

# Knives and Smallwares

## SECTIONS

Section 10.1 Knives

Section 10.2 Smallwares

## WRITING ACTIVITY

### Paragraph

A paragraph is a group of sentences that develop one central idea. Write a paragraph describing one type of knife and its main uses. Include a topic sentence, supporting sentences, and an ending sentence.

### Writing Tips

- 1 Focus on the main idea of your paragraph.
- 2 Write clear and simple sentences to express your meaning.
- 3 Use the dictionary to help you find additional words.

### EXPLORE THE PHOTO

Knives and smallwares are important tools in any professional kitchen. *Why is it important to know how to choose, care for, and use knives?*



# Knives

*Learn to use, clean, and sharpen knives safely.*

## Reading Guide

### Before You Read

**Stay Engaged** One way to stay engaged when reading is to turn each of the headings into a question, and then read the section to find the answers. For example, Knife Safety and Care might be, “How can I use knives safely?”

### Read to Learn

#### Key Concepts

- **Categorize** knives by their specific tasks.
- **Demonstrate** basic knife skills.
- **Explain** proper knife safety and storage.

#### Main Idea

Knives are the most commonly used kitchen tools. Therefore, it is important for a chef to know the construction, use, and maintenance of knives.

### Content Vocabulary

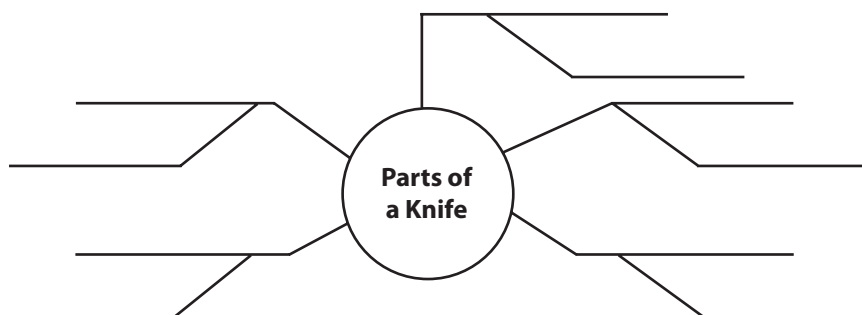
- stainless steel
- diagonal
- tang
- roll cut
- rivet
- julienne
- bolster
- batonnet
- serrated
- brunoise
- pare
- whetstone
- chiffonade
- trueing
- rondelle


### Academic Vocabulary

- transfer
- uniform

### Graphic Organizer

Use a spider map like the one below to list the five parts of a knife. Fill in each branch with details about that part of a knife.



 **Graphic Organizer** Go to this book's Online Learning Center at [glencoe.com](http://glencoe.com) for a printable graphic organizer.

### ACADEMIC STANDARDS

#### Mathematics

**NCTM Geometry** Use visualization, spatial reasoning, and geometric modeling to solve problems.

**NCTM Number and Operations** Understand the meanings of operations and how they relate to one another.

#### Science

**NSES F** Students should develop an understanding of personal and community health.

#### Social Studies

**NCSS II B Time, Continuity, and Change** Apply key concepts such as chronology and change to explain, analyze, and show connections among patterns of historical change and continuity.

**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

# Knife Construction

Knives are the most commonly used kitchen tools. They are an important part of any chef's tool kit. A kitchen tool is an implement that is used in the kitchen. Accomplished chefs can perform countless valuable tasks with a sharp knife. To perform these tasks, however, chefs must be familiar with knife construction and type. They must also use proper cutting techniques and knife safety. Finally, chefs must know how to care for knives properly so that they will last.

To know which knife to use for a specific task, you must have a working knowledge of the different parts of a knife.

## Blade

The blade of a high-quality, professional knife is made of a single piece of metal. The metal has been cut, stamped, or forged into the desired shape. The metals most often used for the knife blade are stainless steel and high-carbon stainless steel.

**Stainless steel** is a hard, durable metal made of chromium and carbon steel. It does not rust or discolor. Stainless steel also will not **transfer**, or pass to foods, a metallic taste. The main drawback is that it is hard to sharpen.

High-carbon stainless steel is a mix of iron, carbon, chromium, and other metals. This metal combines the best features of stainless steel and carbon steel, but it is expensive.

High-carbon stainless steel does not rust or discolor and can be sharpened easily. This is the most common metal used for knives in the professional kitchen.

## Tang

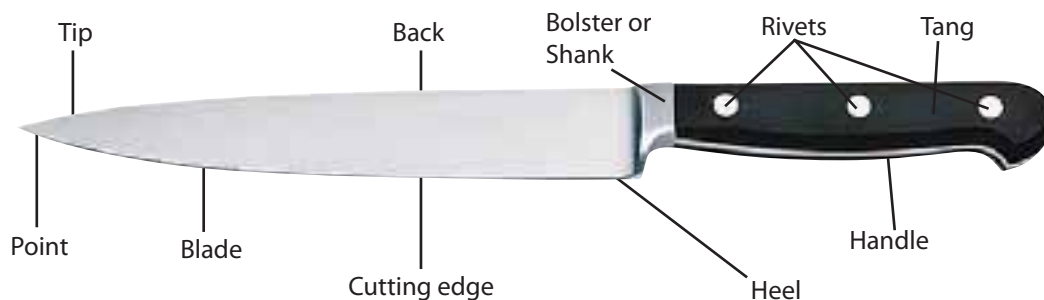
The **tang** is the part of the blade that continues into the knife's handle. Some knives have full tangs, while others have partial tangs. A full tang is as long as the whole knife handle. Knives used for heavy work, such as chef's knives and cleavers, should have a full tang. Knives used for lighter work, such as paring knives and utility knives, may have a partial tang.

## Handle

Knife handles can be made of several types of material, including plastic, vinyl, and hard woods such as rosewood and walnut. Because you will hold the knife for long periods of time, the handle should feel comfortable in your hand. Your hand may cramp from using a handle that is either too small or too large. Manufacturers make various sizes of handles. Try different sizes to find one that fits.

