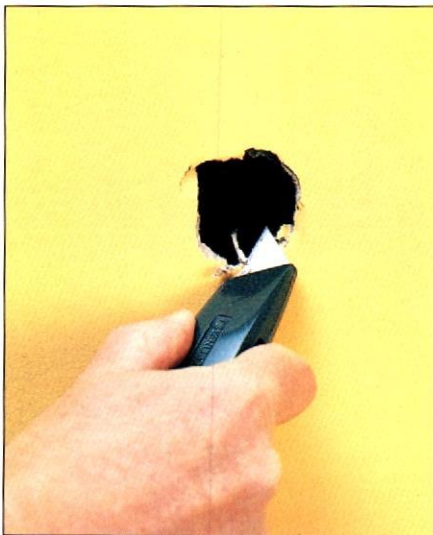
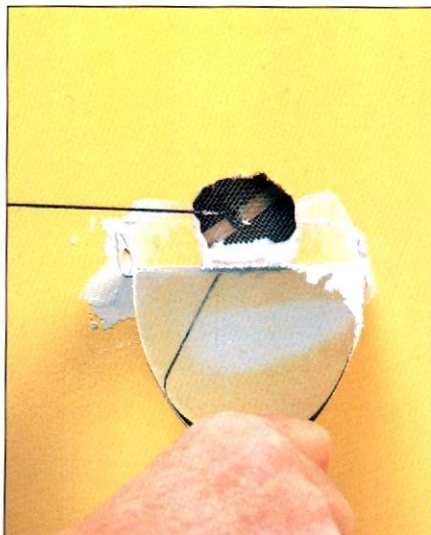


### Patching Holes 1 to 5 Inches



**1** Clean away loose drywall and cut off loose paper. Leave the inner surface of the gypsum rough. Cut screen 2 inches larger than hole all around. Tie one end of 12-inch string to a small stick; thread other end through center of screen.

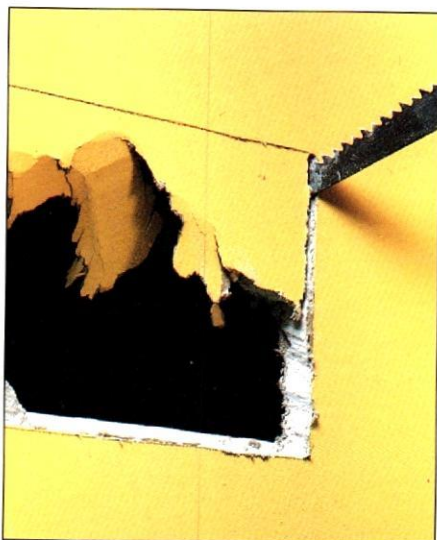


**2** Bend screen and insert stick and screen into hole. Pull on string so the stick holds screen flat against back of hole. Holding string taut, fill hole, working in from the edges. Make sure compound adheres to mesh. Tape string tightly against wall with masking tape.



**3** When compound has dried completely, cut string flush to wall. If using joint compound, remember it will shrink; apply another layer to bring patch up to surface of wall. You may have to apply a third layer. Then proceed to finishing as shown (*overleaf*).

### Patching Holes 5 to 8 Inches



**1** Measure a rectangular drywall patch about an inch larger than the hole. Cut it at a bevel with drywall saw, or use a saber saw with angled base plate. Use patch as a template to mark wall, and cut around hole at same bevel as patch.



**2** After adjusting fit, if necessary, with a utility knife, spread compound along the beveled edges of the patch. Fit patch in place with light pressure. Matching bevels prevents patch from falling through.

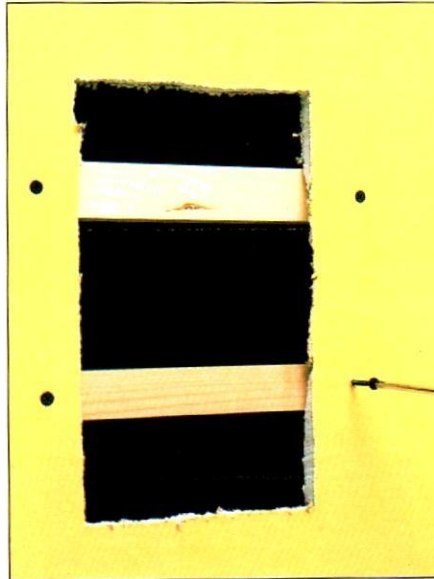


**3** Smooth the compound and apply drywall tape over all joints with the joint knife. At end of each joint, press edge of knife blade in firmly and use as straightedge to tear off tape. Sand when dry.

