Chapter 11

Finish Carpentry

Topics

1.0.0 Interior Door Finishes
2.0.0 Window Casing
3.0.0 Moldings
4.0.0 Millwork

To hear audio, click on the box.

Overview

Woodworking, especially finish carpentry, is one of the most visible of the Builder’s trades. Quality woodworking shows in the installation of trim, casing, and molding and in cabinets and built-in furniture.

Objectives

When you have completed this chapter, you will be able to do the following:

1. Identify interior door finish components and explain layout and installation procedures for these elements in building construction.

2. Identify window casing components and explain layout and installation for these elements in building construction.

3. Identify the types of moldings and explain layout and installation procedures for these elements.

4. Identify the types of millwork and explain layout and installation procedures for these elements.

Prerequisites

None

This course map shows all of the chapters in Builder Basic. The suggested training order begins at the bottom and proceeds up. Skill levels increase as you advance on the course map.
Features of this Manual

This manual has several features which make it easy to use online.

- Figure and table numbers in the text are italicized. The figure or table is either next to or below the text that refers to it.

- The first time a glossary term appears in the text, it is bold and italicized. When your cursor crosses over that word or phrase, a popup box displays with the appropriate definition.

- Audio and video clips are included in the text, with an italicized instruction telling you where to click to activate it.

- Review questions that apply to a section are listed under the Test Your Knowledge banner at the end of the section. Select the answer you choose. If the answer is correct, you will be taken to the next section heading. If the answer is incorrect, you will be taken to the area in the chapter where the information is for review. When you have completed your review, select anywhere in that area to return to the review question. Try to answer the question again.

- Review questions are included at the end of this chapter. Select the answer you choose. If the answer is correct, you will be taken to the next question. If the answer is incorrect, you will be taken to the area in the chapter where the information is for review. When you have completed your review, select anywhere in that area to return to the review question. Try to answer the question again.
1.0.0 INTERIOR DOOR FINISHES

Rough openings for interior doors are usually framed to be 3 inches higher than the door height and 2 1/2 inches wider than the door width. This provides for placing, plumbing, and leveling the frame in the opening. Interior doorframes are made up of two side jambs, a head jamb, and the stop moldings on which the door closes. The most common of these jambs is the one piece type shown in Figure 11-1, view A. Jambs can be obtained in standard 5 1/4 inch widths for plaster walls and 4 5/8 inch widths for walls with 1/2 inch drywall finish. The two and three piece adjustable jambs, shown in views B and C, are also standard types. Their principal advantage is being adaptable to a variety of wall thicknesses.

Some manufacturers produce interior doorframes with the doors fitted and prehung, ready for installing. Installation of the casing completes the job. When used with two or three piece jambs, casings can even be installed at the factory.

Common minimum widths for single interior doors are as follows:

- Bedrooms and other habitable rooms, 2 feet 6 inches
- Bathrooms, 2 feet 4 inches
- Small closets and linen closets, 2 feet

These sizes vary a great deal, and sliding doors, folding door units, and similar types, often used for wardrobes, may be 6 feet wide or more. In most cases, the jamb stop and casing parts are used in some manner to frame and finish the opening.

1.1.0 Casing

Casing is the edge trim around interior door openings and is also used to finish the room side of windows and exterior doorframes. Casing usually varies in widths from 2 1/4 to 3 1/2 inches, depending on the style. Casing is available in thicknesses from 1/2 to 3/4 inch, although 11/16 inch is standard in many of the narrow line patterns. A common casing pattern is shown in Figure 11-1, view D.

Interior doors come in two general types, flush and panel. Flush interior doors usually have a hollow core of light framework and are faced with thin plywood or hardboard, as shown in Figure 11-2.
Figure 11-2 – Hollow-core construction of flush doors.

Plywood faced flush doors, as shown in Figure 11-3, View A, are available in gum, birch, oak, mahogany, and several other wood species, most of which are suitable for natural finish. Nonselected grades are usually painted as hardboard faced doors.

