

## SECTION I: INTRODUCTION TO THE WORLD OF WOODWORKING

### CHAPTER

# 1

## The Woodworking Industry

### MULTIPLE CHOICE

*Identify the choice that best completes the statement or answers the question.*

- \_\_\_ 1. Planes, saws, and hammers were first used in \_\_\_ and look very much like the same tools we use today.
- ancient Rome
  - England
  - the Middle Ages
  - the Industrial Revolution
- \_\_\_ 2. Early settlers needed wood for building homes, barns, business establishments, and the ships that transported goods. They built mills powered by \_\_\_ to grind grain for flour and to turn logs into lumber.
- geothermal energy
  - slave labor
  - water wheels
  - solar energy
- \_\_\_ 3. The invention of the circular saw, which no carpenter today can imagine working without, is credited to \_\_\_.
- the ancient Romans
  - the trade guilds in Western Europe
  - someone watching the action of a windmill
  - the Shakers
- \_\_\_ 4. During the Middle Ages in Europe, a young man would be sent out to train with a master at the age of 7 or 8, and typically worked for him for a period of 7 years. He was called a(n) \_\_\_.
- novice
  - apprentice
  - cadet
  - journeyman

- \_\_\_\_\_ 5. During the Middle Ages in Europe, the \_\_\_\_\_ were above the journeymen.
- bosses
  - superintendents
  - foremen
  - masters
- \_\_\_\_\_ 6. Today, more than \_\_\_\_\_ people are employed in one capacity or another in working with wood.
- 10,000
  - 100,000
  - 500,000
  - 2 million
- \_\_\_\_\_ 7. The U.S. Department of Labor's \_\_\_\_\_ is a good resource you can utilize from your computer to learn more about careers in various categories.
- Bureau of Labor Statistics
  - Bureau of Engraving
  - Bureau of Mines
  - Treasury Department
- \_\_\_\_\_ 8. The U.S. Department of Labor's \_\_\_\_\_ gives you information on the nature of the work, working conditions, employment, training and advancement, job outlook, earnings, related occupations, and sources of additional information.
- Student Career Handbook
  - Census
  - Income Statistics Report
  - Occupational Outlook Handbook
- \_\_\_\_\_ 9. \_\_\_\_\_ is a national organization serving high school and college students who are enrolled in technical, skilled, and service programs.
- The YMCA
  - The Masons
  - VISTA
  - Skills USA
- \_\_\_\_\_ 10. The first thing a person notices about you is \_\_\_\_\_.
- the way you talk
  - the way you look
  - the kind of briefcase you carry
  - the way you shake hands

## **COMPLETION**

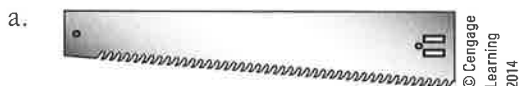
*Complete each statement.*

- The first tools were made of \_\_\_\_\_ and bone, which were often fastened to wooden handles.
- By the 1600s, the white pine of the Northeast was highly prized by \_\_\_\_\_ for masts.

3. The advent of steam power and later \_\_\_\_\_ made it easier to process lumber, and allowed lumber to be processed much faster.
4. It is possible today for an operator using “\_\_\_\_\_ numerical controls (CNC)” to program a machine to perform a sequence of operations automatically.
5. During the Middle Ages, an apprentice gained \_\_\_\_\_ status at the end of his apprenticeship and upon demonstrating his skills.
6. The word “craft” comes from the old English word *craft*, meaning “\_\_\_\_\_.”
7. A(n) \_\_\_\_\_ is an organization of wage earners formed for the purpose of serving the members’ interest with respect to wages and working conditions.
8. A(n) \_\_\_\_\_ is supervised, practical training undertaken by a student or recent graduate.
9. A(n) \_\_\_\_\_ is a brief account of one’s professional or work experience and qualifications designed to give potential employers a snapshot of who you are and what you can offer to their company.
10. A(n) \_\_\_\_\_ is a formal meeting in person arranged for the assessment of the qualifications of an applicant.

## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.



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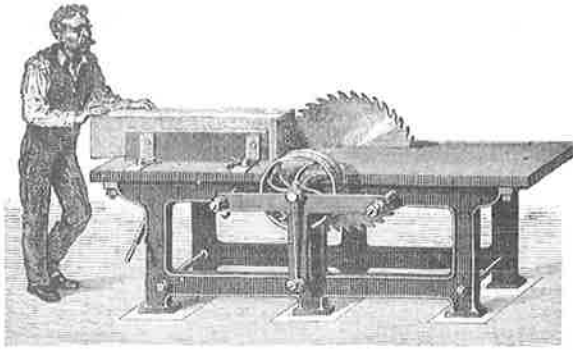


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- \_\_\_ 1. plans being drawn using drafting software
- \_\_\_ 2. table saw
- \_\_\_ 3. installing hardwood floors
- \_\_\_ 4. completed deck
- \_\_\_ 5. pit saw

### SHORT ANSWER

1. Explain what a water wheel is and how it works.

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## CHAPTER

# 2

## General Safety Practices

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. If you cannot keep your attention on what you are doing, you should \_\_\_\_\_.  
a. use dangerous tools only during daylight hours  
b. not operate dangerous tools  
c. use dangerous tools only at night  
d. have an assistant who will warn you of dangers
- \_\_\_\_\_ 2. A simple auxiliary jig for holding a small piece while boring on the drill press is a hand-screw \_\_\_\_\_.  
a. clamp  
b. push stick  
c. shield  
d. chisel
- \_\_\_\_\_ 3. If you wear corrective glasses in the shop, they should be \_\_\_\_\_.  
a. shatter-resistant  
b. lightweight  
c. plastic  
d. set in a wraparound frame
- \_\_\_\_\_ 4. Wood dust has been linked to certain types of \_\_\_\_\_, such as lymphoma.  
a. asthma  
b. allergies  
c. cancer  
d. bacterial infections
- \_\_\_\_\_ 5. If you work with \_\_\_\_\_, you must be particularly careful to clean up when you finish working for the day, because the combination of wood dust, moisture, and sufficient oxygen can lead to spontaneous combustion.  
a. respirators  
b. pine  
c. sawdust  
d. green wood

- \_\_\_\_\_ 6. Sweeping the shop is not enough. You must periodically \_\_\_\_\_ the accumulated dust.
- vacuum
  - wash
  - scrub
  - recycle
- \_\_\_\_\_ 7. Do not overreach while in the shop because you must be \_\_\_\_\_ at all times.
- confident
  - creative
  - relaxed
  - securely balanced
- \_\_\_\_\_ 8. You are more likely to get hurt with a \_\_\_\_\_ tool.
- sharp
  - dull
  - clamped
  - clean
- \_\_\_\_\_ 9. When making adjustments to tools, you should \_\_\_\_\_.
- disconnect them from the power source
  - keep the power on
  - connect them to a generator
  - lower the power level by half
- \_\_\_\_\_ 10. You should not work when you are under the influence of \_\_\_\_\_ drugs.
- prescription
  - legal
  - illegal
  - any

## COMPLETION

*Complete each statement.*

- The number one safety rule is to stay \_\_\_\_\_.
- \_\_\_\_\_ are safety devices designed for use with specific tools, and they keep the operators' hands from getting dangerously close to spinning blades, bits, and cutters.
- A(n) \_\_\_\_\_ is a purchased or shop-made device that makes a job safer and easier.
- A(n) \_\_\_\_\_ is a shaped wood or plastic device that allows the operator to move material past the blade without putting his fingers into the danger zone.
- When you open to a chapter on safety, protecting your \_\_\_\_\_, ears, and lungs is probably what comes to your mind first.
- Good hearing protectors will screen out \_\_\_\_\_ frequencies, which cause the most damage, but they will still allow you to hear normal conversation.

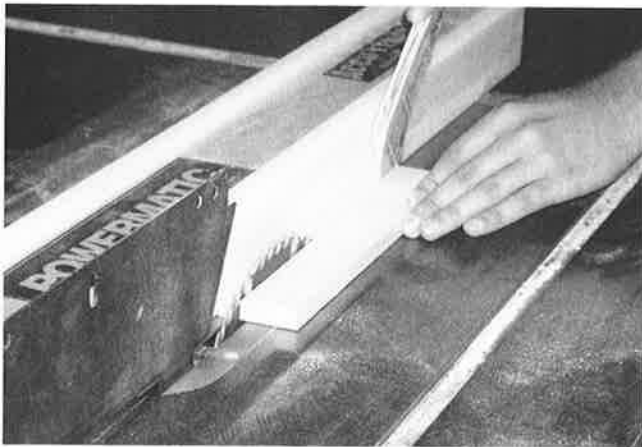


7. A person who is regularly exposed to 110 decibels for a period of more than one \_\_\_\_\_ risks permanent hearing loss.
8. Wood scraps and dust can also present a fire hazard, so your shop should be equipped with an approved \_\_\_\_\_ in the event of fire.
9. A(n) \_\_\_\_\_ kit should contain, at the minimum, splinter tweezers, needles for splinter removal, povidone-iodine solution, latex gloves, instant ice packs, clean plastic bags, an asthma inhaler, an eye cup and eye wash, Band-Aids of various sizes, 4" x 4" gauze pads, sterile rolled gauze, adhesive tape, butterfly bandages, and sharp scissors.
10. To cut down on the time you spend picking splinters out of your hands, keep a pair of \_\_\_\_\_ in your tool kit, and do not hesitate to put them on when moving material in bulk.

## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

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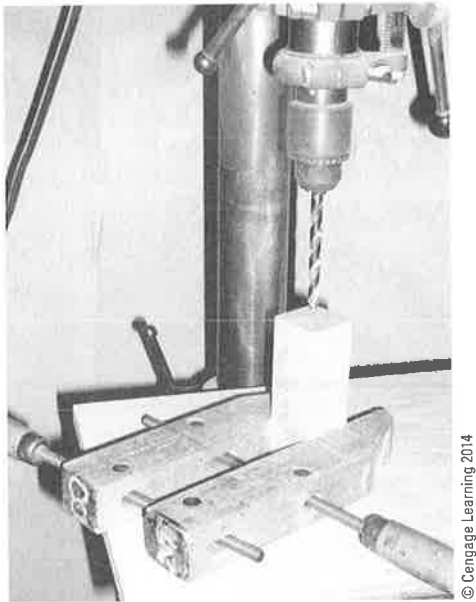
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- 1. a simple auxiliary jig
- 2. face shield
- 3. push stick
- 4. ear muffs
- 5. respirator

**SHORT ANSWER**

1. What are the greatest hazards of woodworking?

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2. When is using a tool guard not necessary?

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3. What are the decibel levels of some common sounds?

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4. How should you dress while in the shop?

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5. What are the general guidelines for working safely in the shop?

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## SECTION II: TOOLS OF THE TRADE

### CHAPTER

# 3

## Hand Tools

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Good steel tape measures are available in lengths ranging from 12 to \_\_\_\_\_ feet.
- 15
  - 20
  - 25
  - 30
- \_\_\_\_\_ 2. A *square* is a T-shaped or L-shaped tool used for drawing and testing \_\_\_\_\_ angles.
- acute
  - right
  - obtuse
  - straight
- \_\_\_\_\_ 3. A marking \_\_\_\_\_ gives you a very accurate, fine line that will not be smudged.
- knife
  - compass
  - square
  - plane
- \_\_\_\_\_ 4. Tooth spacing is referred to as *TPI*, or \_\_\_\_\_.
- teeth placed inside
  - teeth placement inset
  - teeth per incision
  - teeth per inch
- \_\_\_\_\_ 5. The \_\_\_\_\_ is the gap created as the saw is used.
- dust
  - kerf
  - set
  - TPI

- \_\_\_\_\_ 6. A \_\_\_\_\_ may be defined as a metal tool with a sharp beveled edge that is used to cut and shape wood.
- plane
  - backsaw
  - chisel
  - hammer
- \_\_\_\_\_ 7. \_\_\_\_\_ planes are usually the first plane a beginning woodworker acquires.
- Block
  - Bench
  - Shoulder
  - Scrub
- \_\_\_\_\_ 8. \_\_\_\_\_ differ from files in that they have individually raised, triangular-shaped teeth.
- Drawknives
  - Card scrapers
  - Rasps
  - Spokeshaves
- \_\_\_\_\_ 9. The three parts of a screwdriver are the handle, the shaft, and the \_\_\_\_\_.
- screw
  - bore
  - tip
  - hammer
- \_\_\_\_\_ 10. A relatively new type of screw head is the \_\_\_\_\_ head.
- square
  - Phillips
  - flat
  - slotted

## COMPLETION

*Complete each statement.*

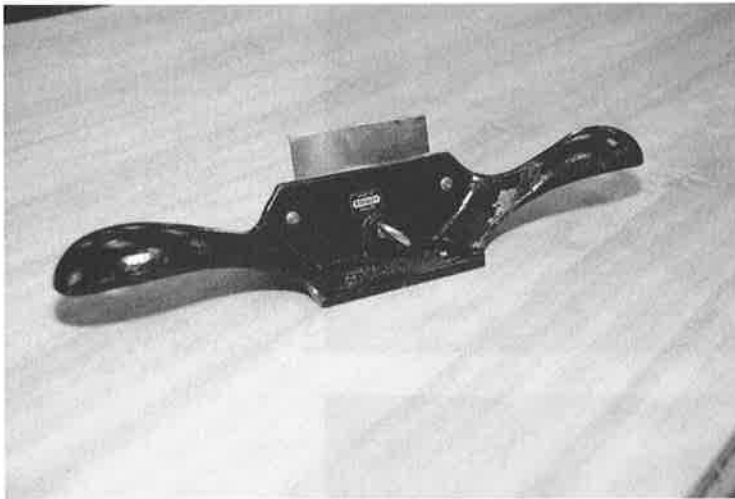
- Steel tapes and wooden \_\_\_\_\_ are the woodworker's primary measuring tools.
- Compasses made specifically for woodworking are called \_\_\_\_\_.
- The \_\_\_\_\_ saw is designed for making cuts with the grain; the cutting edges of its teeth have a flat front edge and are not angled.
- A(n) \_\_\_\_\_ is a tool used to flatten, smooth, and reduce the thickness of wood.
- \_\_\_\_\_ planes differ from bench planes in that the cutting iron is embedded with the bevel up, and they do not have a chipbreaker.

6. The \_\_\_\_\_ drill is a small, portable drill that is operated by turning the handle; it is sometimes called an egg-beater drill.
7. A(n) \_\_\_\_\_, also called a *drawshave*, is a knife fitted with a handle at each end of the blade; it is used with a drawing motion to shave material from a surface.
8. Scrapers cut by means of a(n) \_\_\_\_\_, which is a sharp hook of metal that is turned on the edge of the scraper by burnishing it with a steel rod.
9. A(n) \_\_\_\_\_ is a type of hammer with a softer head than the metal head found on hammers.
10. There are many different types of screw heads, but the oldest and most familiar are slotted and \_\_\_\_\_.

## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



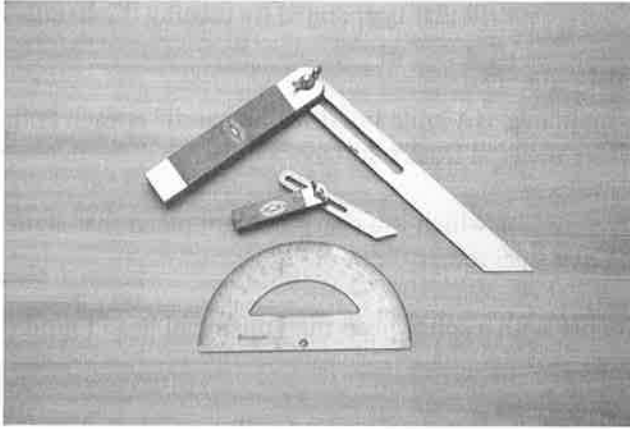
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- \_\_\_ 1. Tapes and rules
- \_\_\_ 2. Bevel squares and protractor
- \_\_\_ 3. Hammer, mallets, and nail sets
- \_\_\_ 4. Cabinet scraper
- \_\_\_ 5. Chisels and tip protectors

**SHORT ANSWER**

1. What are the parts of a combination square, and how is a combination square used?

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2. What are the steps you should follow when starting a cut with a handsaw?

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## CHAPTER

# 4

## Portable Power Tools

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. The \_\_\_ is probably the most widely recognized and used of the portable cutting tools.
- circular saw
  - miter saw
  - power planer
  - router
- \_\_\_ 2. The jigsaw is particularly suited to cutting \_\_\_.
- metal
  - curved lines
  - straight lines
  - miters
- \_\_\_ 3. The \_\_\_ miter saw is the oldest of the three types of miter saw.
- compound
  - simple
  - sliding compound-angle
  - sliding
- \_\_\_ 4. Drills hold a drill bit, which is gripped by a \_\_\_.
- shank
  - miter
  - chuck
  - tip
- \_\_\_ 5. A router \_\_\_ holds the router in an inverted position below a table.
- plunge
  - base
  - fixture
  - table

- \_\_\_\_\_ 6. A \_\_\_\_\_ is a router-like tool that is smaller and lighter than a router and therefore easier to manipulate.
- miter
  - lamine trimmer
  - jigsaw
  - plunger
- \_\_\_\_\_ 7. The \_\_\_\_\_ sander is the most powerful of the three main types of portable sanders.
- pad
  - disc
  - palm
  - belt
- \_\_\_\_\_ 8. Power-driven fastening tools include finish nailers, brad nailers, and \_\_\_\_\_.
- staplers
  - hammers
  - jigsaws
  - lamine trimmers
- \_\_\_\_\_ 9. The smallest standard size that biscuits come in is \_\_\_\_\_.
- 0
  - 10
  - 20
  - 30
- \_\_\_\_\_ 10. Plates are made of compressed \_\_\_\_\_.
- pine
  - oak
  - cedar
  - beech

## COMPLETION

Complete each statement.

1. A(n) \_\_\_\_\_ saw gets its name from its blade, which is shaped like a circle with its cutting teeth arranged around the perimeter.
2. The \_\_\_\_\_ cuts with a straight blade that reciprocates; that is, it moves up and down.
3. \_\_\_\_\_ saws, also called *chop saws* or *drop saws*, are used to make quick, accurate crosscuts.
4. A(n) \_\_\_\_\_ is an angled cut made along the edge or end of a board.
5. Drill \_\_\_\_\_ come in a range of sizes and configurations and are designed to bore holes; they consist of a shank, which is inserted into the chuck, and a tip, which does the work.

6. The \_\_\_\_\_ is the primary portable power tool used for shaping wood, though not the only one.
7. Routers may be divided into two main categories: fixed-base routers, also called *standard routers*, and \_\_\_\_\_ routers.
8. The three main portable sanding tools are \_\_\_\_\_ sanders, pad sanders, and disc sanders.
9. \_\_\_\_\_ tools run on compressed air that is usually supplied by an air compressor, which may be gasoline-powered or electric.
10. A(n) \_\_\_\_\_ joiner, also known as a *biscuit joiner*, is a tool used to join two pieces of material together. It is a great tool for connecting components quickly and is especially useful with manufactured panels of all types.

## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



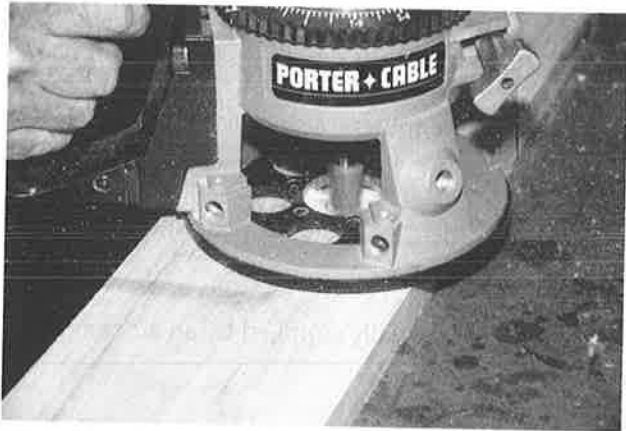
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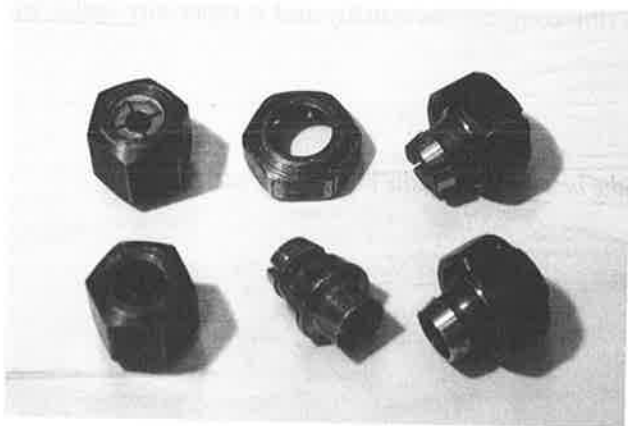
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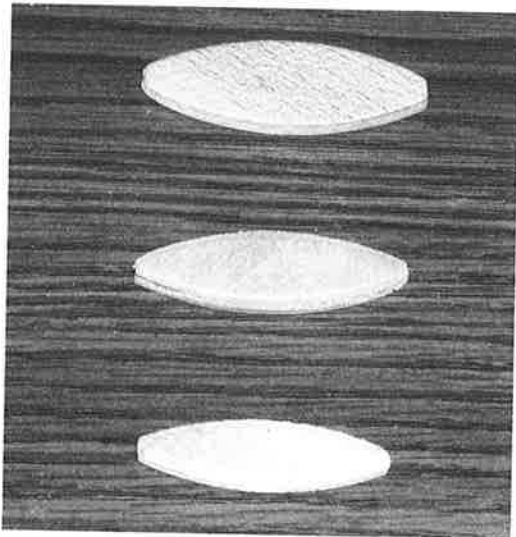
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- \_\_\_ 1. Routing freehand
- \_\_\_ 2. Collets and nuts
- \_\_\_ 3. Saw blades
- \_\_\_ 4. Biscuits
- \_\_\_ 5. Jigsaws

**SHORT ANSWER**

1. What safety habits should you develop, especially with regard to portable power tools?

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2. What are some ways you can drill both straight and angled holes accurately?

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3. How do you sand a board face with a belt sander?

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4. How do you join boards using a plate joiner?

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5. What are some ways of storing bits and blades so that they won't be damaged?

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## CHAPTER

# 5

## Stationary Shop Tools

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. In a jointer, the \_\_\_ provides a surface to support the work, and it is normally set perpendicular to the jointer tables.
- infeed
  - outfeed
  - fence
  - cutter head
- \_\_\_ 2. A \_\_\_ is an angled cut made all the way across the edge or end of a board.
- crown
  - bevel
  - chamfer
  - miter
- \_\_\_ 3. The \_\_\_ planer, often simply referred to as a *planer*, is a machine used to create boards that are of an even thickness along their whole length.
- flattened
  - stock
  - push block
  - thickness
- \_\_\_ 4. The miter gauge is usually set at \_\_\_ degrees to the blade and is used to make square cuts.
- 30
  - 45
  - 90
  - 135
- \_\_\_ 5. \_\_\_ is cutting a board in the direction of the grain.
- Ripping
  - Crosscutting
  - Fencing
  - Mitering

- \_\_\_\_\_ 6. A \_\_\_\_\_ dado blade, sometimes called an *adjustable dado*, is only one blade, set to oscillate back and forth as it spins, thereby creating a recess.
- stack
  - cutter
  - chipper
  - wobble
- \_\_\_\_\_ 7. The \_\_\_\_\_ may be thought of as a bigger and stronger sibling of the table-mounted router.
- shaper
  - lathe
  - drill press
  - grinder
- \_\_\_\_\_ 8. A \_\_\_\_\_ is a machine tool that uses an abrasive wheel as a cutting device.
- lathe
  - grinder
  - shaper
  - router
- \_\_\_\_\_ 9. The degree of coarseness of sandpaper is known as the \_\_\_\_\_ size.
- grit
  - gram
  - sand
  - particle
- \_\_\_\_\_ 10. The \_\_\_\_\_ is basically a square- or rectangular-shaped recess created to accept the tenon.
- rip
  - shoulder
  - cheek
  - mortise

## COMPLETION

Complete each statement.

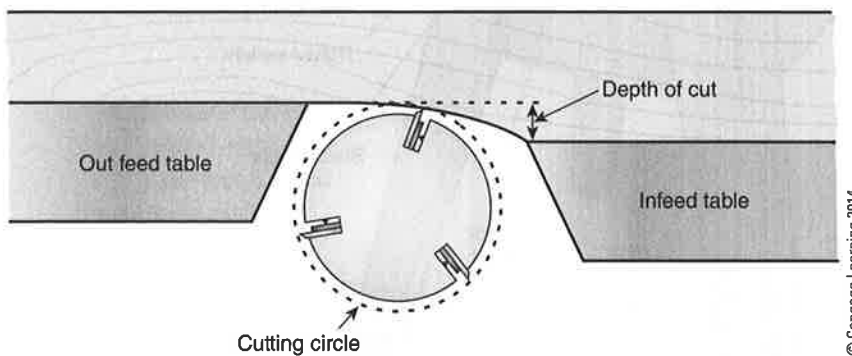
- The \_\_\_\_\_ is a machine used to produce a flat surface on a board; it consists of two parallel tables, known as the *infeed* and *outfeed* tables, a moveable fence, and a cutter head.
- A(n) \_\_\_\_\_ is an angled cut made partway across the edge or end of a board.
- In a table saw, the saw blade is mounted on a(n) \_\_\_\_\_, a metal shaft that is threaded at one end to accept the nut.
- \_\_\_\_\_ is an operation in which a cut is made across the grain to change the length of the piece.
- The \_\_\_\_\_ angle is the angle of the tooth in relation to the centerline of the blade; it is generally 20 degrees on a rip blade.

6. The \_\_\_\_\_ is an invaluable tool for accurately drilling holes; it is a fixed drill, consisting of a base, column, table, spindle, and drill head.
7. Shapers use \_\_\_\_\_ rather than bits, as routers do.
8. The \_\_\_\_\_, the stationary shop tool with the longest history, spins a block of material so that when tools are applied to the block, it is shaped to produce an object that is symmetrical around its axis of rotation.
9. The \_\_\_\_\_ arm saw consists of a circular saw blade directly driven by an electric motor, which is held in an adjustable yoke that slides along a horizontal arm above a horizontal table surface.
10. A(n) \_\_\_\_\_ saw is a small electric saw that can cut very intricate patterns and much tighter curves than the band saw.

### IDENTIFICATION

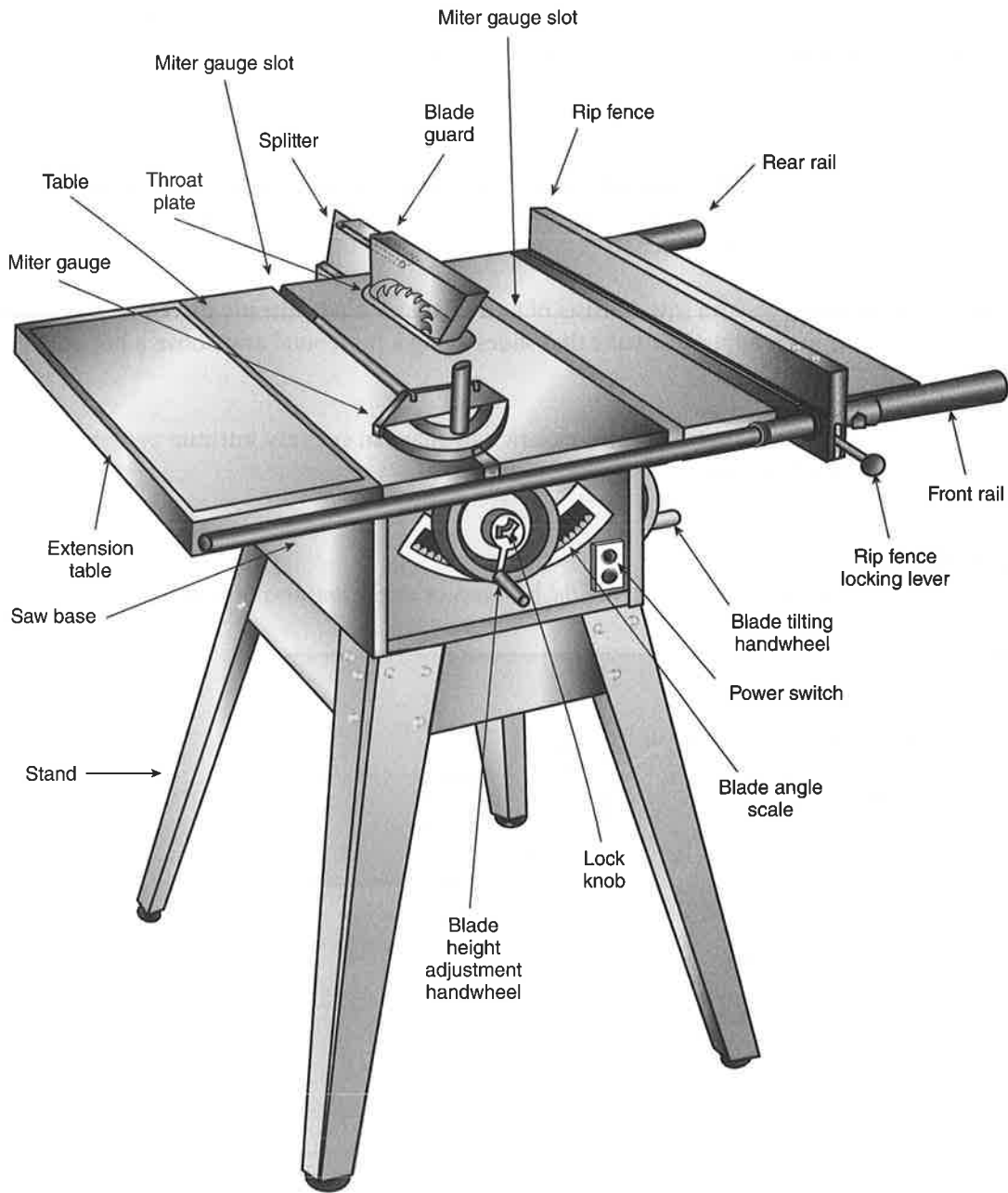
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



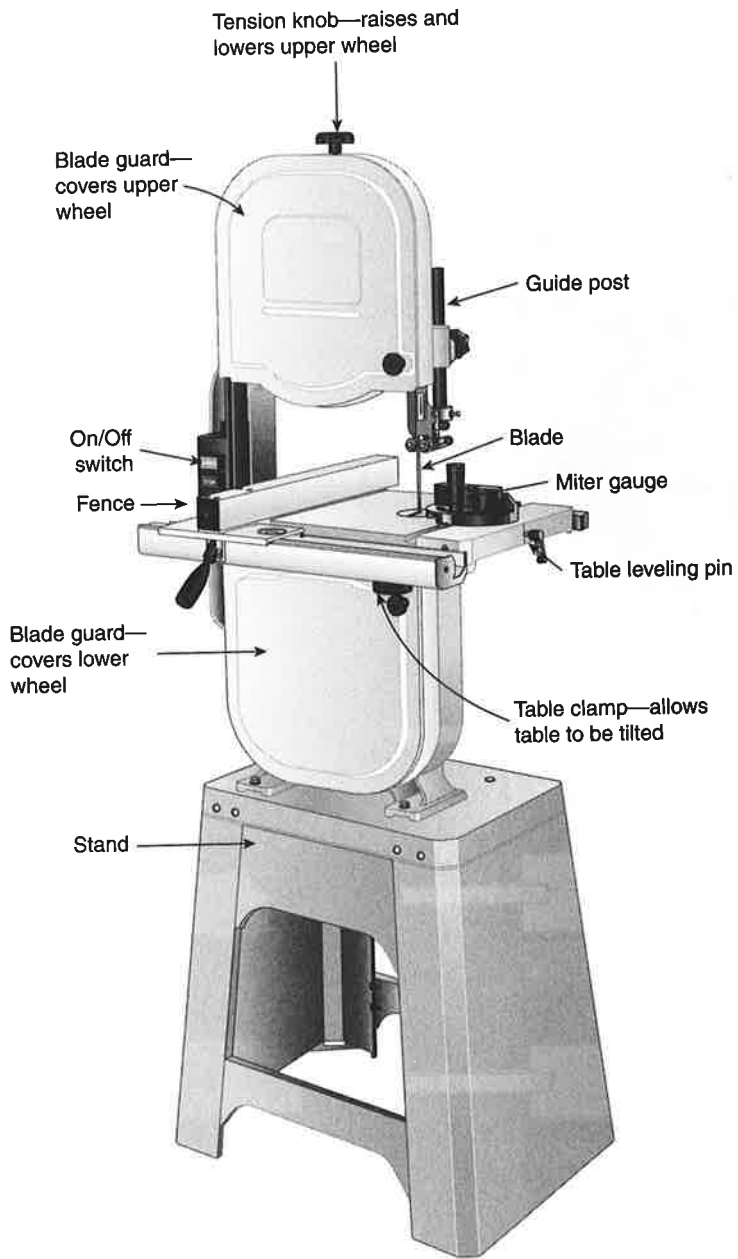
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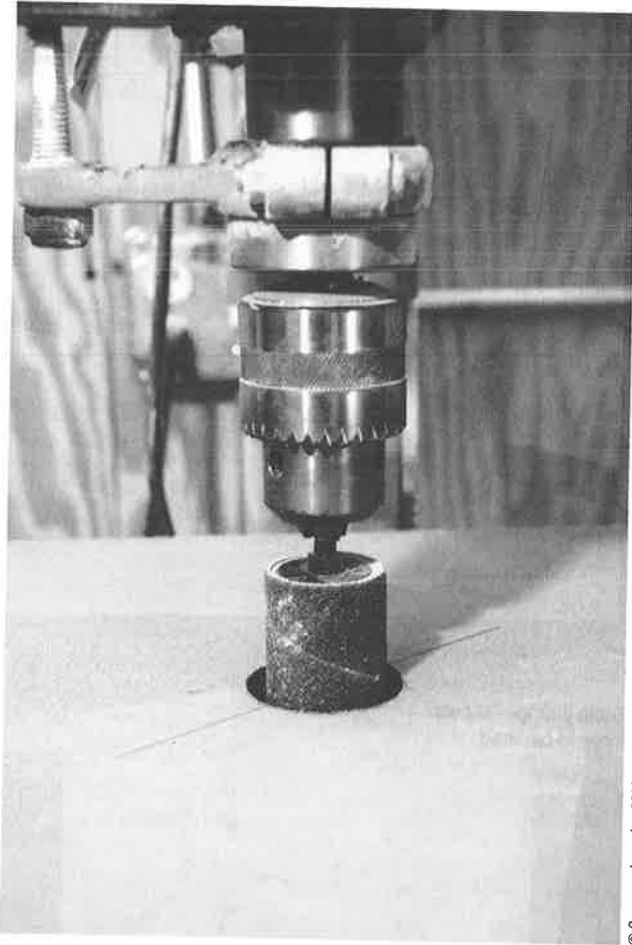
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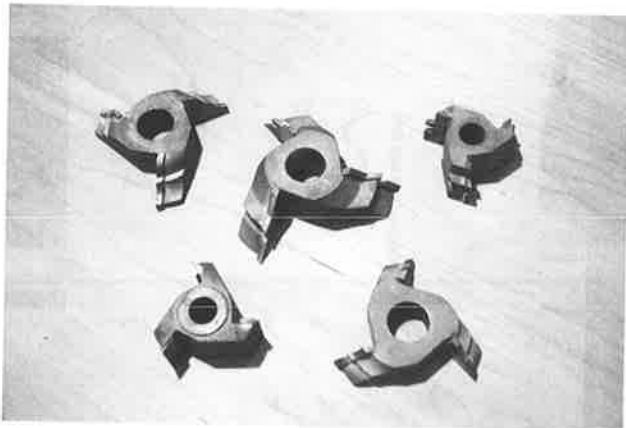
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- 1. How a jointer works
- 2. External parts of a band saw
- 3. External parts of a table saw
- 4. Drum sander on a drill press
- 5. Three-wing carbide-tipped shaper cutters

**SHORT ANSWER**

1. What should you do if you are not confident you can perform an operation?

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2. How do you edge joint a board?