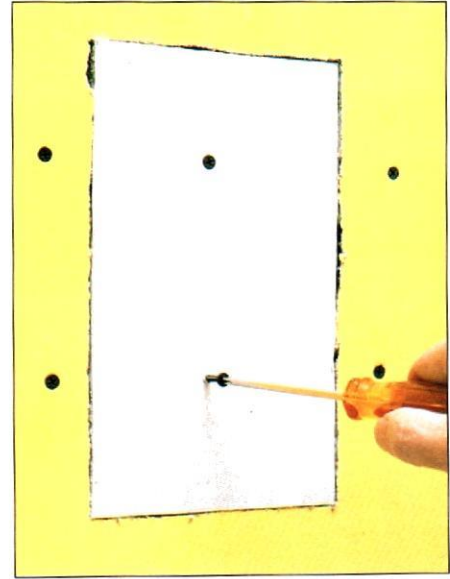
## Patching Larger Holes with Backer Boards



**1** Measure hole. Cut a rectangular or triangular patch from a piece of drywall making it at least 1 inch larger than the hole on all sides. Trace patch onto wall and cut out shape using saw or utility knife.



**2** Insert a backer board with construction adhesive applied to the ends. Holding firmly in place, screw drywall screws through drywall into board, at least 1 inch away from edge of hole. Repeat if using two backer boards.



**3** Place the new piece of drywall in the hole and fasten it to backer boards with screws. Press compound or fast-drying patching plaster into joints with joint knife. Tape joints (*overleaf*), and finish as shown below.

## Finishing After Repairing



**1** No matter how small or large the repair, the method for finishing is the same. With wide joint knife spread a smooth, thin layer of joint compound over the repaired area or over all joints of new patch. Extend beyond edges of repaired area and feather out to surrounding wall.



**2** When compound is dry (at least 24 hours), sand with fine-grade drywall sandpaper on a sanding block. Wear a dust mask when sanding. If necessary, repeat these two steps until satisfied with your final surface.

Drywall is the material most commonly used to construct interior walls in houses built since World War II because it is quicker to install than plaster. Although drywall can dent or puncture more easily than plaster, it is easier for the average homeowner to repair. Here are four methods for fixing surface defects ranging in size from the smallest dent to large holes of a foot or more.

Drywall, also called wallboard, gypsum board or plasterboard, is often simply known by the brand name Sheetrock. It consists of a hard gypsum core sandwiched between plies of fiberboard, paper or felt. Drywall is sold in 4 by 8- or 4 by 12-foot sheets that are nailed or screwed to studs.