The panel door consists of solid stiles or vertical side members, rails or cross pieces, and panels of various types. The five cross panel and the colonial type panel doors are perhaps the most common of this style, shown in Figure 11-3, Views B and C. The louvered door shown in View D is also popular and is commonly used for closets because it provides some ventilation. Large openings for wardrobes are finished with sliding or folding doors, or with flush or louvered doors shown in View E. Such doors are usually 1 1/8 inches thick.
Hinged doors should open or swing in the direction of natural entry, against a blank wall whenever possible. They should not be obstructed by other swinging doors. Doors should never be hinged to swing into a hallway.

1.2.0 Frame and Trim Installation

When the frame and doors are not assembled and prefitted, fabricate the side jambs by nailing through the dado into the head jamb with three 7d or 8d coated nails, as shown in Figure 11-1, View A. Then fasten the assembled frames in the rough openings by using shingle wedges between the side jamb and the stud, as shown in Figure 11-4, View A. Plumb and level one jamb using four or five sets of shingle wedges for the height of the frame. Use two 8d finishing nails at each wedged area once driven so that the doorstop covers it. Then fasten the opposite side jamb in place with shingle wedges and finishing nails, using the first jamb as a guide in keeping a uniform width.

Do not nail casings to both the jamb and the framing members. Allow about a 3/16 inch edge distance from the face of the jamb. Use 6d or 7d finish or casing nails, depending on the thickness of the casing. To nail into the stud, use 4d or 5d finish nails or 1 1/2 inch brads to fasten the trimmer edge of the casing to the jamb. For hardwood casing, it is advisable to predrill to prevent splitting. Locate nails in the casing in pairs and space them about 16 inches apart along the full height of the opening at the head jamb.

Casing with any form of molded shape must have a mitered joint at the corners as shown in Figure 11-4, View B. When casing is square edged, make a butt joint at the junction of the side and head casing as shown in Figure 11-4, View C. If the moisture content of the casing material is high, a mitered joint may open slightly at the outer edge as the material dries. Minimize this by using a small glued spline at the corner of the mitered joint. Use of a spline joint under any moisture condition is good practice, and some prefitted jamb, door, and casing units are provided with splined joints. Nailing into the joint after drilling helps retain a close fit.
The door opening is now complete except for fitting and securing the hardware and nailing the stops in the proper position. Interior doors are normally hung with two 3 1/2 by 3 1/2 inch loose pin butt hinges. Fit the door into the opening with the clearances shown in Figure 11-5. The clearance and location of hinges, lockset, and doorknob may vary somewhat, but the ones in Figure 11-5 are generally accepted by craftsmen and conform to most millwork standards. Bevel the edge of the lock stile slightly to permit the door to clear the jamb when swung open. If the door is to swing across heavy carpeting, the bottom clearance may need to be slightly more than what is shown.

When fitting doors, temporarily nail the stop in place; you will nail the stop in permanently when you hang the door. Stops for doors in single piece jambs are generally 7/16 inch thick and may be 3/4 inch to 2 1/4 inches wide. Install them with a mitered joint at the junction of the side and head jambs. A 45° bevel cut at the bottom of the stop, about 1 to 1 1/2 inches above the finish floor, eliminates a dirt pocket and makes cleaning or refinishing of the floor easier.
Some manufacturers supply prefitted doorjambs and doors with the hinge slots routed and ready for installation. A similar door buck or jamb of sheet metal with formed stops and casing is also available.

1.3.0 Door Hardware Installation

Hardware for doors is available in a number of finishes, with brass, bronze, and nickel being the most common. Door sets are usually classified as follows:

- Entry lock for interior doors
- Bathroom set, which has an inside lock control with a safety slot for opening from the outside
- Bedroom or keyed lock
- Passage set without a lock

Doors should be hinged so that they open in the direction of natural entry. They should also swing against a blank wall whenever possible and never into a hallway. The door swing directions and sizes are usually shown on the working drawings. The hand of the door is the expression used to describe the direction in which a door is to swing, normal or reverse, and the side from which it is to hang, left or right. These options are shown in Figure 11-6.

![Figure 11-6 – Hands of doors.](image-url)
When you order hardware for a door, be sure to specify whether it is a left-hand door, a right-hand door, a left-hand reverse door, or a right-hand reverse door.