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3. How do you change a band saw blade?

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## SECTION III: CLAMPS, FASTENERS, AND ADHESIVES

### CHAPTER

# 6

## Clamps

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. \_\_\_\_\_ clamps are similar to bar clamps except that a steel pipe, rather than a bar, holds the jaws.
- Pipe
  - C-
  - Vise
  - Web
- \_\_\_\_\_ 2. \_\_\_\_\_ clamps are metal clamps that are shaped like that letter of the alphabet.
- B-
  - C-
  - T-
  - U-
- \_\_\_\_\_ 3. \_\_\_\_\_ clamps are used primarily used for holding pieces in jigs while they are machined.
- Pipe
  - Bar
  - Toggle
  - Web
- \_\_\_\_\_ 4. \_\_\_\_\_ are sometimes called *wooden parallel clamps*.
- Parallel screws
  - C-clamps
  - Bench vises
  - Hand screws
- \_\_\_\_\_ 5. \_\_\_\_\_ are not used in gluing but are very useful for holding material in place on the work bench.
- Bench dogs
  - Holdfasts
  - Miter clamps
  - Frame clamps

- \_\_\_\_\_ 6. Bench vises are used to secure material being worked on at the bench, and they can be used for larger jobs when used in conjunction with \_\_\_\_\_.
- holdfasts
  - C-clamps
  - bench dogs
  - web clamps
- \_\_\_\_\_ 7. Pressure of up to \_\_\_\_\_ pounds per square foot can be exerted using vacuum clamping.
- 300
  - 600
  - 900
  - 1,800
- \_\_\_\_\_ 8. Cam clamps are made up of a locator board, \_\_\_\_\_, and cams.
- pipe
  - cam dog
  - holdfast
  - fence
- \_\_\_\_\_ 9. A veneer \_\_\_\_\_ is used for attaching veneer to a substrate or to clamp inlaid panels.
- press
  - clamp
  - hold
  - vise
- \_\_\_\_\_ 10. The higher the \_\_\_\_\_ content of wood, the more likely glue stains are to occur.
- chlorophyll
  - iron
  - tannin
  - glue

## COMPLETION

Complete each statement.

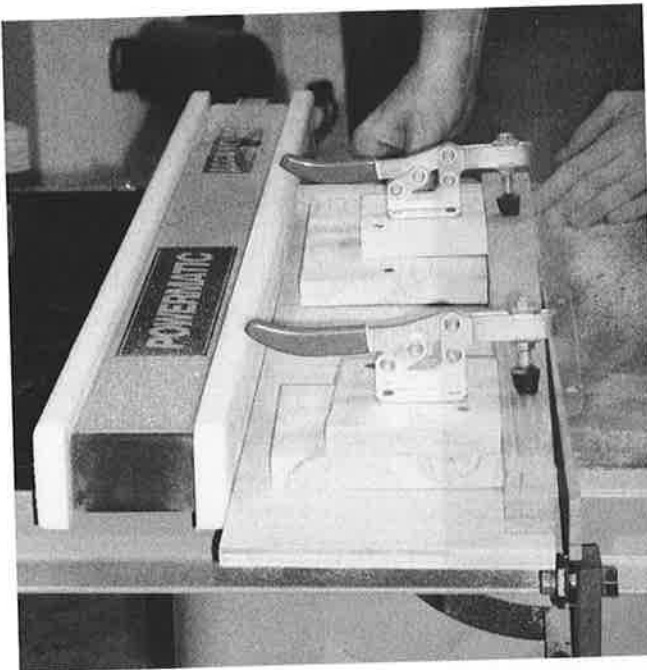
- \_\_\_\_\_ blocks are used to make repetitive cuts of the same length and to limit cuts.
- A(n) \_\_\_\_\_ is any custom-made accessory that increases the accuracy, speed, or safety of a task.
- \_\_\_\_\_ clamps consist of a bar with two jaws; typically, one jaw is connected to a clamp head at one end of the bar and can only be moved a short distance; the other is movable along the whole length of the bar.
- \_\_\_\_\_ are metal clamps that are sometimes called *carriage clamps*.
- \_\_\_\_\_ clamps are lighter duty than band clamps and use a cloth webbing strap that is an inch wide.

6. \_\_\_\_\_ clamps operate like a large clothespin.
7. A bench \_\_\_\_\_ has two jaws, one of which is fixed; the other moves in relation to the first by means of a screw device.
8. \_\_\_\_\_ clamping is a method of holding material through atmospheric pressure. The air between the work piece and its support is suctioned out using a pump.
9. A(n) \_\_\_\_\_ is an eccentrically shaped wheel with a pin for placement in a hole in the locator board; in other words, it is not perfectly round.
10. When you use a water-based glue, a reaction occurs between the water in the glue, the \_\_\_\_\_ in the clamps, and the tannin in the wood to form a stain.

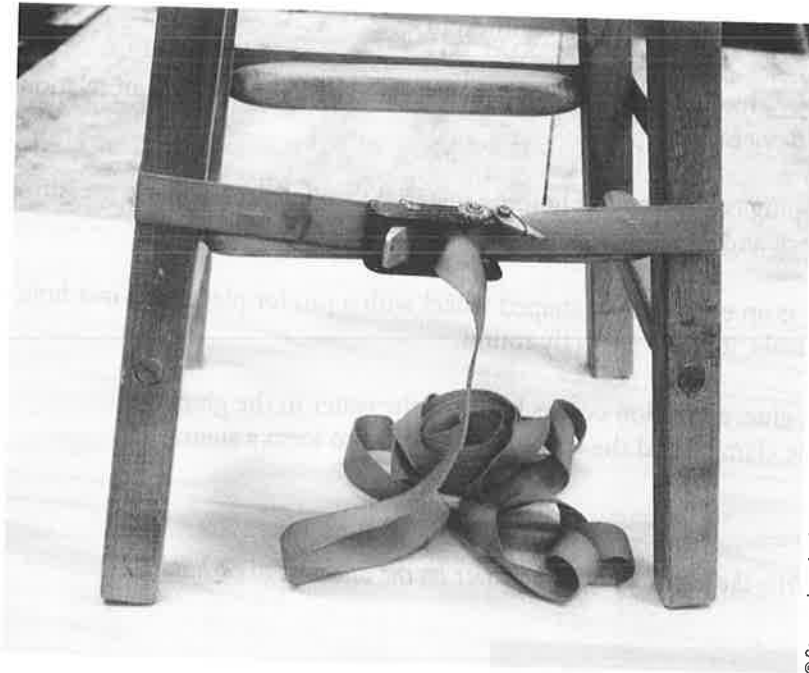
### IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.

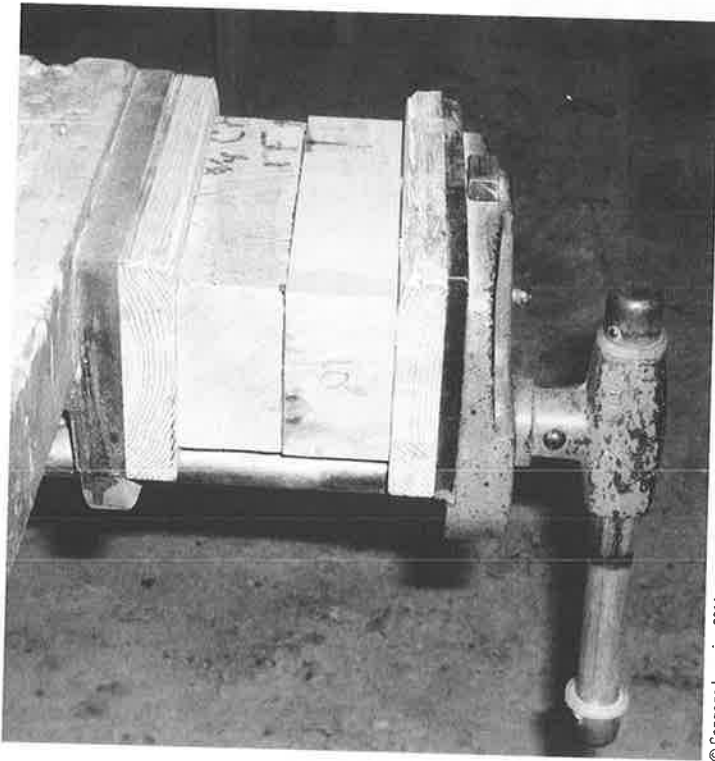


b.



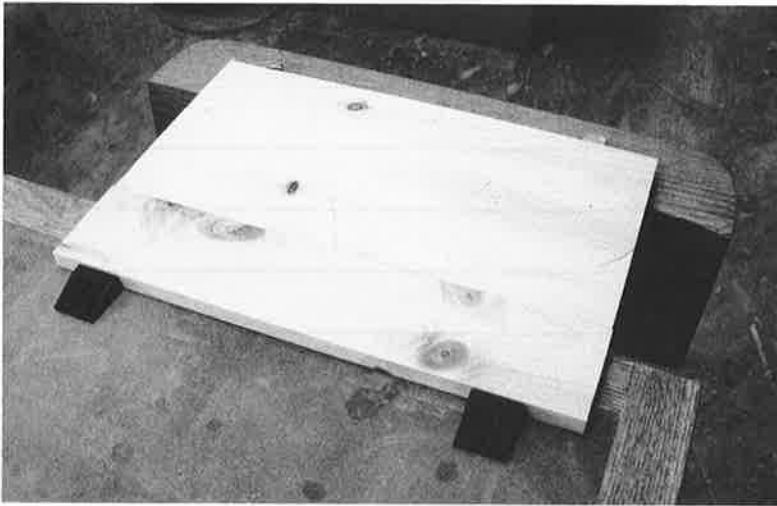
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c.



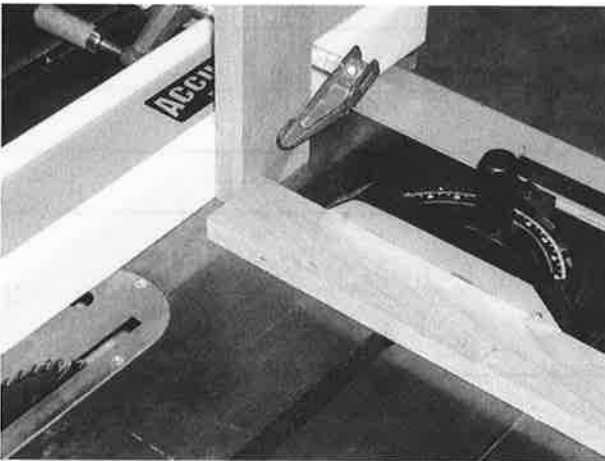
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d.



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e.



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- \_\_\_ 1. Bench vise
- \_\_\_ 2. Clamps securing a piece to a jig
- \_\_\_ 3. Bench dog
- \_\_\_ 4. Web clamp
- \_\_\_ 5. Stop block

### SHORT ANSWER

1. What is the difference between a *feather board* and a *stop block*?

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2. What makes pipe clamps frustrating when gluing up a panel?

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3. What is the procedure for clamping wide panels?

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4. How do miter clamps and hand screws differ?

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5. How do you clean up glue squeeze-out?

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## CHAPTER

# 7

## Fasteners

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. \_\_\_\_\_ nails have a thinner cross section and a smaller head than common nails and are used in lighter construction work, such as attaching siding.
- Brad
  - Box
  - Casing
  - Finish
- \_\_\_\_\_ 2. \_\_\_\_\_ are smaller, lighter versions of finish nails.
- Brads
  - Box nails
  - Casing nails
  - Common nails
- \_\_\_\_\_ 3. \_\_\_\_\_ are small brass nails with round heads that are used for decorative purposes or to attach small hardware.
- Tacks
  - Screws
  - Common nails
  - Escutcheon pins
- \_\_\_\_\_ 4. When installing screws, a \_\_\_\_\_ hole, also called a *shank hole*, is drilled in the first piece.
- counterbore
  - plug
  - clearance
  - countersink
- \_\_\_\_\_ 5. \_\_\_\_\_ include panel connectors, cross dowels and bolts, one-piece connectors, dowel screws, corrugated fasteners, and chevrons.
- Joint fasteners
  - Nails
  - Screws
  - Nuts

- \_\_\_\_\_ 6. Panel connectors are perfect for joining bookcases or entertainment center sections, and they consist of two parts: a \_\_\_\_\_ and a sleeve nut.
- bolt
  - screw
  - nail
  - brad
- \_\_\_\_\_ 7. \_\_\_\_\_ bolts have a rounded head with a square shoulder.
- Insert
  - Carriage
  - Hanger
  - T-
- \_\_\_\_\_ 8. Biscuits, or \_\_\_\_\_ as they are sometimes called, are football-shaped wafers made of compressed beech.
- planes
  - panels
  - rafters
  - plates
- \_\_\_\_\_ 9. Expansion anchors are commonly called molly \_\_\_\_\_.
- screws
  - bolts
  - nails
  - brads
- \_\_\_\_\_ 10. Four types of anchors used to attach objects to poured concrete walls are split-fast anchors, lag shields, lead anchors, and \_\_\_\_\_ anchors.
- steel
  - gold
  - aluminum
  - plastic

## COMPLETION

Complete each statement.

- \_\_\_\_\_ nails are the stoutest of the nails and are most commonly used in framing.
- If nails need to be hidden, they are driven close to the surface of the wood, and then set into the wood with a(n) \_\_\_\_\_, also called a *nail punch*.
- If the screw is to be flush to the surface, the last step before driving the screw is to drill a(n) \_\_\_\_\_ into which the head of the screw will fit.
- A(n) \_\_\_\_\_ is a piece of wire in the shape of a square bracket and might be thought of as a U-shaped nail.

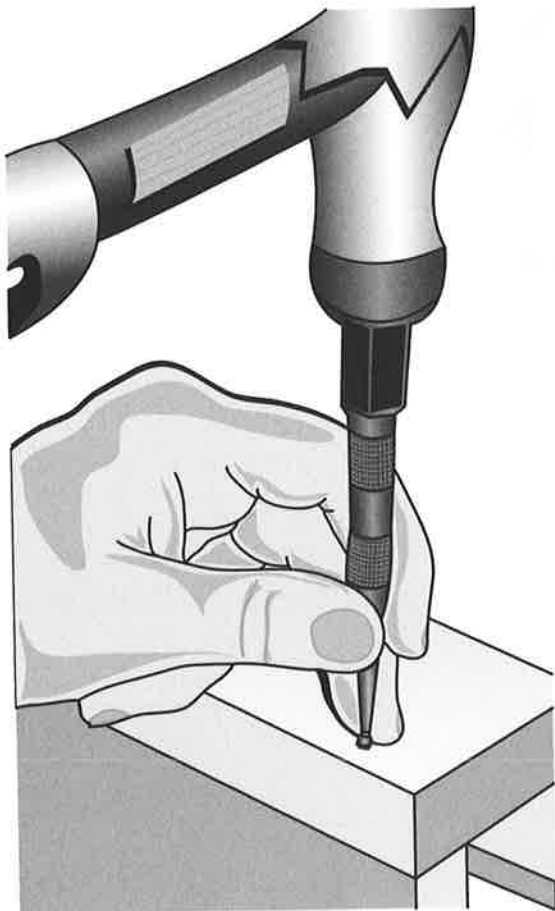


5. \_\_\_\_\_ fasteners are used in the construction of cabinets or furniture that can be assembled or disassembled relatively easily; they are sometimes referred to as *ready-to-assemble (RTA) fasteners*.
6. A(n) \_\_\_\_\_ is a threaded fastener that has a head at one end and is designed to be inserted through holes in assembled parts and secured with a nut.
7. A(n) \_\_\_\_\_ is a round wooden pin that fits tightly into corresponding holes to fasten or align to adjacent pieces.
8. One type of anchor is the \_\_\_\_\_ bolt; it consists of a stove bolt and a spring-loaded toggle and is used to secure objects to hollow walls.
9. Lags \_\_\_\_\_ are anchors that are used with lag screws.
10. Lead anchors and \_\_\_\_\_ anchors are also called *inserts*; they are only suitable for hanging light objects.

## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



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b.



Slotted



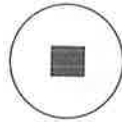
Phillips



Clutch head



Pozidriv®



Robertson  
type

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c.

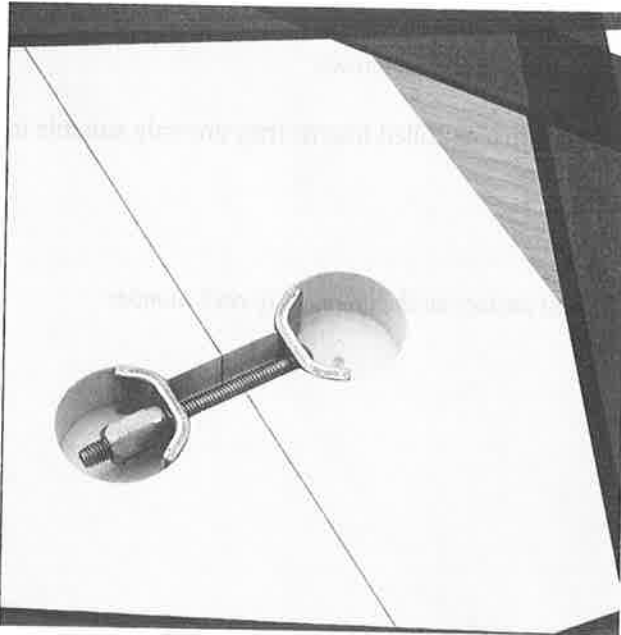
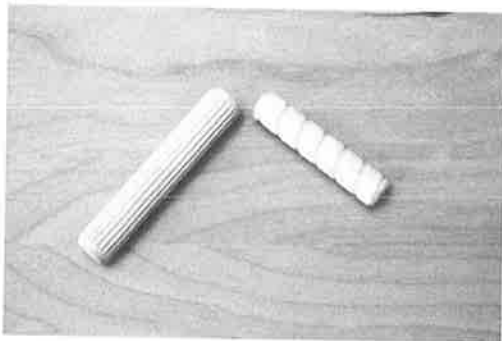


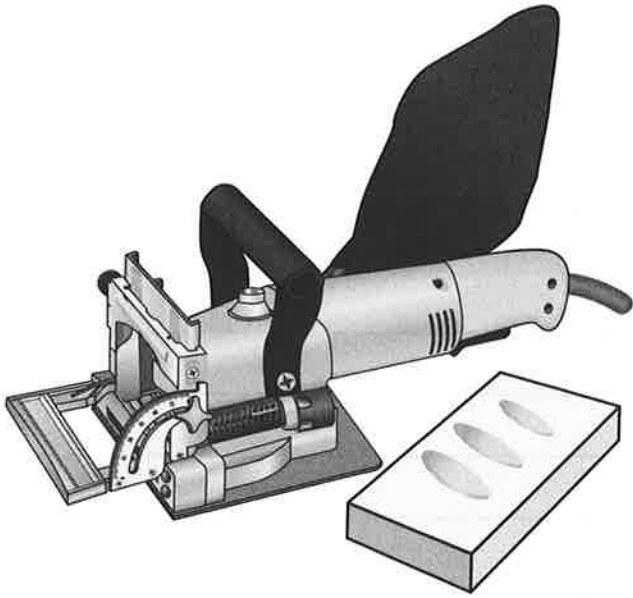
Image courtesy of Woodcraft Supply, LLC, woodcraft.com

d.



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e.



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- 1. Dowels
- 2. Biscuit joiner and biscuits
- 3. Using a panel connector
- 4. Using a nail set
- 5. Screw slots

**SHORT ANSWER**

1. How do finish nails differ from casing nails?

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2. How are screws different from nails? What materials are used to construct them?

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3. What is the procedure for driving a nail?

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4. How do you install a countersunk screw in hardwood?

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5. List the steps involved in making and installing plugs.

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## CHAPTER

# 8

# Adhesives

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. \_\_\_ adhesion is the bonding that occurs between the adhesive and the wood fibers; tiny fingers of adhesive penetrate the pores and cell cavities of the wood.
- Specific
  - Cohesive
  - Mechanical
  - Chemical
- \_\_\_ 2. \_\_\_ resistance is a measure of how the adhesive will stand up to assaults from finishes, cleaning agents, and alcohol.
- Water
  - Heat
  - Mechanical
  - Chemical
- \_\_\_ 3. \_\_\_ life describes the amount of time you have for applying the adhesive.
- Pot
  - Shelf
  - Curing
  - Set
- \_\_\_ 4. \_\_\_ time also differs from adhesive to adhesive; it is the amount of time it takes for the solvent in the adhesive to evaporate.
- Curing
  - Set
  - Shelf
  - Pot
- \_\_\_ 5. Most adhesives used today are synthetic adhesives, which can be further broken down into two categories, thermoplastic and \_\_\_.
- natural
  - hide
  - PVA
  - thermosetting

6. \_\_\_\_\_ is a thermoplastic adhesive. It is white in color, so it is often referred to as *white glue*; it dries clear.
- Aliphatic resin
  - Polyvinyl acetate
  - Epoxy
  - Hide glue
7. Plastic resin adhesive is also called \_\_\_\_\_.
- urea
  - alcohol
  - ammonia
  - white glue
8. \_\_\_\_\_ is a two-part adhesive; a red, liquid resin is mixed with a tan, powdered catalyst, which acts as a hardener.
- PVA
  - Cyanoacrylate
  - Resorcinol resin
  - Polyurethane
9. There are two basic categories of contact cement, high solvent and \_\_\_\_\_.
- resorcinol resin
  - super glue
  - PVA
  - neoprene based
10. Hot-melt adhesives and spray adhesives are primarily used as \_\_\_\_\_ adhesives.
- plastic
  - temporary
  - permanent
  - metal

### COMPLETION

Complete each statement.

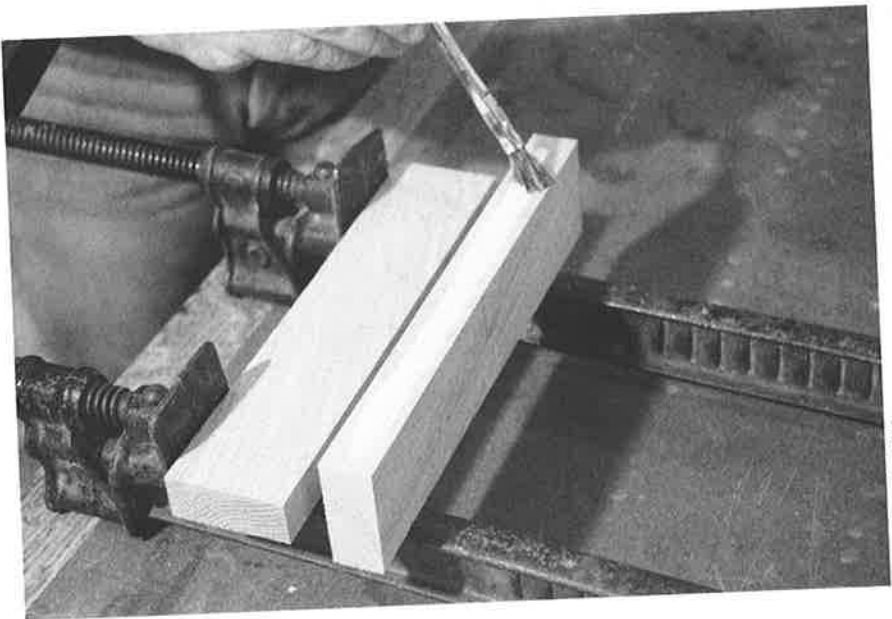
- In addition to adhesion, another factor to consider when describing glues is the \_\_\_\_\_ of the glue, or how well the glue sticks to itself.
- \_\_\_\_\_ life, sometimes called *storage time*, is how long the adhesive remains usable.
- Animal glue, often called \_\_\_\_\_ glue, is manufactured from the hooves, hides, and bones of animals.
- \_\_\_\_\_ adhesives were the first adhesives used and have been around for thousands of years; they are made from materials such as bones, blood, hides, eggs, milk, and vegetables.

5. \_\_\_\_\_ resin is a thermoplastic glue. It is a type of PVA that is yellowish in color and thicker than white glue, so it runs less.
6. Plastic \_\_\_\_\_ adhesive is also called *urea*, or *urea formaldehyde*.
7. The essential component of \_\_\_\_\_ glue is diphenylmethane diisocyanate (MDI); it is highly water and heat resistant.
8. \_\_\_\_\_ is often called *superglue*. Like epoxy cement, it is expensive and only practical for small gluing jobs.
9. \_\_\_\_\_ cement is different from other adhesives in that it is applied to both surfaces to be bonded, and then each surface is allowed to dry.
10. Hot-melt adhesives will bond many dissimilar types of materials. The adhesive comes in a solid form, usually a stick, and is applied with a special applicator, often called a(n) \_\_\_\_\_.

### IDENTIFICATION

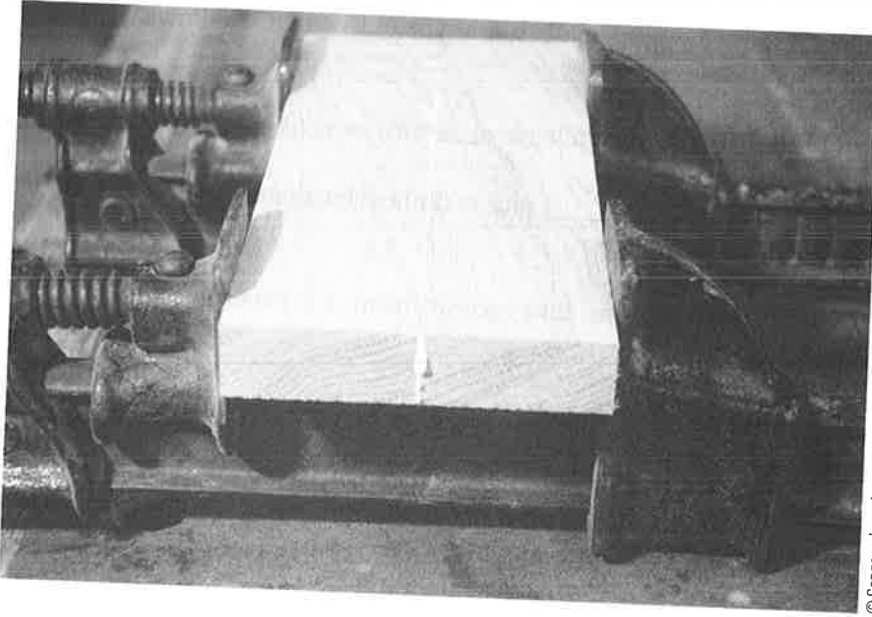
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



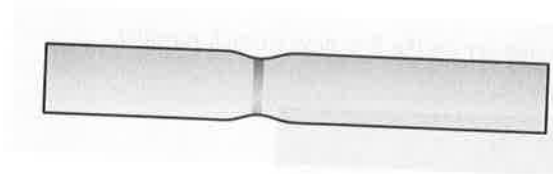
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b.



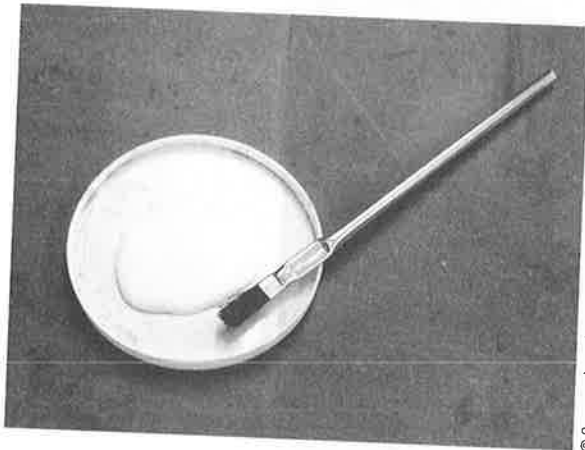
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c.



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- 1. Open assembly
- 2. Sunken joint
- 3. Closed assembly
- 4. Acid brush



**SHORT ANSWER**

1. What is the difference between *specific* and *mechanical* adhesion?

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2. When were synthetic adhesives developed? What major types are available?

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3. Give an overview of epoxy glues.

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4. What is the basic procedure for using adhesives?

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5. Give an overview of contact cements.

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## SECTION IV: WOODWORKING MATERIALS

### CHAPTER

# 9

## Wood

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. \_\_\_\_\_ trees lose their leaves each year.
- Deciduous
  - Coniferous
  - Softwood
  - Heartwood
- \_\_\_\_\_ 2. The outer part of the cambium is known as the \_\_\_\_\_.
- phloem
  - xylem
  - bark
  - sapwood
- \_\_\_\_\_ 3. The \_\_\_\_\_ of the tree run(s) horizontally across the face of the cross section.
- sapwood
  - heartwood
  - medullary rays
  - annual rings
- \_\_\_\_\_ 4. Most commercial mills dry their lumber in \_\_\_\_\_.
- saunas
  - kilns
  - smokehouses
  - barns
- \_\_\_\_\_ 5. The following describes a \_\_\_\_\_: a crack caused by a separation of wood fibers along the grain traveling the length of the wood; it is perpendicular to the growth rings.
- crack
  - kink
  - wane
  - split

- \_\_\_ 6. The volume of one board foot is \_\_\_ cubic inches.
- 12
  - 144
  - 120
  - 1,728
- \_\_\_ 7. A board exhibiting \_\_\_ grain on its face was cut along a radius running from the center of the tree outward.
- end
  - radial
  - longitudinal
  - edge
- \_\_\_ 8. The actual moisture in the air is the \_\_\_ humidity, and when we talk about the weather being humid, it is this that we are referring to.
- specific
  - mixed
  - absolute
  - relative
- \_\_\_ 9. \_\_\_ water accounts for 72 percent of the tree's total moisture content.
- Absolute
  - Free
  - Bound
  - Relative
- \_\_\_ 10. Since most of the wood produced is plainsawn, the majority of the wood we work with will show \_\_\_ grain on its faces.
- tangential
  - radial
  - edge
  - end

## COMPLETION

Complete each statement.