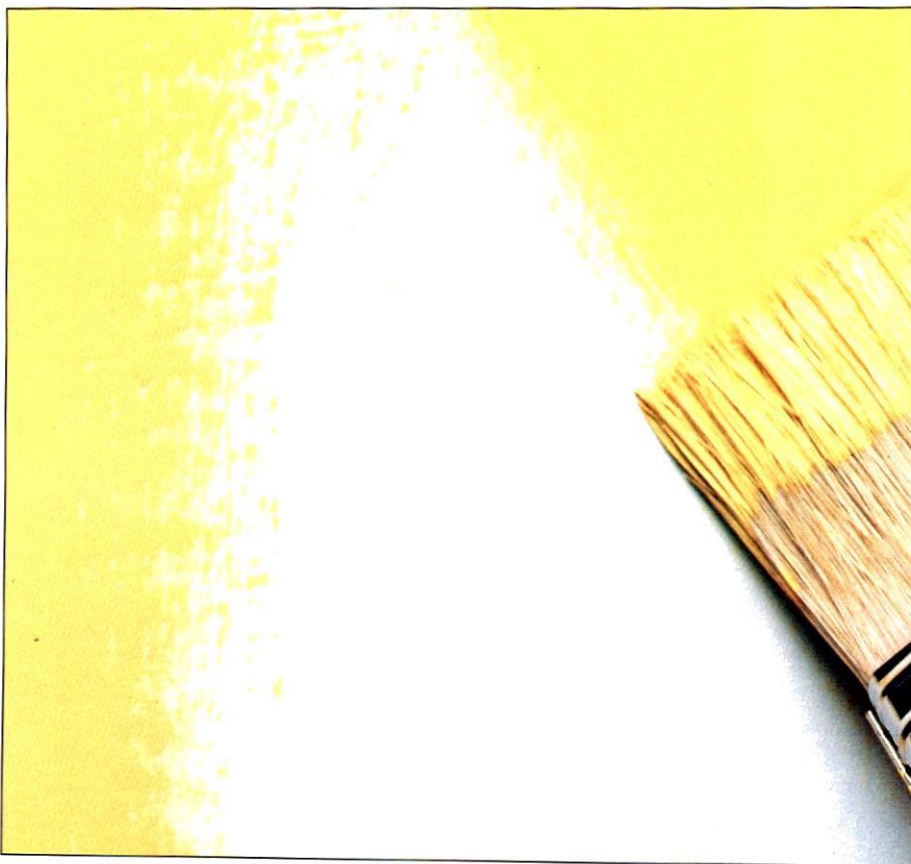
Just as the nomenclature for drywall varies, so do the names of the plaster-like substances used for sealing drywall. The substance most commonly used to finish joints is called joint compound. When you have time, use this for

## KEYS TO SUCCESS

Choose the method most appropriate for the extent of damage.

Keep your joint knife perfectly clean while working to avoid lumps, bumps and uneven application of compound. Clean by scraping your knife over a clean scrap of wood, not over the container edge, to keep the fresh compound uncontaminated.

## Repairing Damaged Drywall



making repairs. It applies smoothly and sands beautifully. The disadvantages are: It takes 24 hours to dry and it shrinks while drying, so you need two or more layers to level off a wall surface. There are also a variety of other patching substances. Spackling compounds dry faster and shrink less than joint compound but are harder to sand smooth. Patching plasters dry quickest (one or two hours) without shrinking and are strong fillers, but dry hard and are difficult to sand. If you use one of these, fill a hole almost flush with the wall, then finish with joint compound for easy sanding.

Small dents of up to one inch can simply be filled with joint compound or patching plaster, and sanded. If nails have popped through the surface of your wall, remove these or sink them with a hammer and nail set, drive a new screw an inch above or below the

old nail, then fill the new dents.

Patching with wire screen is a good method for repairing holes from one to five inches or so. Cut the screen patch slightly larger than the cleaned-out hole.

If you can get your fist through the hole but it is no more than about eight inches, use a beveled patch cut out of an extra piece of drywall. Measure the damaged area and add one inch in each direction for the patch dimensions. Use a drywall saw to cut the edges of the patch slanting in (beveled) so that the inner surface is smaller than the outer.

A break that is more than eight inches in any direction will need a backer board or two for supporting new drywall. Use 1x2s or 1x4s—whatever you have handy. Just make sure they are five inches longer than the opening and provide a flat surface to support a new patch.

