interesting new soups.

Soups are frequently served at lunch and dinner. A lunch special may include a combination of soup and salad, soup and potato, or soup and sandwich. A hearty minestrone (*ˌmi-nə-ˈstrō-nē*) or French onion soup can satisfy your hunger at dinner when served with a chunk of crusty bread. Menus most often offer the choice of either a cup or a bowl of soup. A soup is sometimes served between a course of a multiple course meal. A simple soup will cleanse and recondition the palate. This means that it will have a neutral flavor.

Soups are as old as history. One of the first types of soups can be dated to about 6000 BCE.

By this time, waterproof and heatproof containers had been discovered. This made boiling foods possible. The word soup originates from *sop*, a dish consisting of a soup or thick stew that was soaked up with bread.

Commercial canning became possible in the 19th century. This made commercial soups available. Today, there are many canned and dried soups on the market. Most restaurants, however, prefer to make their own soups from scratch. Fresh soups made of high-quality ingredients have the best flavor.

Soups are usually classified as clear or unthickened soups, thick soups, and specialty soups. Most soups begin with a stock. (See Section 20.1.)

Clear Soups

A **clear soup** is made from clear stock or broth. Clear soups are not thickened. **Broth**, sometimes called a *bouillon*, is made from simmered meat and vegetables. Vegetable soup is made from a clear stock or broth that has been seasoned and may include meat,



Clear Combinations
Clear soups are fairly simple to prepare and, when garnished, are appealing to the eye.
What would you serve alongside this soup?

vegetables, and a starch such as potatoes, rice, or noodles. A concentrated, clear soup that is made from a rich broth is called a **consommé** (*ˌkän(t)-sə-ˈmä*).

Clear soups are made primarily of broths that can stand alone as a dish. Broths are more flavorful than stocks because the meat, not merely the bone, is simmered along with the other ingredients. A broth will have even more flavor when stock, rather than water, is used as the liquid ingredient for the soup.

Clear soups are relatively simple to prepare. It is important that the ingredients are of the highest quality available.

Follow these steps to make a clear soup:

1. Simmer or brown the meats and sweat the vegetables that will flavor the soup. **Sweating**, or cooking vegetables in fat over low heat, is a process that allows the vegetables to release moisture. This helps vegetables release their flavors more quickly when they are combined with other ingredients. Do not let the vegetables brown. If you live at an altitude that is higher than 2,500 feet, you might have to extend the cooking time.
2. Add simmering stock to the vegetables.
3. Continue to simmer the soup on a medium heat.
4. Skim off the impurities and fats as they rise to the surface while the soup mixture is simmering.
5. Season the soup to taste before serving.

Consommé

Consommé is made from stock or broth. The broth is reduced to evaporate some of the water. This makes the liquid more concentrated. A consommé's strong flavor is its most important **characteristic**, or feature. Second to its richness, however, is the clarity of the consommé. To **clarify** a consommé means to remove the particles as they float to the top. This way the particles do not cloud the consommé, and it remains clear. Because a consommé must be completely clear, starting with the best broth is very important.

✧ Nutrition Notes ✧

Soup's Effect on Appetite


Soup can help those on limited-calorie diets eat healthful, nutritious meals with fewer calories. Researchers from Penn State university gave some participants low-calorie soup made of chicken broth, broccoli, potato, cauliflower, carrots and butter before eating a main course. Other participants did not have soup. Participants ate 20% fewer calories when they had both the soup and the main course than when they did not have the soup. The researchers tested different varieties of the same soup recipe, and found that they all had the same effect.

CRITICAL THINKING *Why do you think those who ate the soup ate fewer calories?*

Consommé Preparation The steps below explain how to make a consommé:

1. Combine ground poultry or beef, lightly beaten egg white, and other ingredients such as a tomato product.
2. Add cold broth and stir. If the broth has a weak flavor, heat it in a separate pan and reduce it until it is concentrated. Chill it, then, add it to the other ingredients.
3. Stir the mixture occasionally as you bring it to a simmer over medium heat.
4. The egg white and meat proteins coagulate as they cook, forming a raft. The **raft** is a floating mass that forms from the mixture of meat and eggs. The raft traps the impurities that rise to the top of the broth. Do not stir the mixture after this point, and do not cover the soup. Mixing will redistribute the impurities into the soup.
5. Lower the heat and simmer slowly for 1 to 1½ hours to extract flavor and clarify.
6. Use several layers of cheesecloth or coffee filters and a china cap to strain the consommé. Taste and adjust seasonings as needed.
7. Cool, label, date, and refrigerate if the consommé will not be used immediately.