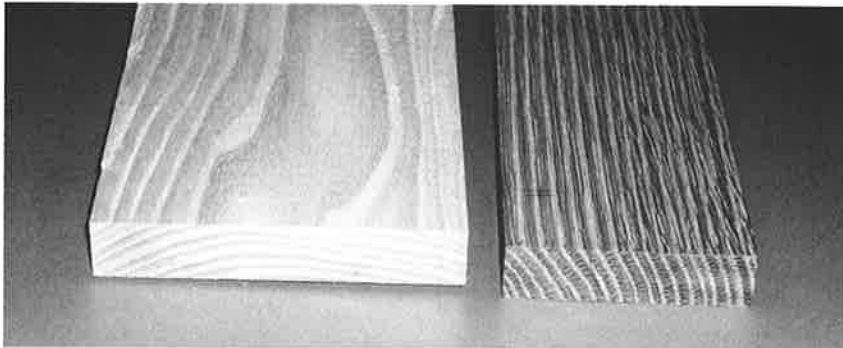
1. It is more accurate to use the term *deciduous* in referring to hardwoods and \_\_\_\_\_ for softwoods.
2. The very best logs are set aside to be processed into cabinet grade \_\_\_\_\_.
3. Once the log has been cut into boards, the edges are trimmed off to produce a board of uniform width, and the boards are cut to length. Next, the newly sawn boards go to the \_\_\_\_\_.

4. A(n) \_\_\_\_\_ pocket is an opening in the wood containing resin, which may be solid or liquid.
5. Softwood is sold in standard thicknesses, widths, and lengths; it is ordered by its \_\_\_\_\_ size.
6. A(n) \_\_\_\_\_ is a unit of volume measurement equivalent to a piece of wood measuring 12 inches wide, 12 inches long, and 1 inch thick.
7. \_\_\_\_\_ and edge grains are classified as either tangential or radial, depending on how the board was cut in relation to the tree's growth rings.
8. A living tree has a lot of moisture in it, most of it in the form of sap; this is known as \_\_\_\_\_ water, and it fills the cell cavities of the tree.
9. Because of its unique physical structure, wood expands and contracts in response to changes in the relative \_\_\_\_\_, which is the ratio of actual moisture in the air to the maximum amount of water the air will hold at its current temperature.
10. Wood is a(n) \_\_\_\_\_ material, which means that it changes dimension differently in different directions.

## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



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b.

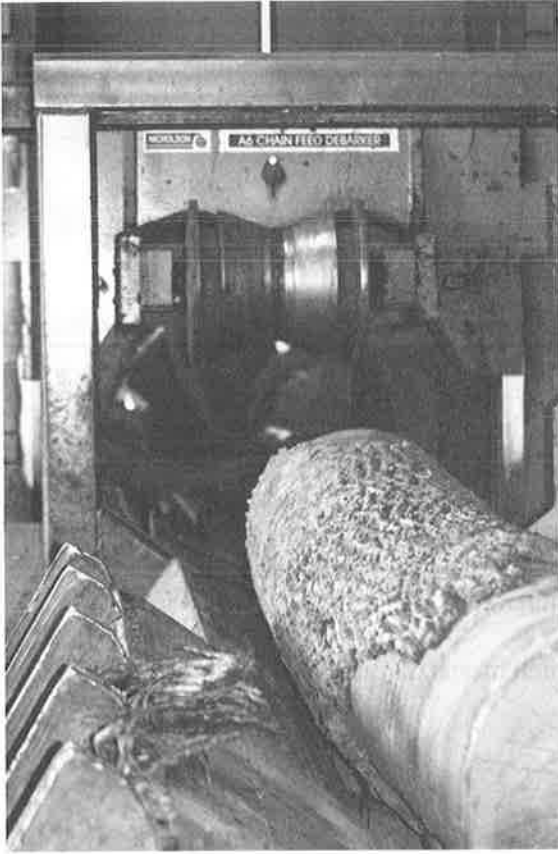
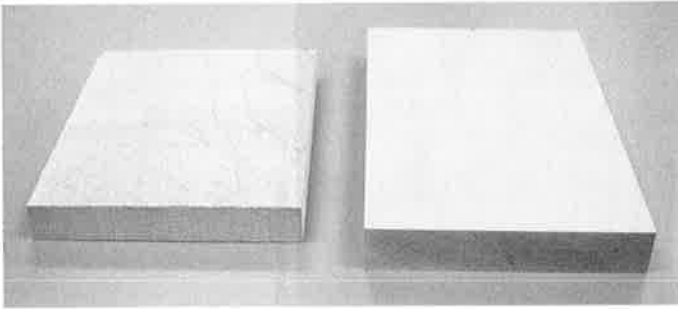


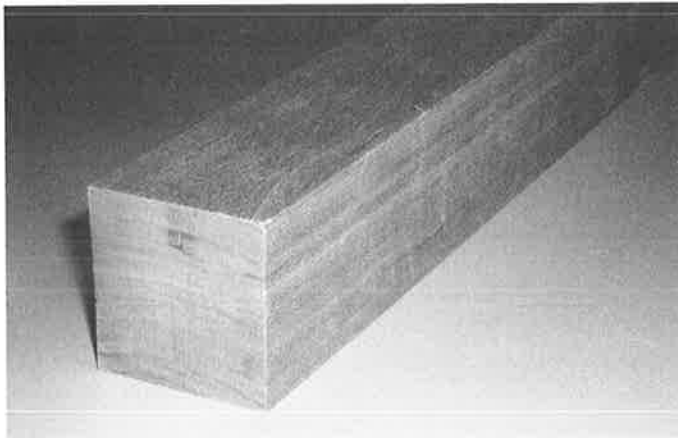
Image courtesy of the A. Johnson Co., LLC

c.



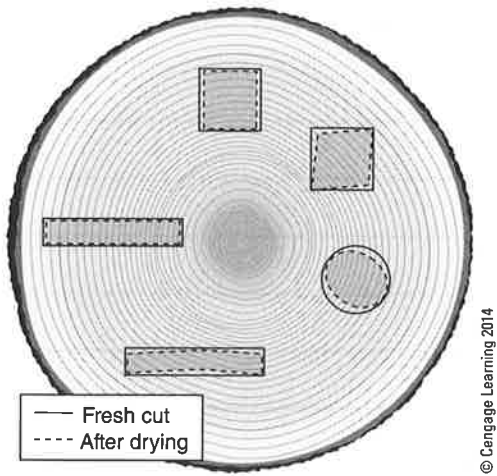
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d.



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e.



- \_\_\_ 1. Debarking a log
- \_\_\_ 2. Hard maple before and after surfacing
- \_\_\_ 3. Grain of a board from different perspectives
- \_\_\_ 4. Plainsawn vs. quartersawn lumber
- \_\_\_ 5. Changes in board shape

### SHORT ANSWER

1. What is the significance of the rings in a tree's cross section?

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2. What is a warp, and what are the different kinds of warp?

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3. Discuss the difference between the two broad categories of softwood lumber: construction and remanufacture.

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4. Say a cabinetmaker buys one board that is  $\frac{4}{4}$  thick, 8 inches wide, and 11 feet long and another that is  $\frac{8}{4}$  thick, 5 inches wide, and 7 feet long. Calculate the board footage.

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5. What are some inexpensive ways to acquire wood?

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## CHAPTER

# 10

## Panel Products

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Plywood sheets are most commonly 4 feet by \_\_\_\_\_ feet.
- 2
  - 4
  - 6
  - 8
- \_\_\_\_\_ 2. Cabinet-grade plywood provides the look of solid wood and is \_\_\_\_\_.
- sturdier
  - less time-consuming to work
  - more time-consuming to work
  - another name for lumber
- \_\_\_\_\_ 3. Cabinet-grade plywood provides the look of solid wood and is \_\_\_\_\_.
- always imported
  - less expensive to use
  - more expensive to use
  - another name for phloem
- \_\_\_\_\_ 4. The highest face grade given to cabinet-grade plywood is \_\_\_\_\_.
- A
  - B
  - C
  - D
- \_\_\_\_\_ 5. The highest back grade given to sheets of plywood is \_\_\_\_\_.
- 1
  - 2
  - 3
  - 4

- \_\_\_\_\_ 6. \_\_\_\_\_-density fiberboard is a good choice for drawer bottoms and cabinet backs.
- Uniform
  - Low
  - High
  - Medium
- \_\_\_\_\_ 7. One drawback of medium-density fiberboard is that it \_\_\_\_\_.
- produces dust when being machined
  - is too light
  - must be submerged in water
  - holds fasteners too tightly
- \_\_\_\_\_ 8. The density of particleboard is \_\_\_\_\_ the density of hardboard and MDF.
- less than
  - between
  - the same as
  - double
- \_\_\_\_\_ 9. \_\_\_\_\_ is commonly used for "carcass" construction, and is often the major component of inexpensive furniture.
- MDF
  - Hardboard
  - B-grade plywood
  - Melamine
- \_\_\_\_\_ 10. The great disadvantage that all panel products share is that the edges of the sheets must be covered; this can be accomplished by \_\_\_\_\_.
- using a router
  - using a clear lacquer
  - attaching solid lumber
  - cross sectioning

## COMPLETION

*Complete each statement.*

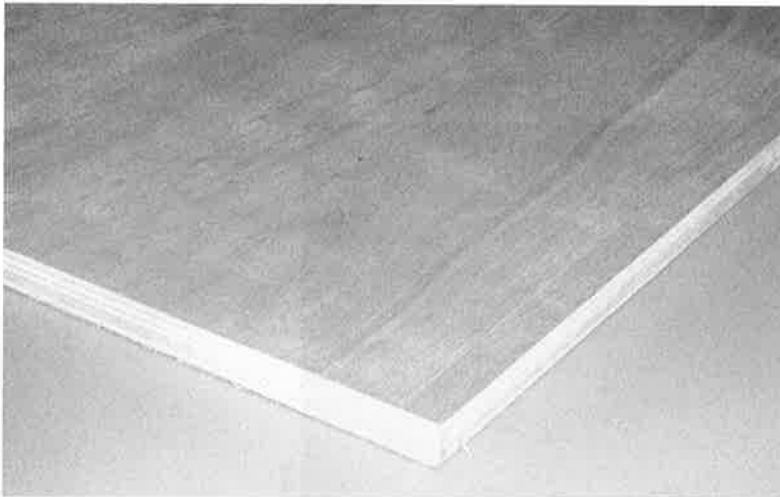
- Cabinet-grade \_\_\_\_\_ may replace lumber in cabinets or furniture.
- \_\_\_\_\_ is created by mixing wood fibers with resin and bonding them together by radio-frequency adhesion or heat.
- Different grades of cabinet plywood are available. Each sheet has a(n) \_\_\_\_\_ grade, which appears on the front of the sheet.
- The three types of veneer cuts are plain sliced, quarter sliced, and \_\_\_\_\_ cut.
- \_\_\_\_\_ -density fiberboard is not really used by cabinetmakers; its primary use is in the upholstery industry.

6. High-density fiberboard is often referred to as \_\_\_\_\_.
7. \_\_\_\_\_ is usually referred to by the acronym MDF.
8. The great disadvantage that all panel products share is that the edges of the sheets must be covered; this can be accomplished using \_\_\_\_\_ tape.
9. \_\_\_\_\_ is not as dense as either hardboard or MDF, but it is an adequate and less expensive alternative.
10. \_\_\_\_\_ is a thermally fused, resin-saturated paper finish applied over a particle-board core.

### IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.

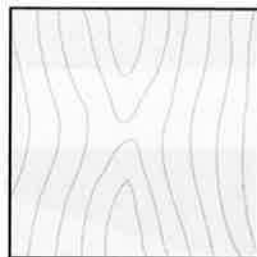


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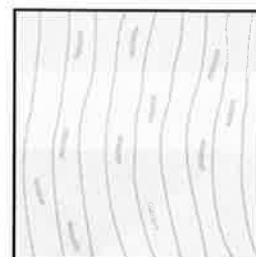
b.



Rotary cut



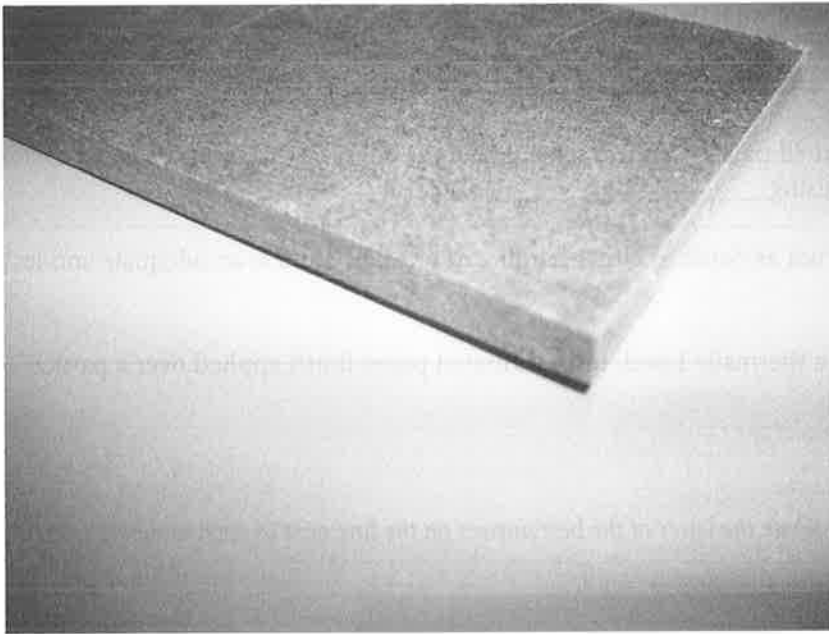
Plain sliced



Quarter sliced

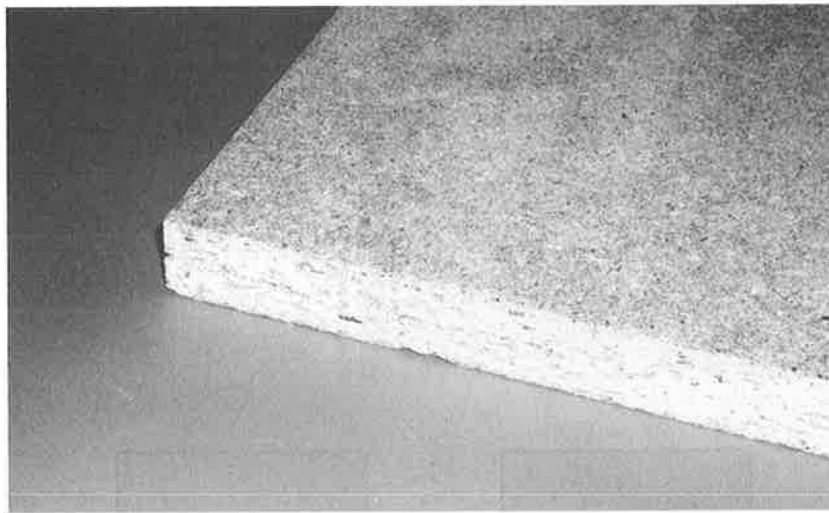
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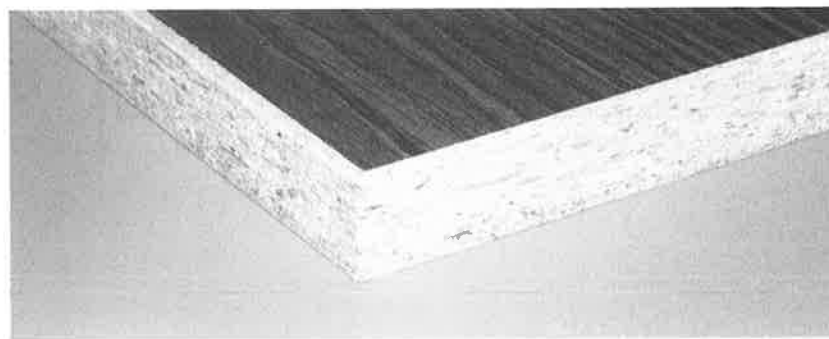
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d.



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- \_\_\_ 1. Veneer faces
- \_\_\_ 2. Melamine
- \_\_\_ 3. Particleboard
- \_\_\_ 4. Hardboard
- \_\_\_ 5. Cabinet-grade plywood

**SHORT ANSWER**

1. Why is the type of core used in plywood important?

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2. When should you use MDF?

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3. What are the drawbacks of using MDF?

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4. What is the main disadvantage of panel products?

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5. How do you apply adhesive-backed edge banding?

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## CHAPTER

# 11

## Veneer

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Stump wood is also known as \_\_\_\_\_ wood.
- butt
  - crotch
  - bud
  - flame
- \_\_\_\_\_ 2. A flame pattern is often exhibited by wood cut from the \_\_\_\_\_.
- butt
  - crotch
  - burl
  - flame
- \_\_\_\_\_ 3. The instrument used in rotary cutting is the \_\_\_\_\_.
- sander
  - grinder
  - lathe
  - router
- \_\_\_\_\_ 4. There are two types of slicing: flat slicing, also called \_\_\_\_\_ slicing, and quarter slicing.
- half
  - double
  - whole
  - plain
- \_\_\_\_\_ 5. In quarter slicing, you end up with \_\_\_\_\_ flitches.
- two
  - four
  - eight
  - ten

- \_\_\_\_\_ 6. Three different patterns may be produced by stay-log cutting: \_\_\_\_\_, half-round, and back cut.
- quilted
  - rift
  - full-round
  - half
- \_\_\_\_\_ 7. Rift cutting is sometimes called \_\_\_\_\_ cutting, and it results in a very straight-grained veneer.
- half-round
  - comb
  - burl
  - flat
- \_\_\_\_\_ 8. It is ideal to have \_\_\_\_\_ extension cords in a shop.
- no
  - one
  - three
  - five
- \_\_\_\_\_ 9. After the veneer has been cut and clipped, it is dried to less than \_\_\_\_\_ percent moisture content.
- 5
  - 10
  - 15
  - 20
- \_\_\_\_\_ 10. The thickest veneers are used as \_\_\_\_\_.
- plies in plywood
  - peel-and-stick veneers
  - covering for drywall
  - edge bands

## COMPLETION

Complete each statement.

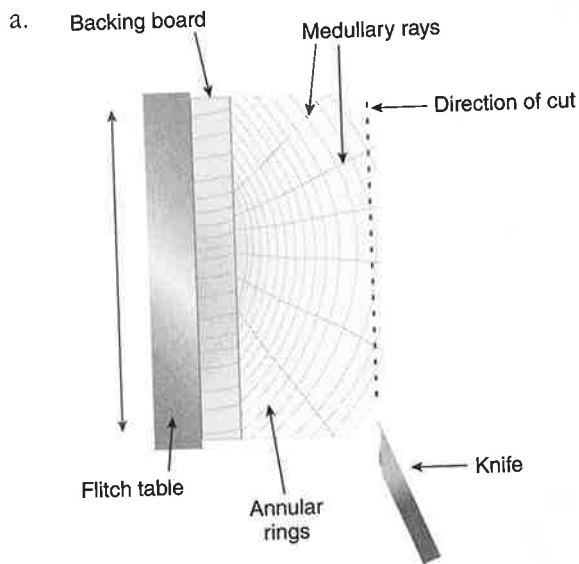
- The best logs that are cut, called \_\_\_\_\_ logs, are sold for veneer production.
- A(n) \_\_\_\_\_ is a lump on a tree that is formed by new growth generated to heal an injury.
- In \_\_\_\_\_ cutting, the log is turned on a lathe and rotated against a stationary knife.
- \_\_\_\_\_ is the method by which most hardwood veneer is cut.
- In flat slicing, the peeler block is cut in half lengthwise. The two halves are known as \_\_\_\_\_.
- \_\_\_\_\_ cutting is cutting at a 45-degree angle to the annual rings.
- \_\_\_\_\_ cuts produce a large U-patterned grain.



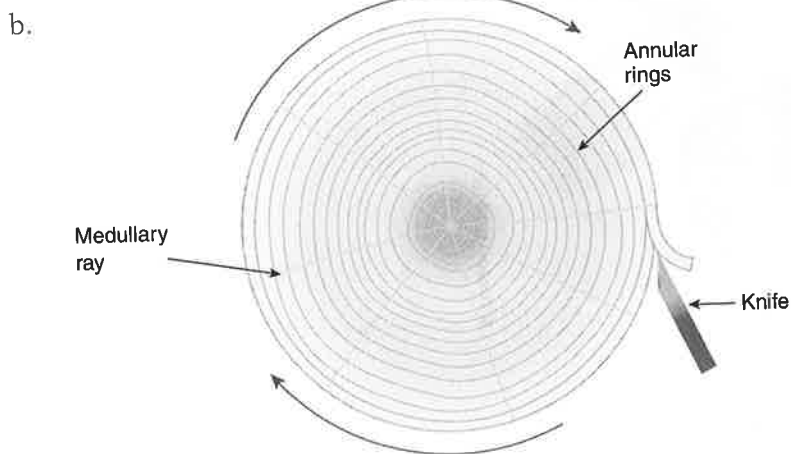
8. Veneers 1/28" to 1/40" thick are called \_\_\_\_\_ veneers.
9. Within a flitch, all of the \_\_\_\_\_ have a similar grain and color.
10. The thinnest veneers are called \_\_\_\_\_ veneers.

### IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

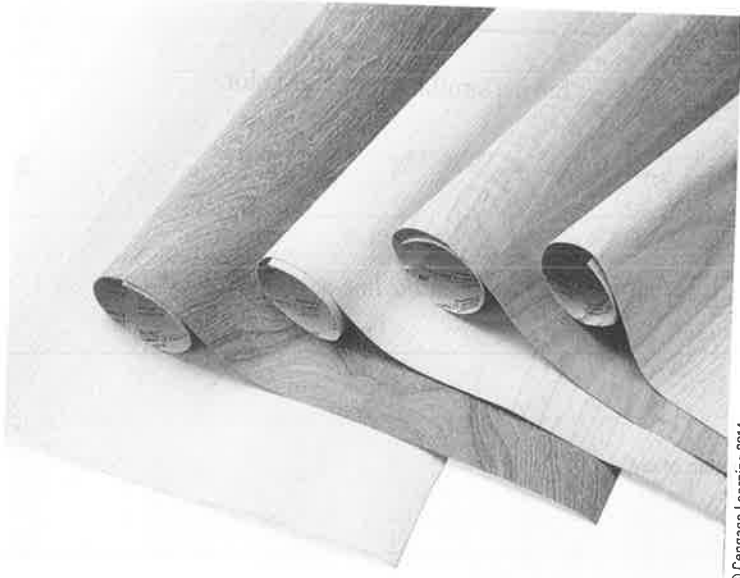


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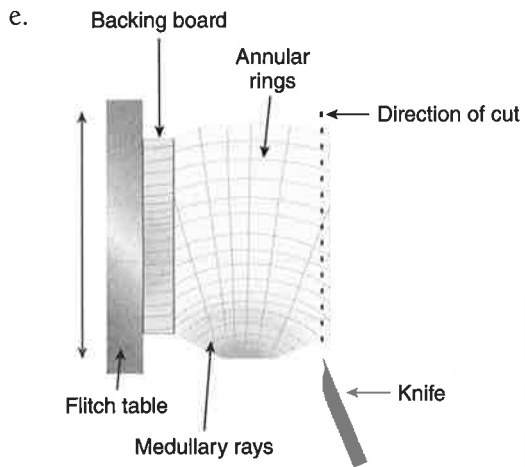


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- \_\_\_ 1. quarter slicing veneer
- \_\_\_ 2. rotary cutting veneer
- \_\_\_ 3. peel-and-stick veneer
- \_\_\_ 4. flat slicing veneer
- \_\_\_ 5. veneer edge banding

**SHORT ANSWER**

1. How are veneer logs processed?

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2. How does quarter slicing differ from flat slicing?

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3. What is stay-log cutting?

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4. Compare and contrast half-round cuts and back cuts.

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5. What are the thinnest types of veneer used for?

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## CHAPTER

# 12

## Synthetic Materials

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. The core and back of plastic laminates are impregnated with \_\_\_ resin.
- phenolic
  - clear melamine
  - textured
  - glossy
- \_\_\_ 2. Rigid laminates are frequently referred to as \_\_\_ laminates.
- low-temperature
  - high-pressure
  - high-temperature
  - low-pressure
- \_\_\_ 3. Plastic laminates come in \_\_\_ different types
- six
  - five
  - three
  - two
- \_\_\_ 4. Plastic laminate was invented in \_\_\_\_.
- 1898
  - 1900
  - 1912
  - 1936
- \_\_\_ 5. Solid surface material is \_\_\_\_.
- only applied to MDF
  - only applied to plywood
  - not applied to substrate
  - applied to the same substrates as plastic laminates

- \_\_\_\_\_ 6. When making solid surface material, the \_\_\_\_\_ and binder are combined and then cast in a curing process that results in a sheet or shape.
- laminare
  - post-form
  - filler
  - vertical surface
- \_\_\_\_\_ 7. The filler used in the production of solid surface is a \_\_\_\_\_.
- gas
  - synthetic material
  - liquid crystal
  - natural mineral
- \_\_\_\_\_ 8. A sheet of solid surface material may be up to 75 percent ATH, which is refined from bauxite ore, a form of \_\_\_\_\_.
- iron
  - carbon
  - clay
  - quartz
- \_\_\_\_\_ 9. The primary disadvantage of solid surface material as compared to plastic laminates is \_\_\_\_\_.
- its higher flammability
  - its substantially higher cost
  - that it is easily scratched
  - its inability to be decorated
- \_\_\_\_\_ 10. Polyester resins, including those that are mixed with acrylic, are used in \_\_\_\_\_ applications.
- high-temperature
  - low-temperature
  - high-strength
  - low-strength

## COMPLETION

*Complete each statement.*

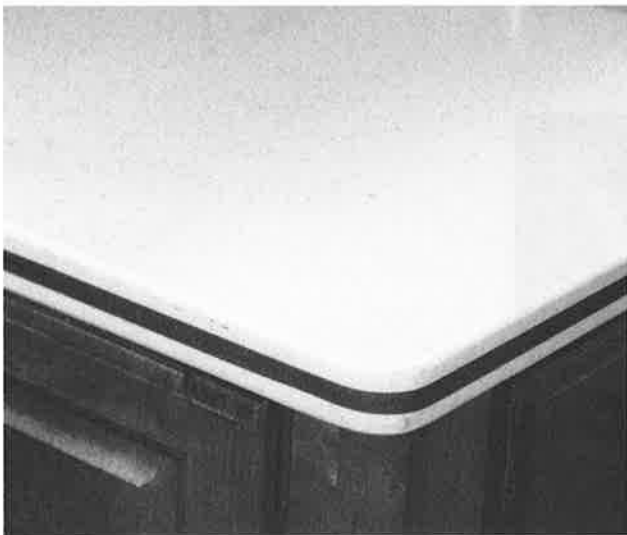
- Plastic \_\_\_\_\_ are similar to veneers, but they are synthetic rather than natural.
- The core and back of plastic laminates are made up of multiple layers of Kraft \_\_\_\_\_ impregnated with phenolic resin, which is a durable plastic.
- \_\_\_\_\_ laminates are designed for surfaces that will have a great deal of use, such as countertops; they are 1/16" thick.
- \_\_\_\_\_ laminates are 1/32" thick and are used for the sides and other outside surfaces of cabinets that are subject to less wear than countertops.

5. \_\_\_\_\_ laminates are no more than 1/32" thick; they are made with flexible resins that allow them to be bent around curved surfaces.
6. \_\_\_\_\_ surface material is an acrylic material that is manufactured into flat sheets.
7. Most solid surface materials are a combination of two main ingredients: a filler and a(n) \_\_\_\_\_.
8. The most commonly used filler is \_\_\_\_\_, or ATH.
9. Two main resins used in the manufacturing process of binders are acrylic and \_\_\_\_\_.
10. A purely acrylic-based resin yields a sheet that is \_\_\_\_\_, which means that it can be heated, bent into a new shape, and cooled without any loss of performance characteristics.

### IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



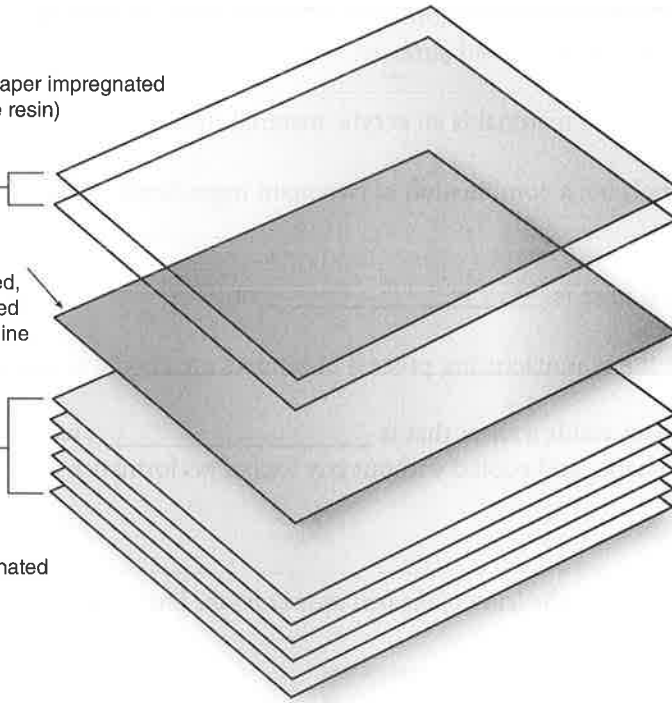
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b.

Protective layers  
(Thin, transparent paper impregnated  
with clear melamine resin)

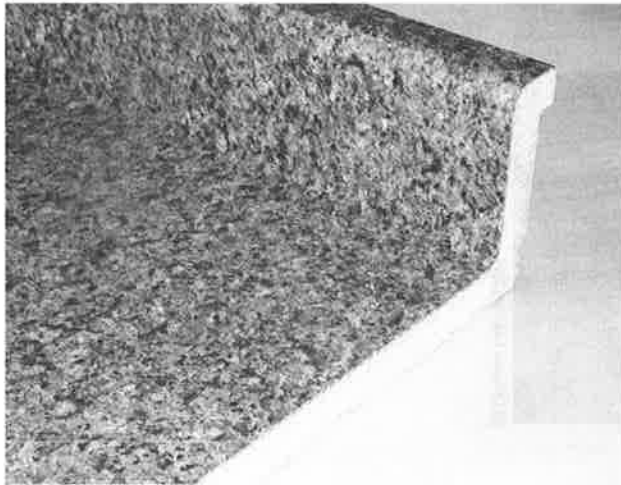
Decorative layer  
(Printed or colored,  
paper impregnated  
with clear melamine resin)

Core paper layers  
(Kraft paper impregnated  
with phenolic resin)



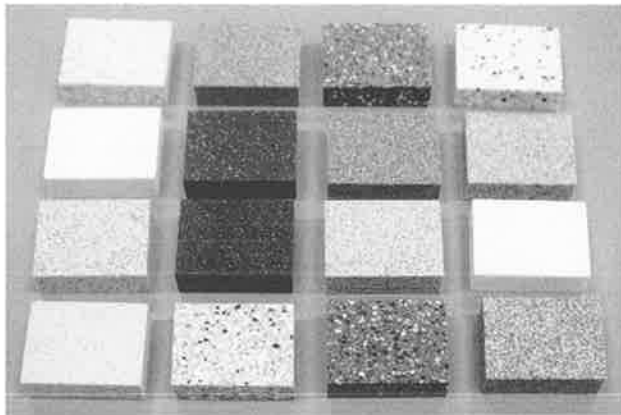
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e.



- \_\_\_ 1. inlaid solid surface
- \_\_\_ 2. solid surface materials
- \_\_\_ 3. plastic laminate composition
- \_\_\_ 4. post-forming laminate
- \_\_\_ 5. plastic laminates

**SHORT ANSWER**

1. How are the layers of plastic laminates bonded together? In what forms are plastic laminates available?

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2. What are the major drawbacks of plastic laminates?

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3. Where is solid surface material used?

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4. What is the difference between acrylic and polyester resins?

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5. What are the benefits of using solid surface material instead of plastic laminate?