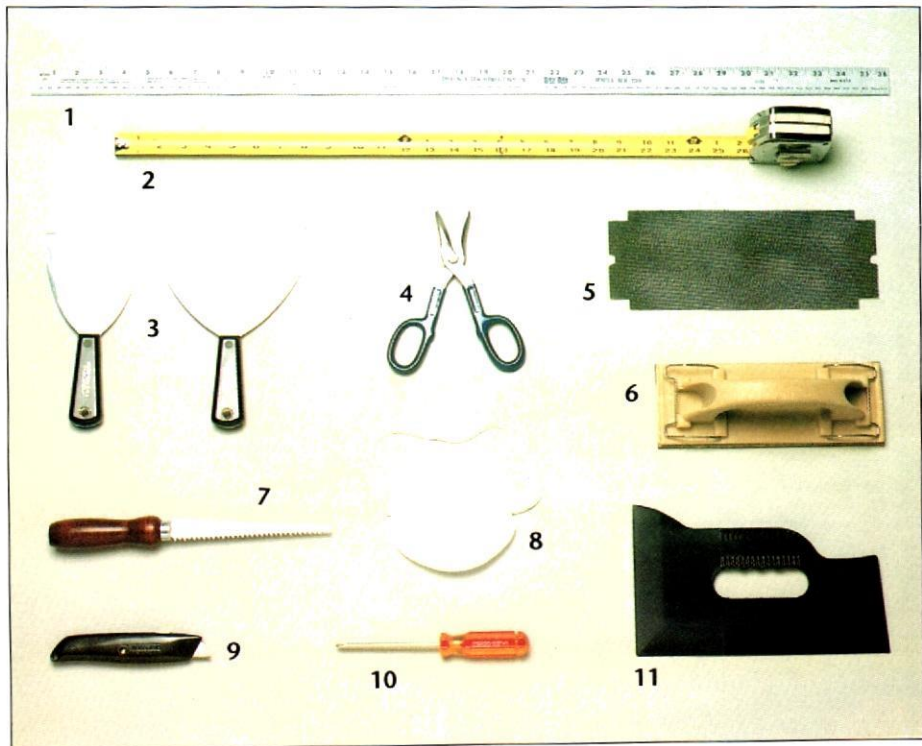
**WHAT YOU WILL NEED**

**Tools**

1. Metal straightedge
2. Tape measure
3. 4" and 6" joint knives
4. Shears
5. Drywall sandpaper
6. Sanding block
7. Drywall saw
8. Dust mask
9. Utility knife
10. Phillips-head screwdriver
11. 8" joint knife

**Materials**

- Drywall scraps for patches
- Drywall tape
- Joint compound
- Drywall patching plaster
- Piece of wire screen
- String
- Masking tape
- 1x2s or 1x4s for backer boards
- Drywall screws
- Construction adhesive
- Dropcloth



**Small Repairs**

**PLANNING**

Locate all holes and dents around your house. Determine which repair method is needed for each. If there are more than a few, make a quick sketch of the floor plan locating defects and list what you will need to repair each one.

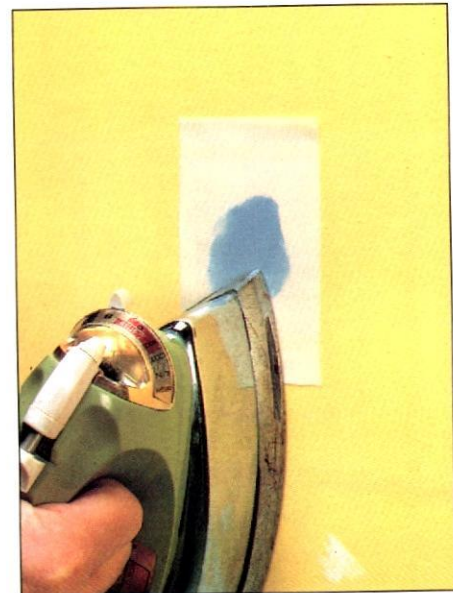
Cover furniture or rugs near work areas with dropcloths to protect them from compound dust.

**STEP-BY-STEP**

1. Prepare patch or support materials (screen, board, straight patch or beveled patch).
2. Prepare surface of defect (clean holes, cut openings).
3. Insert supports and patch.
4. Apply compound.
5. Sand.



**Joint compound for dents.** Clean off loose edges. Dip joint knife into compound sideways and load about half the blade width. Pull knife across dented area with a slow smooth stroke. Position knife at a 90-degree angle to the first stroke and pull across again to remove excess compound. When dry, sand to finish.



**Iron-on patches for small holes.** These patches are a new method for repairing small flaws in drywall. Cut the polymer fabric to size and iron with a household iron set at medium heat. Apply compound over fabric and sand when the compound has dried. Always wear a dust mask while sanding joint compound.