## Rivet

The tang is attached to the knife handle with rivets. A **rivet** is a metal fastener. For comfort and sanitation, the rivets should be smooth and lie flush with the handle's surface.



**Parts of a Knife** Knives used for heavy work should have a tang that runs the entire length of the handle. *Why do you think this is?*



**Types of Knives** Chefs use a variety of knives in the kitchen for different tasks. *Which knife would you choose to cut bread slices?*

## Bolster

Some knives have a shank, or bolster, in the spot where the blade and handle come together. Knives with a bolster are very strong and durable. The **bolster** helps prevent food particles from entering the space between the tang and the handle.

## Types of Knives

A chef chooses knives according to the type of food that she or he is preparing. For example, chopping onions requires a different knife than one used for slicing bread.

## Chef's Knife

The chef's knife, also called a French knife, is the most important knife in the chef's tool kit. This all-purpose knife has an 8- to 14-inch triangular blade. It can be used for peeling, trimming, chopping, slicing, and dicing. The 10-inch chef's knife is used for general work in a commercial kitchen. A skilled chef can also use this knife to cut large foods, such as meat, poultry, and fish, into smaller pieces. A smaller knife, but similar in shape to a chef's knife, is the utility knife. A utility knife is an all-purpose knife with a 5- to 7-inch blade. It is used mainly for peeling and slicing fruits and vegetables.

## Gourmet Math

### Drawing and Cutting Angles

When two straight lines have the same end-point, they form an angle. The size of an angle is measured in degrees, and written as a number between 0 and 360 followed by the degree ( $^{\circ}$ ) symbol. Common reference angles are  $0^{\circ}$ ,  $45^{\circ}$ ,  $90^{\circ}$ , and  $180^{\circ}$ . Angles measuring  $0^{\circ}$  and  $180^{\circ}$  are straight lines. A  $90^{\circ}$  angle is a right angle, and a  $45^{\circ}$  angle is halfway between a straight line and a right angle.

In cooking, angle measures are often used to help you visualize how to hold a knife. Sketch a  $10^{\circ}$  angle and a  $60^{\circ}$  angle on a piece of paper, and practice cutting each of these angles on a raw potato.

**Math Concept Measuring Angles** Use a protractor to measure angles. If you do not have a protractor, you can estimate the degrees by picturing the common reference angles.

**Starting Hint** If you have a protractor, use it to draw exact  $10^{\circ}$  and  $60^{\circ}$  angles. You can also estimate the appearance of these angles without a protractor. A  $10^{\circ}$  angle is very small, while a  $60^{\circ}$  angle is two-thirds of the way between a straight line and a right ( $90^{\circ}$ ) angle.

**NCTM Geometry** Use visualization, spatial reasoning, and geometric modeling to solve problems.

## A TASTE OF HISTORY

1664

British troops capture New Amsterdam and rename it New York

1669

King Louis XIV of France decrees that all dinner knife points be ground down to reduce violence

### A Most Useful Tool

Knives are some of man's oldest tools. The earliest knives, used approximately 2 million years ago, were made of flint. Much later in history, man began to make knives from copper and bronze. In the early 1900s, advancements in steel manufacturing led to the development of the knives that are used in professional kitchens today.

### Historical Application

Create a time line that traces the history of the knife, starting with a picture of an early knife. Finish with a picture of a modern chef's knife and label its parts.

**NCSS II B Time, Continuity, and Change** Apply key concepts such as chronology and change to explain, analyze, and show connections among patterns of historical change and continuity.

### Slicer

The slicer has a long, thin blade that is ideal for cutting large foods such as meat and poultry. The tip of this knife may be pointed or rounded. The blade may be rigid or flexible. The slicer's blade may also be **serrated** (sə-<sup>1</sup>rāt-ed), meaning that it is toothed like a saw. You can use a serrated slicer to slice coarse foods without crushing or tearing them.

### Boning Knife

A small knife with a thin, angled 5- to 7-inch blade, the boning knife is used to remove bones from meat, fish, and poultry and trim fat from meat. The blade may be rigid or flexible. Rigid blades are used for heavier work. Flexible blades are used for lighter work.

### Paring Knife

The paring knife has a rigid blade that is only 2 to 4 inches long. You can use this knife to pare a thin outer layer or peel from fruits and vegetables. To **pare** means to trim off.

### Tournée Knife

Similar in size to the paring knife, the tournée (tür-<sup>1</sup>nā) knife has a curved blade that looks like a bird's beak. It is used to trim potatoes and vegetables into shapes that look like footballs.

### Fillet Knife

The fillet knife has an 8- to 9-inch blade with a pointed tip. The blade may be rigid or flexible. It is mainly used to fillet fish.

### Butcher Knife

The butcher knife has a 6- to 14-inch rigid blade whose tip curves up at a 25-degree angle. It is sometimes called a scimitar ('si-mə-,tär) because its curved blade resembles a saber by that name. You can use the butcher knife to cut meat, poultry, and fish.



Reading Check

**Define** What is a paring knife?

## Knife Skills

One of the most important skills you will learn is how to use a knife properly. You will use a knife to perform many different tasks, from boning fish to paring fruits, slicing bread, and dicing or mincing vegetables. The more you practice, the more efficient you will become.

You can grip a knife in several different ways. Comfort and the task at hand will help you determine which grip to use. As a general rule, grip the knife firmly but not so tightly that your hand gets tired. Avoid placing your index finger on the top of the blade.

To make safe, even cuts, you need to guide the knife with one hand while you hold the food firmly in place with the other hand. Curl the fingertips on the hand that holds the food. This will help you avoid accidental cuts. Use the sharp edge of the blade to do the cutting. A sharp knife is the safest knife to use. Use smooth, even strokes, and never force the blade through the food. Report dull knives to a supervisor for sharpening.