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## SECTION V: JOINERY AND ASSEMBLY

### CHAPTER

# 13

## Construction Methods

### MULTIPLE CHOICE

*Identify the choice that best completes the statement or answers the question.*

- \_\_\_ 1. The primary disadvantage of solid wood construction is that wood changes in response to seasonal changes in \_\_\_\_.
- foliage
  - atmospheric pressure
  - humidity
  - sunlight
- \_\_\_ 2. \_\_\_ was long used to make barrels because it is impervious to water.
- White oak
  - Pine
  - Beech
  - Birch
- \_\_\_ 3. Panel products use \_\_\_\_ solid lumber compared to solid wood construction.
- far less
  - about the same amount of
  - slightly more
  - double the
- \_\_\_ 4. Manufactured panel products include materials such as \_\_\_\_.
- melamine
  - iron
  - nylon
  - rayon
- \_\_\_ 5. In frame-and-panel construction, the \_\_\_\_ can be either solid wood or a manufactured product.
- panel
  - frame
  - veneer
  - tape

- \_\_\_\_\_ 6. If you are using a circular saw to cut panel products, the good face of the panel should be \_\_\_\_\_ to minimize splintering.
- removed
  - down
  - up
  - sanded
- \_\_\_\_\_ 7. \_\_\_\_\_ construction maximizes the advantages of the other two types of construction.
- Solid wood
  - Panel
  - Veneer
  - Frame-and-panel
- \_\_\_\_\_ 8. In frame-and-panel construction, the solid wood frame allows for profiles to be \_\_\_\_\_ on the edges.
- milled
  - carved
  - glued
  - taped
- \_\_\_\_\_ 9. A more interesting look can be achieved with frame-and-panel construction, since by its nature it shows \_\_\_\_\_.
- texture
  - linearity
  - depth
  - width
- \_\_\_\_\_ 10. The weight of frame-and-panel construction is \_\_\_\_\_ that of solid wood construction and manufactured panel construction.
- between
  - less than
  - about the same as
  - greater than

## COMPLETION

*Complete each statement.*

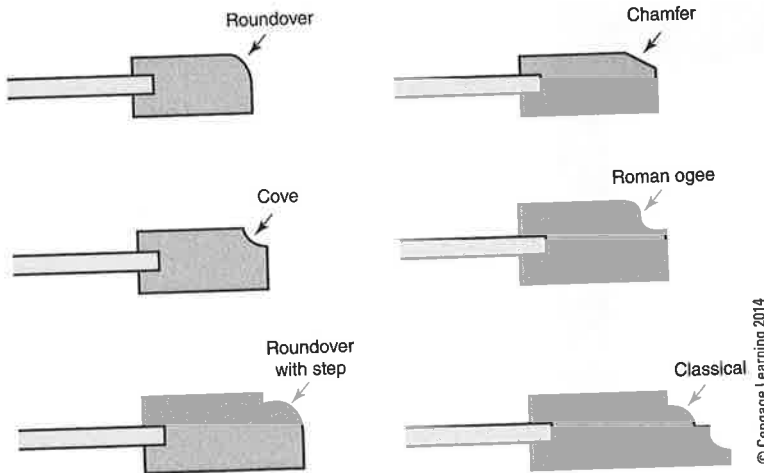
- \_\_\_\_\_ wood construction is the most ancient of the three building methods.
- The primary disadvantage of \_\_\_\_\_ wood construction is that wood is not a static material.
- Quartersawn \_\_\_\_\_ is the wood most associated with the Craftsman furniture movement.
- Manufactured \_\_\_\_\_ products are materials such as plywood, particleboard, fiberboard, and melamine.
- \_\_\_\_\_ is made of thin layers (plies) glued up perpendicular to one another, which diminishes wood movement.

6. There are disadvantages to panel construction; one is that the edge of the panel is unattractive and so must be covered with veneer \_\_\_\_\_.
7. Shelves constructed of plywood, particleboard, or MDF that are longer than 32" should be \_\_\_\_\_ to prevent sagging under a load.
8. If you are cutting panel products on the table saw, the good side should be face \_\_\_\_\_ to minimize splintering on the face side of the panel.
9. \_\_\_\_\_-and-panel construction was developed to deal with the wood movement problem of solid wood.
10. Frame-and-panel construction is \_\_\_\_\_ in weight than either solid wood construction or manufactured panel construction.

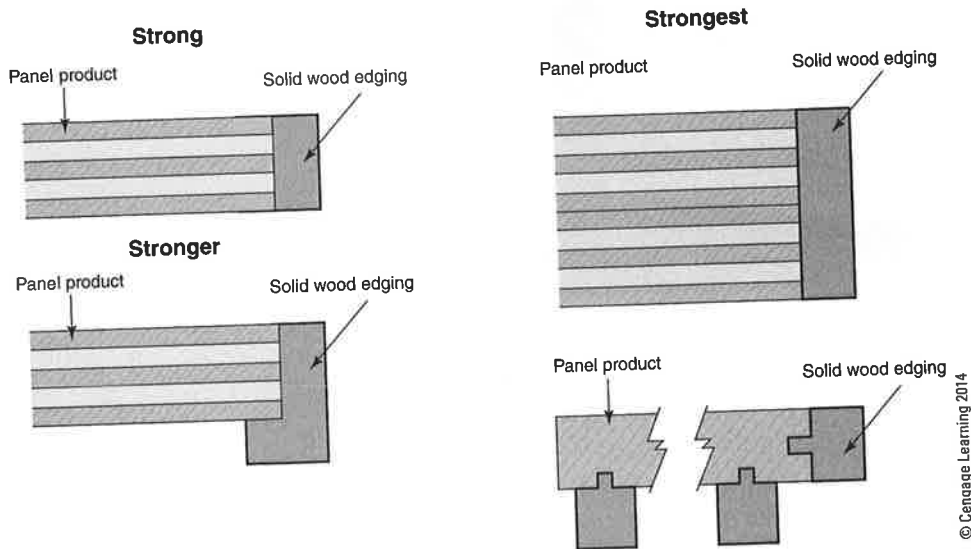
### IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

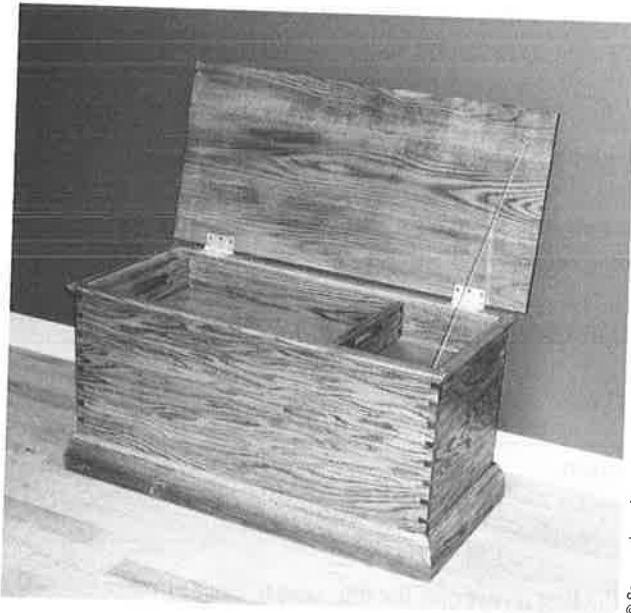
a.



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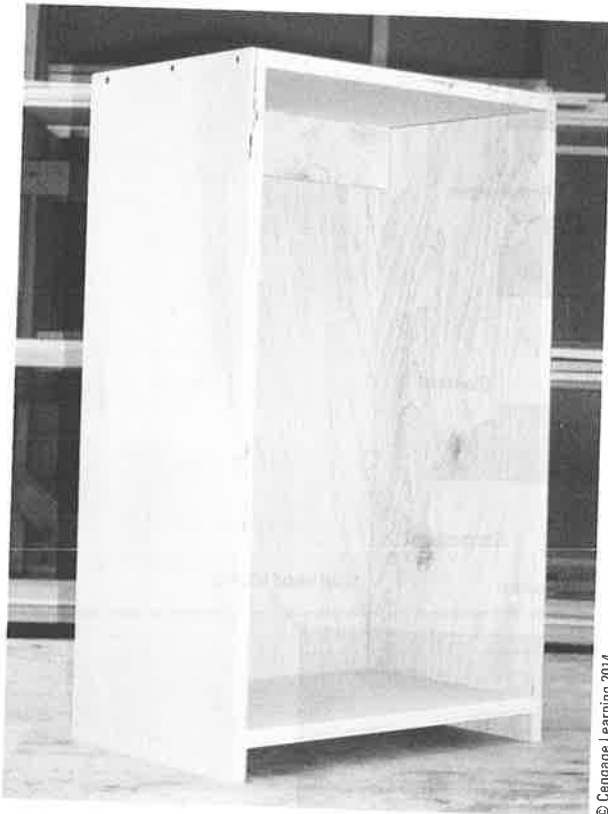


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- 1. frame-and-panel construction
- 2. milled profiles
- 3. methods of reinforcement
- 4. solid wood construction
- 5. panel construction

**SHORT ANSWER**

1. What are the advantages of using solid wood?

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2. What are the advantages of using panel construction?

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3. What are the disadvantages of using panel construction as opposed to solid wood construction?

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4. How can you mill centered grooves in a piece of solid wood?

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5. What are the advantages and disadvantages of frame-and-panel construction?

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## CHAPTER

# 14

## Stock Preparation

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. A \_\_\_\_\_ is a very important safety device to use when flattening stock on the jointer, and it is easy to make.
- jointer
  - planer
  - miter saw
  - push block
- \_\_\_\_\_ 2. A rough layout marks out the pieces \_\_\_\_\_ they will be once they are machined.
- smaller than
  - the same size as
  - larger than
  - thicker and shorter than
- \_\_\_\_\_ 3. When doing a rough layout, what is a good choice of marking instrument?
- chalk
  - pencil
  - ballpoint pen
  - permanent marker
- \_\_\_\_\_ 4. When flattening faces, a \_\_\_\_\_ face should face down if present.
- concave
  - convex
  - flat
  - semicircular
- \_\_\_\_\_ 5. If possible, you want to joint \_\_\_\_\_ to avoid tear-out.
- perpendicular to the grain
  - with the crown
  - with the grain
  - against the grain

- \_\_\_\_\_ 6. When ripping to width, set the rip \_\_\_\_\_ to the final width of your work piece.
- saw
  - fence
  - cut
  - jointer
- \_\_\_\_\_ 7. The planer maintains the two faces as \_\_\_\_\_.
- acute-angled
  - parallel
  - perpendicular
  - oblique
- \_\_\_\_\_ 8. A \_\_\_\_\_ cut is a cut made to check the setup of a machine.
- miter
  - rip
  - check
  - test
- \_\_\_\_\_ 9. What should you do if the saw you have chosen is not cutting squarely?
- Adjust it.
  - Keep going.
  - Use a jointer.
  - Use a planer.
- \_\_\_\_\_ 10. It is necessary to have \_\_\_\_\_ to make the task at hand, and those to come, easier.
- the latest technology
  - good organization
  - computers
  - assistants

## COMPLETION

*Complete each statement.*

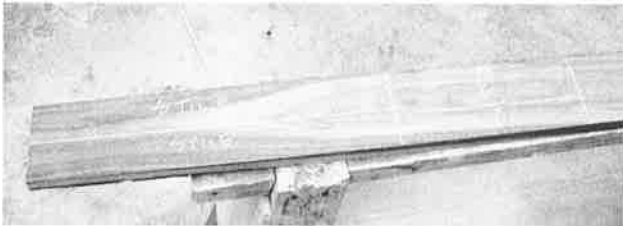
- When selecting stock, it is helpful to do a(n) \_\_\_\_\_ layout of the components needed.
- S2S stands for \_\_\_\_\_.
- The maximum width piece that you can flatten is determined by the size of your \_\_\_\_\_.
- The job of the \_\_\_\_\_ is to bring material to the desired thickness while maintaining the parallelism of the two faces.
- The second time the \_\_\_\_\_ is used is when we need to create an edge that is square to the face of the board.
- When the board is flat, milled to desired thickness, and has a square edge, it is taken to the \_\_\_\_\_ saw.
- The final step in processing stock is to \_\_\_\_\_ the work piece to finished length.

8. A simple \_\_\_\_\_ cut and check will determine whether your saw is cutting squarely.
9. The final cut can be made on the radial arm saw, the table saw, or the \_\_\_\_\_ saw.
10. \_\_\_\_\_ normally has a straight grain, so it is often used in handles for striking tools, such as hammers, hatchets, and axes.

## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



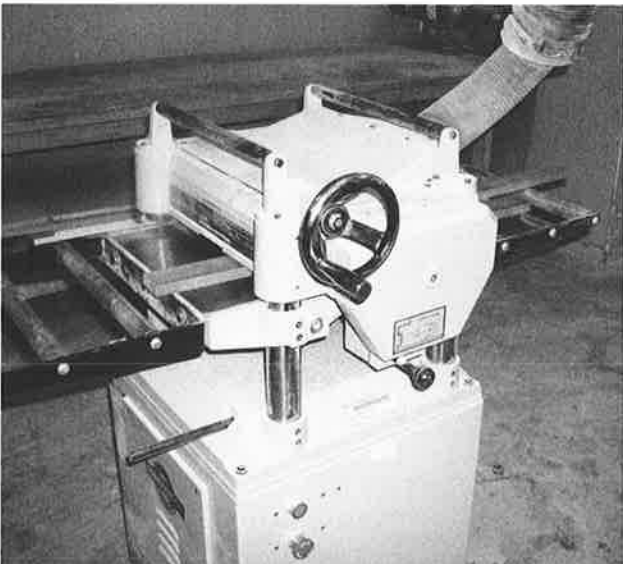
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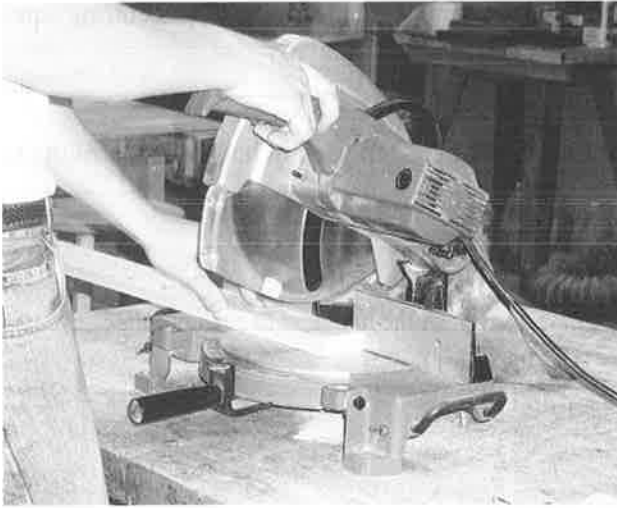
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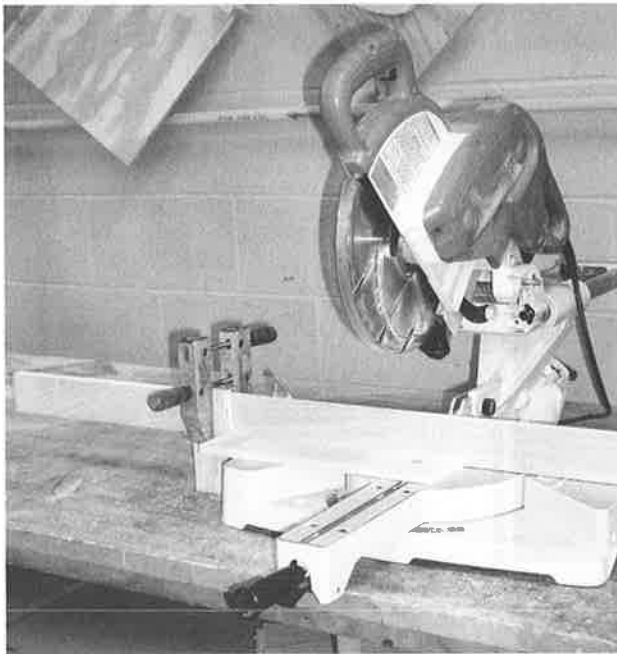
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- 1. rough layout on stock
- 2. squaring an edge
- 3. planing to thickness
- 4. using a stop block
- 5. crosscut to length

**SHORT ANSWER**

1. When is it essential to flatten a face of the stock?

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2. What is the maximum width piece that you can flatten?

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3. How do you square an edge?

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4. How do you crosscut a piece to finished length?

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5. What should you do when you have multiple pieces to process in a project?

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## CHAPTER

# 15

## Case Joints

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. In a butt joint, end grain is joined to \_\_\_ grain.
- face
  - edge
  - radial
  - longitudinal
- \_\_\_ 2. How many types of rabbet joints are in common use?
- one
  - two
  - three
  - four
- \_\_\_ 3. The pieces in a mitered case joint typically have their ends beveled at a \_\_\_-degree angle.
- 15
  - 45
  - 60
  - 90
- \_\_\_ 4. Spline keys are made of \_\_\_ material than feather keys.
- thinner
  - stronger
  - weaker
  - thicker
- \_\_\_ 5. The \_\_\_ miter joint is an excellent joint because it combines the appearance of a miter joint with the strength of a rabbet-and-dado joint.
- feather
  - lock
  - spline
  - key

- \_\_\_ 6. The tenons in a box joint are known as \_\_\_\_.
- notches
  - boxes
  - pins
  - sockets
- \_\_\_ 7. Prior to the advent of corrugated cardboard boxes, the joint of choice for constructing wooden boxes was the \_\_\_\_ joint.
- dovetail
  - drawer
  - box
  - rabbet
- \_\_\_ 8. The tenons in a dovetail joint are known as \_\_\_\_ and pins.
- tails
  - notches
  - sockets
  - doves
- \_\_\_ 9. There are various types of dovetail joints, but by far the most common are \_\_\_\_ dovetails and half-blind dovetails.
- box
  - edge
  - through
  - blind
- \_\_\_ 10. Jigs can also be built to cut dovetails on the table saw or band saw, but by far the most commonly used method is to use a \_\_\_\_ and some kind of jig.
- miter
  - router
  - jointer
  - planer

## COMPLETION

*Complete each statement.*

- The \_\_\_\_\_ case joint is the simplest and most basic of all case joints.
- A(n) \_\_\_\_\_ is a strip of wood that fits into two matching grooves, one machined in each adjoining piece.
- One way to reinforce a butt joint is to use \_\_\_\_\_ blocks, triangular or square pieces of wood used to strengthen and support two adjoining surfaces.
- A(n) \_\_\_\_\_ is a two-sided groove along the edge or end of a work piece.
- A(n) \_\_\_\_\_ is a three-sided groove.

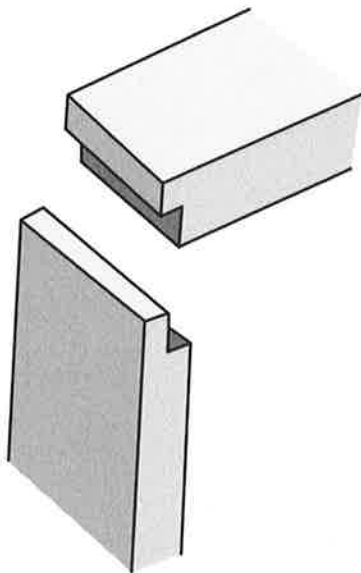


6. There are three types of keys: spline keys, dovetail keys, and \_\_\_\_\_ keys.
7. \_\_\_\_\_ miters are a step up from simple miters.
8. The \_\_\_\_\_ joint, also called a *finger joint* or *comb joint*, consists of interlocking tenons and notches cut in the ends of adjoining boards.
9. The \_\_\_\_\_ joint is the quintessential case joint. Some consider the hand-cut version the holy grail of woodworking.
10. In a dovetail joint, both the tails and pins fit into the recesses on the mating pieces. These recesses are called \_\_\_\_\_.

### IDENTIFICATION

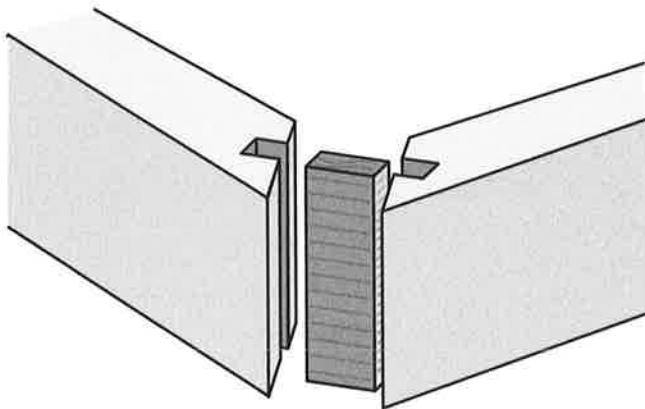
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



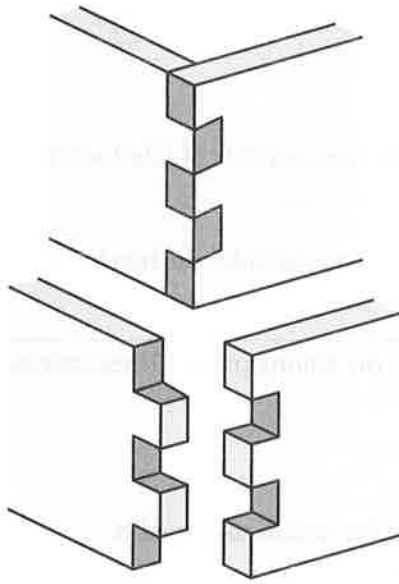
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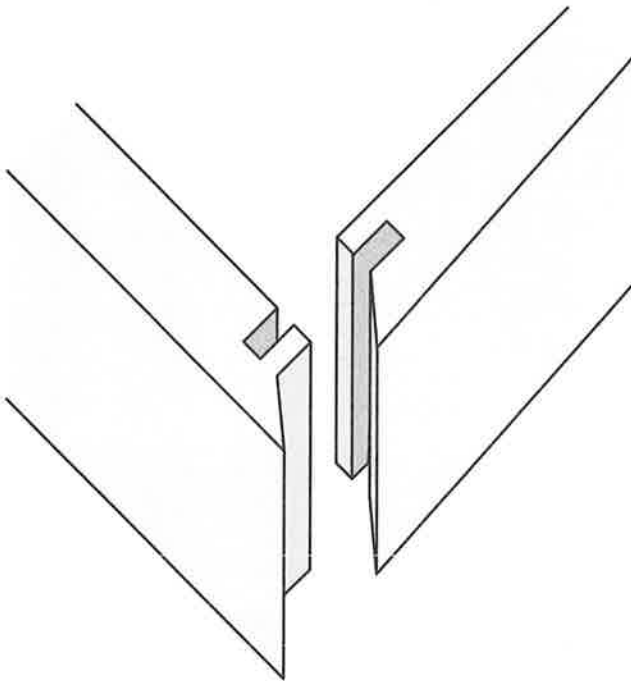
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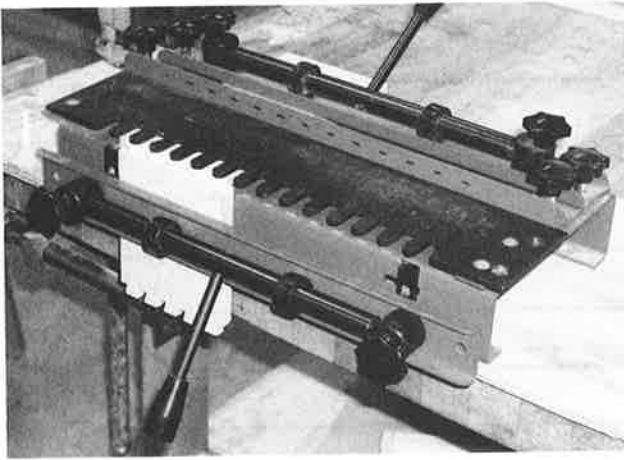
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e.



- \_\_\_ 1. lock miter joint
- \_\_\_ 2. double-rabbit joint
- \_\_\_ 3. splined miter joint
- \_\_\_ 4. half-blind dovetail jig
- \_\_\_ 5. box joint

**SHORT ANSWER**

1. How do you make a rabbit joint on a table saw?

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2. How do you machine a dado-and-rabbit joint?

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3. How do you make a splined miter joint?

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4. How do you choose the size and spacing of fingers in a box joint?

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5. Give a brief procedure for cutting a dovetail joint by hand.

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## CHAPTER

# 16

## Frame Joints

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Frames have \_\_\_\_\_ main uses in cabinet construction.
- two
  - three
  - four
  - five
- \_\_\_\_\_ 2. In a mitered frame joint, each member is cut at a \_\_\_\_\_-degree angle.
- 30
  - 45
  - 75
  - 90
- \_\_\_\_\_ 3. A pocket-hole joint uses \_\_\_\_\_ as reinforcements.
- screws
  - nails
  - biscuits
  - dowels
- \_\_\_\_\_ 4. Miter joints, like butt joints, are \_\_\_\_\_.
- easy to assemble
  - unable to be reinforced
  - structurally weak
  - structurally strong
- \_\_\_\_\_ 5. Lap joints may meet to form an L, a T, or a(n) \_\_\_\_\_.
- A
  - C
  - V
  - X

- \_\_\_\_\_ 6. \_\_\_\_\_, also known as *canoe wood*, has a straight grain and fine texture; it is often used for furniture and cabinetwork, carving, and musical instruments.
- Pine
  - Oak
  - Ash
  - Poplar
- \_\_\_\_\_ 7. A joint in which the end of one piece is joined to the end of another piece is called a \_\_\_\_\_ joint.
- miter
  - slip
  - bridle
  - rein
- \_\_\_\_\_ 8. A blind mortise and tenon is also called a \_\_\_\_\_ mortise and tenon.
- stopped
  - jigged
  - loose
  - haunched
- \_\_\_\_\_ 9. An invisible wedged mortise and tenon is also called a \_\_\_\_\_-wedged mortise and tenon.
- visible
  - haunched
  - fox
  - through
- \_\_\_\_\_ 10. The pegged mortise-and-tenon will still work if \_\_\_\_\_.
- the peg snaps off
  - only one piece of wood is used
  - the glue fails
  - the peg disintegrates

## COMPLETION

Complete each statement.

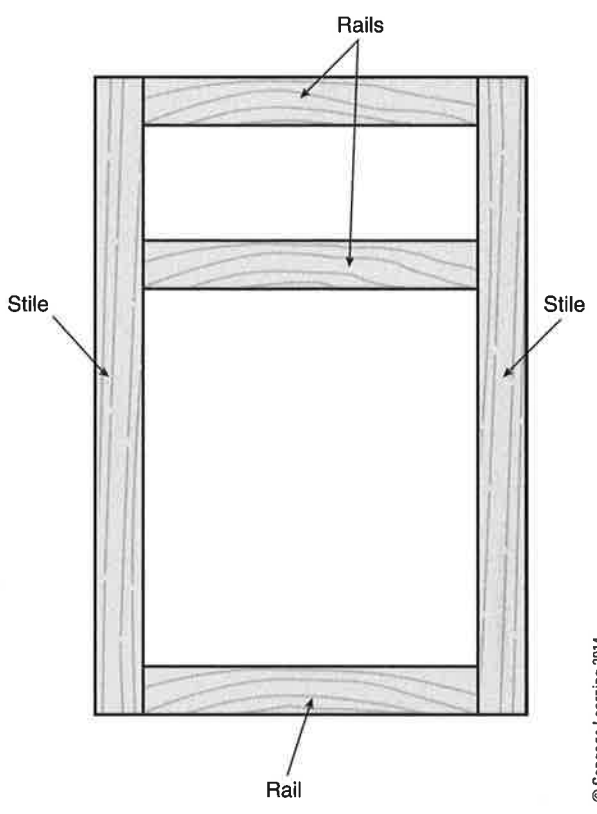
- \_\_\_\_\_ frames are installed inside a case, tying the case together and supporting and separating drawers.
- \_\_\_\_\_ frame joints form a neat right-angle corner, and if they fit well, the seam is almost indiscernible.
- The \_\_\_\_\_-and-stub tenon joint is a fairly light-duty joint, appropriate for building frames that will be anchored to a case, such as face frames.
- The \_\_\_\_\_-and-stick joint is a more elegant version of a related tenon joint, and a stronger one, too.
- A slip joint in which the end of one piece is joined to the middle of another piece is called a(n) \_\_\_\_\_ joint.

6. The \_\_\_\_\_-and-tenon joint is woodworking's essential frame joint, in the same way that the dovetail joint is the ultimate case joint.
7. Tenons are easily made on the table saw with a tenoning \_\_\_\_\_.
8. A(n) \_\_\_\_\_ mortise-and-tenon joint has a tongue that projects from the tenon's shoulder between the edge of the tenon and the edge of the rail.
9. There are two types of \_\_\_\_\_ mortise-and-tenon joints: visible and hidden.
10. The pegged mortise-and-tenon is usually a blind mortise and tenon that is further reinforced with \_\_\_\_\_.

**IDENTIFICATION**

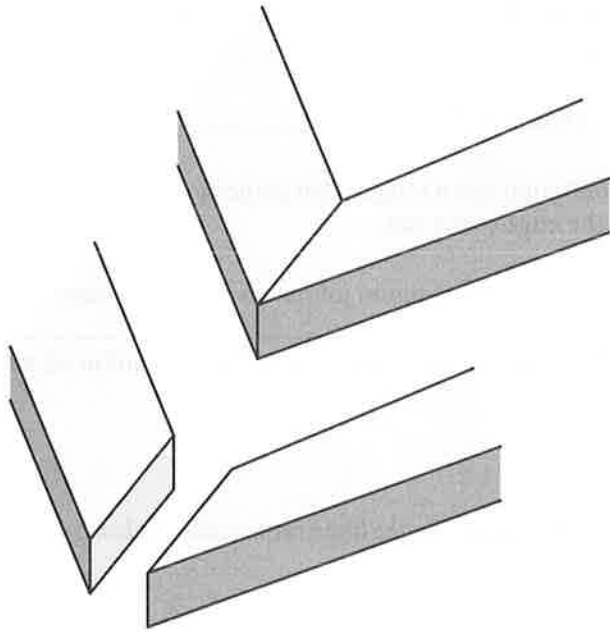
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



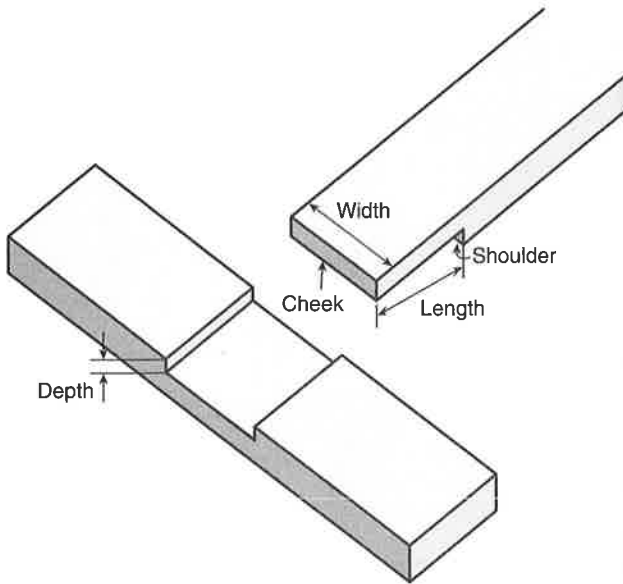
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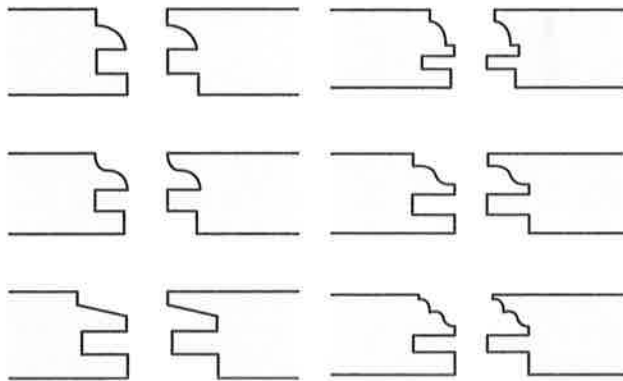
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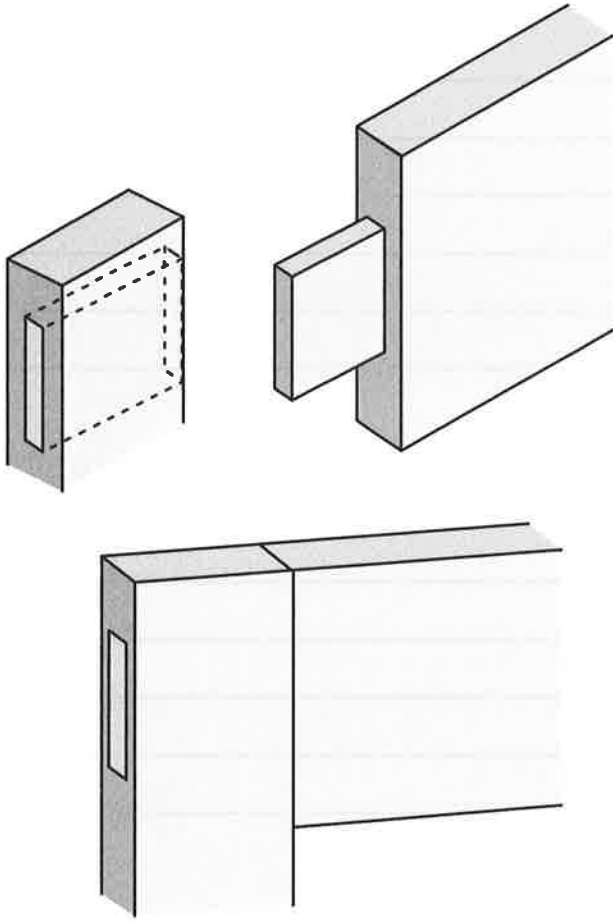
d.



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- 1. face frame
- 2. half-lap joint
- 3. miter joint
- 4. cope-and-stick profiles
- 5. through mortise and tenon

**SHORT ANSWER**

1. How do you create a pocket joint?

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2. How do you machine a half-lap joint?

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3. How do you make a mitered half-lap joint?

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4. How do you make a groove-and-stub tenon joint?

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5. How do you make the mortise in a blind mortise-and-tenon joint?