### 1.3.1 Hinges

Use three hinges for hanging 1 3/4 inch exterior doors and two hinges for the lighter interior doors. The difference in exposure on the opposite sides of exterior doors causes a tendency to warp during the winter. Using three hinges reduces this tendency. Three hinges are also useful on doors that lead to unheated attics and for wider and heavier doors that may be used within the structure. If a third hinge is required, center it between the top and bottom hinges.

Use loose pin butt hinges and be sure they are the proper size for the door they support. For 1 3/4 inch thick doors, use 4 by 4 inch butts; for 1 3/8 inch doors, use 3 1/2 by 3 1/2 inch butts. After fitting the door to the tied opening with the proper clearances, fit the hinge halves to the door. Route them into the door edge with about a 3/16 inch back distance, as shown in Figure 11-7. One hinge half should be set flush with the surface and must be fastened square with the edge of the door. Screws are included with each pair of hinges.

Now place the door in the opening and block it up at the bottom for proper clearance. Mark the jamb at the hinge locations, and half route and fasten the remaining hinge in place. Then position the door in the opening and slip the pins in place. If you have installed the hinges correctly and the jambs are plumb, the door will swing freely.

### 1.3.2 Locks

The types of door locks differ in installation method, cost, and the amount of labor required to set them. Some types, such as mortise locks, combination dead bolts, and latch locksets, require drilling of the edge and face of the door and then routing of the edge to accommodate the lockset and faceplate, as shown in Figure 11-8.
The bored lockset shown in Figure 11-9 is easy to install since it requires only one hole drilled in the edge and one in the face of the door. Boring jigs and faceplate markers are available to ensure accurate installation.

Install the lock so that the doorknob is 36 to 38 inches above the floor line. Most sets come with paper templates, marking the location of the lock and size of the holes to be drilled. Recheck your layout measurements before drilling any holes.

The parts of an ordinary cylinder lock for a door are shown in Figure 11-10.

**NOTE**

Be sure to read the manufacturer’s installation instructions carefully.

The procedure for installing a lock of this type is as follows:

1. Open the door to a convenient working position and check it in place with wedges under the bottom near the outer edge.

2. Measure up 36 inches from the floor, the usual knob height, and square a line across the face and edge of the lock stile.
3. Place the template, which is usually supplied with a cylinder lock, on the face of the door at the proper height and in alignment with the layout lines and mark the centers of the holes to be drilled. A typical template is shown in Figure 11-11.

![Diagram of a template for locksets]

**CAUTION!**
Locate All Holes Correctly. Drill All Holes Straight. Halfway From Each Side of Door.

Figure 11-11 – Drill template for locksets.

4. Drill the holes through the face of the door and then the hole through the edge to receive the latch bolt. It should be slightly deeper than the length of the bolt.

5. Cut again for the latch bolt mounting plate, and install the latch unit.

6. Install the interior and exterior knobs.

7. Find the position of the strike plate and install it in the jamb.
1.3.3 Strike Plates

The strike plate, which is routed into the doorjamb, holds the door in place by contact with the latch. To install, mark the location of the latch on the doorjamb and locate the position of the strike plate by outlining it. Route out the marked outline with a chisel and also rout for the latch as shown in Figure 11-12. The strike plate should be flush with or slightly below the face of the doorjamb. When the door is latched, its face should be flush with the edge of the jamb.

![Figure 11-12 –Strike plate details.](image)

1.3.4 Door Stops

You may now permanently nail in the stops that have been temporarily set during the fitting of the door and the hardware. Use finish nails or brads, 1 1/2 inches long. The stop at the lock side shown in Figure 11-13 should be nailed first, setting it tightly against the door face when the door is latched. Space the nails in pairs 16 inches apart.

![Figure 11-13 – Door stop details.](image)

Nail the stop behind the hinge side next, with a 1/32 inch clearance from the door face allowed to prevent scraping as the door is opened. Then nail the head jamb stop in place. Remember that painting the door and trim will take up some of the clearance.

1.4.0 Commercial and Industrial Hardware

The items of commercial and industrial door hardware shown in Figure 11-14 are usually installed in commercial or industrial buildings, not residential housing. These items are used in new construction or in alterations or repairs of existing facilities. Most of these items are made for use on metal doors, but some are made for wood doors.
NOTE

Follow the manufacturer's installation instructions.