## HOW TO

# Grip a Knife

- A** Grip the knife by placing four fingers on the bottom of the handle and the thumb firmly against back of the blade.



- B** Grip the knife by placing four fingers on the bottom of the handle and the thumb against the side of the blade.



- C** Grip the knife by placing three fingers on the bottom of the handle, the index finger flat against the blade on one side, and the thumb on the other side. This grip offers extra control and stability.



## Knife Cuts

It is important to cut foods into **uniform** pieces, or pieces that are even in shape and size, so that they cook evenly. Uniform sizes also make the finished product more visually appealing. When you use a properly sharpened knife, you can avoid bruising foods such as onions and tomatoes. The basic cutting techniques include slicing, mincing, and dicing. You can also roughly chop foods when visual appeal is not important, such as for stock vegetables. A rough chopped item, often vegetables, is called *concassé*.

### Slicing

When you slice food, you will use a chef's knife to cut it into large, thin pieces. To slice safely, make sure the flat side of the food is down so that it will not slip. If necessary, cut a piece of the food to create a flat surface. You can make many different specialty slices

**Chiffonade** To **chiffonade** (*ʃi-fə-'näd*) means to finely slice or shred leafy vegetables or herbs. This cut is often used to make certain garnishes.

**Rondelle** A **rondelle** (*rän-'del*), or round, is a disk-shaped slice. Rondelles are made from cylindrical fruits or vegetables, such as cucumbers or carrots.

**Diagonal** A **diagonal** cut results in an oval or elongated slice of a cylindrical fruit or vegetable. The technique used to slice a diagonal is similar to the one used for a rondelle except that you must hold the knife at an angle to get an oval-shaped slice.

**Roll Cut** A **roll cut**, or oblique cut, is done by first cutting a cylindrical fruit or vegetable as for a diagonal cut, rolling the fruit or vegetable by 180 degrees, and then doing another diagonal cut. This exposes more of the surface of the vegetable to decrease cooking time.

# Safely Cut Food

## METHOD A

- 1 With your fingertips curled back, grip the food to be cut with your thumb and three fingertips. Holding the knife in your other hand, keep the tip of the knife on the cutting board, and lift the knife's heel.
- 2 Use the second joint of your index finger as a guide as you slice with a smooth, even, downward motion. To make slices of equal size, adjust your index finger as you work. As you slice, move your thumb and fingertips down the length of the food, using the tip of the knife as the support.



## METHOD B

- 1 Use the same grip as described in Method A. Slice the food into the desired thickness by using the second joint of your index finger to guide you. Lift the tip of the knife and cut by moving the knife slightly toward you and down through the food.
- 2 Use your wrist, not your elbow, to move the knife. Do not apply too much downward pressure. Your wrist serves as the support for this slicing method. The weight of the knife should be doing most of the work.



## HOW TO

# Make a Chiffonade Cut

- 1 Wash and de-stem the vegetable's leaves as needed. Stack several leaves on top of one another and roll them tightly.



- 2 Holding the rolled leaves tightly, finely slice them.



## HOW TO

# Make a Rondelle Cut

- 1 Peel the food if desired.



- 2 On a cutting board, hold the knife perpendicular to the food and make even slices.

## HOW TO

# Make a Diagonal Cut

- 1 Peel the food if desired.



- 2 On a cutting board, hold the knife at the desired angle to the food being cut and make even slices.



## HOW TO

# Dice Food

- 1 Peel the food if desired and square off the sides. Trim the food to the proper length for the slices you will make. Cut slices of the desired thickness.



- 2 Stack the slices and cut them into uniform sticks. These sticks should be of the same thickness as the slices.



- 3 To make a small dice, make a 1/4-inch cut perpendicular to the length of a batonnet. A 3/8-inch cut from a 3/8-inch stick makes a medium dice. A 5/8-inch cut from a 5/8-inch stick creates a large dice. Making a 1/8-inch cut from a julienne makes a cube called a brunoise.



## HOW TO

# Mince Food


- 1 Dice food using the same technique shown above.



- 2 Hold the tip of the knife on the cutting board with a flat hand. Use a rocking motion to mince the diced food with the knife's heel.



## Sharpen and True Knives

- 1 Using four fingers to guide the knife, hold the knife at a 20-degree angle against the whetstone. If you use a three-sided whetstone, start with the coarsest surface and end with the finest.
  - 2 Press down on the blade, keeping it at the 20-degree angle. Gently draw the knife forward across the stone.
- 
- 3 Gently bring the knife off the stone.
  - 4 Turn the knife over and repeat steps 1–4, using strokes of equal number and pressure.

- 5 Hold the steel with the hand that you do not write with. Place your arm in front of you at a 60-degree angle.
- 6 Hold the knife in the hand that you write with. Rest the blade against the inner side of the steel at a 20-degree angle.
- 7 Keeping the knife at a 20-degree angle, slowly draw the blade along the entire length of the steel.



- 8 Repeat step 7 several times on each side of the blade until the knife edge is straightened.
- 9 After you use the steel, carefully wipe the blade to remove any particles of metal.

### Mincing

Food that is cut into very small pieces is minced (<sup>1</sup>min(t)sd). This technique is used most often on items such as shallots and garlic. To dice a food, use a chef's knife to cut julienne and batonnet sticks into  $\frac{1}{8}$ - to  $\frac{5}{8}$ -inch cubes.

**Julienne** **Julienne** (jü-lē-'en) cuts are  $\frac{1}{8}$ -inch thick matchstick-shaped cuts. Carrots are often cut julienne.

**Batonnet** **Batonnet** ('bä-tō-,nä) cuts are  $\frac{1}{4}$ -inch thick matchstick-shaped cuts. Some restaurants serve batonnet-cut fried potatoes.