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## CHAPTER

# 17

## Rail Joints

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. The \_\_\_-tenon joint is a very functional joint in furniture that needs to be disassembled occasionally; it is a knockdown joint commonly used in trestle tables and beds.
- mitered
  - multiple
  - twin
  - tusk
- \_\_\_ 2. In a \_\_\_-tenon joint, the tenon itself has a mortise through it, which allows the insertion of a removable wedge that locks the joint together.
- mitered
  - multiple
  - twin
  - tusk
- \_\_\_ 3. If you are making a through cut on a table saw, you can still use the fence as a stop, provided you attach a \_\_\_ to it.
- half fence
  - multiple fence
  - twin-tenon joint
  - test piece
- \_\_\_ 4. The bridle joint is most often seen in rail construction for tables that have \_\_\_ aprons.
- straight
  - curved
  - no
  - twin
- \_\_\_ 5. The \_\_\_ joint used in rail joinery is not a particularly attractive joint, so it is most often used on heavy-duty post-and-rail structures, such as workbenches. Although not especially good looking, it is a very sturdy joint.
- mortise-and-tenon
  - slip
  - lap
  - dovetail

- \_\_\_\_\_ 6. The full-lap joint has material removed from \_\_\_\_\_ member(s).
- no
  - one
  - two
  - a varying number of
- \_\_\_\_\_ 7. The dovetail joint \_\_\_\_\_.
- snaps easy
  - strongly resists forces placed on it
  - uses a tenon extending through a mortise
  - has a socket cut into the rail
- \_\_\_\_\_ 8. Dowel joints are often strengthened using \_\_\_\_\_.
- wedges
  - bed bolts
  - corner braces
  - mortises
- \_\_\_\_\_ 9. A metal corner plate allows aprons to be assembled to legs with \_\_\_\_\_ joints.
- lap
  - butt
  - mortise-and-tenon
  - dovetail
- \_\_\_\_\_ 10. The bolt head in a bed bolt may be recessed and covered by a \_\_\_\_\_.
- decorative plate
  - wedge
  - tenon
  - corner plate

## COMPLETION

*Complete each statement.*

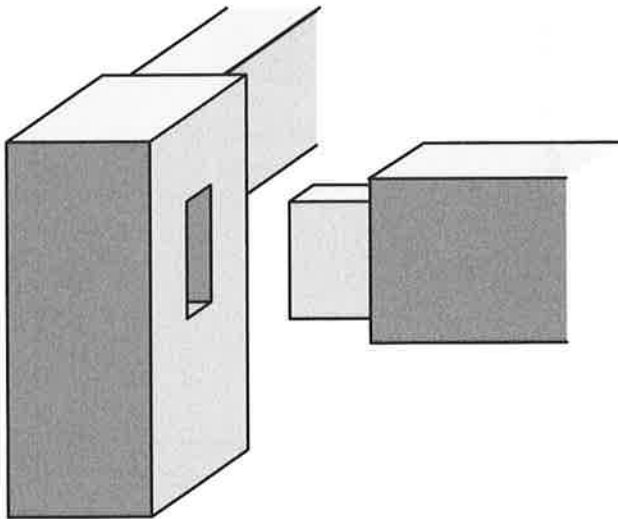
- \_\_\_\_\_ -tenon joints are used to join a drawer rail to a leg.
- The \_\_\_\_\_ -tenon joint, consisting of two or more tenons and corresponding mortises, is used on wide rails to counteract the expansion and contraction that would occur with a single-wide tenon.
- A(n) \_\_\_\_\_ tenon extends through its mortise and beyond.
- Slip joints are mostly used in frame construction, but one form of the slip joint, the \_\_\_\_\_ joint, is very good in rail joinery as well.
- The \_\_\_\_\_ -lap joint only has material removed from one member.
- The \_\_\_\_\_ -lap joint has a notch cut in the edge of each of the adjoining members, allowing them to interlock.

7. When crosscutting on the table saw, you should never use the rip \_\_\_\_\_ as a stop when making a through cut.
8. The \_\_\_\_\_ joint can be used for joining of a top drawer rail to a table legs.
9. The \_\_\_\_\_ joint is not a particularly good rail joint and is only suitable for small, light-duty constructions, unless it is reinforced.
10. Bed \_\_\_\_\_ are instances of specialized connectors used in making rail joints for beds.

### IDENTIFICATION

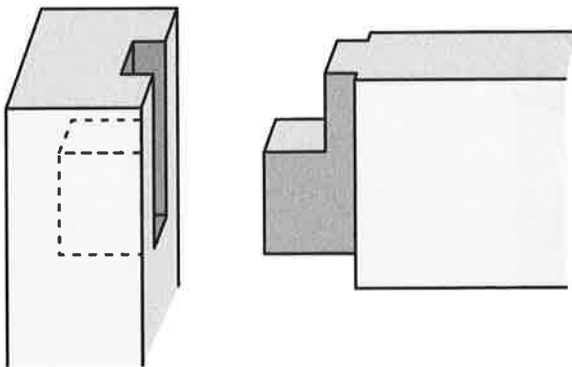
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



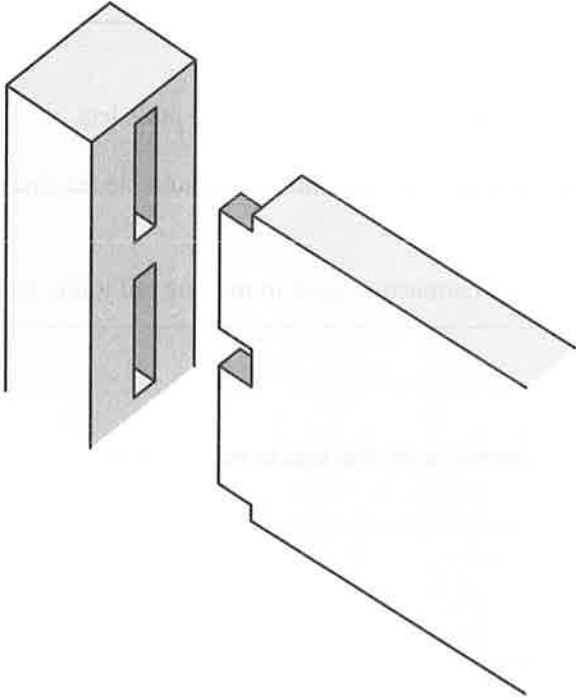
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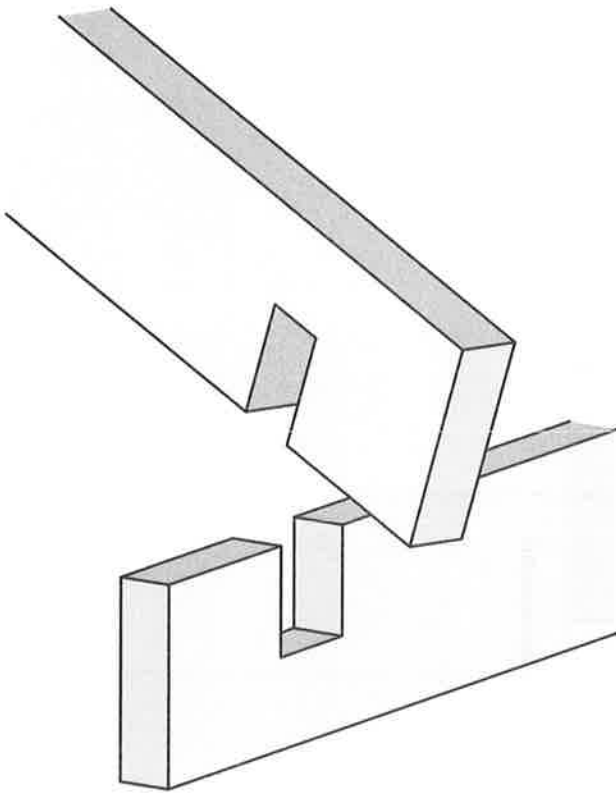
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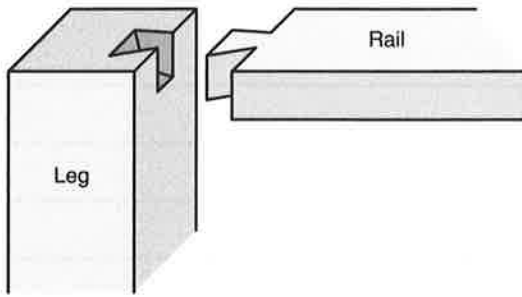
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- 1. dovetail joint
- 2. haunched tenon
- 3. edge-lap joint
- 4. multiple-tenon joint
- 5. mitered tenon

**SHORT ANSWER**

1. Where are slip joints used in rail joinery?

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2. What is the difference between the two lap joints used in rail joinery?

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3. What are the characteristics of beechwood?

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4. How does a metal corner plate work?

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5. How do bolt and barrel nut assemblies work?

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## CHAPTER

# 18

## Housed Joints

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. The butt joint is \_\_\_\_\_.
- a high-end joint
  - mainly used for aesthetic purposes
  - mainly used for utilitarian purposes
  - a variation on the dado-and-rabbet joint
- \_\_\_\_\_ 2. The \_\_\_\_\_-dado housing has a dado that stops short of the front of the case but runs fully to the back.
- stopped
  - rabbet
  - blind
  - through
- \_\_\_\_\_ 3. Both the stopped-dado and \_\_\_\_\_-dado housings require that the shelf be trimmed to fit the dado.
- through
  - dovetail
  - rabbet
  - blind
- \_\_\_\_\_ 4. A simple, shop-built \_\_\_\_\_ makes routing dados quick and easy, especially on large sheet goods that might be tricky to maneuver on the table saw.
- laminated
  - stop block
  - jig
  - router
- \_\_\_\_\_ 5. In the dado-and-rabbet joint, the dado is milled \_\_\_\_\_.
- into the case
  - into the shelf
  - into the divider
  - from the rabbet

- \_\_\_\_\_ 6. A shelf housed in a case can hold more weight if the rabbet is milled on its \_\_\_\_\_ surface.
- bottom
  - top
  - front
  - back
- \_\_\_\_\_ 7. In a tongue-and-dado housing, the tongue has \_\_\_\_\_ on both sides of it.
- rabbets
  - dadoes
  - blinds
  - shoulders
- \_\_\_\_\_ 8. In a dado-and-spline joint, the spline should be set into the case about \_\_\_\_\_ of the thickness of the case material.
- a quarter
  - a third
  - half
  - two-thirds
- \_\_\_\_\_ 9. The sliding dovetail joint has \_\_\_\_\_ mechanical strength than the simple dado housing.
- much less
  - slightly less
  - slightly more
  - much more
- \_\_\_\_\_ 10. The multiple-tenon housing consists of multiple tenons on the shelf or case divider that fit into corresponding \_\_\_\_\_ in the case.
- mortises
  - dadoes
  - splines
  - rabbets

## COMPLETION

*Complete each statement.*

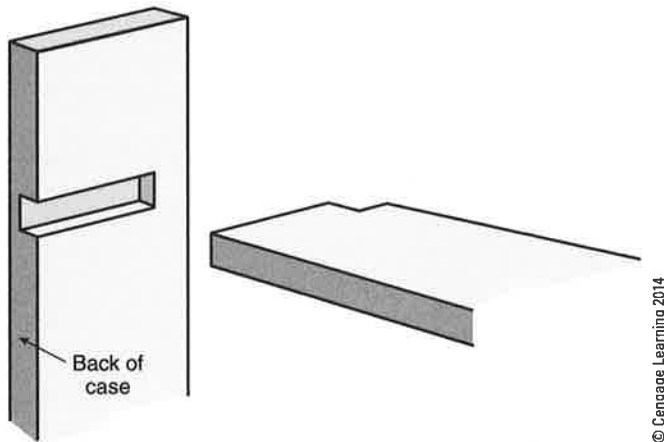
- The \_\_\_\_\_ joint is the most commonly used housing joint in cabinet construction.
- A dado that runs from one end of the case to the other is called a(n) \_\_\_\_\_ dado.
- A butt joint that is used as a housing joint must be \_\_\_\_\_.
- The \_\_\_\_\_-dado housing is stopped short of both the front and the back of the case.
- The dado-and-rabbet housing joint has a(n) \_\_\_\_\_ on the end of the shelf or divider.
- The \_\_\_\_\_-and-dado housing is similar to the dado and rabbet, but the rabbet is replaced by another structure.

7. The dado-and-\_\_\_\_\_ joint is a good choice when working with MDF or particle-board.
8. The \_\_\_\_\_ joint is a more elaborate version of the dado joint.
9. A slightly altered version of the sliding dovetail, with only one sloping side, is the sliding \_\_\_\_\_-dovetail.
10. The multiple-tenon housing is a(n) \_\_\_\_\_-and-tenon joint.

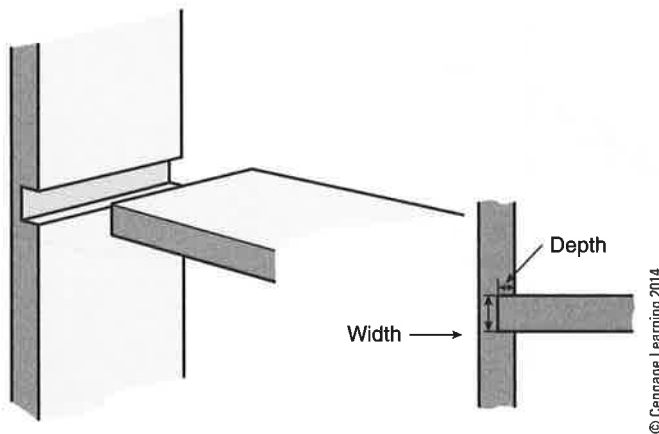
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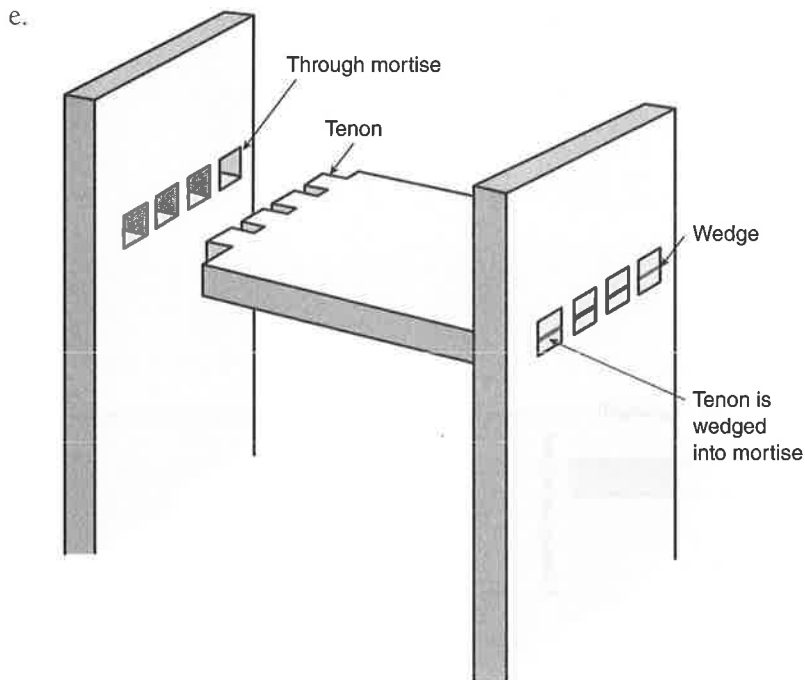
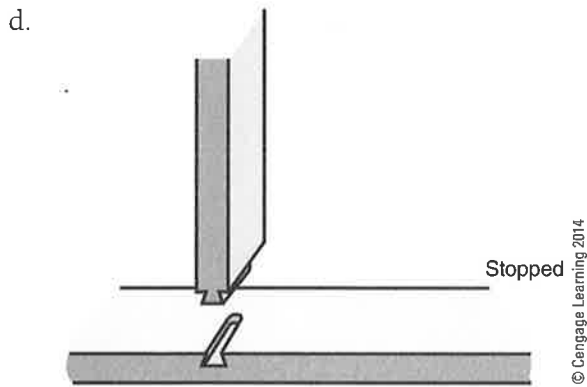
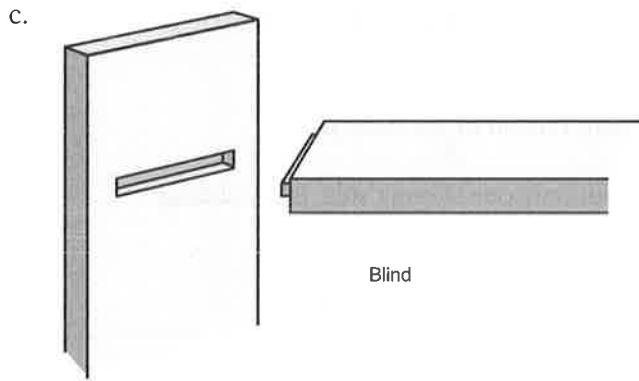
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



b.





- \_\_\_ 1. sliding-dovetail joint
- \_\_\_ 2. multiple-tenon housing
- \_\_\_ 3. dado housing
- \_\_\_ 4. stopped-dado joint
- \_\_\_ 5. tongue-and-dado joint

**SHORT ANSWER**

1. What reinforcements are used in the construction of butt joints?

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2. What is one disadvantage of dado joints, and how can a cabinetmaker avoid this problem?

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3. How do you make a jig for routing dados?

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4. What is soft maple used for?

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5. Describe how to make a dado-and-rabbet housing.

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## CHAPTER

# 19

## Making Wide Panels, Thick Blanks, and Corner Joints

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. Reinforced joints for wide panels include those that use \_\_\_\_.
- dowels
  - glue
  - miters
  - fingers
- \_\_\_ 2. The use of butterfly keys is a traditional element of \_\_\_\_ joinery.
- Italian
  - Japanese
  - Indian
  - Mexican
- \_\_\_ 3. In a tongue-and-groove joint, the tongue thickness is typically \_\_\_\_ the thickness of the stock being used.
- a quarter
  - a third
  - half
  - three-fifths
- \_\_\_ 4. The shiplap joint is \_\_\_\_ than the tongue-and-groove joint.
- more slowly cut
  - a better joint
  - more closely fitting
  - more quickly cut
- \_\_\_ 5. Clamps should be spaced \_\_\_\_ inches apart, alternating on the bottom and top of the panel.
- 2 to 4
  - 4 to 8
  - 8 to 12
  - 12 to 14

- \_\_\_\_\_ 6. When making a thick blank, the individual pieces must have \_\_\_\_\_ faces.
- large
  - small
  - parallel
  - perpendicular
- \_\_\_\_\_ 7. Corner joints are created by attaching the \_\_\_\_\_ of one piece to the \_\_\_\_\_ of another.
- face, face
  - edge, end
  - edge, edge
  - edge, face
- \_\_\_\_\_ 8. The advantage of the rabbet-and-groove joint is that \_\_\_\_\_.
- it has a rabbet on both pieces
  - it has a prominent seam
  - it must use a reveal
  - it locks in place
- \_\_\_\_\_ 9. The edge-miter joint looks similar to the case-miter joint, but differs in its \_\_\_\_\_.
- exclusive use of a lock
  - grain orientation
  - inability to conceal grain change
  - easy assembly
- \_\_\_\_\_ 10. The lock-miter joint is most frequently used to make \_\_\_\_\_.
- edge-miter joints
  - case-miter joints
  - grooves
  - tongues

## COMPLETION

*Complete each statement.*

- \_\_\_\_\_ panels are manufactured by joining two or more narrow boards together edge to edge.
- The use of \_\_\_\_\_ keys consists of inseting a double-dovetail shaped piece into the main pieces to help lock them together.
- \_\_\_\_\_ joints used for joining boards edge to edge for wider panels include tongue-and-groove, shiplap, glue, finger, and lock-miter joints.
- The \_\_\_\_\_ joint has rabbets cut into the opposite faces of adjoining boards. It cannot keep surfaces flush.
- \_\_\_\_\_ blanks are created when pieces are glued up face to face.
- \_\_\_\_\_ joints are constructed by joining the edge of one board to the face of another.

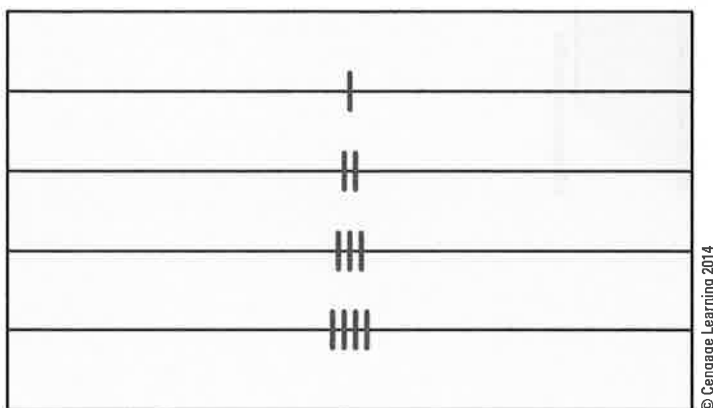


7. Several types of rabbet joints may also be employed in forming corner joints; they are the single-rabbet, double-rabbet, and rabbet-and-\_\_\_\_\_ joints.
8. One option with the single-rabbet joint is to cut the rabbet slightly less than the thickness of the mating piece, creating a(n) \_\_\_\_\_, which allows part of the piece being covered to show.
9. In the \_\_\_\_\_-miter joint, the end of one piece is joined to the end of another.
10. With the \_\_\_\_\_-miter joint, the edge of one piece is joined to the edge of its mate.

### IDENTIFICATION

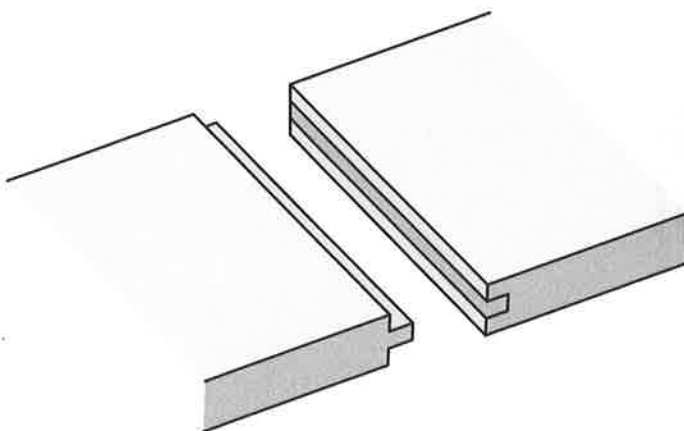
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



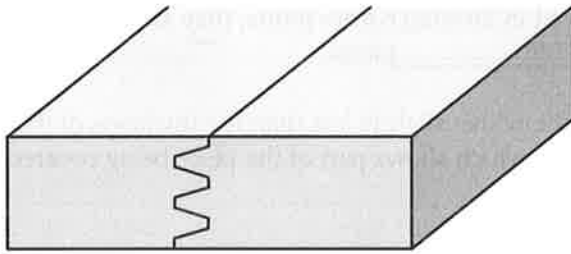
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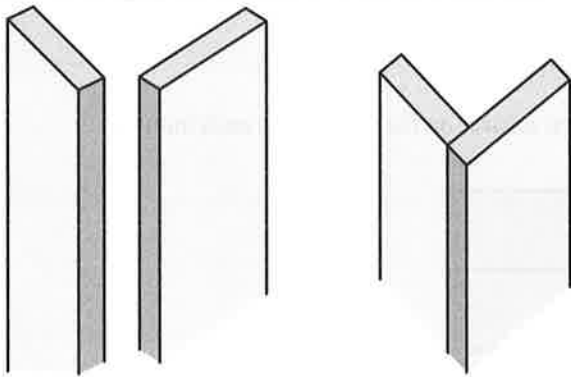
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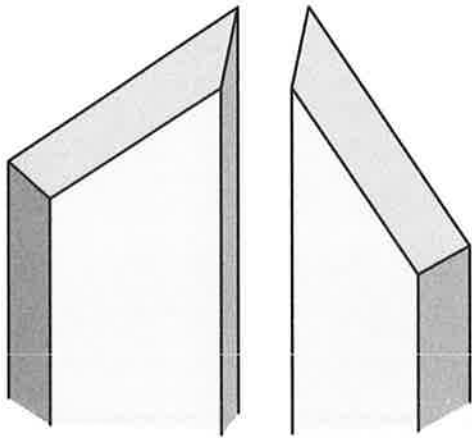
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- 1. edge-miter joint
- 2. corner joint
- 3. finger joint
- 4. tongue-and-groove joint
- 5. panel marked for easy reassembly

## SHORT ANSWER

1. How do you minimize warping in wide panels?

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2. How are butterfly keys constructed and used?

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3. How do you mill a tongue-and-groove joint for a wide panel?

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4. How are thick blanks created?

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5. What are the safety precautions you should take when working with a shaper?

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## SECTION VI: CABINET AND FURNITURE ANATOMY

# CHAPTER 20 Cabinets

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Frameless cabinets were initially introduced in \_\_\_\_\_.  
a. Europe  
b. New York  
c. Japan  
d. China
- \_\_\_\_\_ 2. In a cabinet with a face frame, the bottom is usually recessed into a \_\_\_\_\_.  
a. frame  
b. top  
c. dado  
d. rabbet
- \_\_\_\_\_ 3. In a face frame, the \_\_\_\_\_ fit between the stiles.  
a. mullions  
b. cross stiles  
c. rungs  
d. rails
- \_\_\_\_\_ 4. In European cabinets, a series of \_\_\_\_\_-mm holes are drilled into the sides.  
a. 5  
b. 12  
c. 20  
d. 32
- \_\_\_\_\_ 5. European-style cabinets \_\_\_\_\_.  
a. use the extended sides as the foundation  
b. are usually set on separate feet  
c. use 32-mm pegs as feet  
d. are set on a pedestal

- \_\_\_\_\_ 6. European cabinets are \_\_\_\_\_.
- rarely found
  - built with frames
  - produced rapidly
  - slowly produced
- \_\_\_\_\_ 7. The standard height of kitchen base cabinets, including the countertop, is \_\_\_\_\_ inches.
- 20
  - 32
  - 36
  - 48
- \_\_\_\_\_ 8. Kitchen base cabinets are \_\_\_\_\_ inches deep, excluding the countertop.
- 12
  - 20
  - 24
  - 36
- \_\_\_\_\_ 9. The countertop in bathroom vanities is generally \_\_\_\_\_ inch(es) in thickness.
- a half
  - one
  - one and a quarter
  - one and a half
- \_\_\_\_\_ 10. Auxiliary fences are also known as \_\_\_\_\_ fences.
- sacrificial
  - dado
  - rabbet
  - push

## COMPLETION

Complete each statement.

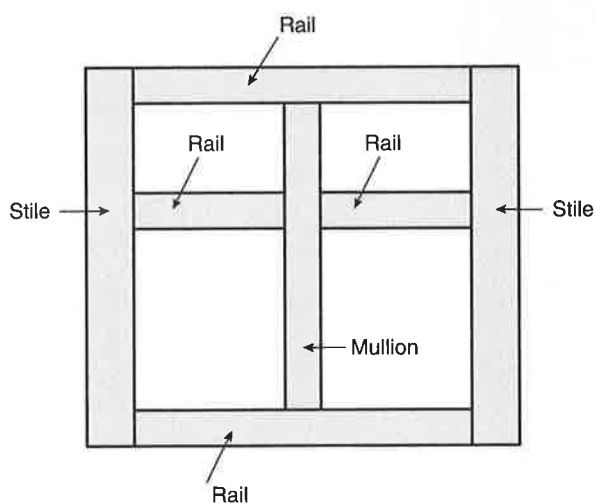
- Cabinets without face frames are called *frameless* or \_\_\_\_\_ cabinets.
- The essential parts of a cabinet are the sides, the bottom, and the \_\_\_\_\_.
- Cabinets with face frames have vertical members known as \_\_\_\_\_.
- A face frame may be divided by a vertical member, called a(n) \_\_\_\_\_, which fits between the rails.
- The European cabinet is also known as the \_\_\_\_\_ millimeter cabinet.
- Instead of the tops and bottoms of frameless cabinets being set into \_\_\_\_\_, as they typically are in face-frame construction, they are usually doweled or screwed into place through the sides.
- European cabinetry is \_\_\_\_\_ (less/more) expensive than traditional face-frame cabinetry.

8. Kitchen \_\_\_\_\_ cabinets are 34 1/2" high; they sit on the floor.
9. Most kitchen \_\_\_\_\_ cabinets are 12" deep and are usually 30" high, although it is possible to purchase them in other dimensions.
10. Bathroom \_\_\_\_\_, which are cabinets that contain a sink, are the same depth as kitchen base cabinets but are a total height of 34" with the countertop.

## IDENTIFICATION

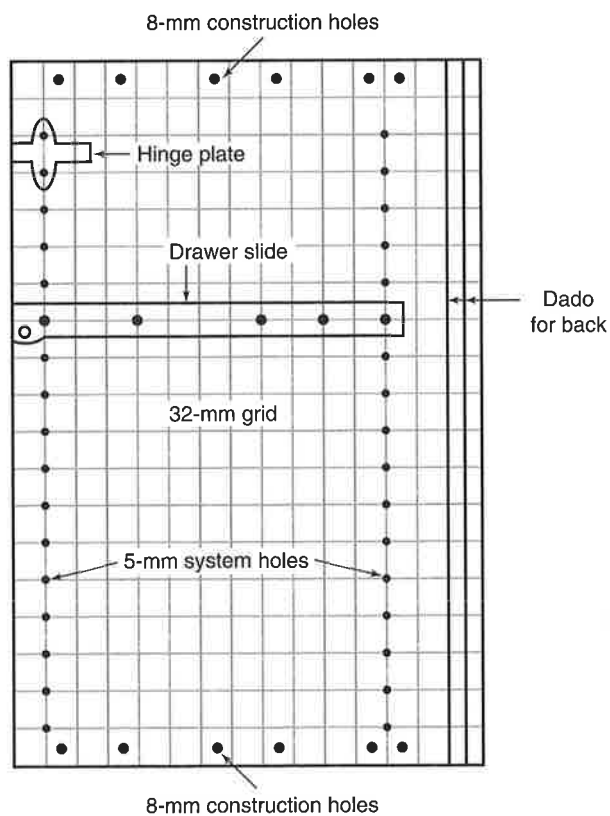
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



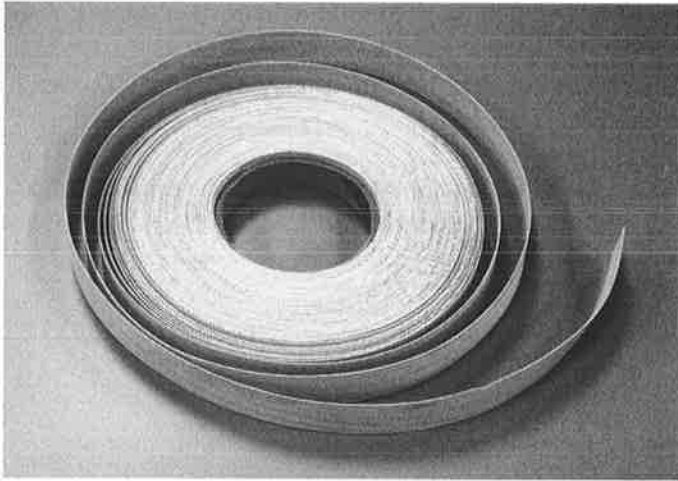
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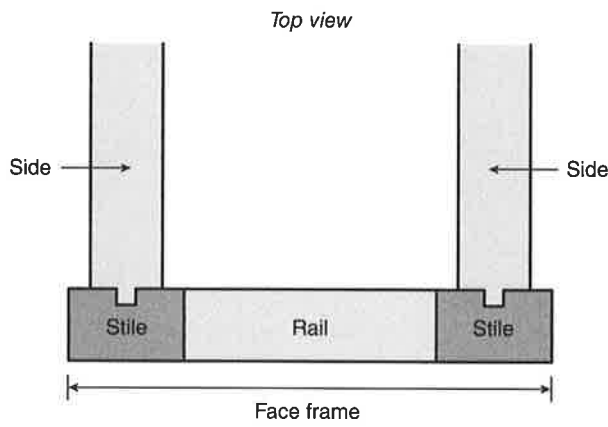
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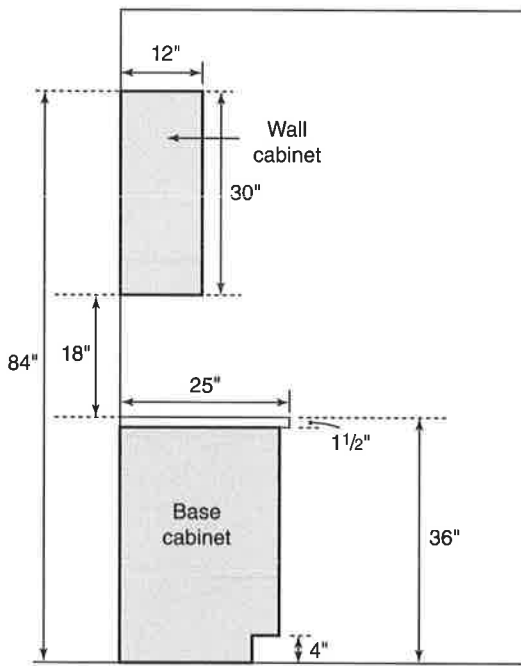
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3. What has caused the upsurge in the popularity of European cabinets?

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4. What kinds of alterations exist to the dimensions of kitchen wall cabinets?

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5. What is an auxiliary fence?