Figure 11-14 – Commercial hardware.

Recommended door hardware locations for standard steel doors are shown in Figure 11-15. Standard 7 foot doors are normally used in commercial construction.
2.0.0 WINDOW CASING

The casing around the window frames on the interior of a structure should have the same pattern as that used around the interior doorframes. Other trim used for a double hung window frame includes the sash stops, stool, and apron, shown in Figure 11-16, view A. Another method of using trim around windows has the entire opening enclosed with casing, as shown in Figure 11-16, view B. The stool serves as a filler trim member between the bottom sash rail and the bottom casing.

The stool is the horizontal trim member that laps the windowsill.

Figure 11-15 – Location of hardware for steel doors.

Figure 11-16 – Installation of window trim.
and extends beyond the casing at the sides, with each end notched against the plastered wall. The apron serves as a finish member below the stool. The window stool is the first piece of window trim to install and is notched and fitted against the edge of the jamb and plaster line, with the outside edge flush against the bottom rail of the window sash. Blind nail the stool at the ends so that the casing and the stop cover the nailheads. Predrilling is usually necessary to prevent splitting. Also, nail the stool at the midpoint of the sill and to the apron with finishing nails. You may sometimes substitute or supplement face with toenailing of the outer edge to the sill.

Install and nail the window casing as described for doorframes, shown in Figure 11-4, View A, except for the inner edge. This edge should be flush with the inner face of the jambs so that the stop covers the joint between the jamb and casing. Then nail the window stops to the jambs so that the window sash slides smoothly. Channel type weather stripping often includes full width metal subjambs into which the upper and lower sash slide, replacing the parting strip. Stops are located against these instead of the sash to provide a small amount of pressure. Cut the apron to a length equal to the outer width of the casing line as shown in Figure 11-16, View A. Nail it to the windowsill and to the 2 by 4 inch framing sill below.

When you use casing to finish the bottom, sides, and top of the window frame, the narrow stool butts against the side window jamb. Miter the casing at the bottom corners as shown in Figure 11-16, View B, and nail it as previously described.

### 3.0.0 Moldings

#### 3.1.0 Base Molding

Base molding serves as a finish between the finished wall and floor. It is available in several widths and forms. Two piece base consists of a baseboard topped with a small base cap, as shown in Figure 11-17, View A. When plaster is not straight and true, the small base molding will conform more closely to the variations than will the wider base alone. A common size for this type of baseboard is 5/8 inch by 3 1/4 inches or wider. One piece base varies in size from 7/16 inch by 2 1/4 inches to 1/2 inch by 3 1/4 inches and wider as shown in Figure 11-17, Views B and C. Although a baseboard is desirable at the junction of the wall and carpeting to serve as a protective bumper, wood trim is sometimes eliminated entirely.

A single base molding without the shoe is sometimes placed at the wall and floor junction. Most baseboards are finished with a 1/2 by 3/4 inch base shoe, as shown in Figure 11-17, View A, especially where carpeting might be used.

Install square edged baseboard with a butt joint at the inside corners and a mitered joint at the outside corners, as shown in Figure 11-17, View D. Nail it to each stud with two 8d
finishing nails. Molded single piece base, base moldings, and base shoe should have a **coped joint** at the inside corners and a mitered joint at the outside corners. In a coped joint, square cut the first piece against the plaster or base and cope the second piece of molding. Do this by sawing a 45° miter cut and using a coping saw to trim the molding along the inner line of the miter, as shown in *Figure 11-17, View E*.

Nail the base shoe into the baseboard itself. Then, if there is a small amount of shrinkage of the joists, no opening will occur under the shoe.

To butt, join a piece of baseboard to another piece already in place at an inside corner; set the piece to be joined in position on the floor; bring the end against or near the face of the other piece, and take off the line of the face with a scribe as shown in *Figure 11-18*. Use the same procedure when butting ends of the baseboard against the side casings of the doors.

For miter joining at an outside corner, proceed as shown in *Figure 11-19*.