 **Soup Raft** The raft has an important role in making consommé. *What are the main ingredients in a raft?*

8. Remove any fat from the surface when the consommé is completely cooled.
9. When you reheat the consommé, remove any dots of remaining fat on the surface by blotting the surface with a paper towel.

Vegetable Soups

Vegetable soup is one of the easiest clear soups to prepare, but you must still pay attention to details. Meat-based stock or broth is used most often. For vegetarian soup, use a vegetable-based stock or broth. Make sure you cut all the vegetables about the same size so that they will cook evenly. Pasta or grains, such as rice or barley, may be added to make the soup more hearty.

Thick Soups

A **thick soup** is not clear or transparent. Thick soups include a thickening agent, such as roux, cream, or a vegetable purée. Thick soups such as cream of chicken or cream of mushroom are examples.

Thick soups differ from clear soups because of the thickening agents that are added to them. Cream soups, which are the most com-

mon thick soups, are often thickened with roux and made with cream or milk. Milk thins the soup. Cream adds richness without thinning the soup. Cream soups can be made from leafy or soft vegetables such as broccoli, asparagus, or spinach. Hard vegetables, including squash or roasted red peppers, may also be used.

Purée Soups

Soups that are thickened by grinding the soup's main ingredient in a food processor or blender are called purées. Split pea, navy bean, and butternut squash soup are examples. These hearty soups are filling and are sometimes served as a main course. Purées may contain milk or cream.

Purée Soup Preparation Purée soups are also thick soups. Although cream is occasionally used to thicken a purée soup, the main ingredient of the soup itself is puréed for thickness. Purée soups have a coarser texture than cream soups. The coarse texture comes from legumes or starchy vegetables such as potatoes. These ingredients form the base of the soup. Because the soup is made from these ingredients, it is usually very thick and hearty.

It often makes a good meal with bread. These are the steps to make a purée soup:

1. Cut up fresh vegetables and sweat them in fat over low heat.
2. Add the liquid, such as stock, that has been simmering in a separate pan.
3. Add starchy or dried vegetables.
4. Simmer the soup until all vegetables are cooked but not overcooked.
5. Purée the soup, using a food processor or blender.
6. Simmer again, and check that the soup has reached the desired thickness.
7. If the soup is too watery or too thick, add a thickening agent or more liquid to adjust the thickness.
8. Add final seasonings and serve.

Cream Soups

A **cream soup** is a velvety-smooth, thick soup. Cream soups are made with cooked vegetables that are sometimes puréed. Puréeing soup requires the vegetables to be cooked to a tender consistency so that they are easily

folded into the soup. To fold means to stir in gently. Cream soups may also be made with rich chicken broth.

Cream Soup Preparation Follow these steps to make a smooth cream soup:

1. Sweat hard vegetables, such as carrots or celery, in butter or oil by slowly cooking them over low heat.
2. Once the vegetables have sweated, thicken the soup by adding flour to make a roux.
3. Add hot stock or milk to the roux and vegetables. Simmer, but do not boil. Be careful that the soup does not brown.
4. Add a spice sachet or bouquet garni if you wish, along with any soft vegetables such as asparagus or broccoli. Cook the vegetables until they are just soft.
5. Skim impurities and fat from the soup as it simmers.
6. Purée the soup until it is very smooth.
7. Add hot Béchamel sauce or cream to finish the soup.
8. Taste the soup, and adjust the seasonings before serving.



◀ **Purée Base** Puréed soup is thick and hearty. *What ingredients would you use as a base for puréed soup?*

Small Bites

Remove Salt If you have added too much salt to a soup, you may try adding a raw, peeled potato to the soup. Simmer the soup for 15 minutes, and then remove the potato from the pot. The potato will absorb extra salt. This may help if you have added just a little bit too much salt.

Specialty Soups

A **specialty soup** highlights the cuisine of a specific region, or **reflects**, or shows, the use of special ingredients or techniques. Some examples of specialty soups include bisques, chowders, cold soups, and international soups.