**Brunoise** **Brunoise** (brün-'wäz) cuts are  $\frac{1}{8}$ -inch thick cubes often cut from julienne cuts.



#### Reading Check

**Describe** How do you mince food?

### Knife Safety and Care

Now that you know how to select and use knives safely, you need to know how to care for them properly. Sanitize knives after each use and always store knives properly. To keep your knives in good condition, keep them sharp and clean. You will use a sharpening stone to keep your knives sharp. A **whetstone** is a sharpening stone made of either silicon carbide or stone. It may have up to three sides, with grains ranging from coarse to fine. After you have sharpened your knife, a steel is used to keep the blade straight and to smooth out irregularities. This process is called **trueing**. A steel can be used daily to keep knives sharp.

Use these knife safety guidelines:

- Always use the correct knife for the task.
- Always use a sharp knife. You will need to use more force with a dull knife.
- Always cut with the blade facing away from your body.
- Always use a cutting board.
- Never let the knife's blade or handle hang over the edge of a cutting board or a table.
- Carry a knife by the handle with the point of the blade straight down at your side. The sharp edge should face behind you.
- Do not try to catch a falling knife.
- When you pass a knife to someone, lay the knife down on the work surface, or carefully hold the dull side of the blade with the handle facing out.
- Never use a knife to open a can or pry something apart.
- Never leave a knife in a sink filled with water. Someone could reach into the sink and be cut.
- Carefully wipe the blade from its dull side so you do not cut yourself.

## Knife Sanitation

When you keep your knives clean, you can protect the dish you are making from cross-contamination. The temperature and drying process in dishwashers causes knife handles to dry out and crack. Always wash the knife you have used by hand. Wash knives in hot, soapy water after every cutting task and before you store them. Let knives air dry thoroughly after you wash, rinse, and sanitize them.

## Knife Storage

To prevent damage to blades or to people, knives must be stored safely. A convenient way to store knives is in a slotted knife holder. A slotted knife holder should be hung on a wall, not on the side of a table.

A knife kit is a safe, handy storage unit for a large knife collection. Individual slots keep each knife safely in place. Custom-built drawers are another storage option. Special slots hold each knife in place.



Reading Check

**Explain** Why is knife sanitation important?

## SECTION 10.1



After You Read

### Review Key Concepts

1. **Explain** the use of a boning knife.
2. **Categorize** the different types of cuts involved in dicing food.
3. **Demonstrate** proper knife storage.

### Practice Culinary Academics



#### Science

4. **Procedure** Coat a small piece of cheese with cinnamon. Cut the coated cheese with your knife, and then cut an uncoated piece of cheese with the same knife.

**Analysis** What happens to the knife and the clean piece of food? What does this tell you about cross-contamination? Write a paragraph to explain.

**NSES F** Develop an understanding of personal and community health.



### Mathematics

5. Julio dices a potato into equal-size cubes using a medium dice. If he stacks six of the potato cubes on top of one another, how tall will the stack be?

#### Math Concept

#### Multiplying Fractions

To multiply when a fraction is involved, convert any mixed or whole numbers to improper fractions. Multiply the numerators to get the new numerator, then multiply the denominators to get the new denominator.

**Starting Hint** Determine the number of inches in a medium dice. Multiply this number by  $\frac{1}{6}$ , which you should rewrite as  $\frac{1}{6}$ . Reduce the result to lowest terms if necessary.

**NCTM Number and Operations** Understand the meanings of operations and how they relate to one another.



Check your answers at this book's Online Learning Center at [glencoe.com](http://glencoe.com).

# Smallwares

## Reading Guide

### Before You Read

**Buddy Up for Success** One advantage to sharing your notes with a buddy is that you can fill in gaps in each other's information. You can also compare notes before you start quizzing each other.

### Read to Learn

#### Key Concepts

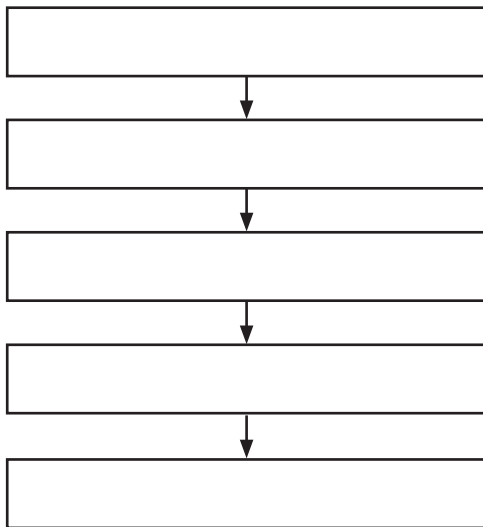
- **Select** appropriate tools and smallwares for specific tasks.
- **Illustrate** proper smallwares cleaning and sanitation.

#### Main Idea

Smallwares are hand tools, pots, and pans used for cooking. It is important for a chef to know the proper use and care of smallwares.

### Graphic Organizer

Use a series of events chain like the one below to show the five steps to use when you clean and sanitize smallwares. Fill in one step of the process in each rectangle.



### Content Vocabulary

- smallwares
- hand tools
- weight
- volume
- cookware
- heat transfer

### Academic Vocabulary

- withstand
- gauge

*How many different tools do you use in the kitchen?*

### ACADEMIC STANDARDS

#### English Language Arts

**NCTE 12** Use language to accomplish individual purposes.

#### Mathematics

**NCTM Number and Operations** Understand the meanings of operations and how they relate to one another.

#### Social Studies

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

**NCTE** National Council of Teachers of English

**NCTM** National Council of Teachers of Mathematics

**NSES** National Science Education Standards

**NCSS** National Council for the Social Studies



#### Graphic Organizer

Go to this book's Online Learning Center at [glencoe.com](http://glencoe.com) for a printable graphic organizer.

## Smallwares Selection

Every restaurant has a supply of hand tools, pots, and pans used for cooking called **smallwares**. Stainless steel and wooden hand tools, aluminum pots, and copper-bottomed pans are some smallwares.

Handheld items used to cook, serve, and prepare food are known as **hand tools**. Hand tools are often used to cut and prepare fruit and vegetables. Hand tools include slicers, peelers, corers, cutters, and melon ballers. The majority of hand tools are made of stainless steel, aluminum, or plastic.