1. Set a marker piece of baseboard across the wall corner, as shown in *View A*, and mark the floor along the edge of the piece.
2. Set the piece to be mitered in place. Mark the point where the wall corner intersects the top edge and the point where the mark on the floor intersects the bottom edge.
3. Lay 45° lines across the edge from these points to make a 90° corner. Connect these lines with a line across the face as shown in *View B*, and miter to the lines as indicated.

The most economical, and sometimes the quickest, method of installing baseboard is to use vinyl. In addition to its flexibility, it comes with premolded inside and outside corners.

**NOTE**

When installing vinyl base, follow the manufacturer’s recommended installation
procedures for both the base and the adhesive.

3.2.0 Ceiling Molding

Ceiling moldings as shown in Figure 11-20 are sometimes used at the junction of the wall and ceiling for an architectural effect or to terminate drywall paneling of gypsum board or wood. As with base moldings, inside corners should be cope jointed as shown in Figure 11-20, View A. This ensures a tight joint and retains a good fit if there are minor moisture changes.

A cutback edge at the outside of the molding as shown in View B partially conceals any unevenness of the plaster and makes painting easier where there are color changes. For gypsum drywall construction, a small, simple molding as shown in View C might be desirable. Drive finish nails into the upper wall plates and also into the ceiling joists for large molding when possible.

3.3.0 Decorative Treatment

The decorative treatment for interior doors, trim, and other millwork may be painted or given a natural finish with stain, varnish, or other nonpigmented material. The paint or natural finish desired for the woodwork in various rooms often determines the species of wood to be used.

Interior finish to be painted should be smooth, close grained, and free from pitch streaks. Species meeting these requirements include ponderosa pine, northern white pine, redwood, and spruce. Birch, gum, and yellow poplar are recommended for their hardness and resistance to hard usage. Ash, birch, cherry, maple, oak, and walnut provide a beautiful natural finish decorative treatment. Some require staining to improve appearance.

4.0.0 MILLWORK

As a general term, millwork usually includes most wood products and components that require manufacturing. It not only includes the interior trim and doors, but also kitchen cabinets and similar units. Most of these units are produced in a millwork manufacturing plant and are ready to install. Figure 11-21 shows an example of the dimensions you might be working with.
4.1.0 Building Cabinets in Place

A common way to build cabinets, such as those shown in *Figure 11-22*, is to cut the

![Diagram of cabinets with dimensions and labels](image)

*Figure 11-21 – Typical dimensions for cabinetwork.*

*Figure 11-22 – Typical kitchen cabinets: wall (view A) and base (view B).*

*Figure 11-23 – Typical frame construction of a cabinet.*
pieces shown in Figure 11-23 and assemble them in place. Think of building in place cabinets as four steps:

1. Construct the base first. Use straight 2 by 4 lumber for the base. Nail the lumber to the floor and to a strip attached to the wall. If the floor is not level, place shims under the various members of the base. Later you can face any exposed 2 by 4 surfaces with a finished material, or the front edge can be made of a finished piece, such as base molding.

2. Cut and install the end panels. Attach a strip along the wall between the end panels and level with the top edge. Be sure the strip is level throughout its length. Nail it securely to the wall studs.

3. Cut the bottom panels and nail them in place on the base. Follow this with the installation of the partitions, which are notched at the back corner of the top edge so they will fit over the wall strip.

4. Plumb the front edge of the partitions and end panels. Secure them with temporary strips nailed along the top.

Wall units are made using the same basic steps as the base units. You should make your layout lines directly on the ceiling and wall. Nail the mounting strips through the wall into the studs. At the inside corners, end panels can be attached directly to the wall.

Remember to make your measurements for both base and wall units carefully, especially for openings for built-in appliances. Refer frequently to your drawings and specifications to ensure accuracy.

4.1.1 Shelves

Shelves are an integral part of cabinetmaking, especially for wall units. Cutting dadoes into cabinet walls to fit in shelves may actually strengthen the cabinet shown in Figure 11-24.
Place shelving supports for 3/4 inch shelves no more than 42 inches apart. Shelves designed to hold heavy loads should have closer supports. To improve the appearance of plywood shelving, cover the laminated edge with a strip of wood that matches the stock used for the cabinet.