Bisques and Chowders

A specialty soup that is usually made from shellfish and contains cream is called a **bisque** ('bisk). For example, lobster bisque is prepared like a cream soup. A bisque is made with a concentrated stock of shellfish, such as lobster or shrimp, plus cream, and roux. Even the shells are added for flavor during cooking. The shells are removed before the bisque is strained.

A specialty soup made from fish, seafood, or vegetables is called a **chowder**. Chowders may be compared to stews because they are hearty, chunky soups. Most are based on vegetables, shellfish, or fish. Chowders are often thickened with roux. They usually include potatoes, and use cream or milk for the liquid ingredient.

Because bisques and chowders generally include milk or cream, it is best not to leave them on the serving line for too long. The milk may curdle or spoil the batch. Ideally, make small batches of these soups.

Cold Soups

A **cold soup** is a specialty soup that may be cooked or uncooked, and then chilled. This decision depends on the ingredients. Yogurt, cream, or puréed fruit is often used as a thickener for cold soups.

Cold soups are either cooked and then chilled, or not cooked. There are many ways to prepare a cold soup. It is also important to note that adding dairy products to cold soups reduces their shelf life.

Cooked Cold Soups Many hot soups may be chilled and served cold. One of the most popular cold cooked soups is **vichyssoise** (vi-shē-'swäz), a cold version of potato-leek soup. Cold cream soups are different from hot cream soups in several different ways:

- Cream is added to a cold soup just before it is served, after it has already chilled. This process increases the soup's shelf life because the cold soup is not stored with the cream already added.
- Cold dulls the flavor of a soup, so taste a cold cream soup just before serving to ensure that it is flavorful enough.
- The consistency of the cold cream soup should be thinner than the hot cream soup. Use either less thickener or more liquid.

Uncooked Cold Soups Uncooked cold soups are easy to prepare. The majority of the work in preparing these soups comes from chopping the ingredients. Fresh fruit or vegetables are often puréed to make the soup thicker. Sometimes, cream or yogurt is added, too. It is best to make uncooked cold soups in small batches so that they stay fresh. Cold soups should be served as cold as possible in cold bowls.

International Soups

International soups are linked to different nations or cultures. For example, Borscht ('börsh(t)) is a beet soup originally from Russia. There has been a steady increase in the number of ethnic restaurants in the United States. It is not uncommon to find authentic Indian and Thai soups offered as specialties. Soup is almost always offered on both lunch and dinner menus in ethnic restaurants. These soups use ingredients that are associated with a culture's cuisine.

Some international soups, such as French onion and gazpacho (gəz-'pä-(,)chō), a cold Spanish soup, have become mainstream in the United States. These soups are often found in restaurants that have mostly American-style cuisine. They have also become popular in many areas of the world.

Some international soups are hearty enough to be meals. Minestrone is one of the many international soups that can easily stand alone as a meal. Minestrone is an Italian soup that can be served as an appetizer or as a meal. It includes not only a variety of vegetables, but pasta and beans, too. This gives it a hearty texture, and a good nutritional content. Minestrone is also low in fat.

There are many different types of soups from all different cultures:

- Ginataan is a soup from the Philippines made from coconut milk, milk, fruits and tapioca pearls. It is served hot or cold.
- Oshiruko is a Japanese bean soup.
- Egg drop soup from China features egg in a broth.
- Bouillabaisse is a French fish soup. It is also made in other parts of the world.

Small Bites

Cook Vegetable Soup When you make a vegetable soup, be sure to add the vegetables based on how long they will need to cook. For example, carrots take longer to soften than spinach does, so add the carrots first. If all of the vegetables are added at the same time, the softer vegetables will become overcooked.

In Catalonia it is called bullebesa.

- Gumbo is a Creole soup that comes from the American South. The soup is thickened with okra pods.
- Mulligatawny soup from India has curry as a flavoring.
- Menudo is a traditional Mexican soup that has tripe and hominy.
- Phở is a Vietnamese beef noodle soup.

If you can learn to make a variety of interesting international soups, you can create an exotic, flavorful menu.

Reading Check **Identify** What are the different classifications of soup?



International Flavor International soups such as gazpacho have become commonplace on many restaurant menus. *What are the main ingredients in gazpacho?*

✦ MASTER RECIPE

Beef Consommé

YIELD: 50 SERVINGS
SERVING SIZE: 8 OZ.