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## CHAPTER

# 21

## Cabinet Doors and Drawers

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. The simplest type of door has \_\_\_ frame.
- a flat-panel
  - a raised-panel
  - no
  - a narrow
- \_\_\_ 2. A solid wood panel should never be \_\_\_.
- glued into its frame
  - given room to account for expansion
  - decorated with a profile on their edges
  - raised
- \_\_\_ 3. The most time-consuming way to connect door stiles and rails is with \_\_\_ joints.
- cope-and-stick
  - raised-panel
  - biscuit
  - mortise-and-tenon
- \_\_\_ 4. When making lap joints, \_\_\_ of the material's thickness is removed from the back of the stile and the front of the rail.
- one-quarter
  - one-third
  - two-fifths
  - one-half
- \_\_\_ 5. The dowel joint, biscuit joint, and pocket-screw method of joining the stiles and rails are all simple \_\_\_ joints between the stiles and rails.
- dovetail
  - butt
  - mortise
  - lap

- \_\_\_\_\_ 6. A flat door should have its handle or knob set \_\_\_\_\_ inch(es) in from the edge of the door and 4 inches from the corner.
- 1
  - 2
  - 3
  - 4
- \_\_\_\_\_ 7. \_\_\_\_\_ doors sit partly into the face frame or cabinet, if it is without a face frame.
- Overlay
  - Flush
  - Inlay
  - Drawer
- \_\_\_\_\_ 8. One option to deal with double doors is to add a(n) \_\_\_\_\_ in the center of the frame between the two rails.
- astragal
  - raised panel
  - stile
  - mullion
- \_\_\_\_\_ 9. A drawer lock is similar to a \_\_\_\_\_ joint but requires a special drawer-lock bit used with a table-mounted router.
- biscuit
  - dowel
  - dovetail
  - rabbet-and-dado
- \_\_\_\_\_ 10. A sliding dovetail is also called a \_\_\_\_\_ dovetail.
- dado
  - half-blind
  - through
  - rabbet

## COMPLETION

*Complete each statement.*

1. The \_\_\_\_\_ door is a style of door with medium complexity that has a frame consisting of stiles and rails.
2. The style of door that is the most complicated and time consuming to build is the \_\_\_\_\_ door.
3. In a raised-panel door, the width of the panel must be \_\_\_\_\_ than the distance from the bottom of the groove in one stile to the bottom of the groove in the other stile.
4. The strongest way to connect the door stiles and rails is with \_\_\_\_\_ joints.

5. The groove-and-\_\_\_\_\_ tenon method of joining stiles and rails is closely related to the cope-and-stick joint, but it can be machined using just the table saw.
6. Doors are built to be 3/4" wider and taller than the door opening, yielding a 3/8" overlap all the way around.
7. A(n) \_\_\_\_\_ is a strip of wood attached to either the front or the back of one door to eliminate the gap between the two.
8. Like doors, drawers may be \_\_\_\_\_, overlay, or flush.
9. The \_\_\_\_\_ dovetail is the one most often seen in drawer construction.
10. If the drawer is very wide, a centered wooden strip, called a(n) \_\_\_\_\_, can be installed to prevent sagging.

## IDENTIFICATION

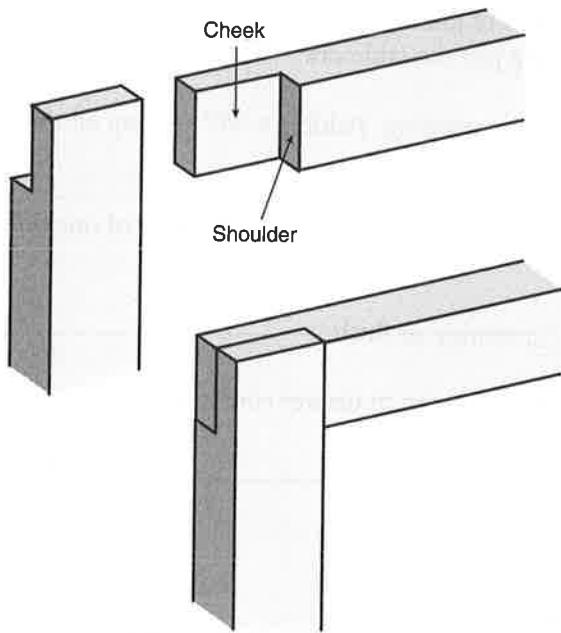
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



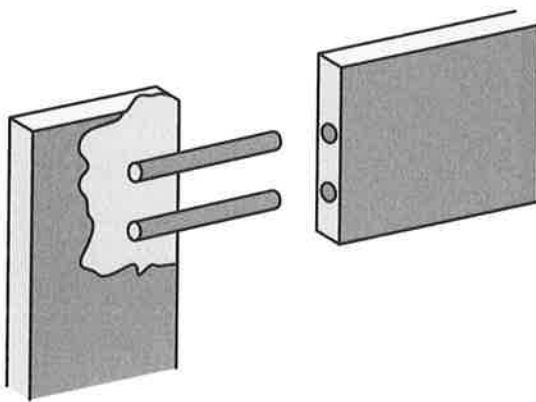
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b.



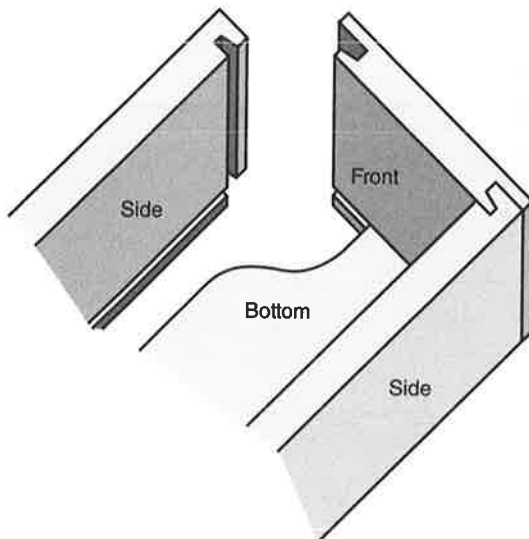
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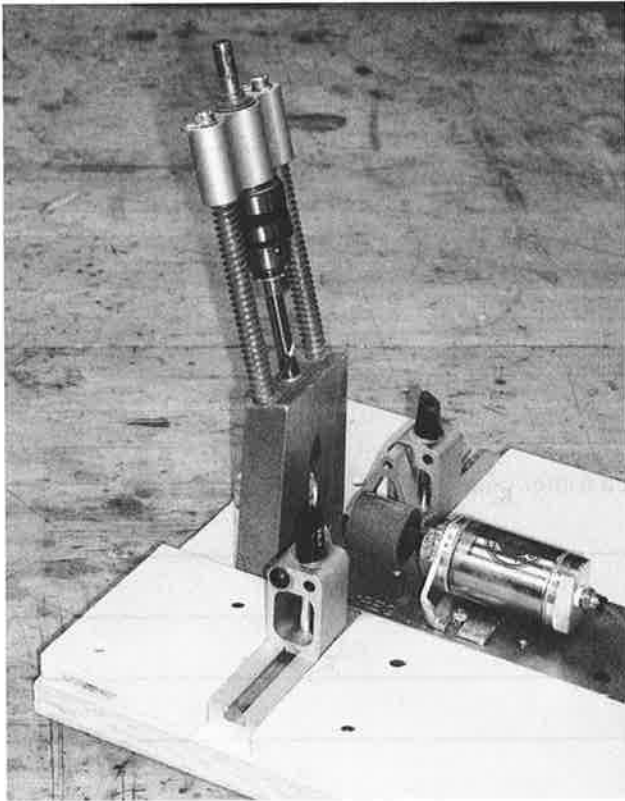
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- 1. routed drawer lock joint
- 2. dowel joint
- 3. lap joint
- 4. pocket-hole jig
- 5. flat-panel doors

**SHORT ANSWER**

1. How do you make a raised panel on a router table?

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2. How do you mill a groove-and-stub tenon joint on a router table?

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3. How do you mill a rabbet-and-dado joint on a router table?

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4. How do you machine a sliding dovetail?

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5. Describe the attributes of cherry wood.

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## CHAPTER

# 22

## Tables and Desks

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Aprons can be rectangular or \_\_\_\_\_.
- square
  - tapered
  - relieved
  - sculpted
- \_\_\_\_\_ 2. Bedside tables are often called \_\_\_\_\_.
- night stands
  - coffee tables
  - sideboards
  - hall tables
- \_\_\_\_\_ 3. The basic type of table is sometimes called a \_\_\_\_\_ table.
- trestle
  - pedestal
  - dining
  - leg-and-apron
- \_\_\_\_\_ 4. Tabletop blocks, used to attach the tabletop to the frame, are also known as \_\_\_\_\_ blocks.
- figure-eight
  - trestle
  - button
  - mortise
- \_\_\_\_\_ 5. Pedestal tables consist of a central \_\_\_\_\_ that supports the top.
- trestle
  - pillar
  - leaf
  - apron

- \_\_\_ 6. What is the bevel angle for a 12-sided pedestal?
- 15 degrees
  - 30 degrees
  - 90 degrees
  - 360 degrees
- \_\_\_ 7. \_\_\_ is defined as the distance from the floor to the underside of the desktop.
- Knee room
  - Leg room
  - Thigh room
  - Apron clearance
- \_\_\_ 8. The \_\_\_ desk is also known as a *plantation desk*.
- postmaster's
  - schoolmaster's
  - computer
  - writing
- \_\_\_ 9. A \_\_\_ is a combination desk and bookcase.
- plantation desk
  - secretary
  - schoolmaster's desk
  - writing desk
- \_\_\_ 10. The sight angle of a computer desk should not exceed \_\_\_ degrees.
- 30
  - 45
  - 60
  - 90

## COMPLETION

Complete each statement.

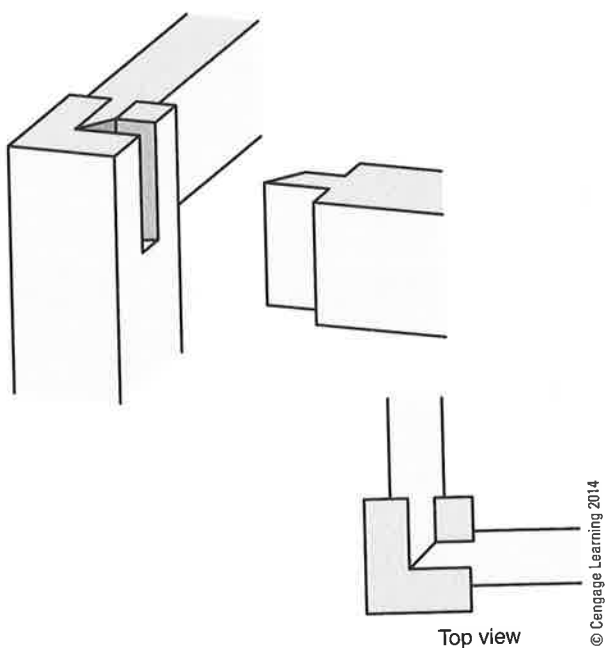
- \_\_\_\_\_ are horizontal pieces that run between the legs and support the tabletop.
- \_\_\_\_\_ tables generally sit in front of a couch and are sometimes called *cocktail tables*.
- Side tables are sometimes called \_\_\_\_\_; these are oblong tables originally designed to be set against a wall close to the kitchen.
- There are two commonly used types of tabletop fasteners, both of which are metal; one is shaped like the figure eight, and the other is called a(n) \_\_\_\_\_-clip.
- Not all tables are leg-and-apron tables. There are also \_\_\_\_\_ tables and pedestal tables.
- A(n) \_\_\_\_\_ table is any table that has leaves hinged to the tabletop that hang vertically when not in use.
- The slant-top desk is also known as a(n) \_\_\_\_\_ desk or a *stand-up desk*.

8. A modesty or \_\_\_\_\_ panel often closes the knee-hole on the far side of the knee-hole desk.
9. A(n) \_\_\_\_\_ desk, also called a *tambour desk*, is characterized by a tambour curtain that pulls down to completely enclose the writing surface.
10. The sight angle of a computer desk is defined as the angle between the sight line to the \_\_\_\_\_ and the sight line to the monitor.

## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

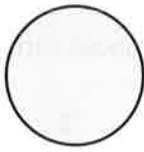
a.



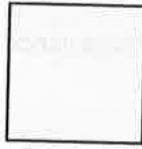
b.



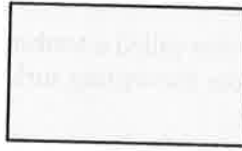
c. Top could be:



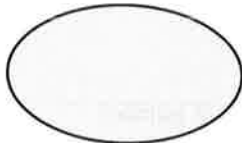
Round



Square



Rectangular



Elliptical

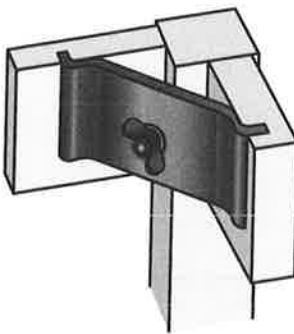
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- \_\_\_ 1. drop-leaf table
- \_\_\_ 2. mitered tenons
- \_\_\_ 3. postmaster's desk
- \_\_\_ 4. tabletops
- \_\_\_ 5. metal shopmade table brace

**SHORT ANSWER**

1. What are the steps involved in making and using a fixed tapering jig for a two-sided taper?

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2. What standards are associated with dining tables?

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3. How do you make button blocks?

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4. How is a compass used in making an eight-sided column?

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5. What configuration standards are associated with computer desks?

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## CHAPTER

# 23

## Chests

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. In its most primitive form, the blanket chest consists of just \_\_\_ boards.
- four
  - five
  - six
  - seven
- \_\_\_ 2. Which of the following is an example of a blanket chest?
- tool chest
  - chest of drawers
  - bureau
  - dresser
- \_\_\_ 3. The function of a chest is to \_\_\_.
- organize tools
  - display items
  - replace tables
  - store items safely
- \_\_\_ 4. Basswood is \_\_\_, and for this reason, it has been used extensively for kitchen utensils and food containers.
- citrus-scented
  - heavy in weight
  - odorless
  - colorless
- \_\_\_ 5. The chest of drawers is \_\_\_ than the blanket chest.
- older historically
  - more difficult to build
  - less complex
  - less organizationally useful

- \_\_\_\_\_ 6. The width of a chest-on-chest ranges from \_\_\_\_\_ inches.
- 18 to 24
  - 36 to 48
  - 72 to 84
  - 96 to 108
- \_\_\_\_\_ 7. A dresser is essentially a low and wide \_\_\_\_\_.
- chest-on-chest
  - blanket chest
  - chest of drawers
  - armoire
- \_\_\_\_\_ 8. The overall height of a dresser ranges from \_\_\_\_\_ inches.
- 29 to 34
  - 39 to 44
  - 49 to 54
  - 59 to 64
- \_\_\_\_\_ 9. Another name for an armoire is a \_\_\_\_\_, and it is a large, often ornate piece of furniture.
- blanket chest
  - chest of drawers
  - bureau
  - wardrobe
- \_\_\_\_\_ 10. When making an ogee bracket foot, the first step is to \_\_\_\_\_.
- sand the lumber
  - make a template of the foot
  - mill an appropriately sized strip of lumber
  - draw the ogee on the piece of lumber

## COMPLETION

Complete each statement.

1. The \_\_\_\_\_ chest is the simplest form of chest.
2. The dimensions of blanket chests vary greatly, but they typically run from 30 to \_\_\_\_\_ inches in length.
3. The \_\_\_\_\_ represents a much more evolved kind of chest; historically, it is a later form. As its name indicates, it is essentially a chest holding a number of drawers.
4. \_\_\_\_\_, *Tilia americana*, is also known as *American linden* or *American lime*.
5. When making a(n) \_\_\_\_\_ scrolled cut, you only need to make a pattern for half of it.
6. A(n) \_\_\_\_\_ is just what it sounds like: One chest is placed on top of another.

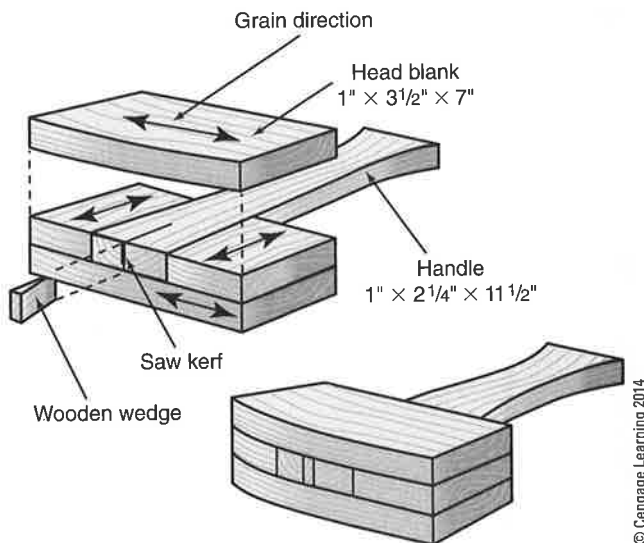


7. When \_\_\_\_\_ on the table saw, resist the impulse to reach over with your hand to remove the cutoff; wait until the blade has stopped spinning.
8. A dresser is sometimes called a(n) \_\_\_\_\_.
9. It is hard to imagine, but houses were once built without closets. People used a piece of furniture called a(n) \_\_\_\_\_ to hold their hanging clothes.
10. The \_\_\_\_\_ into which the wedge is driven locks the mallet's handle firmly in the mallet head.

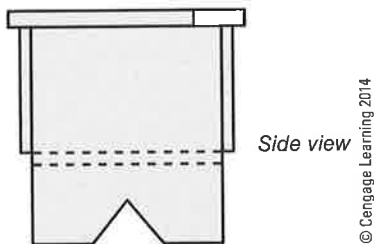
## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

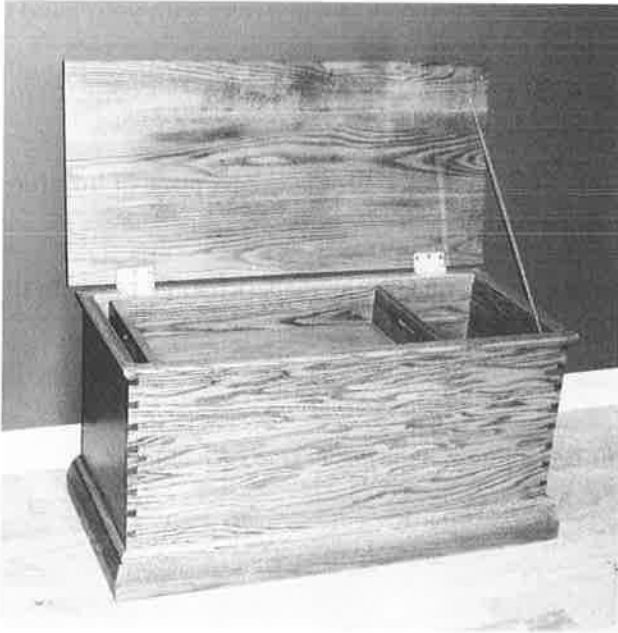
a.



b.



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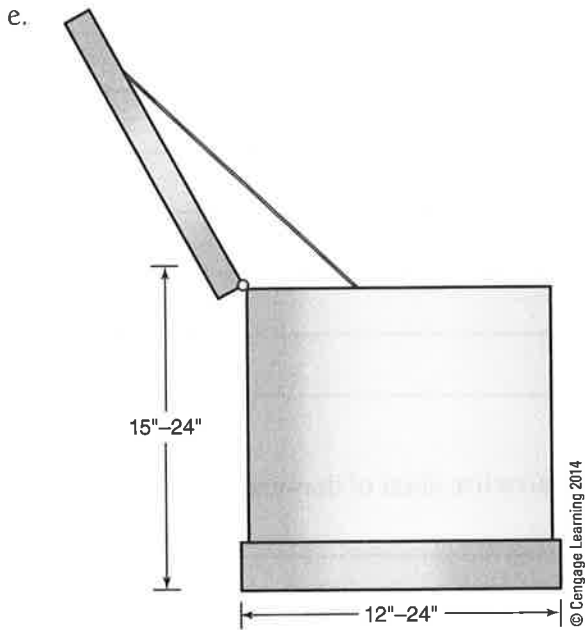


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The Ball and Claw, Jeffrey Greene Furnituremaker, [www.JeffreyGreeneNewport.com](http://www.JeffreyGreeneNewport.com)



- \_\_\_ 1. blanket chest guidelines
- \_\_\_ 2. primitive chest side view
- \_\_\_ 3. block-front chest
- \_\_\_ 4. wooden mallet diagram
- \_\_\_ 5. dovetailed chest with tray

**SHORT ANSWER**

1. What are the general dimensions of a blanket chest?

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2. What are the steps in making an applied base?

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3. What guidelines are followed to make a functional and attractive chest of drawers?

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4. How do you make a scrolled base?

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5. When making an ogee bracket foot, what steps are left after you rip the blank to final width?

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## CHAPTER

# 24

## Beds

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. A bedstead is also called a \_\_\_\_\_.  
a. bedframe  
b. head rail  
c. headboard  
d. footboard
- \_\_\_\_\_ 2. Bedposts may be square, turned, or \_\_\_\_\_.  
a. rectangular  
b. elliptical  
c. relieved  
d. tapered
- \_\_\_\_\_ 3. The \_\_\_\_\_ rails run the length of the bed between the posts.  
a. head  
b. foot  
c. end  
d. side
- \_\_\_\_\_ 4. How many posts does a bed have?  
a. one  
b. two  
c. three  
d. four
- \_\_\_\_\_ 5. When the headboard and footboard are permanently connected to other parts of the bed, the headboard and footboard assemblies are usually \_\_\_\_\_ together.  
a. screwed  
b. mortised  
c. glued  
d. nailed

- \_\_\_ 6. Which of the following is a standard for bed construction?
- The bed should be easily transportable.
  - The box springs and mattress must be accommodated.
  - Storage area must be provided.
  - The bed must be aesthetically pleasing.
- \_\_\_ 7. The recommended height from the floor to the top of the mattress is \_\_\_ inches.
- 12 to 15
  - 17 to 20
  - 24 to 27
  - 30 to 33
- \_\_\_ 8. Waterbeds generally use a \_\_\_-style bedstead.
- posted
  - Murphy
  - platform
  - futon
- \_\_\_ 9. The platform of a platform bed is often made of \_\_\_.
- plywood
  - hardwood
  - pine
  - straw
- \_\_\_ 10. A bed with tall and thin posts is known as a \_\_\_ bed.
- pencil-post
  - banister
  - futon
  - sleigh

## COMPLETION

Complete each statement.

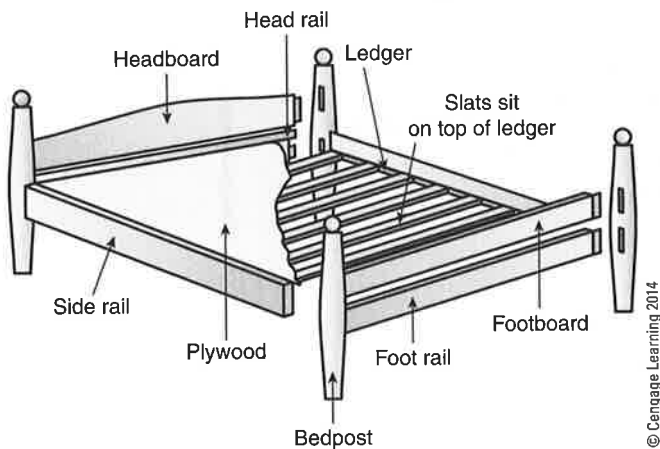
- The framework of a bed is called a(n) \_\_\_\_\_.
- The posts at the bottom of the bed are connected by the foot rail and \_\_\_\_\_, if there is one.
- \_\_\_\_\_, *Juglans cinerea*, is a member of the walnut family and is sometimes called white walnut.
- The classic bed form has \_\_\_\_\_ to support the box springs.
- The \_\_\_\_\_ is attached at the head of the bedstead.
- The two posts at the head of the bed are connected by a head \_\_\_\_\_ and the headboard.
- The simplest form of bed is the \_\_\_\_\_ bed.

8. \_\_\_\_\_ beds are a combination of sofa and bed.
9. Beds that are stacked one over the other are known as \_\_\_\_\_ beds.
10. Beds that fold up vertically, so they are parallel to the wall when closed, are known as \_\_\_\_\_ beds.

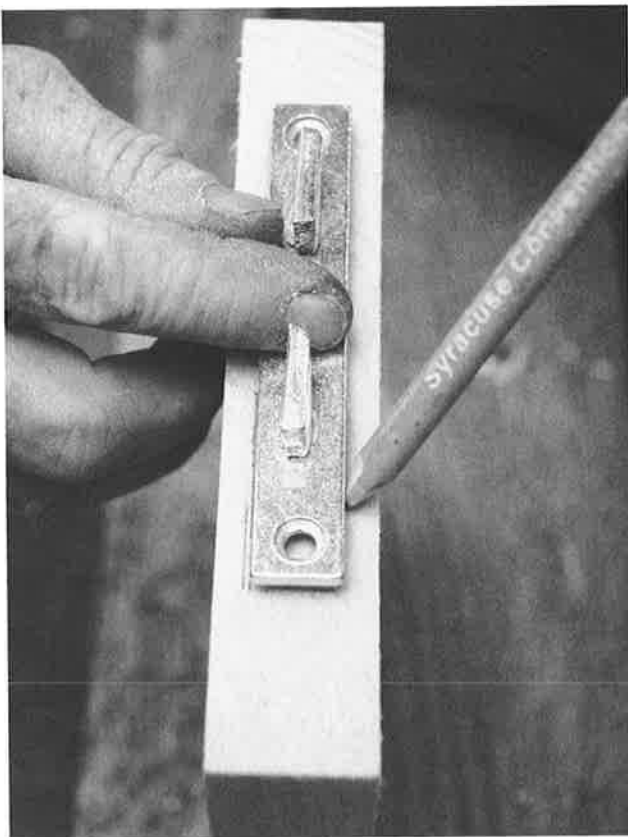
## IDENTIFICATION

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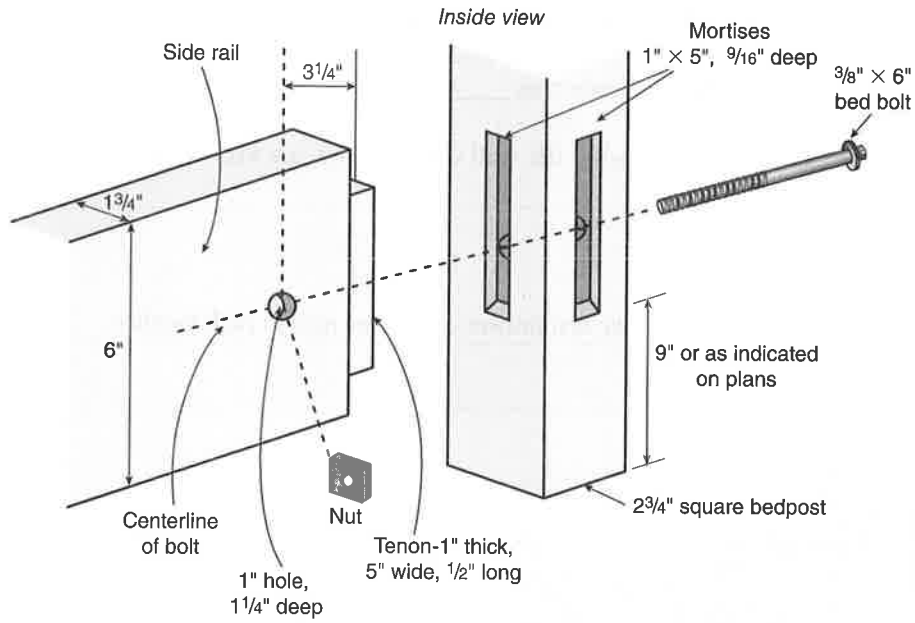
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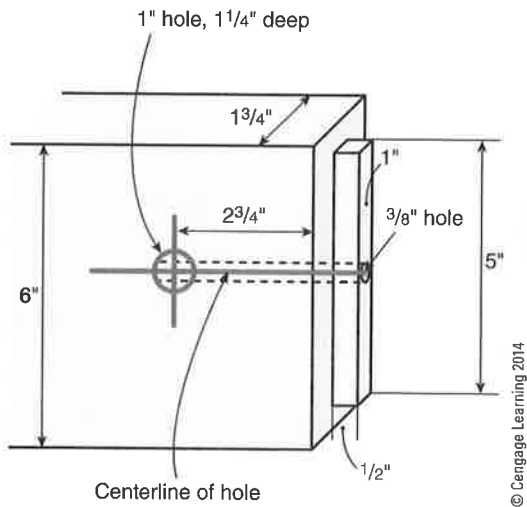


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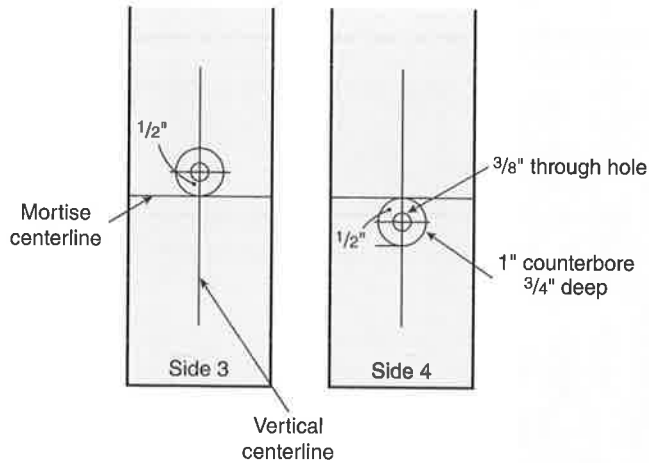
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- \_\_\_ 1. basic bed anatomy
- \_\_\_ 2. carrying the centerline
- \_\_\_ 3. centering a male bracket
- \_\_\_ 4. drilling holes for bed bolt installation
- \_\_\_ 5. layout for two bed bolts per post

**SHORT ANSWER**

1. Describe the characteristics of butternut wood.

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2. What are the first few steps involved in installing bed bolts (until you have to drill counterbore holes)?

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3. After drilling counterbore holes, what do you need to do to install bed bolts?

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4. How do you install mortised bed rail fasteners?

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5. How do you make a zero-clearance throat plate? Why is this important?

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## CHAPTER

# 25

## Chairs

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Chairs are divided into \_\_\_\_\_ main categories.
- two
  - three
  - four
  - five
- \_\_\_\_\_ 2. A side chair should have a seat height of \_\_\_\_\_ inches.
- 9 to 14
  - 14 to 19
  - 19 to 24
  - 24 to 29
- \_\_\_\_\_ 3. The curved pieces of wood attached to a rocking chair are known as \_\_\_\_\_.
- rockers
  - rollers
  - slats
  - easers
- \_\_\_\_\_ 4. A chair should \_\_\_\_\_ for optimum comfort.
- slant slightly forward
  - slant slightly back
  - be wider at the back
  - not have arms
- \_\_\_\_\_ 5. Chairs have two major components: the \_\_\_\_\_ and the supporting frame.
- spindles
  - seat
  - rungs
  - slats

- \_\_\_\_\_ 6. \_\_\_\_\_ extend from one rung to another, providing one means of tying the chair frame together.
- Crests
  - Spindles
  - Stretchers
  - Splats
- \_\_\_\_\_ 7. A seat to which the legs are attached is called a(n) \_\_\_\_\_ seat.
- rung
  - frame
  - open
  - slab
- \_\_\_\_\_ 8. As with chairs, bench parts may be rectangular, turned, or \_\_\_\_\_.
- mortised
  - round
  - square
  - elliptical
- \_\_\_\_\_ 9. Small couches are known as \_\_\_\_\_.
- loveseats
  - folders
  - pews
  - stools
- \_\_\_\_\_ 10. The first \_\_\_\_\_ was designed by Thomas Lee in 1903.
- porch swing
  - sofa
  - pew
  - Adirondack chair

## COMPLETION

*Complete each statement.*

- A(n) \_\_\_\_\_ is defined as a piece of furniture, consisting of a seat, legs, back, and sometimes arms, that was designed to accommodate one person.
- \_\_\_\_\_ chairs differ from armchairs in that they do not have arms.
- \_\_\_\_\_ chairs are lower, both in seat height and overall height, than either side chairs or armchairs.
- A(n) \_\_\_\_\_ chair is a chair with two curved pieces of wood attached to the bottom of the legs.
- The \_\_\_\_\_ of a chair run between the legs and connect them.
- The top of the back of a chair is called a(n) \_\_\_\_\_ rail.
- \_\_\_\_\_ serve the same function as slats, but they are turned.

8. Both benches and \_\_\_\_\_ represent the earliest and simplest forms of seating that are still used today.

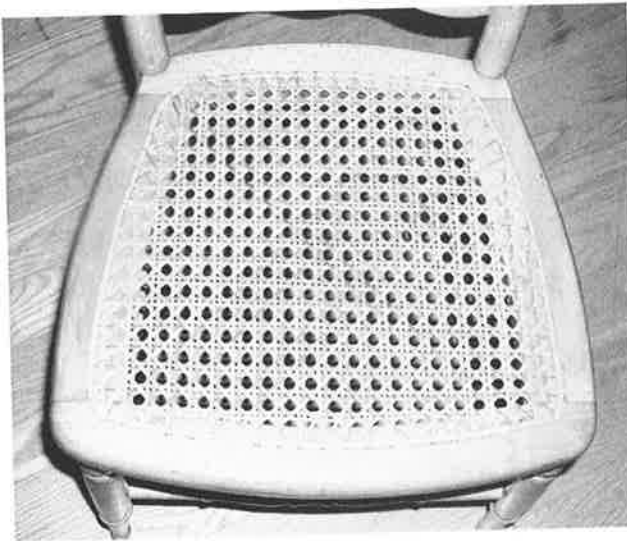
9. \_\_\_\_\_, also called *couches*, are actually larger versions of easy chairs.