4.1.2 Cabinet Facing

After completing the frame construction and shelving, apply finished facing strips to the front of the cabinet frame. These strips are sometimes assembled into a framework, called a faceplate or face frame, by commercial sources before they are attached to the basic cabinet structure. The vertical members of the facing are called stiles, and the horizontal members are known as rails.

As for built in place cabinets, cut each piece and install it separately. Lay out the size of each piece by positioning the facing stock on the cabinet and marking it. Then make the finished cuts. Use a cut piece to lay out duplicate pieces.

Cabinet stiles are generally attached first, and then the rails, as shown in Figure 11-25. Sometimes a Builder will attach a plumb end stile first, and then attach rails to determine the position of the next stile.

Use finishing nails and glue to install facing. When nailing hardwoods, drill nail holes where you think splitting might occur.

4.1.3 Drawers

Seabees use many methods of building drawers. The most common are the multiple dovetail, lock shouldered, and square shouldered methods shown in Figure 11-26.
Several types of drawer guides are available. The three most commonly used are the side guide, the corner guide, and the center guide, shown in Figure 11-27.

The two general types of drawer faces are the lip and flush faces shown in Figure 11-28. A flush drawer must be carefully fitted. A lip drawer must have a rabbet along the top and sides of the front. The lip style overlaps the opening and is much easier to construct.

4.1.4 Cabinet Doors

The four types of doors commonly used on cabinets are flush, lipped, overlay, and sliding doors. A flush door, like the flush drawer, is the most difficult to construct. For a finished look, each type of door must be fitted in the cabinet opening within 1/16 inch clearance around all four edges. A lipped door is simpler to install than a flush door since the lip, or overlap, feature allows a certain amount of adjustment and greater tolerances. Form the lip by cutting a rabbet along the edge.

Overlay doors are designed to cover the edges of the face frame. Several types of sliding doors are used on cabinets. One type of sliding door is rabbeted to fit into grooves at the top and bottom of the cabinet. The top groove is always made to allow the door to be removed by lifting it up and pulling the bottom out.
4.2.0 Installing Premade Cabinets

To install premade cabinets, begin with either the wall or the base cabinets. The general procedures for each are similar.

4.2.1 Installing the Wall Cabinets First

When making layouts and locating wall studs, lift the wall units into position. Hold them with a padded T brace that allows you to stand close to the wall while making the installation. After securely attaching and checking the wall cabinets, move the base cabinets into place and then level and secure them.

4.2.2 Installing the Base Cabinets First

When base cabinets are installed first, the tops of the base cabinets can be used to support braces that hold the wall units in place while they are fastened to the wall.

4.2.3 Procedures

The following procedures are a simple way of installing premade cabinets:

1. Locate and mark the location of all wall studs where the cabinets are to be hung. Find and mark the highest point in the floor. This will ensure the base cabinet is level on uneven floor surfaces. Use shims to maintain the cabinet at its designated leveled height.

2. Start the installation of a base cabinet with a corner or end unit. After all base cabinets are in position, fasten the cabinets together at the sides. To get maximum holding power from screws, place one screw close to the top and one screw close to the bottom.

3. Starting at the highest point in the floor, level the leading edges of the cabinets. After leveling all the leading edges, fasten them to the wall at the studs to obtain maximum holding power.

4. Install the countertop on the base cabinets, making sure to drill or screw through the tops of the base cabinets.

5. Make a brace to help support the wall cabinets while they are being fastened. Start the wall cabinet installation with a corner or end cabinet. Make sure you check for plumb and level as you install these cabinets.

6. After installing the cabinets and checking for plumb and level, join the wall cabinets through the sides as you did with the base cabinets.

7. After they are plumb and level, secure the cabinets to the wall at the studs for maximum holding power.

Here are some helpful hints for the general construction of cabinets:

- Fasten cabinet parts together with screws or nails. Set them below the surface, and fill the holes with putty. Use glue at all joints. Use clamps to produce better fitting, glued joints.

- To make a better quality cabinet, rabbet it where the top, bottom, back, and side pieces come together, although you can also use butt joints. If panels are less
than 3/4 inch thick, use a reinforcing block with the butt joint. Dado fixed shelves into the sides.