## Choose Appropriate Tools

The tools in a professional kitchen may look similar to home tools. However, most home kitchen tools cannot **withstand**, or hold up to, the heavy use of a foodservice kitchen.

NSF International, previously known as the National Sanitation Foundation, tests tools for construction, comfort, and safety:

- Tools, equipment, and their coatings must be nontoxic and should not affect the taste, odor, or color of food.
- Surfaces that come into contact with food must be smooth.
- Tools and equipment must be easily cleaned.
- External corners and angles must be smooth and sealed.
- Internal corners and edges must be smooth and rounded.
- Waste must be easily removed from tools, equipment, and their coatings.
- Coatings and exposed surfaces must resist chipping and cracking.

### Small Bites

**Aluminum Warnings** Be careful not to use stainless steel utensils with aluminum cookware. Stainless steel utensils can scrape off a thin layer of aluminum and cause certain foods to become discolored. Tomatoes and other foods that are high in acid will chemically react with the aluminum.

## Measuring Equipment

Accurate volume measures are essential to the success of recipes. They also help control portion size and costs.

Measurements are usually needed for an item's weight or volume. **Weight** is the heaviness of a substance, while **volume** is the space occupied by a substance.

## Choose Cookware

Cookware plays an essential role in the professional kitchen. **Cookware** in any well-equipped kitchen includes pots, pans, and baking dishes. Pots and pans may be made of stainless steel, aluminum, copper, cast iron, or ceramics.

## Heat Transfer

When you select cookware, you must consider **heat transfer**. Heat transfer is a measure of how efficiently heat passes from one object to another. The **gauge**, or type and thickness of the material, determines how well it transfers heat.

Copper has a high heat transfer rating. However, it is expensive and difficult to clean. That is why many professional kitchens choose to use aluminum-covered or stainless steel-covered pots and pans. Some kitchens also use cookware with copper-lined bottoms or cast-iron cookware.

**Aluminum** Aluminum is a common metal used for commercial cookware because it is lightweight, inexpensive, and rust free. It is also fairly heat efficient. However, aluminum may react chemically with some foods.

**Stainless Steel** Stainless steel is virtually rust free. However, it is a poor and uneven heat conductor. Stainless steel pots often have an added layer of aluminum or copper on the bottom for better heat transfer.

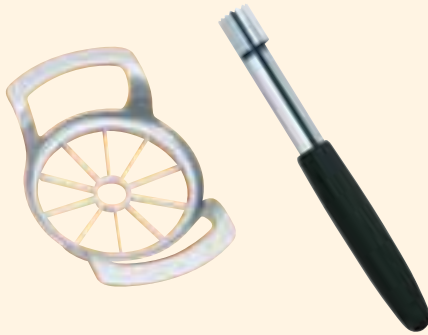


### Reading Check

**Explain** Why are the bottoms of stainless steel pots and pans usually lined with another type of metal?

## Hand Tools

**Vegetable Peeler** A vegetable peeler is commonly used to shave the skin of fruits and vegetables. It can also be used to make delicate garnishes, such as carrot curls and chocolate curls.



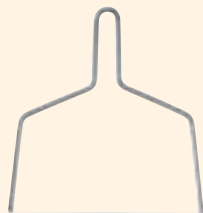
**Apple/Fruit Corers** Push the corer through the center of the fruit so that the core comes out in one long, round piece. Small corers can be used on fruits such as apples and pears, while large corers are used on fruits such as pineapples and grapefruits.

**Tomato Corer** A tomato corer is used to core and remove tomato stems. It can also remove vegetable markings, apple seeds, and potato eyes.



**Kitchen Shears** Kitchen shears are used to tackle a variety of cutting chores, such as snipping string and butcher's twine, trimming artichoke leaves, and dividing taffy.

**Cutting Board** Cutting boards are made from wood, plastic, or composite materials. They should have a smooth surface free of any deep scratches, nicks, gouges, or scars.



**Cheese Slicer** A cheese slicer is used to cut slices from hard or semihard cheeses.

# Hand Tools

*continued*

**Butter Curler** The surfaces of a butter curler produce garnishes ranging from curls to grooves to marble-sized balls. Make sure the butter is cold and the blade has been warmed in hot water.



**Egg Slicer** An egg slicer works by placing a peeled, hard-cooked egg in the hollow of the slicer. Push the tool down and the wires will slice the egg or cut it into wedges. There are two kinds of egg slicers. One makes round shapes and the other makes wedge shapes.

**Pizza Cutter** A pizza cutter cleanly slices baked pizza into serving pieces.



**Zester** A zester is used to remove tiny strips from the outer surface of citrus peels, which add visual interest and flavor to foods. It can also be used on vegetables, such as carrots and radishes, to add shavings to salads. Zesters work best on fresh, firm fruits and vegetables.



**Melon Baller** A melon baller or Parisienne scoop is used to scoop out smooth balls from many foods, such as cheese, butter, and melons. The scoops range in size and shape, and sometimes have scalloped edges.



**Whisks** Balloon whisks are light and bouncy with a rounded end. They are ideal for beating egg whites or light batters. Rigid whisks are longer and have heavier, thicker wires. Rigid whisks can mix thick sauces and batters.



### Solid, Perforated, and Slotted Spoons

Spoons are used to scoop, skim, mix, and serve. Perforated and slotted spoons are used to lift and drain foods from the liquid in which the food cooks.



### Rubber, Straight, and Offset Spatulas

A rubber spatula has a broad, flexible rubber or plastic tip on a long handle. It is used to scrape food from the inside of bowls and pans, or fold in whipped cream or egg whites. A straight spatula, or palette knife, has a long, flexible blade with a rounded end. It is used to scrape bowls and spread icing on cakes. An offset spatula, or turner, has a broad, bent stainless steel blade. It is used to lift and turn foods such as pancakes.

**Chef's Fork** A chef's fork, also known as a braising fork, is used to lift and turn large cuts of meats and other items. It is also used to hold heavy pieces of food during carving.