10. \_\_\_\_\_ are essentially benches with backs, and like benches, they are built to seat more than a single occupant.

### IDENTIFICATION

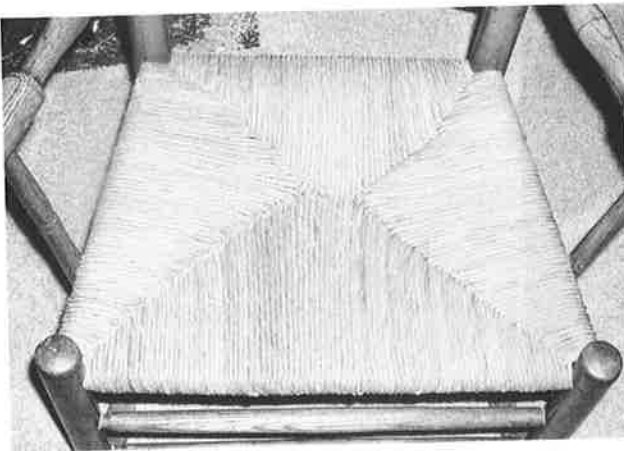
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



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b.



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c.



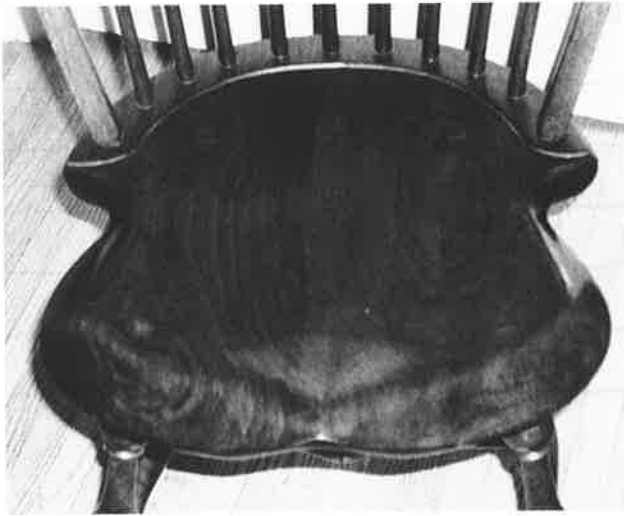
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d.



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- 1. woven rush seat
- 2. bench
- 3. stool
- 4. slab seat
- 5. caned seat

**SHORT ANSWER**

1. Give a brief history of the chair.

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2. What are some characteristics of an easy chair?

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3. What types of joints are used in chairs?

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4. How can you more accurately drill holes in round stock?

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5. What are the characteristics of white ash?

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## CHAPTER

# 26

## Hardware

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. An inset door is also known as a(n) \_\_\_ door.
- flush
  - overlay
  - lipped
  - paneled
- \_\_\_ 2. On butt hinges, \_\_\_ leaves are shaped for a closer fit.
- flush
  - swaged
  - straight
  - inset
- \_\_\_ 3. A \_\_\_ is an ornamental terminating point seen on a post, a piece of furniture, or a hinge.
- straightedge
  - swage
  - pivot
  - finial
- \_\_\_ 4. \_\_\_ hinges are similar to pivot hinges but are smaller and not as strong.
- Knife
  - Flush
  - Finial
  - Formed
- \_\_\_ 5. One type of invisible hinge is the \_\_\_ hinge; it is larger than the barrel hinge and has leaves that are mortised into the door edge and the cabinet.
- butt
  - pin
  - pivot
  - Soss

- \_\_\_\_\_ 6. European hinges are sometimes referred to as \_\_\_\_\_ hinges.
- cup
  - Soss
  - pin
  - pivot
- \_\_\_\_\_ 7. Drop-leaf \_\_\_\_\_ are required when using drop-leaf hinges.
- pins
  - supports
  - finials
  - panels
- \_\_\_\_\_ 8. \_\_\_\_\_ hold doors closed. They are located on the inside of the door and are not seen when the door is closed.
- Latches
  - Hinges
  - Handles
  - Catches
- \_\_\_\_\_ 9. A \_\_\_\_\_ is a vertically installed strip with slots to accept shelf supports, which in turn support the shelf.
- panel
  - pilaster
  - leaf
  - finial
- \_\_\_\_\_ 10. Related to levelers are \_\_\_\_\_, which may nail or screw on to the bottom of furniture, often the legs, to make it easy to move the furniture around without damaging the floor.
- extension slides
  - lazy Susans
  - escutcheons
  - glides

## COMPLETION

Complete each statement.

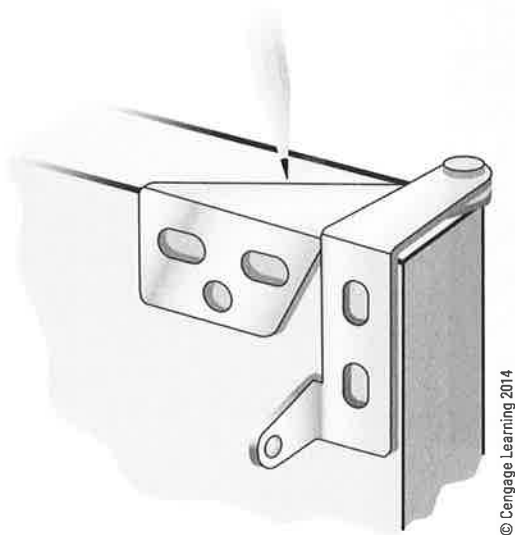
- A(n) \_\_\_\_\_ is a jointed or flexible device that allows the turning or pivoting of a part on a stationary frame.
- \_\_\_\_\_ hinges are also called *bent hinges* or *wraparound hinges*.
- \_\_\_\_\_ hinges consist of two plates that are riveted together. They can be used on overlay doors.
- \_\_\_\_\_ hinges are completely hidden when the door is closed.
- \_\_\_\_\_ hinges are concealed hinges that can be used with overlay and flush doors.
- \_\_\_\_\_ and pulls are used for opening doors and drawers.

7. \_\_\_\_\_ are used on chests and trunks, and they enable a person to lift the trunk easily.
8. Shelf hardware consists of pilasters and shelf \_\_\_\_\_.
9. \_\_\_\_\_ allow a cabinet or table to be adjusted until it is level.
10. When table leaves are inserted into extension tables, they may be aligned with table \_\_\_\_\_ or aligned and secured with table locks.

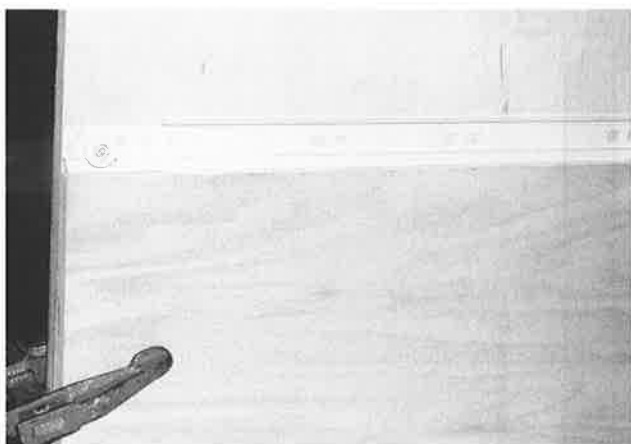
### IDENTIFICATION

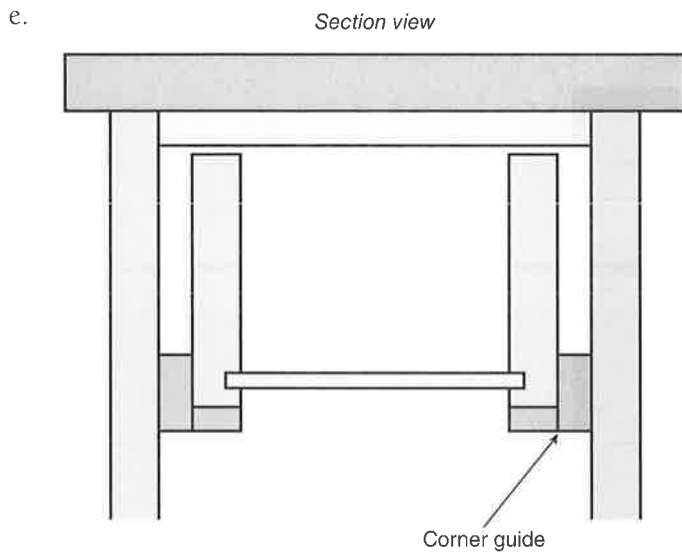
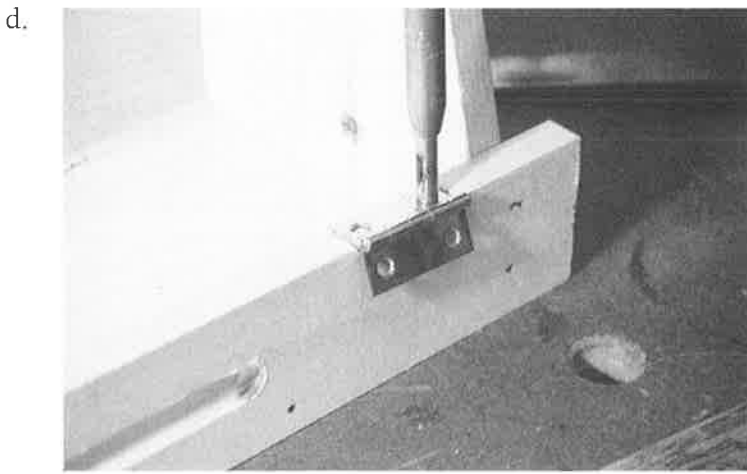
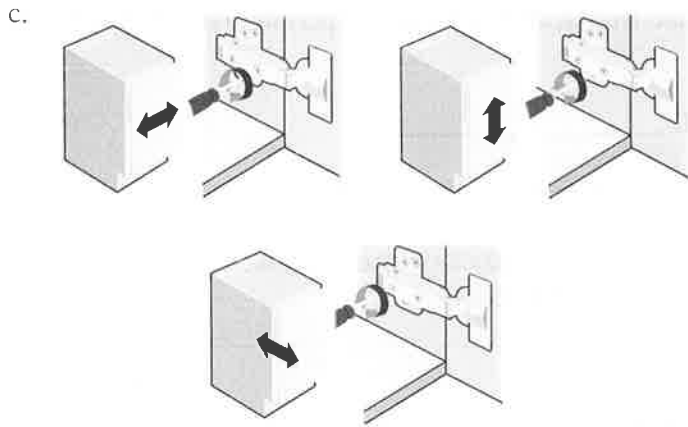
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



b.





- \_\_\_ 1. adjusting a European hinge
- \_\_\_ 2. using a self-centering bit to drill pilot holes
- \_\_\_ 3. pivot hinge
- \_\_\_ 4. using a plywood spacer to set slides in cabinet
- \_\_\_ 5. shop-built bottom slide

**SHORT ANSWER**

1. How do you install a butt hinge?

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2. How do you install a formed hinge?

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3. What is one way to simplify the installation of a piano hinge?

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4. How do you make multiple simple wooden pulls?

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5. How do you install recessed pilasters?

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## SECTION VII: FINISHING

### CHAPTER

# 27

## Surface Preparation

### MULTIPLE CHOICE

*Identify the choice that best completes the statement or answers the question.*

- \_\_\_\_\_ 1. \_\_\_\_\_ is soft limestone ground into a powder.
- A grinding wheel
  - Rottenstone
  - Pumice
  - Aluminum oxide
- \_\_\_\_\_ 2. \_\_\_\_\_ is rated Mohs 13; it is the hardest and most expensive of the synthetic abrasives.
- Silicon carbide
  - Garnet
  - Zirconia alumina
  - Aluminum oxide
- \_\_\_\_\_ 3. The first adhesive coat that binds abrasive grains to a backing is known as the \_\_\_\_\_ coat.
- flex
  - grit
  - bond
  - size
- \_\_\_\_\_ 4. One type of adhesive used to bind abrasive grains to a backing is called \_\_\_\_\_ over resin.
- resin
  - glue
  - animal hide
  - waterproof
- \_\_\_\_\_ 5. The grit size refers to the number of holes in the screen per lineal \_\_\_\_\_.
- centimeter
  - inch
  - foot
  - meter

- \_\_\_\_\_ 6. The lower the grit number, the \_\_\_\_\_ the abrasive grains are.
- finer
  - harder
  - softer
  - coarser
- \_\_\_\_\_ 7. For general sanding and easy leveling, \_\_\_\_\_ grit is a good choice of coated abrasive.
- 80
  - 100
  - 120
  - 150
- \_\_\_\_\_ 8. There are two kinds of scrapers: \_\_\_\_\_ scrapers and card scrapers.
- plane
  - coarse
  - sand
  - cabinet
- \_\_\_\_\_ 9. Deep scratches up to \_\_\_\_\_-inch deep can be removed with a hand plane.
- $1/16$
  - $1/8$
  - $1/4$
  - $1/2$
- \_\_\_\_\_ 10. \_\_\_\_\_-based putty is the most widely used.
- Lacquer
  - Wax
  - Oil
  - Water

## COMPLETION

Complete each statement.

- The material that we call sandpaper is more accurately termed a coated \_\_\_\_\_.
- \_\_\_\_\_ is finely ground lava.
- Abrasive grains are rated on \_\_\_\_\_ scale, which rates minerals for hardness.
- The second adhesive coat is called the \_\_\_\_\_ coat.
- The \_\_\_\_\_ system is used to indicate the coarseness of the abrasive grains and consequently the coarseness of the sandpaper.
- Dried \_\_\_\_\_ that is not removed will interfere with the wood's absorption of stain and finish.
- Final sanding should always be done with the \_\_\_\_\_ of the wood.



8. \_\_\_\_\_ shears off wood fibers and creates a very smooth surface.
9. \_\_\_\_\_ involves removing wood around the defect and replacing it with another piece of wood.
10. Putties that harden may be either \_\_\_\_\_ or lacquer based.

### IDENTIFICATION

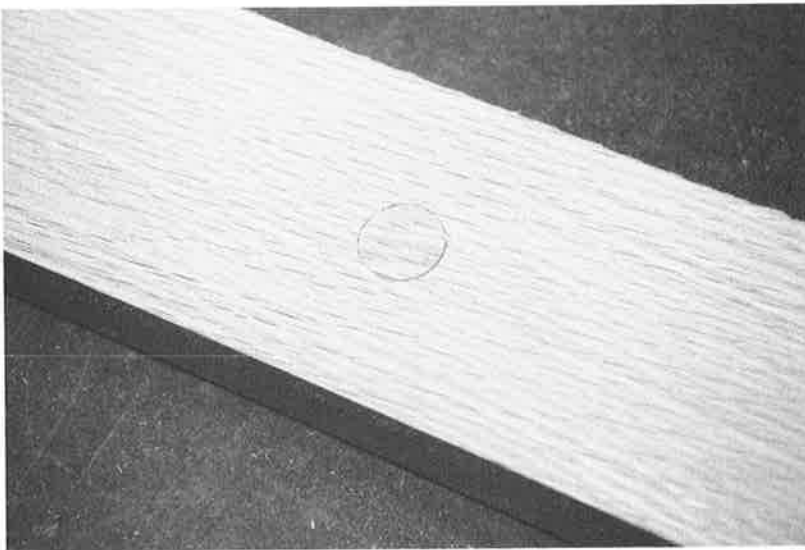
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



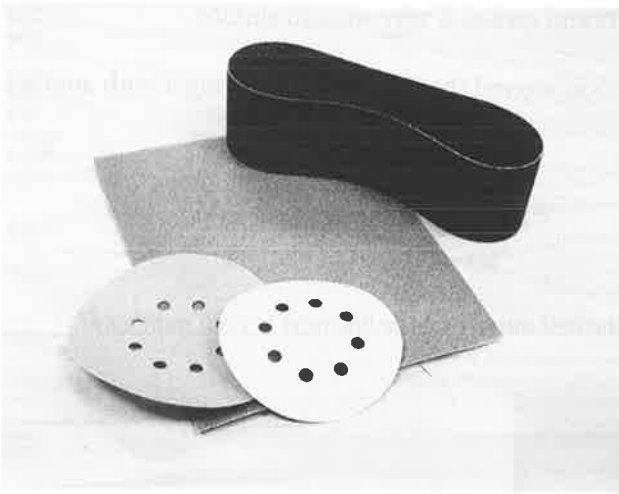
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b.



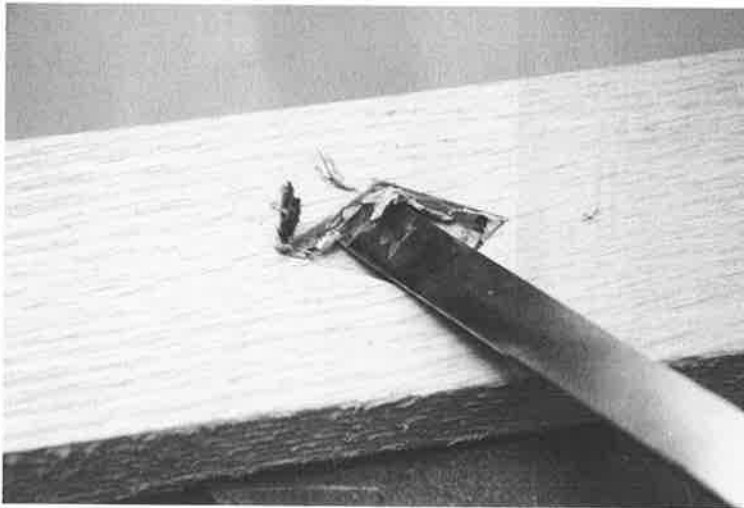
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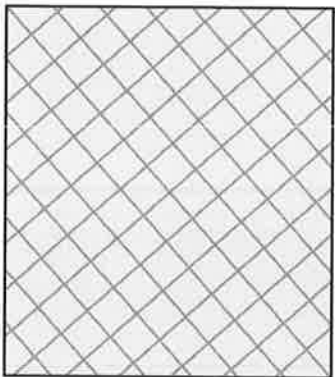
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- 1. coated abrasives
- 2. cleaning a sanding belt
- 3. patching with a plug
- 4. double flex pattern on sandpaper
- 5. removing waste with a chisel



4. How do you patch a defect?

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5. Describe a shop-made alternative to wood putty.

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## CHAPTER

# 28

## Finishes and Application Methods

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Applying finish to a project makes it \_\_\_\_\_.  
a. easier to stain  
b. easier to clean  
c. more liable to gather dust  
d. less beautiful
- \_\_\_\_\_ 2. The most commonly used water stains are \_\_\_\_\_ dyes.  
a. aniline  
b. oil  
c. turpentine  
e. spirit
- \_\_\_\_\_ 3. A strong \_\_\_\_\_ solution, 26 percent or higher, produces a soft brown stain.  
a. ammonia  
b. iron  
c. vinegar  
d. lye
- \_\_\_\_\_ 4. The great advantage of a \_\_\_\_\_ stain is that, due to the high viscosity, it will not run or drip.  
a. water  
b. chemical  
c. gel  
d. lacquer
- \_\_\_\_\_ 5. \_\_\_\_\_ is the strongest acting of the homemade bleaching solutions.  
a. Oxalic acid  
b. Chlorine laundry bleach  
c. Iron oxide  
d. Hydrogen peroxide

- \_\_\_\_\_ 6. The classic nontoxic oil is \_\_\_\_\_ oil, but better choices are salad bowl oil and walnut oil
- olive
  - almond
  - mineral
  - bamboo
- \_\_\_\_\_ 7. The darkest grade of shellac is \_\_\_\_\_ lac.
- seed
  - button
  - garnet
  - white
- \_\_\_\_\_ 8. \_\_\_\_\_ is a synthetic varnish that is made up of plastics and solvents.
- Tung
  - Polyurethane
  - Lacquer
  - Resin
- \_\_\_\_\_ 9. The amount of sheen in polyurethane is controlled by the manufacturer by adding \_\_\_\_\_ to the mixture.
- VOCs
  - lacquer
  - shellac
  - silica
- \_\_\_\_\_ 10. LVHP stands for \_\_\_\_\_.
- low volume, high pressure
  - low varnish, high pressure
  - low varnish, high polyurethane
  - low volume, high price

## COMPLETION

*Complete each statement.*

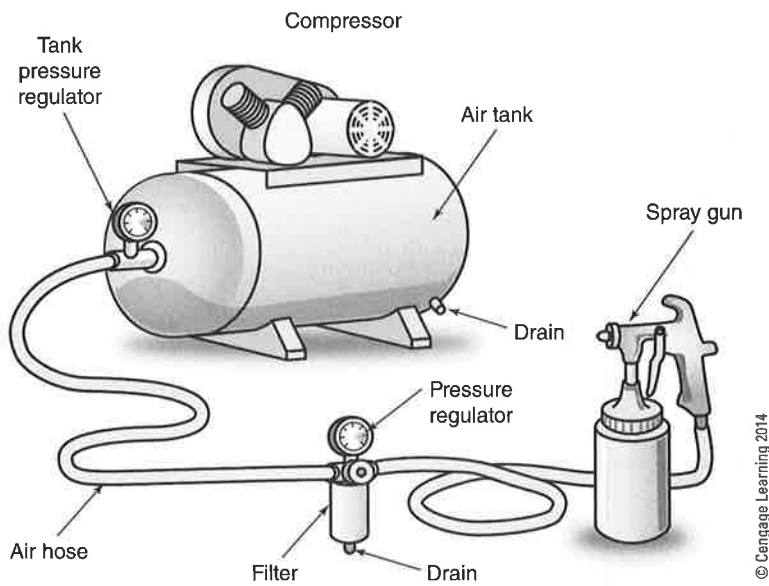
- \_\_\_\_\_ oil stains are made of coal-tar dyes dissolved in a thinner, which acts as a vehicle.
- \_\_\_\_\_ stains are somewhat similar to water stains in that they are an aniline powder dye that is mixed with a vehicle; the difference is that the vehicle that the dye is dissolved in is denatured or ethyl alcohol or acetone rather than water.
- \_\_\_\_\_ stains are made of either a penetrating oil stain or a pigmented oil stain to which wax and a drier have been added.
- \_\_\_\_\_ stains are much thicker than any of the other stains; they have the consistency of jelly.
- \_\_\_\_\_ oil is extracted from the seeds of the flax plant.
- Tung oil is available as pure tung oil or as \_\_\_\_\_ tung oil.

7. \_\_\_\_\_ finishes, as their name implies, lie on the surface of the wood rather than penetrating into it.
8. Varnishes add a yellow tint, called \_\_\_\_\_.
9. The development of water-based finishes was prompted by regulations concerning \_\_\_\_\_ (VOCs).
10. There are two types of spraying systems: One is a(n) \_\_\_\_\_ system, and the other is an HVLP system.

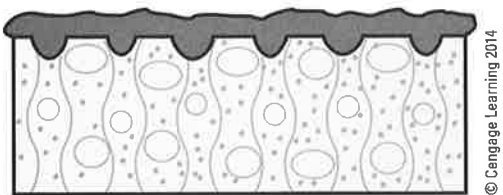
## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



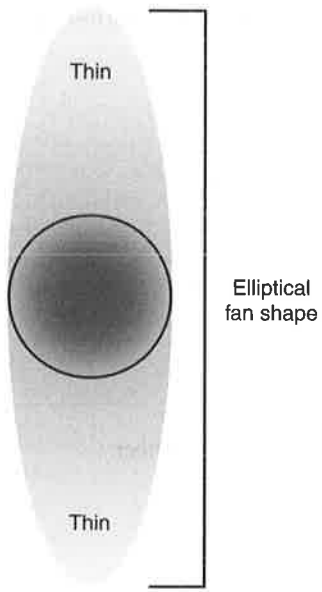
b.



c.



d.



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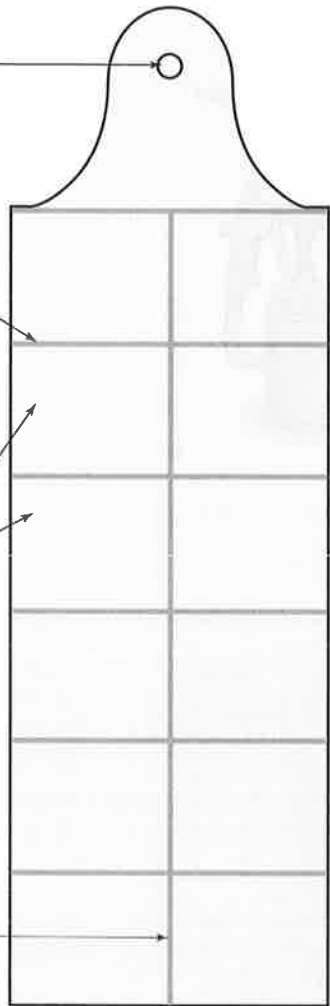
e.

1/4" hole - allows board to be hung - optional

1/8" saw kerf, 1/8" deep

Spaces for various stain or finish samples. Label carefully for future reference

Saw kerf



Size and configuration to suit.

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3. What are some characteristics of lacquer stains?

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4. Where does shellac come from, and how is it used?

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5. What are combination finishes?

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## SECTION VIII: SPECIAL TOPICS

### CHAPTER

# 29

## Bending Wood

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Plain bending is limited to \_\_\_\_\_ stock.
- fairly thin pieces of
  - thick pieces of
  - hardwood
  - pinewood
- \_\_\_\_\_ 2. The \_\_\_\_\_ being bent will determine the thickness of the pieces you cut for laminations.
- price of the wood
  - total length of the curve
  - radius of the curve
  - origin of the wood
- \_\_\_\_\_ 3. The glues used to glue up bent laminations should be \_\_\_\_\_ glues.
- natural
  - synthetic
  - slow-set
  - quick-set
- \_\_\_\_\_ 4. Steam is invisible and highly dangerous. The steam generated for steam bending is at \_\_\_\_\_ °F.
- 0
  - 32
  - 100
  - 212
- \_\_\_\_\_ 5. Two-sided forms cannot be made by simply cutting the form material in two. Two \_\_\_\_\_ are required to allow for the thickness of the wood being bent.
- rectangles
  - parallel lines
  - perpendicular lines
  - ellipses

- \_\_\_\_\_ 6. Drying forms, called \_\_\_\_\_, are placed in the bent wood so that it keeps its shape as it dries.
- solid forms
  - lamina
  - dryers
  - keepers
- \_\_\_\_\_ 7. Regardless of the wood chosen for bending, it is important that it be free of defects and that it have a(n) \_\_\_\_\_ grain.
- straight
  - end
  - arced
  - oblique
- \_\_\_\_\_ 8. Segment lamination is also called \_\_\_\_\_.
- brick stacking
  - milling
  - kerfing
  - coopering
- \_\_\_\_\_ 9. In segment lamination, pieces are joined \_\_\_\_\_.
- edge to edge
  - end to end
  - front to front
  - front to end
- \_\_\_\_\_ 10. Coopering is an ancient trade. Coopers were responsible for making \_\_\_\_\_.
- shoes
  - boats
  - saddles
  - casks

## COMPLETION

Complete each statement.

- \_\_\_\_\_ is a second method of dry bending that allows greater bends to be achieved than those possible through plain bending, and thicker pieces of wood may be used.
- \_\_\_\_\_ bends are made by bending thin layers of stock that have been coated with glue around a form.
- In lamination bending, the layers, called \_\_\_\_\_, are visible in the finished product.
- The lignin in wood is made soft and pliable through \_\_\_\_\_, which allows the cellulose fibers bound together by the lignin to slide past one another.
- \_\_\_\_\_ bending is sometimes called *hot-pipe bending* and is most frequently associated with the construction of musical instruments.

6. It is also possible to plasticize wood and then bend it with very hot or boiling \_\_\_\_\_.
7. The United States \_\_\_\_\_ Laboratory has conducted bending tests on hundreds of boards from many different species.
8. \_\_\_\_\_ lamination is a method for making curves using short pieces of solid stock stacked in staggered rows.
9. \_\_\_\_\_ is one method of creating curves without bending; it is a method of joining wood strips edge to edge to create a curve.
10. The beveled pieces used in coopering are called \_\_\_\_\_.

**IDENTIFICATION**

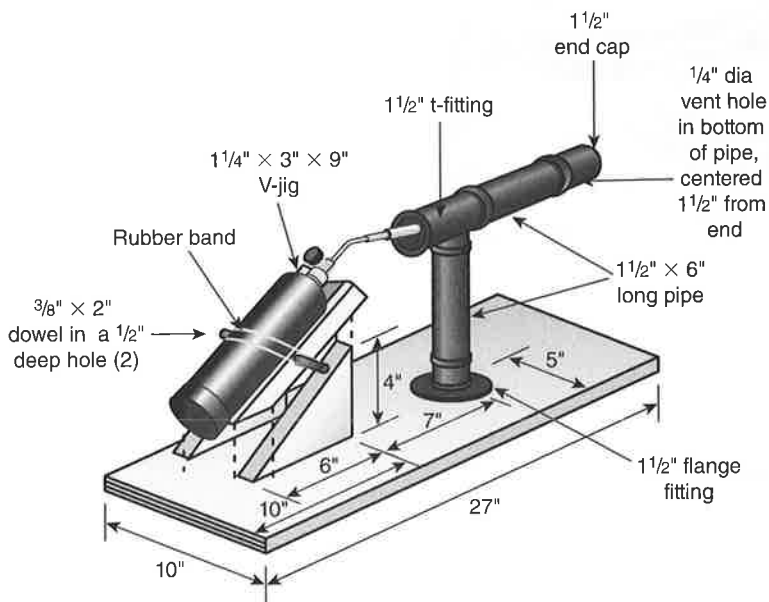
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



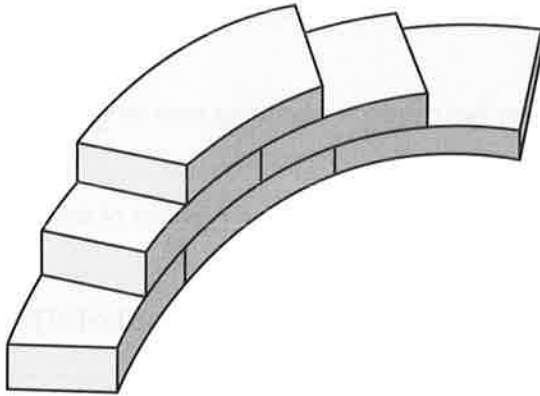
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b.



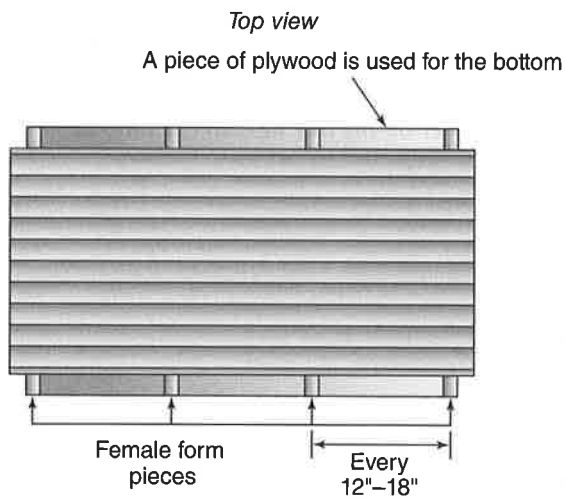
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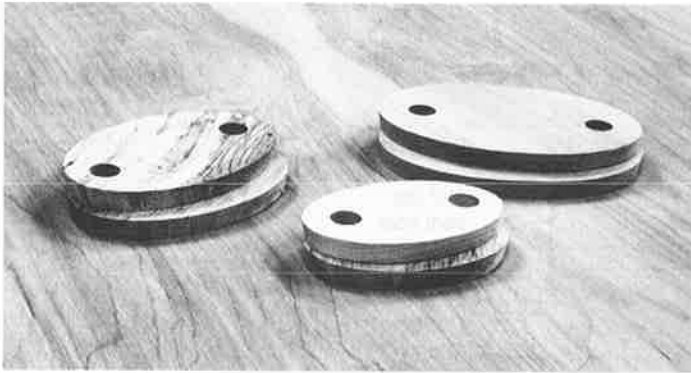
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d.



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e.



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- 1. curved chair back
- 2. dry-heat bending jig
- 3. keepers
- 4. gluing form for coopered panels
- 5. segment lamination

**SHORT ANSWER**

1. How do you determine kerf spacing for a given bend?

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2. Can you perform dry-heat bending with a hot air gun?

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3. When building a steam box, what steps should be followed before gluing the plug to the door?