Method of Preparation

1. In a mixing bowl, combine the lean ground beef, mirepoix, tomato purée, herbs, spices, salt, and white pepper to taste. Mix the egg whites and meat mixture until blended. Refrigerate for one hour.
2. In a marmite, blend the cold beef stock with the above clarifying ingredients.
3. Place on moderate heat. Carefully watch the clarifying ingredients to make sure they do not scorch. Stir occasionally, until a raft forms. Then stop stirring.
4. Simmer the soup for 1½ hours or to the desired strength, making sure the raft does not break or sink. Remove the first cup of consommé through the spigot, and discard.
5. In a chinois lined with four to five layers of wet cheesecloth, slowly strain the liquid into a soup insert, separating the clarifying ingredients from the liquid. Hold at 135°F (57°C) or above.
6. Adjust the seasonings. Remove all of the fat from the consommé, and serve very hot with the appropriate garnish.
7. Cool to an internal temperature of 41°F (5°C) or below.
8. Reheat to 165°F (74°C) for at least 15 seconds.

Ingredients

3 lbs.	Ground beef, lean
2 pts.	Tomato purée
16 each	Black peppercorns
6 each	Bay leaves
3 oz.	Parsley stems
1½ tsp.	Thyme leaves
Salt and pepper to taste	
10 each	Egg whites, slightly whipped
5 gal.	Cold brown beef stock, or strong beef broth

Mirepoix:

12 oz.	Onion, peeled, cut brunoise
2 lbs.	Carrots, washed, peeled, cut brunoise
4 stalks	Celery, washed, trimmed, cut brunoise
2 pts.	Tomato purée

International Flavor

Many different cultures use consommé as a base for other recipes. Research these recipes, and list three more recipes with consommé bases.

- Markklosschen (Germany)
- Egg Drop Soup (China)

Chef Notes

If the stock is gelatinous, allow it to liquefy before using it.

Substitutions

- For chicken consommé, add ground chicken and use cold chicken stock.
- For vegetable consommé, use the vegetable stock, increase the egg whites, and replace the onions with leeks.

Glossary

Mirepoix roughly chopped vegetables
Brunoise ⅛-inch dice
Marmite stockpot
Chinois fine, cone-shaped strainer

HACCP

- Hold at 135°F (57°C) or above
- Cool to 41°F (5°C) or below
- Reheat to 165°F (74°C) for 15 seconds

Hazardous Foods

- Egg whites
- Ground beef

Nutrition

Calories 120	Calories from fat 30
Total Fat 3g	
Saturated Fat 1.5g	
Trans Fat 0g	
Cholesterol 20mg	
Sodium 880mg	
Total Carbohydrate 9g	
Fiber 1g	
Sugars 4g	
Protein 14g	
• Vitamin A 60%	• Vitamin C 6%
• Calcium 4%	• Iron 10%

Safety Check

✓ Maintain Temperature

Because bacteria growth slows down only in cold food, it is important to reheat foods to safe temperatures at 165°F (74°C) or above. Before you place cream soups on a steam table, heat them to the proper temperature.

CRITICAL THINKING *What are the potential consequences of failing to reheat soup to 165°F (74°C) or above?*

Soup Presentation and Storage

Whether as an appetizer or a meal, a soup's presentation is important. The size and type of the cup or bowl is usually determined by the type of soup, the meal at which it is served,



▲ **Soup Presentation** Soups may be presented in interesting ways. *Can you identify each type of soup shown here?*

Small Bites

Soup Accompaniment Suggestions Soups are often served with an accompaniment. Here are some choices:

- Whole-grain wafers
- Corn chips
- Saltine or oyster crackers
- Melba toast
- Bread sticks

and when during the meal it will be eaten. The soup portion served as an appetizer should be between 6 and 8 ounces, and between 10 and 12 ounces for a main course portion.

The temperature of the bowl or cup will influence the presentation of the soup, too. The bowl should be warm for serving a hot soup, and cold for serving a cold soup. Most importantly, when you serve the soup, make sure the soup itself is the right temperature. Serve cold soups at 41°F (5°C) or below. Serve hot soups at 165°F (74°C) or above.