**Skimmer** A skimmer has a flat, perforated surface to remove food from stocks and soups. It is also used to skim impurities from the tops of liquids.

**Tongs** Tongs are spring-action or scissor-type tools used to pick up items such as meats, vegetables, or ice cubes.



**Meat Tenderizer** Each side of a meat tenderizer has different-size tooth-like points that are made of aluminum or steel. These points tenderize meat by breaking up and bruising muscle fibers.



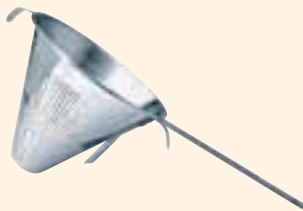
# Hand Tools

*continued*

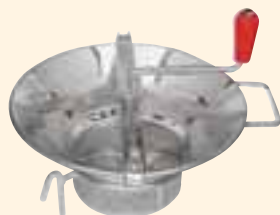
**Strainers** Strainers have a cup-shaped body made of perforated mesh. The holes range from extra-fine to coarse. Strainers can be used to drain pasta, vegetables, and stocks after cooking.



**Chinois or China Cap** A chinois (shēn-'wāz), or China cap, is a cone-shaped metal strainer used for straining sauces and stocks. A pestle ('pe-səl), or a round, bat-like instrument, can be used to press very soft food through the China cap.



**Colander** A colander is a large, perforated bowl used to rapidly drain water from cooked foods. It is also used to rinse food items before cooking.



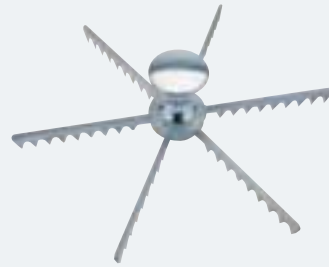
**Food Mill** A food mill is a bowl-like container with disks used to purée and strain food. Disks are available in varying degrees of coarseness or fineness.

**Box Grater** Four-sided graters are the most common. Each side has different-size holes that determine the size of the grated food pieces, from slices to shreds to crumbs.



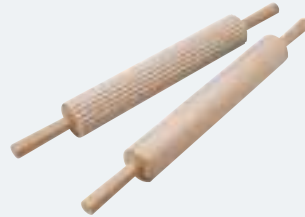
**Funnel** A funnel is used to pour liquid from a large container into a smaller container, such as from a pot into a bottle. Funnels are available in several different sizes and materials.

**Pie Dividers** Pie dividers are circular tools that contain six openings, each the size of a piece of pie. Pressing the tool over the pie marks the dish into the designated number of slices.



**Pastry Tools** Pastry bags are filled with icing or other soft foods for hand-squeezed pastry decorating and assembly. They can be made of nylon, plastic-lined cotton, or disposable paper. Pastry tips fit onto the pastry bags and shape the flow of food as it is squeezed out of the bag. A pastry brush is used to brush liquid onto dough before, during, or just after baking.

**Rolling Pins** A rolling pin is used to stretch and roll dough. Most rolling pins are made of hardwood, but marble may also be used. Rolling pins with grooves that add patterns or fancy designs to dough are also available. French rolling pins do not have handles.



**Bench Scraper** This hand-held rectangular tool has a stainless steel blade and a sturdy handle. It is used to scrape surfaces and cut dough into equal pieces.

**Food Molds** Food molds can turn foods such as gelatins, custards, and puddings into eye-catching shapes. Food in liquid form is poured into the mold and allowed to set.



**Vegetable Brush** With their short, tough bristles, vegetable brushes are used to clean dirt off of vegetables.

# Measuring Equipment

**Portion Scale** A portion scale is a type of spring scale used to determine the weight of an ingredient or portion of food. It can be reset to zero so that you can measure individual ingredients.



**Electronic Scale** An electronic, or digital, scale weighs an item when it is placed on its tray. The weight is displayed in numbers on a digital readout rather than by a needle. This readout is more accurate than a portion scale.

**Balance Scale** A balance scale is used to measure most baking ingredients. The ingredients being weighed are placed on one side while weights are placed on the other side. When the two sides are balanced, the ingredients weigh the same as the weights.



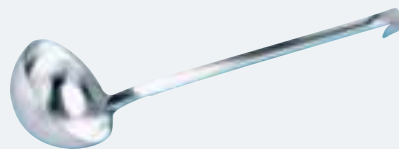
**Volume Measures** Volume is measured in 8-, 16-, 32-, 64-, and 128-ounce quantities. Volume measures are made of metal, which can withstand heavy use.

**Liquid Measures** Liquid measures also measure volume, and come in 1 cup, 1 pint, and 1-, 2-, and 4-quart sizes. The lip or spout of the measure helps prevent spills and makes pouring easier.



**Measuring Spoons** Measuring spoons are available in sets and usually include measurements of  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1 teaspoon, and 1 tablespoon for volume. Stainless steel is recommended because it is less likely to warp or change shape.

**Ladle** A ladle is used to portion liquids such as sauces and soups. Its long handle enables you to reach to the bottom of a deep pot or pan. The capacity, ranging from 1 to 16 ounces, is marked on the handle.



## Cookware

**Stockpot** A stockpot has straight sides and is taller than it is wide. A stockpot is used to cook large quantities of liquid on the range, such as stocks or soups. Some stockpots have a spigot at the bottom so that liquid can be drained off without lifting the pot.



**Saucepot** The saucepot is similar in shape to a stockpot, only not as deep. The saucepot is used for rangetop cooking.

**Saucepan** A saucepan has a long handle and straight sides. It is primarily used for heating and cooking food in liquid. Saucepans come in many sizes.



**Sauté Pans** There are two types of sauté pans: a pan with straight sides and a pan with sloped sides. Both are used to sauté and fry foods. The sloped pan allows the chef to flip items without using a spatula.