- Screws should go through the hanging strips and into the stud framing. Never use nails. Toggle bolts are required when studs are inaccessible. Join units by first clamping them together and then, while they are aligned, install bolts and T nuts.

4.3.0 Counters and Tops

In cabinetwork, the counters and tops are covered with a 1/16 inch layer of high pressure plastic **laminate**. Although this material is very hard, it does not possess great strength and is serviceable only when it is bonded to plywood, particle board, or wafer wood. This base, or core material, must be smooth and is usually 3/4 inch thick.

4.3.1 Working Laminates

Plastic laminates can be cut to rough size with a table saw, portable saw, or saber saw. Use a fine tooth blade, and support the material close to the cut. If no electrical power is available, use a finish handsaw or a hacksaw. When you cut laminates with a saw, place masking tape over the cutting area to help prevent chipping the laminate. Make cut markings on the masking tape.

Measure and cut a piece of laminate to the desired size. Allow at least 1/4 inch extra to project past the edge of the countertop surface. Mix and apply the contact bond cement to the underside of the laminate and to the topside of the countertop surface.

**NOTE**

Be sure to follow the manufacturer’s recommended directions for application.

4.3.2 Adhering Laminates

Allow the contact bond cement to set or dry. To check for bonding, press a piece of waxed brown paper on the cement coated surface. When no adhesive residue shows, it is ready to be bonded. Be sure to lay a full sheet of waxed brown paper across the countertop. This allows you to adjust the laminate into the desired position without permanent bonding. Now, you can gradually slide the paper out from under the laminate, and the laminate becomes bonded to the countertop surface.

Be sure to roll the laminate flat by hand, removing any air bubbles and getting a good firm bond. After sealing the laminate to the countertop surface, trim the edges by using either a router with a special guide or a small block plane. If you want to bevel the countertop edge, use a mill file.
Summary

Finish carpentry is undertaken after rough carpentry is completed. Doorframing applies to the interior side of exterior walls and for both sides of interior door. Installing hardware for doors is part of finishing doors. Window casing is similar to doorframing, and is applied to the interior of all windows. Moldings at the ceiling and floor, as well as other decorative treatments are part of finish carpentry. Installing millwork, including cabinets and tops, is also part of finish carpentry.
Review Questions (Select the Correct Response)

1. Rough openings for interior doors are usually framed how much (a) higher and (b) wider than the finished door size?
   A. (a) 2 inches (b) 3 inches
   B. (a) 2 1/2 inches (b) 3 1/2 inches
   C. (a) 3 inches (b) 2 1/2 inches
   D. (a) 3 1/2 inches (b) 3 inches

2. What is the proper name for the edge trim around an interior door opening?
   A. Casing
   B. Molding
   C. Jam
   D. Sill

3. Why are louvered doors the most suitable for use on closets?
   A. They are less expensive.
   B. They are more durable.
   C. They require less space.
   D. They allow ventilation.

4. How should hinged doors swing or open?
   A. Against a blank wall only
   B. Toward the natural entry only
   C. Both A and B above
   D. Into a hallway

5. When plumbing and leveling a door frame, which of the following materials should you use?
   A. Casing wedges
   B. Wood shingle wedges
   C. Wood shake wedges
   D. Hairpin wedges

6. What edge distance allowance is made when the casing is nailed to the jamb?
   A. 1/16 inch
   B. 1/8 inch
   C. 3/16 inch
   D. 3/8 inch
7. What should you do to a mitered casing joint to reduce the chance of its opening up as the casing material dries?
   A. Use a glued spline
   B. Install wood screws
   C. Glue the joint
   D. Use a wood filler

8. What size loose pin butt hinge should you use for a door 1 3/8 inches thick?
   A. 5 inches extra heavy
   B. 5 inches by 6 inches
   C. 3 1/2 inches by 3 1/2 inches
   D. 4 inches by 4 inches

9. A doorknob should be installed at what standard height?
   A. 36 to 38 inches
   B. 34 to 36 inches
   C. 32 to 34 inches
   D. 30 to 32 inches