Soup Garnishes

Soups can look plain. This is why their presentation should be enhanced with a garnish. Each hot consommé is named according to its garnish. For example, consommé Célestine (sə-'les-tēn) is garnished with small, thin, savory pancakes cut into julienne strips. The soup was named after the chef to Napoleon III.

Garnishes such as parsley or sour cream often make the difference between an appetizing appearance and a dull one. Toppings, add contrast to a soup that is all one color, such as puréed soup. Garnishes must be applied just before the soup is served.

Garnish Guidelines

Use the following suggestions to garnish soups:

- Garnishes should be attractively arranged.
- Vegetables or meats for garnishes should be cut about the same size and shape.

Purée of Potato Leek Soup

YIELD: 50 SERVINGS
SERVING SIZE: 8 OZ.

Method of Preparation

1. In a stockpot, heat the clarified butter or oil, and lightly sauté the leeks. Add the vegetable stock, garlic, and potatoes, and heat to the first boil. Reduce to a simmer.
2. Simmer the soup until the potatoes are tender.
3. When the potatoes are tender, strain, and pass the mixture through a food mill.
4. Place the soup in a stockpot. Heat to a boil. Simmer to the desired consistency. Adjust seasoning with salt, white pepper, and nutmeg. Hold at 135°F (57°C) or above.
5. In a separate saucepan, poach the julienne of leeks in the vegetable stock. Add to the soup as a garnish.
6. Cool to an internal temperature of 41°F (5°C) or below.
7. Reheat to 165°F (74°C) for at least 15 seconds.

Ingredients

- 6 oz. Clarified butter

- 2 lbs. Leeks (use only the white part), washed, trimmed, split, and rough chopped into small pieces

- 6 cloves Garlic, peeled and minced

- 7 lbs. Potatoes, peeled, washed, and rough chopped into small pieces

- 3 gal. Vegetable stock

- ½ tsp. Nutmeg

- 1 lb. Leeks, whites (garnish), washed, trimmed, split, and cross-cut

Chef Notes

Trim leek roots, cut off the tops just where white turns to pale green, and remove the toughest outer layer of leaves.

Substitutions

- Use a small amount of oil for sautéing instead of butter to reduce cholesterol.

Cooking Technique

Simmer and Poach

1. Heat the cooking liquid to the proper temperature.
2. Submerge the food product completely.

International Flavor

Potatoes are used as a staple ingredient in many different countries. Research these recipes, and write a half-page paper on how potatoes are used in each.

- Aloo bhurta (India)
- Potato paprikash (Hungary)

Glossary

Clarified butter purified butterfat

Food mill a tool for mashing foods

HACCP

- Hold at 135°F (57°C) or above.
- Cool to 41°F (5°C) or below internally.
- Reheat to 165°F (74°C) for at least 15 seconds.

Hazardous Foods

- Butter

Nutrition

Calories 100	Calories from Fat 30
Total Fat 3.5g	
Saturated Fat 2g	
Trans Fat 0g	
Cholesterol 10mg	
Sodium 3040mg	
Total Carbohydrate 16g	
Fiber 2g	
Sugars 2g	
Protein 4g	
• Vitamin A 6%	• Vitamin C 25%
• Calcium 2%	• Iron 6%

This is especially important for garnishing a consommé, because the clear soup will highlight any uneven cuts.

- The flavor and texture of the garnish should complement the soup.
- If you use vegetables or starches as garnishes, cook them separately so they will not cloud the soup.
- Do not overcook garnishes. Vegetables should not be mushy. Meat or poultry should not fall apart. Rice and pasta should hold their shape. To keep from overcooking, prepare these garnishes separately and hold them on the side until just before serving.

Soup Storage

When you make large batches of thick soup, cool and refrigerate the soup before you add the milk or cream. It is best to heat only small batches of soup if you hold the soup in a steam table. Restock the soup when necessary. Soups will continue to thicken while they are set in holding in the steam table. Be sure to check the consistency before you serve them. Heat the base over low heat, then add the milk or cream to the base. To keep the soup from scorching, stir it often. Taste the soup to see if the seasonings need to be adjusted.

 **Reading Check** **List** What are some suggested accompaniments for soup?

SECTION 20.3

After You Read

Review Key Concepts

1. **Give examples** of specialty soups.
2. **Illustrate** proper soup garnishing.