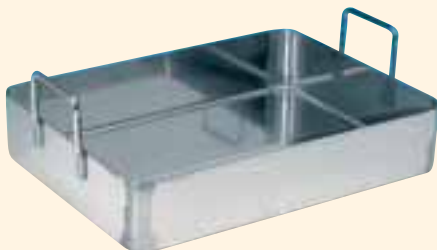
**Wok** A wok is useful for fast rangetop cooking. The wok's height and sloped sides are well suited for tossing ingredients, an essential step in stir-frying. Once food has been cooked, it can be pushed to the side of the pan, leaving the hot center free for new ingredients.



**Cast-Iron Skillet** A cast-iron skillet is a heavy pan that can withstand high heat. It is useful for frying and sautéing a variety of items when steady, even heat is desired.



**Hotel Pans** The cooked foods in a steam table are held in hotel pans. Hotel pans are often used to store refrigerated food and hold casseroles during baking. They come in many different sizes.



**Roasting Pan** A roasting pan is used to roast various types of meat and poultry. A lift-out rack that fits in the bottom of the pan allows fat and juices to drain off the food.

# Cookware

*continued*

**Sheet Pan** Sheet pans come in half and full sizes. They can be used to bake biscuits, cookies, sheet cakes, rolls, and meats such as bacon and sausage.



**Stainless Steel Mixing Bowls** A well-equipped kitchen has several different-size stainless steel mixing bowls. These are used to combine, mix, and whip ingredients.

**Springform Pan** A springform pan is used to bake soft, sticky mixes, such as cheesecake. It has an insert that rests in the bottom of the pan, and the sides are closed with clasps. Opening the clasps gently releases the cake.



**Pie Pan** Traditional pies are baked in pie pans. Deep pie pans are slightly wider to accommodate deep-dish fruit and meat pies.

**Loaf Pan** A loaf pan, also known as a bread pan, is used to bake loaf-shaped foods, such as pound cake, meat loaf, and some breads.



**Muffin Pan** Different kinds of muffins and cupcakes can be baked in muffin pans. Muffin pans come in various sizes.

**Tart Pan** A tart pan is used to bake items with delicate crusts, such as tarts and quiches. The sizes range from 4.5 to 12.5 inches in diameter, and from 0.75 to 1.25 inches high. It has either fluted or smooth sides.



**Tube Pan** An aluminum tube pan is used to bake tube-shaped desserts, such as angel food cake. It may have a removable bottom.



# Cleaning and Sanitation

You must thoroughly clean and sanitize tools and utensils to destroy bacteria.

Follow these steps to hand-wash and sanitize smallwares in a three-compartment sink:

1. Scrape and prerinse smallwares.
2. Fill the first sink with 110°F (43°C) water and detergent. Wash smallware thoroughly with a brush. Drain and refill the water as needed.
3. Fill the second sink with water at about 110°F (43°C) or use running water with an overflow. Rinse the smallwares to remove all traces of detergent.
4. Fill the third sink with 171°F (77°C) water. Some health codes require foodservice facilities to use 180°F (82°C) water. Sanitizers require specific temperature water to work correctly. Add the sanitizing agent in the amount and temperature of water that is listed on the container. Submerge smallwares for about 30 seconds.
5. Remove and air dry smallwares in a clean area. Do not dry smallwares with a towel. Towel drying can recontaminate them by spreading bacteria.



## Reading Check

**Summarize** Explain how to sanitize smallwares.

## SECTION 10.2



## After You Read

### Review Key Concepts

1. **Explain** how to select appropriate kitchen tools.
2. **Compare** aluminum and stainless steel cookware.

### Practice Culinary Academics



#### English Language Arts

3. You have read about smallware and seen your teacher demonstrate the use of some of them. Choose some food items, and then write instructions on how to choose and demonstrate the appropriate hand tools, how to clean and store the hand tools you are using, and any safety precautions that are necessary.

**NCTE 12** Use language to accomplish individual purposes.



#### Social Studies

4. Research the activities of NSF International. Choose one of its programs and write a short report describing the activities of that program. What does that program do and how does it affect the foodservice industry?

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



### Mathematics

5. Imagine that you own a sandwich shop. You need slices of Cheddar cheese to make sandwiches for your customers. A 1-pound block of cheddar cheese from your supplier is 6 inches long. If you use a cheese slicer to cut the entire block into equal  $\frac{3}{16}$ -inch slices, how many slices of cheese will you have?

#### Math Concept

**Dividing Fractions** To divide when a fraction is involved, convert any mixed or whole numbers to improper fractions. An improper fraction has a numerator that is equal to or larger than its denominator. Multiply the first fraction by the reciprocal of the second fraction. Reduce to lowest terms.

**Starting Hint** You must divide 6 inches (or  $\frac{6}{1}$ ) by  $\frac{3}{16}$  inch. Replace the second fraction with its reciprocal by reversing the numerator and denominator:  $\frac{16}{3}$ . Multiply the two fractions to find the number of Cheddar cheese slices.

**NCTM Number and Operations** Understand the meanings of operations and how they relate to one another.



Check your answers at this book's Online Learning Center at [glencoe.com](http://glencoe.com).

**Chapter Summary**

Chefs use many types of knives to prepare food. The parts of a knife are the blade, tang, handle, rivet, and bolster. Basic cutting techniques include slicing, dicing, and mincing. When using a knife, be sure to use the correct type of knife. Make sure the knife you use is sharp. After using

the knife, wash, rinse, and sanitize it, then put it away. Smallwares include hand tools, cookware, and measuring tools. Smallwares must be made of nontoxic materials, be easily cleaned, and be resistant to chipping and cracking. Properly clean and sanitize smallwares after each use.