10. To prevent scraping as a door is opened, what clearance is allowed for the doorstop on the hinge side of the door?
    A. 1/64 inch
    B. 1/32 inch
    C. 1/16 inch
    D. 1/8 inch

11. Which of the following devices holds the door in place by contact with the latch?
    A. Rim
    B. Vertical rod
    C. Mortise
    D. Strike plate

12. Which of the following members is NOT trim for a double hung window?
    A. Apron
    B. Sash stops
    C. Stool
    D. Window jamb

13. What should be the first inside window trim member to be installed?
    A. Stop
    B. Stool
    C. Casing
    D. Apron
14. Name the small strip molding used on the upper edge of a two piece baseboard.
   A. Base cap
   B. Base top
   C. Chair rail
   D. Bumper

15. Name the trim molding added to the baseboard at the floor and wall junction.
   A. Corner
   B. Rail
   C. Shoe
   D. Base

16. What type of joint should be used at inside corners of ceiling moldings?
   A. Butt
   B. Coped
   C. Mitered
   D. Lapped

17. When you build cabinets in place, what step follows installation of the base?
   A. Cut the bottom panels and nail them in place
   B. Cut end panels and install
   C. Cut front edge and install
   D. Cut counter top to length

18. You can increase the strength of a set of cabinets by using what type of joint for the shelves?
   A. Blind mortise and tenon
   B. Tongue and groove
   C. Dado
   D. Rabbet

19. When you use 3/4 inch material for shelves, what should be the maximum distance between shelf supports?
   A. 16 in
   B. 24 in
   C. 36 in
   D. 42 in

20. Which of the following drawer fronts, if any, is the easiest to construct?
   A. Flush
   B. Lip
   C. Sliding
   D. None of the above
21. Which of the following cabinet door types is designed to cover the edge of the face frame?
   A. Overlay
   B. Flush
   C. Lipped
   D. Sliding

22. What is the first thing you should do when installing premade cabinets base-first?
   A. Locate wall studs and find the highest point on the floor
   B. Install cabinet base and locate the wall studs
   C. Locate the highest point on the floor and install the cabinet base
   D. Locate the highest point on the floor, then level the leading edge of the cabinets

23. Which of the following fasteners should you use to hang cabinets on a wall?
   A. Spiral nails
   B. Annular nails
   C. Screws
   D. Stove bolts

24. When installing laminated counter tops, you should use base material that has which of the following characteristics?
   A. 1/2 inch thick only
   B. 3/4 inch thick only
   C. Smooth, 1/2 inch thick
   D. Smooth, 3/4 inch thick

25. (True or False) When cutting a piece of laminate, you should cut it at least 1/4 inch larger than the desired size.
   A. True
   B. False
# Trade Terms Introduced in this Chapter

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<tr>
<th>Term</th>
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<tr>
<td>Butt joint</td>
<td>A square joint between two pieces of molding at right angles to each other.</td>
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<tr>
<td>Casing</td>
<td>The trim around doors and windows.</td>
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<td>Coped joint</td>
<td>The intersection of two pieces of molding with one cut to fit the contour of the other.</td>
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<tr>
<td>Dado</td>
<td>A joint created by fitting the end of one piece of wood at a right angle into a groove cut across the width of another, to a depth of half its thickness.</td>
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<td>Dovetail</td>
<td>In finish carpentry, an interlocking joint that is wider at its end than at its base.</td>
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<td>Drywall</td>
<td>A system of interior wall finish using sheets of gypsum board and taped joints.</td>
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<td>Laminate</td>
<td>Any material formed by bonding together several layers or sheets with adhesive under pressure and sometimes with nails or bolts.</td>
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<td>Millwork</td>
<td>In woodworking, any material that has been machined, finished, and partly assembled at the mill.</td>
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<td>Mitered joint</td>
<td>A butt joint of two members at equal angles.</td>
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<td>Rabbet</td>
<td>A longitudinal edge joint formed by fitting together rabbeted boards.</td>
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<td>Sash</td>
<td>The movable part of a window.</td>
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Additional Resources and References

This chapter is intended to present thorough resources for task training. The following reference works are suggested for further study. This is optional material for continued education rather than for task training.


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