Practice Culinary Academics

English Language Arts

3. Locate an article in a food magazine that describes a soup or a recipe for soup. Identify the type of soup. Then, compare and contrast the steps for making the soup, or the information given about the soup, with the information you read in this section. Did you learn more about that type of soup? Write a half-page summary of what you learned.

NCTE 1 Read texts to acquire new information.

Science

4. **Procedure** Make a clear soup with broth and vegetables. Use at least one starchy vegetable. Notice the texture and thickness of the soup. Now purée the soup to make a puréed soup.
Analysis Notice the texture and thickness of the soup before and after adding the purée. Record any differences, and write a summary of why any differences exist.

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



Mathematics

5. During an average dinner service, your restaurant serves 20 cup-size (6 fluid ounces) portions of asparagus soup, and 9 bowl-size (11 fluid ounces) portions. How many quarts of soup should be prepared for each evening?

Math Concept Equivalent Volume

Measurements There are 32 fluid ounces in one quart. To convert fluid ounces into quarts, divide by 32. To convert quarts into fluid ounces, multiply by 32.

Starting Hint For each serving size, calculate the total volume of soup needed by multiplying number of servings by portion size. Add the two totals together, and convert to quarts. Round to the nearest quart.

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



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

Chapter Summary

The four basic types of stock are white, brown, fish, and vegetable. Basic stocks are the base for many different types of sauces and soups. There are five basic sauces called mother, or grand sauces. Other sauces include compound sauces, independent sauces, and those made from

purées, meat juices, and butter. Sauces can be adjusted by thickening them or adding seasonings and flavorings. The types of soups are clear, thick, and specialty. Presentation and garnishing of soups varies according to their type. Store soups in tightly sealed containers.

Content and Academic Vocabulary Review

1. Write a memo explaining the features of a good soup. Use at least 12 of the following terms in your memo.

Content Vocabulary

- stock (p. 510)
- nourishing element (p. 510)
- mirepoix (p. 510)
- base (p. 510)
- white stock (p. 511)
- brown stock (p. 511)
- fish stock (p. 513)
- fumet (p. 513)
- vegetable stock (p. 513)
- glaze (p. 513)
- reduction (p. 513)
- sauce (p. 517)
- thickening agent (p. 517)
- Béchamel (p. 517)
- hollandaise sauce (p. 517)
- gelatinization (p. 517)
- coulis (p. 518)
- cheesecloth (p. 518)
- mother sauces (p. 519)
- sauce espagnole (p. 519)
- demi-glace (p. 519)
- tomato sauce (p. 519)
- roux (p. 520)
- velouté (p. 520)
- marinara sauce (p. 520)
- gravy (p. 521)
- compound butters (p. 521)
- clarified butter (p. 521)
- clear soup (p. 527)
- broth (p. 527)
- consommé (p. 528)
- sweating (p. 528)
- clarify (p. 528)
- raft (p. 528)
- thick soup (p. 529)
- cream soup (p. 530)
- specialty soup (p. 531)
- bisque (p. 531)
- chowder (p. 531)
- cold soup (p. 531)
- vichyssoise (p. 531)

Academic Vocabulary

- supplement (p. 510)
- reserve (p. 513)
- mediocre (p. 517)
- clarity (p. 518)
- characteristic (p. 528)
- reflects (p. 531)

Review Key Concepts

2. **Identify** the elements of a stock.
3. **Explain** the preparation of different varieties of stock.
4. **List** the main ingredients in a sauce.
5. **Distinguish** between the five mother sauces.
6. **Outline** the steps to prepare a roux.
7. **Give examples** of various types of soups.
8. **Illustrate** proper soup presentation and storage.

Critical Thinking

9. **Analyze** what might happen if you reduce cooking times. Beef stock and veal stock take eight hours to cook. What could happen if you cut the cooking time in half?
10. **Determine** which type of soup you think has more nutritional value: hot vegetable soup, or gazpacho. Why?

Academic Skills

**English Language Arts**

- 11. Research Regional Soups** Many regions of the world have a traditional soup. Choose one regional soup and write a research essay on it. Write about the region the soup comes from, the ingredients of the soup, and how it is made. Discuss how the soup is served, and any variants of the soup, including variants found in other countries. Include your sources.

NCTE 7 Conduct research and gather, evaluate, and synthesize data to communicate discoveries.