**Content and Academic Vocabulary Review**

1. Write your own definition for each content and academic vocabulary term.

**Content Vocabulary**

- stainless steel (p. 252)
- tang (p. 252)
- rivet (p. 252)
- bolster (p. 253)
- serrated (p. 254)
- pare (p. 254)
- chiffonade (p. 255)
- rondelle (p. 255)
- diagonal (p. 255)
- roll cut (p. 255)
- julienne (p. 259)
- batonnet (p. 259)
- brunoise (p. 259)

- whetstone (p. 259)
- trueing (p. 259)
- smallwares (p. 262)
- hand tools (p. 262)
- weight (p. 262)
- volume (p. 262)
- cookware (p. 262)
- heat transfer (p. 262)

**Academic Vocabulary**

- transfer (p. 252)
- uniform (p. 255)
- withstand (p. 262)
- gauge (p. 262)

**Review Key Concepts**

2. **Categorize** knives by their specific tasks.
3. **Demonstrate** basic knife skills.
4. **Explain** proper knife safety and storage.
5. **Select** appropriate tools and smallwares for specific tasks.
6. **Illustrate** proper smallwares cleaning and sanitation.

**Critical Thinking**

7. **Imagine** that you work for a catering company. You are creating vegetable appetizers for a party. Which knives will you need and why?
8. **Analyze** measuring techniques. Why might you use a portion scale to measure ingredients for a cake?
9. **Evaluate** knife quality. If you have a limited budget but want to purchase some quality knives, which two knives would you purchase first? Why?
10. **Imagine** that a coworker at a restaurant needs to scald milk for a recipe. There is an aluminum pot and a stainless steel pot available. Which should he use, and why?

## Academic Skills

**English Language Arts**

- 11. Create a Radio Ad** Choose one piece of equipment from this chapter, either a knife or smallwares. Create a radio script to advertise the knife or smallwares you chose. The script should contain dialogue that mentions the most useful features of your equipment. Use language that is likely to sell the product to a professional chef.

**NCTE 12** Use language to accomplish individual purposes.

**Science**

- 12. Heat Conduction** The way that metal conducts heat is very important to how well it cooks food.

**Procedure** Choose a few pans made out of different types of metals and heat the same food item in each pan. Use a thermometer to measure how quickly the food item heats in each pan.

**Analysis** Note your observations and then make conclusions about the heat conductivity of each material. Compare your results with the class.

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

**Mathematics**

- 13. Use a Balance Scale** Paris recently purchased two large, identical-weight blocks of cheese, but has since discarded the wrapper that shows how much they weigh. She has also used exactly one-third of one of the blocks. If she places the full block of cheese on the left side of a balance scale, and the partial (two-thirds) block of cheese on the right side along with a 2-pound weight, causing the scale to be in balance, how much does the full block weigh?

**Math Concept Solving Equations with Like**

**Terms** In an algebraic equation, like terms are those that contain the same variable (for example,  $2x$  and  $3x$ ). Simplify equations with like terms by using addition or subtraction to combine all like terms.

**Starting Hint** Use  $x$  to represent the weight of a full block of cheese. Write an algebraic equation with the contents of the left side of the balance scale on the left side of the equation, and the contents of the right side of the balance scale on the right side of the equation. Combine all terms containing  $x$  and solve for  $x$ .

**NCTM Algebra** Represent and analyze mathematical situations and structures using algebraic symbols.

## Certification Prep

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

- 14.** What angle should you use to sharpen a chef's knife?
- 20 degrees
  - 25 degrees
  - 60 degrees
  - 90 degrees
- 15.** What utensil should you use to serve spaghetti from a steam table?
- offset spatula
  - tongs
  - ladle
  - spoon with holes

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

**Test-Taking Tip**

In a multiple-choice test, the answers should be specific and precise. Read the questions first, and then read all the answer choices before you choose. Eliminate answers that you know are incorrect.

## Real-World Skills and Applications

## Self-Management Skills

**16. Plan Ahead** Imagine that you have been asked to prepare a three-course meal that includes a garden salad, beef stew, and strawberry shortcake. Find recipes for these dishes. Using the recipes, determine which types of knives and pieces of smallwares you will need to prepare the dishes.

## Interpersonal and Collaborative Skills

**17. Make Purchasing Decisions** Divide into groups of two or three as directed by your teacher. Imagine that you are chefs for a restaurant and you must purchase new knives for the kitchen. Research knives together and come to a decision about which will be the best purchase for your restaurant. Why did you choose the knives you did?

## Technology Applications

**18. Make a Chart** Use a word processing or desktop publishing program to make a chart to illustrate one of the following: types of knives, types of measuring equipment, or types of cookware. Include illustrations of each piece of equipment along with a short description of the item and its uses. Share your chart.

## Financial Literacy

**19. Sharpen Knives** Sharpening knives regularly can help extend the life of your knives. Assume that a good knife-sharpening kit including a whetstone costs \$50. A knife-sharpening service charges you \$15 to sharpen your knives. If you sharpen your knives yourself once per week, how many times will you need to sharpen your knives before the knife-sharpening kit is the more cost-effective choice?

## Culinary Lab

## Choose Knives and Smallwares

**20. Choose Equipment for a Restaurant** In this lab, you will determine the appropriate equipment to be purchased for a small restaurant. You will consider various factors and then make your choice.

- A. Create your menu.** Create a basic menu for a sandwich shop that serves simple lunches and dinners.
- B. Consider your equipment.** Consider the equipment you would need for your menu. You do not have much kitchen space, so try to determine which knives and smallwares could be used for more than one task.
- C. Consider your preparation needs.** Decide whether you will prepare most of your food or if you will have some food prepared and delivered.
- D. List your choices.** Make your final determination of which knives and smallwares you will choose for the sandwich shop and make a list of your choices.
- E. Support your choices.** Discuss your choices with the class. Answer the following questions: 1) Why do you believe you need the equipment you chose? 2) What equipment would you need to care for your knives and smallwares?

*Use the culinary skills you have learned in this chapter.*

## Create Your Evaluation

After the class discussion, write down any revisions you would make to your list. Why did you choose the revisions you did? Was it because of something a classmate said? Describe what took place in the discussion that made you change your mind. Also describe anything that took place in the discussion that you disagreed with and explain why you continue to disagree.