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## CHAPTER

# 30

## Veneering

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Veneer is cut with a veneer saw, which is designed to be used against a \_\_\_\_\_ in the same way that a knife is.
- veneer punch
  - piece of veneer tape
  - straightedge
  - veneer hammer
- \_\_\_\_\_ 2. The surface to which the veneer is attached is called the *substrate*, or *core material*; it is also referred to as the \_\_\_\_\_.
- edge band
  - groundwork
  - punch
  - film
- \_\_\_\_\_ 3. Arranging leaves that came from the same flitch side by side is called a \_\_\_\_\_ pattern.
- slip
  - book
  - diamond
  - cross
- \_\_\_\_\_ 4. If leaves from the same flitch are positioned like they were opened from a book, the resulting pattern is called a book \_\_\_\_\_.
- match
  - band
  - cross
  - slip
- \_\_\_\_\_ 5. Cross banding generally has a grain that runs at a \_\_\_\_\_ angle to the edge of the central veneer panel.
- 30°
  - 45°
  - 60°
  - right

- \_\_\_\_\_ 6. When the veneer is sliced from the log, tiny checks are created on one face; this is the \_\_\_\_\_ face.
- tight
  - cross
  - book
  - open
- \_\_\_\_\_ 7. When cauls are used, \_\_\_\_\_ adhesives are employed.
- natural
  - synthetic
  - slow-setting
  - quick-setting
- \_\_\_\_\_ 8. One option for adhesive is \_\_\_\_\_ cement, which is brushed or rolled onto the core material and onto the back of the veneer and allowed to dry.
- contact
  - portland
  - film
  - hide
- \_\_\_\_\_ 9. To repair a blister or lump in veneer, you should cut a(n) \_\_\_\_\_ -shaped flap with a sharp knife.
- V
  - X
  - circle
  - square
- \_\_\_\_\_ 10. Veneer edge trimmers have \_\_\_\_\_ sides.
- one or two
  - three or four
  - five
  - six

## COMPLETION

Complete each statement.

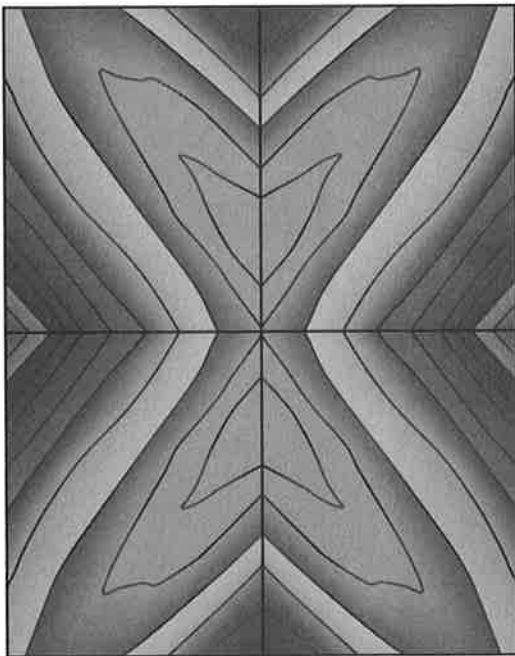
- Veneer \_\_\_\_\_ is used to hold the cut veneer pieces together until after they are glued.
- A(n) \_\_\_\_\_ hammer is not a hammer in the traditional sense; it is used to press the veneer down against the core material once the adhesive is in place.
- To encourage good adhesion, solid wood substrates are roughed with a(n) \_\_\_\_\_ plane, which has grooves in the plane iron.
- Veneer \_\_\_\_\_ are used to repair defects in veneer.

5. \_\_\_\_\_ matching and book matching are the two most common ways to match veneer, but many other possibilities exist.
6. Cross \_\_\_\_\_ is a technique used to set off a center panel; it is essentially a border, and it has the effect of highlighting the center section.
7. Veneer has a front and a back, more properly referred to as a(n) \_\_\_\_\_ face and an open face.
8. Attaching veneer to groundwork is done either by hand or with \_\_\_\_\_, sturdy boards between which the glued veneer and substrate are clamped.
9. A(n) \_\_\_\_\_ is a flat panel that has been kerfed to a depth of about 1/8" at 2" intervals along both its length and width.
10. The oldest method of laying veneer employs \_\_\_\_\_ glue.

## IDENTIFICATION

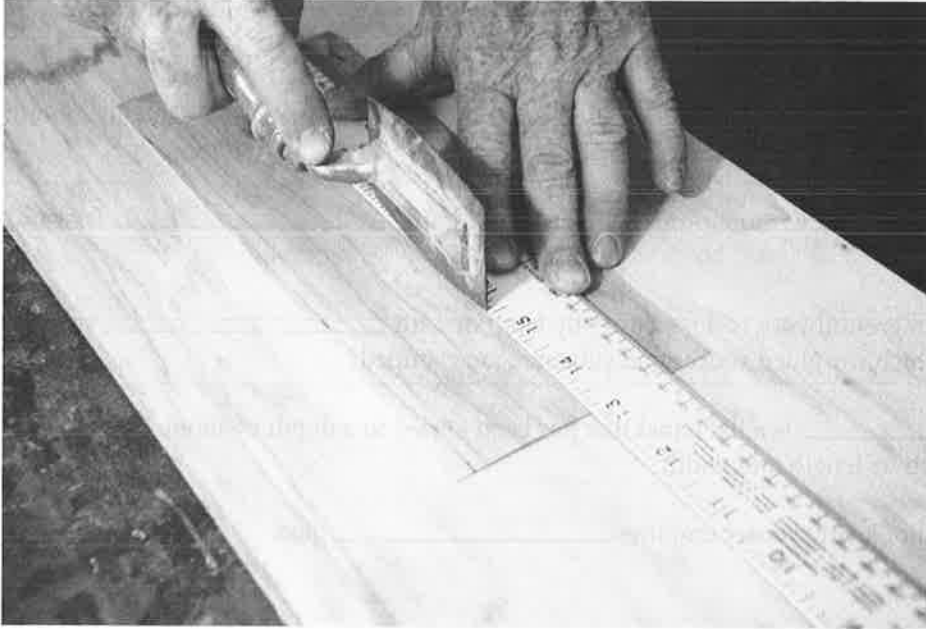
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



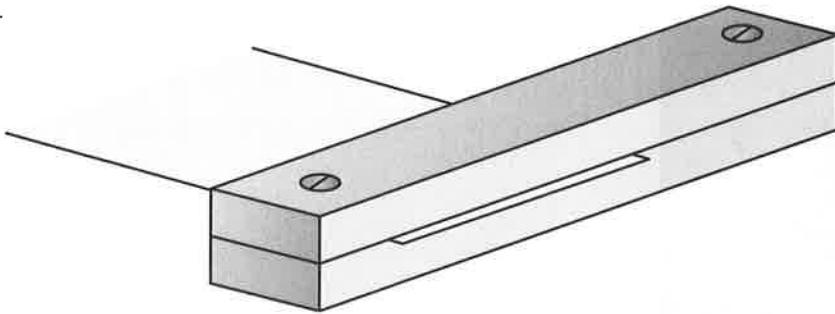
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b.



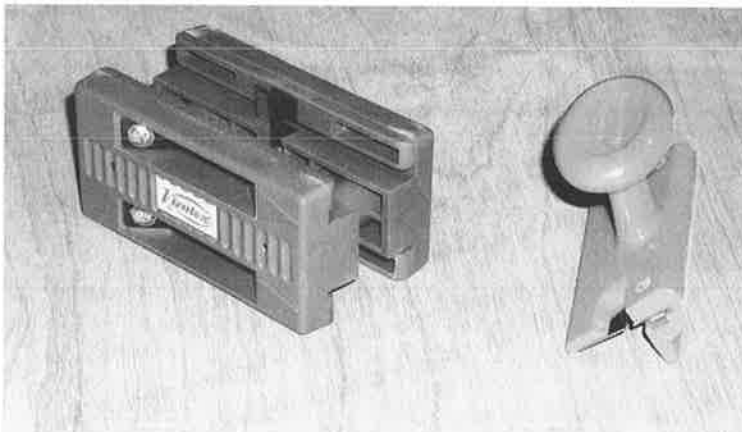
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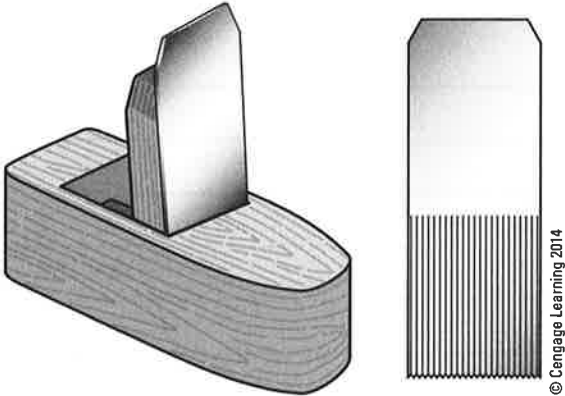
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e.



- 1. using a veneer saw
- 2. tothing plane
- 3. reverse-diamond match
- 4. clamping jig for trimming veneer
- 5. veneer edge trimmers

**SHORT ANSWER**

1. What is the history of veneering?

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2. How should you handle and store veneer?

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## CHAPTER

# 31

## Decorative Techniques

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Inlay involves decorating a surface \_\_\_\_\_ to the work.
- by adding thickness
  - by adding paint
  - without making alterations
  - without adding any thickness
- \_\_\_\_\_ 2. \_\_\_\_\_ are made up of two or more species of wood; they have a design, which may be very intricate.
- Bandings
  - Strings
  - Scratch stocks
  - Router planes
- \_\_\_\_\_ 3. If the same procedure used to create the checkerboard pattern is followed, but the grain of every other strip is reversed, the end result is a \_\_\_\_\_ design.
- marquetry
  - basket-weave
  - chessboard
  - lettered
- \_\_\_\_\_ 4. Diamond patterns can be created by cutting an alternating pattern at a \_\_\_\_\_-degree angle.
- 30
  - 60
  - 90
  - 135
- \_\_\_\_\_ 5. A classic pattern is the \_\_\_\_\_, created by joining three diamonds.
- checkerboard
  - basket-weave
  - isometric cube
  - rhombus

- \_\_\_\_\_ 6. Whether a scroll saw or a fret saw is used to cut marquetry patterns, a \_\_\_\_\_ blade is required.
- thick, fine-toothed
  - thick, coarse-toothed
  - thin, fine-toothed
  - thin, coarse-toothed
- \_\_\_\_\_ 7. The best solution for finishing inlay is to use a very fine grit abrasive, \_\_\_\_\_ or higher, and to use a random oscillating sander.
- 80
  - 120
  - 180
  - 220
- \_\_\_\_\_ 8. In \_\_\_\_\_, the background is cut away to leave a design.
- chip carving
  - relief carving
  - carving in the round
  - geometric carving
- \_\_\_\_\_ 9. The \_\_\_\_\_ is the primary carving tool in chip carving.
- fret saw
  - band saw
  - cutting knife
  - stab knife
- \_\_\_\_\_ 10. Letters you wish to carve should be transferred to the cutting surface with \_\_\_\_\_.
- carbon paper
  - tracing paper
  - a photocopier
  - a stab knife

## COMPLETION

*Complete each statement.*

- A(n) \_\_\_\_\_ is a tool that holds a sharp cutter.
- \_\_\_\_\_ are thin, narrow strips of wood from one species.
- \_\_\_\_\_ differs from inlay work in that the material set into the recess created in the ground surface is not flush with the surface but stands proud of it.
- \_\_\_\_\_ is the creation of geometric patterns or motifs through the use of symmetrically shaped pieces of veneer.
- A(n) \_\_\_\_\_ saw is like a coping saw but has a much deeper throat.
- One method of cutting marquetry designs is called the overlapping method, or \_\_\_\_\_ method.

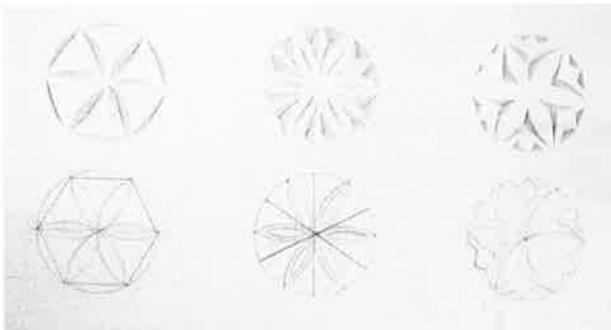


7. Cutting pieces of veneer individually for a picture can be done with a sharp knife, using a technique called the \_\_\_\_\_ method.
8. Carvings fall into one of three categories: relief carving, carving in the \_\_\_\_\_, and chip carving.
9. There are two basic knives used in chip carving, a cutting knife and a(n) \_\_\_\_\_ knife.
10. \_\_\_\_\_ letters are very legible and are perhaps the easiest type of lettering to cut.

### IDENTIFICATION

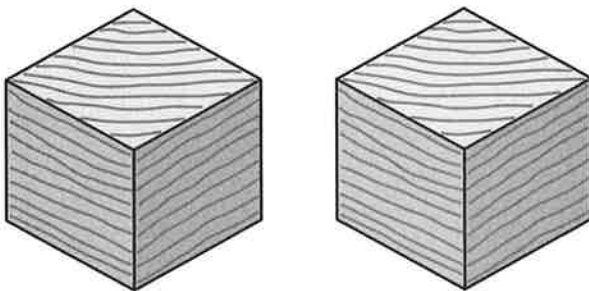
Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



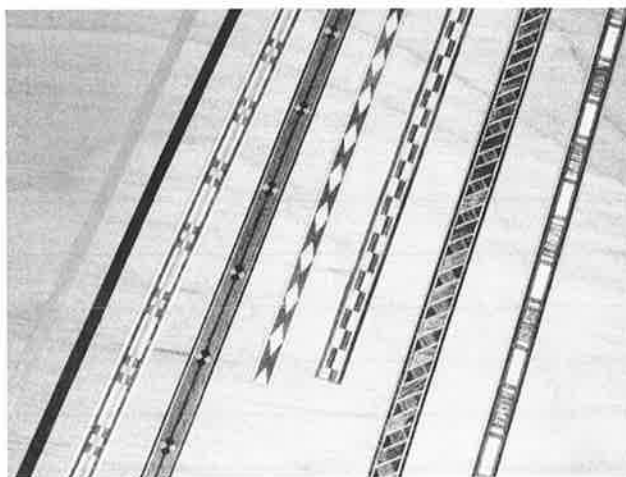
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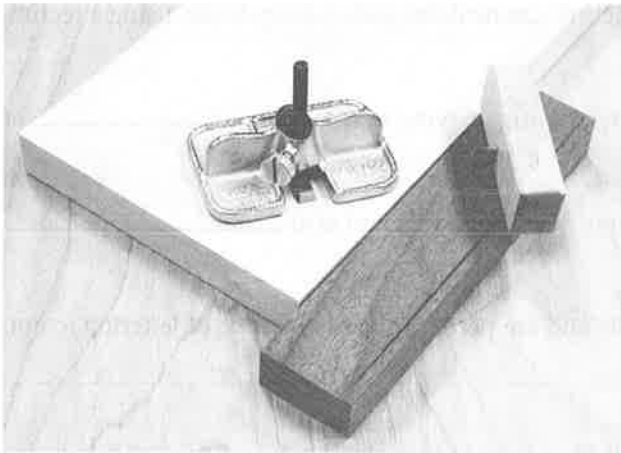
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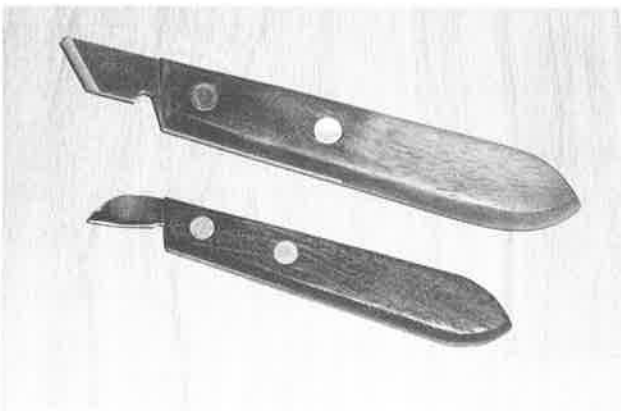
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- 1. router plane and scratch stock
- 2. strings and bandings
- 3. isometric cube pattern
- 4. stab knife and cutting knife
- 5. rosettes

### SHORT ANSWER

1. How do you make a scratch stock?

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## CHAPTER

# 32

## Designing, Drawing, and Planning

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. \_\_\_ may be straight, curved, circular, or S-shaped.
- Tones
  - Masses
  - Lines
  - Shapes
- \_\_\_ 2. Furniture or cabinetry exhibiting formal balance is \_\_\_\_.
- colorful
  - symmetrical
  - asymmetrical
  - ornate
- \_\_\_ 3. According to the rule of \_\_\_\_ progression, each successive unit within the frame increases by a constant ratio.
- geometric
  - arithmetic
  - Fibonacci
  - harmonic
- \_\_\_ 4. In a \_\_\_\_ mass, an object is taller than it is wide.
- secondary horizontal
  - secondary vertical
  - primary horizontal
  - primary vertical
- \_\_\_ 5. The Pilgrim style is sometimes called \_\_\_\_.
- Jacobean
  - Elizabethan
  - Tudor
  - Victorian

- \_\_\_\_\_ 6. The \_\_\_\_\_ style was popular from 1725 to 1755. Graceful and fluid curved lines characterized this style.
- Baroque
  - Queen Anne
  - Postmodern
  - William and Mary
- \_\_\_\_\_ 7. The \_\_\_\_\_ style, prevalent from 1690 to 1850, is a catch-all term for furniture produced outside the urban centers.
- Country
  - Rural
  - Chippendale
  - Pennsylvania Dutch
- \_\_\_\_\_ 8. The \_\_\_\_\_ style grew out of the International style following World War II; it features furniture that is versatile, economical, and lacking in ornamentation.
- Postmodern
  - Baroque
  - Chippendale
  - Contemporary
- \_\_\_\_\_ 9. Often included in a full set of drawings will be one or more \_\_\_\_\_ that show what the cabinet would look like if part of it were to be cut away.
- cut lists
  - section views
  - orthographic projections
  - isometric drawings
- \_\_\_\_\_ 10. A(n) \_\_\_\_\_ details how the piece is built in a step-by-step manner.
- cut list
  - section view
  - plan of procedure
  - orthographic projection

## COMPLETION

*Complete each statement.*

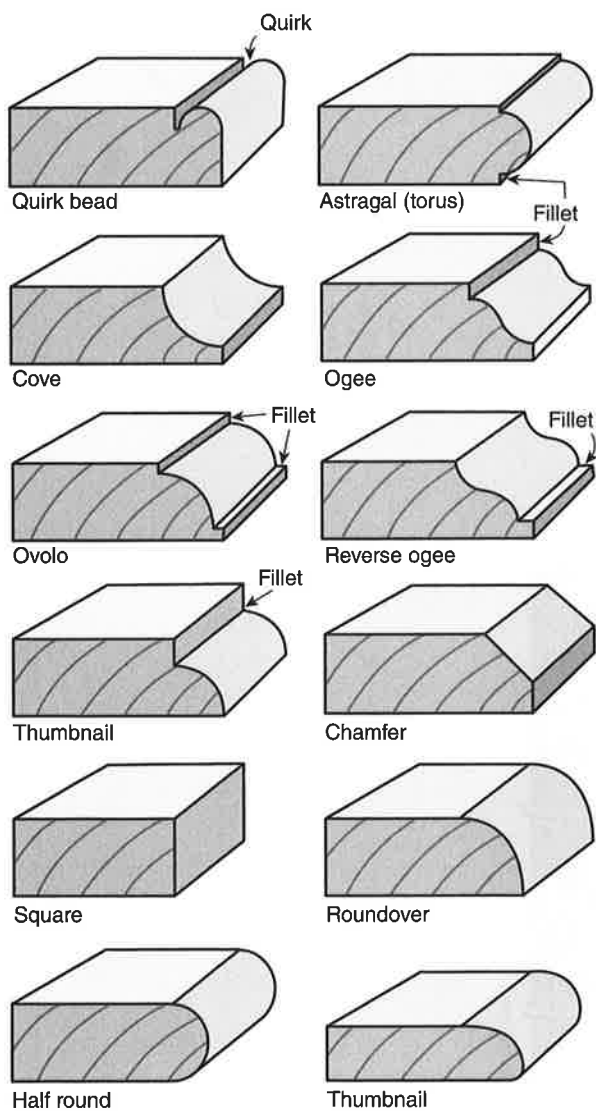
- \_\_\_\_\_ is what the piece is designed to do, or its purpose.
- \_\_\_\_\_ is the relationship between line and shape that gives the appearance of substance.
- \_\_\_\_\_ may be defined as color quality, such as brightness, deepness, or hue.
- \_\_\_\_\_ is the relationship of the parts of an object to each other and to the whole; examples are height and width relationships.
- An example of a(n) \_\_\_\_\_ series is the series 1, 1, 2, 3, 5, 8, 13.

6. \_\_\_\_\_ take into account physical differences between people and objects.
7. The \_\_\_\_\_ period, which was prominent from 1780 to 1820, has been called the United States' first homegrown style.
8. Some designers, who wished to incorporate older Baroque and neoclassical elements for decoration, developed what is known as the \_\_\_\_\_ style.
9. \_\_\_\_\_ drawings are two dimensional; because they do not show depth, they do not appear "true" to our eye.
10. A(n) \_\_\_\_\_ list is a list of all the parts needed for a given project, the number of pieces needed, and the dimensions of each piece.

## IDENTIFICATION

Identify each item pictured below. Write the letter of the best answer on the line next to each number.

a.



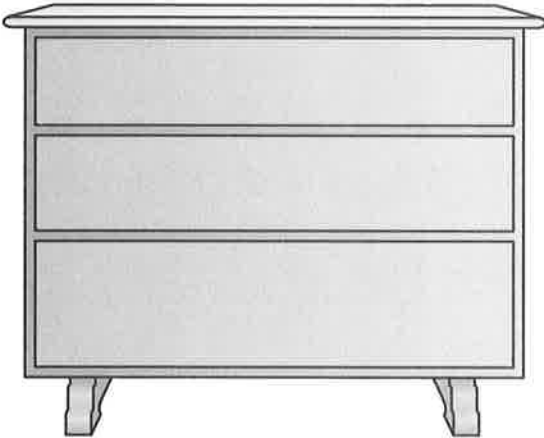
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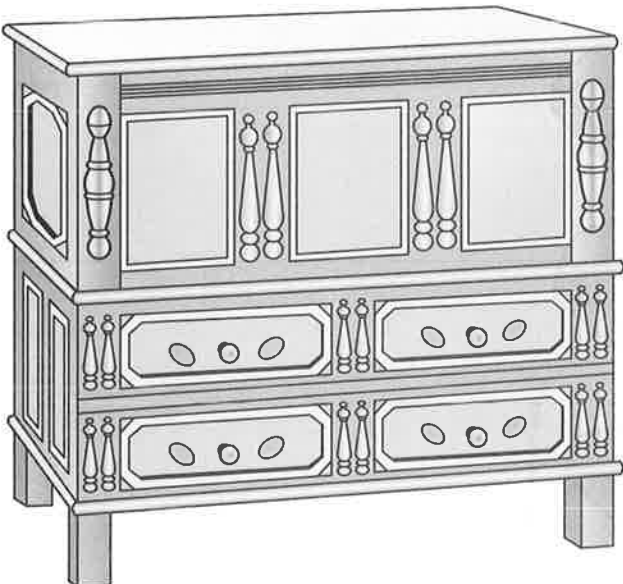
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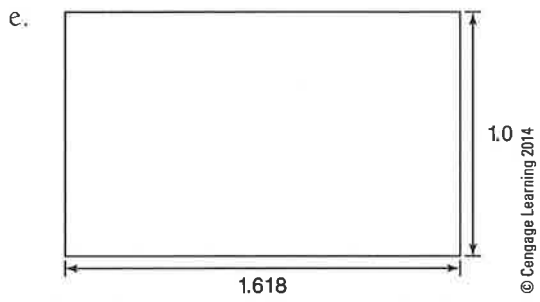
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- 1. edge profiles
- 2. informal balance
- 3. golden rectangle
- 4. sled feet
- 5. Pilgrim chest

**SHORT ANSWER**

1. What is the difference between form and function?

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2. What is the difference between harmony and repetition?

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## CHAPTER

# 33

## Fabricating Countertops

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. Granite is \_\_\_\_.
- flimsy looking
  - expensive
  - not very aesthetically pleasing
  - unstained by cooking oil
- \_\_\_ 2. \_\_\_\_ has long been used as a countertop material in science labs.
- Soapstone
  - Granite
  - Ceramic
  - Marble
- \_\_\_ 3. Wood must be sealed periodically with \_\_\_\_, which is nontoxic.
- WD-40
  - acetone
  - ethyl alcohol
  - mineral oil
- \_\_\_ 4. \_\_\_\_ is (are) the most commonly used material for kitchen countertops.
- Laminates
  - Granite
  - Soapstone
  - Metals
- \_\_\_ 5. Since countertops are typically \_\_\_\_ inch(es) thick, the substrate must be built up around its edges.
- 1
  - 1 1/4
  - 1 1/2
  - 1 3/4

- \_\_\_\_\_ 6. When cutting laminate with a portable power saw, it should be cut with the decorative side down to avoid \_\_\_\_\_.
- scorching
  - scratching
  - chipping
  - melting
- \_\_\_\_\_ 7. When laminating doors or drawer fronts, the \_\_\_\_\_ is (are) laminated first.
- back
  - sides
  - front
  - bottom
- \_\_\_\_\_ 8. Once the laminate has been securely attached to the substrate, the waste protruding past the edge of the surface is trimmed off; this is typically done with a laminate trimmer, using a(n) \_\_\_\_\_-cut bit.
- piloted protruding
  - piloted flush
  - automatic protruding
  - automatic flush
- \_\_\_\_\_ 9. One method of placing a drop edge on a solid surface countertop is known as a \_\_\_\_\_.
- single drop edge
  - double drop edge
  - vertical drop edge
  - horizontal drop edge
- \_\_\_\_\_ 10. Solid surface countertops can be \_\_\_\_\_ to the desired finish.
- painted
  - sanded
  - routed
  - planed

## COMPLETION

*Complete each statement.*

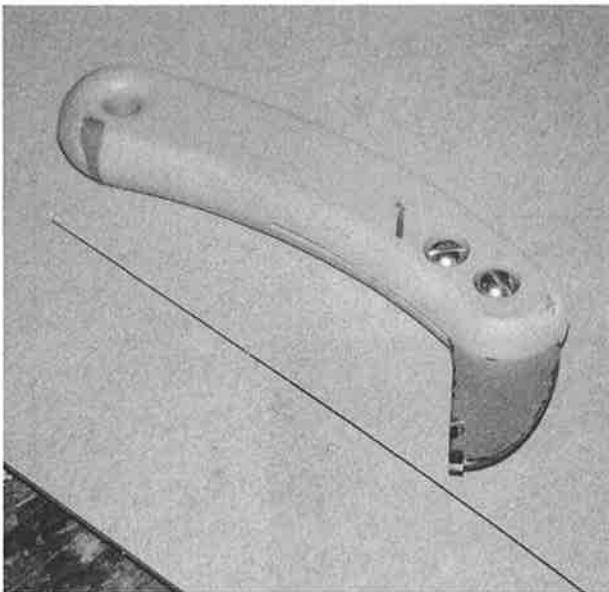
- Countertops consist of a flat surface and often a(n) \_\_\_\_\_.
- \_\_\_\_\_ tile is a product made from clay and other materials; tile is fired in a kiln to harden it.
- \_\_\_\_\_ has become a very popular countertop material; a natural stone found around the world, it comes in a variety of colors and patterns.
- \_\_\_\_\_ is a natural stone, and it is very expensive; it is waterproof, heatproof, and very beautiful.
- \_\_\_\_\_ is a quarried natural stone; it is generally a rich, dark gray in color and very smooth to the touch.

6. \_\_\_\_\_ is a construction material that consists of Portland cement, gravel, sand, and water.
7. Hard \_\_\_\_\_ is the most commonly used wood for countertops due to its tight grain and exceptional hardness.
8. Plywood, particleboard, or MDF may be used as a(n) \_\_\_\_\_ for laminates.
9. When installing solid surface countertops, no \_\_\_\_\_ should be placed within an inch of any corner or within three inches of a dishwasher or stove.
10. A(n) \_\_\_\_\_ edge can be placed on the countertop using one of two methods. The stacking method is stronger and is preferred.

### IDENTIFICATION

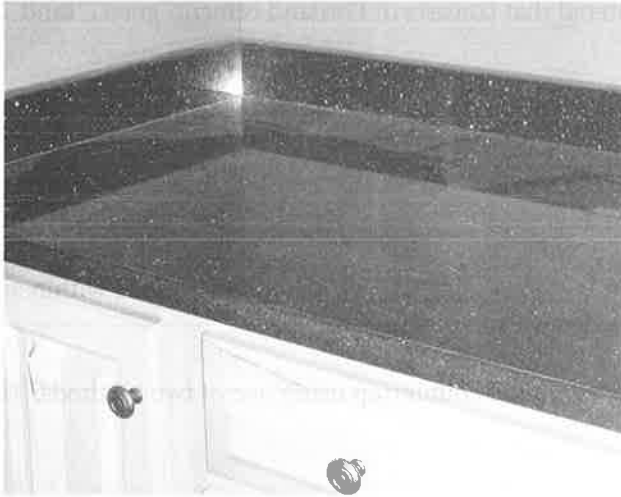
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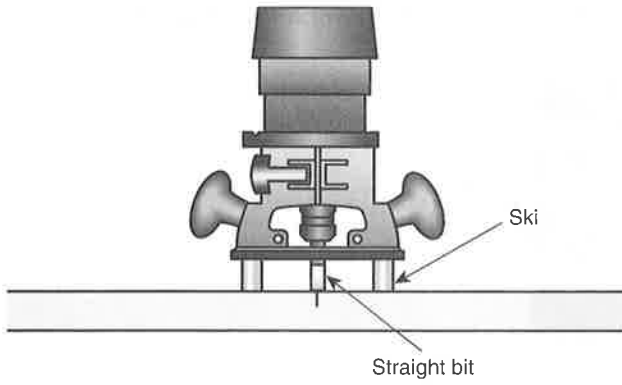
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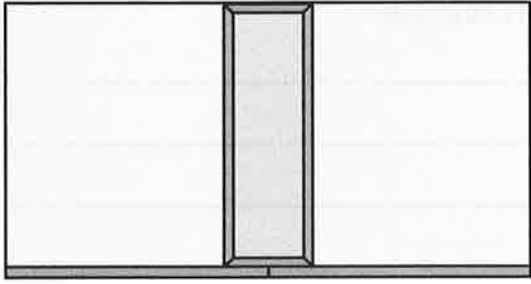
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- \_\_\_ 1. granite countertop
- \_\_\_ 2. laminate scoring tool
- \_\_\_ 3. seam support
- \_\_\_ 4. chamfered edge
- \_\_\_ 5. removing squeeze-out

**SHORT ANSWER**

1. What are the characteristics of metal countertops?

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2. What are the disadvantages of solid surface countertops?

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3. What should you do if you need to apply laminate to a large area?

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4. What reinforcement is necessary for solid surface countertops?

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5. How do you attach solid surface countertops to cabinets? How do you install backsplashes?

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## CHAPTER

# 34

## Running Your Own Business

### MULTIPLE CHOICE

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 1. No matter which business structure you choose, you will need to pay FICA taxes; these are the same as \_\_\_ taxes.
- Social Security
  - federal income
  - state income
  - sales
- \_\_\_ 2. Insurance considerations include \_\_\_ insurance, health insurance, and workers' compensation insurance, if you have employees.
- life
  - auto
  - tax
  - liability
- \_\_\_ 3. Most small businesses start out as \_\_\_.
- LLCs
  - sole proprietorships
  - corporations
  - general partnerships
- \_\_\_ 4. In a limited partnership, the \_\_\_ partner or partners do most of the decision making, but they also have full liability.
- marketing
  - general
  - managing
  - founding
- \_\_\_ 5. Although a corporation can be taxed or sued, its owners, called \_\_\_, are not personally liable for the corporation's debts.
- partners
  - managers
  - shareholders
  - proprietors

- \_\_\_\_\_ 6. A corporation is chartered by a \_\_\_\_\_.
- city
  - county
  - country
  - state
- \_\_\_\_\_ 7. In a business plan, the \_\_\_\_\_ section should include the reasons for starting and operating your business.
- production plan
  - business objectives
  - business form
  - resume
- \_\_\_\_\_ 8. In a business plan, the \_\_\_\_\_ section should include balance sheets.
- business references
  - marketing plan
  - equipment
  - financial
- \_\_\_\_\_ 9. In a business plan, the \_\_\_\_\_ section should include inventory.
- competition
  - equipment
  - marketing plan
  - facilities
- \_\_\_\_\_ 10. It is a good idea to have a \_\_\_\_\_ of your work to show potential customers.
- business card
  - portfolio
  - resume
  - business plan

## COMPLETION

*Complete each statement.*

1. A(n) \_\_\_\_\_ is a person who assumes the responsibility and the risk for a business operation with the expectation of making a profit.
2. \_\_\_\_\_ is the task of promoting and selling your product.
3. The simplest form of business structure is a(n) \_\_\_\_\_.
4. In a(n) \_\_\_\_\_ structure, two or more people own the business.
5. When profits are shared among the partners, it is known as a(n) \_\_\_\_\_ partnership.
6. Unlike a sole proprietorship or a partnership, a(n) \_\_\_\_\_ is considered an entity unto itself, apart from the people who own it.



3. What are the advantages and disadvantages of a sole proprietorship?

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4. What should you keep in mind when you sell at galleries or craft shows?

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5. What is the importance of good record keeping?

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