**Science**

- 12. Choose Vegetables for Stock** The freshness of the vegetables you use for a stock can make a difference.

Procedure Make a chicken or fish stock in two pots. In one pot, use vegetables that are barely fresh. In the other, use fresh vegetables.

Analysis Compare the flavor of the two stocks. What do you observe? Why do you think one is more flavorful than the other? Create a chart that shows your observations and a summary of those differences.

NSES B Develop an understanding of the interactions of energy and matter.

**Mathematics**

- 13. Compare Stock Bases** Teri's restaurant goes through 60 gallons of chicken stock each month. To reduce food costs, Teri would like to start using commercial stock base. One product she is considering comes in packages that yield 5 gallons of stock, costing \$11.25 per package. A second product is a powder that comes in a package of four containers for \$14.50. Each container claims to make 22 8-fluid-ounce servings. Which product will be less expensive on a monthly basis?

Math Concept Equivalent Volume

Measurements There are 128 fluid ounces in 1 gallon. To convert fluid ounces into gallons, divide by 128. To convert gallons into fluid ounces, multiply by 128.

Starting Hint Find the cost to produce 60 gallons of stock using each product. For the concentrate, set up a proportion such as $\$11.25 / 5 \text{ gallons} = x / 60 \text{ gallons}$, and solve for x . For the powder, use a similar proportion after calculating the total stock produced from each package by multiplying $4 \times 22 \times 8$, and then converting the result into gallons.

NCTM Problem Solving Apply and adapt a variety of appropriate strategies to solve problems.

Certification Prep

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

- 14.** What is a mirepoix?
- the powdered, or concentrated form of a stock.
 - the liquids that form the foundation of sauces and soups.
 - a mix of coarsely chopped vegetables and herbs.
 - a combination of fresh herbs and vegetables.
- 15.** What is a roux?
- purified butterfat
 - a thickened brown sauce.
 - a sauce made from a fruit or vegetable purée.
 - equal parts of fat and flour by weight.

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

Test-Taking Tip

Review the vocabulary list and the key concepts in each chapter to help you study for your test.

Real-World Skills and Applications

Self-Management Skills

- 16. List Nutritious Soups** Imagine that you are trying to plan a healthful menu for your restaurant. You want to add some soups to the menu, but you want them to be nutrient-dense. List three soups that are nutrient-dense and contain items from several food groups. Make a list of which ingredients come from which food groups.

Collaborative and Interpersonal Skills

- 17. Reinvent a Soup** Imagine that your restaurant has decided to revamp its menu. The soups on the menu now are minestrone, clam chowder, and roasted red pepper purée. Follow your teacher's instructions to form groups and discuss ways to revise these standard soups to be more interesting to customers. Discuss your ideas with the class.

Technology Applications

- 18. Design a Menu** Use a word processing or graphic design program to design a menu for a restaurant that features soups and main dishes made with sauces. The menu should fit onto one or two pages and should describe each item accurately in the space given. Use illustrations or photographs to make your menu exciting. Turn in your completed menu to your teacher.

Financial Literacy

- 19. Compare Sauce Costs** You own an Italian restaurant. In your restaurant, you use about 80 ounces of tomato sauce per night. Purchasing canned tomato sauce would cost you about 8 cents per ounce. Making your own would cost 11 cents per ounce. What would be the price per night of making your own tomato sauce versus purchasing canned sauce?

Culinary Lab

Make a Béchamel Sauce

- 20. Work in Teams** In this lab activity, you will work together in teams to prepare a béchamel sauce, and then evaluate the sauce you have made.
- Plan your sauce.** With your team, determine the fat and flour you will use and plan your procedures.
 - Review Béchamel basics.** Discuss the characteristics of a good Béchamel so that your team knows its objectives. Review the guidelines in the section for making Béchamel sauce and make sure they are incorporated in your procedures.
 - Make your sauce.** Prepare the Béchamel sauce recipe on page 522.
 - Taste your sauce.** Present your sauce to the class for tasting and evaluation.

Use the culinary skills you have learned in this chapter.

Create Your Evaluation

Create one comment card for each team's sauce. As you taste each sauce, evaluate its the taste, texture, and appearance on the comment card. Include comments about anything that could be done to improve the sauce. Once everyone has had a chance to taste and evaluate each sauce, discuss your comments with the class.