### Disassembling and Inspecting



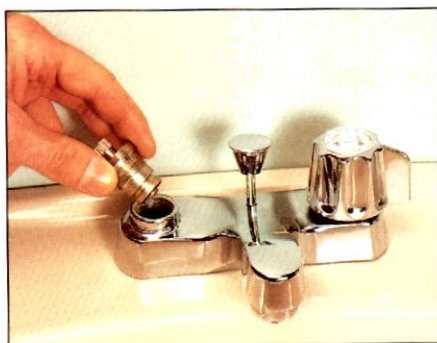
**1** Turn off the water supply by turning the shutoff valves clockwise. Shutoff valves are usually located under the sink, but may be in the basement instead.



**2** Remove the screw on the top of the handle and pull or pry the handle off. A decorative cap covers the screw on some faucets. Pry it off with a small screwdriver.



**3** Remove the packing nut with an adjustable wrench, turning counterclockwise. Use a rag, masking tape or other padding material to protect the fixture.



**4** Unscrew the stem by turning it counterclockwise. Lift it out of the faucet body.



**5** Inspect the rubber washer for wear. A worn washer will be grooved, pitted, frayed or cracked.

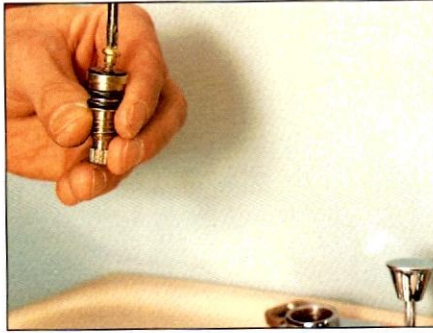


**6** Inspect the valve seat by looking down into the faucet body with a flashlight. If the seat is scored or pitted it will need to be reground or replaced.

### Replacing a Faucet Washer



**1** Turn the screw counterclockwise to remove the old washer. Clean the washer seat and stem by rubbing lightly with steel wool.



**2** Replace the old washer with a new washer of exactly the same size. Do not overtighten the screw as it will compress and deform the washer.

#### TIPS

- If you find while replacing the washer that the old screw is worn or damaged, replace the screw with a new one also.
- Even if only one faucet is leaking, it is a good idea to replace the washers on both faucets, since the other may need it soon.
- Use cloth or masking tape to pad the wrench or pliers. This will prevent scratching or denting the metal fixtures.

## Replacing an O-ring



**1** Pinch the O-ring and slide a knife or screwdriver blade beneath into the ring and pull it off.



**2** Replace the ring by rolling it on one end of the stem. The new ring must be the same size as the old to form an effective seal.

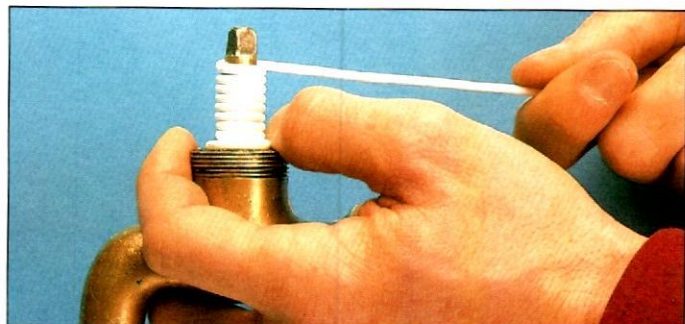
### TIPS

- You will need a clear view of the valve seat to do a proper inspection. Remove residual water in the faucet with a dry cloth to make the task much easier.
- If, after reassembling an older faucet, the faucet leaks around the stem, first try tightening the packing nut a little more. If that does not help, disassemble the packing nut and add more packing material.

## Changing the Packing



**Packing washer.** With the packing nut removed from the stem, the packing washer will be exposed. If the washer is jammed into the nut, pry it out with a screwdriver.



**Packing string.** Remove old packing string from the stem and wrap a few turns of new packing string around the stem. Replace packing nut on stem and tighten; this compresses the packing to prevent leaks. Do not overtighten.

## Dressing a Worn Valve Seat



**1** Insert the valve seat dressing tool into the housing of the faucet and lower the retaining nut so that it holds the tool straight.



**2** Turn the handle clockwise a few times while applying light downward pressure. Work slowly and carefully. Your goal is to smooth the seat, not to grind it down.

### Valve seat



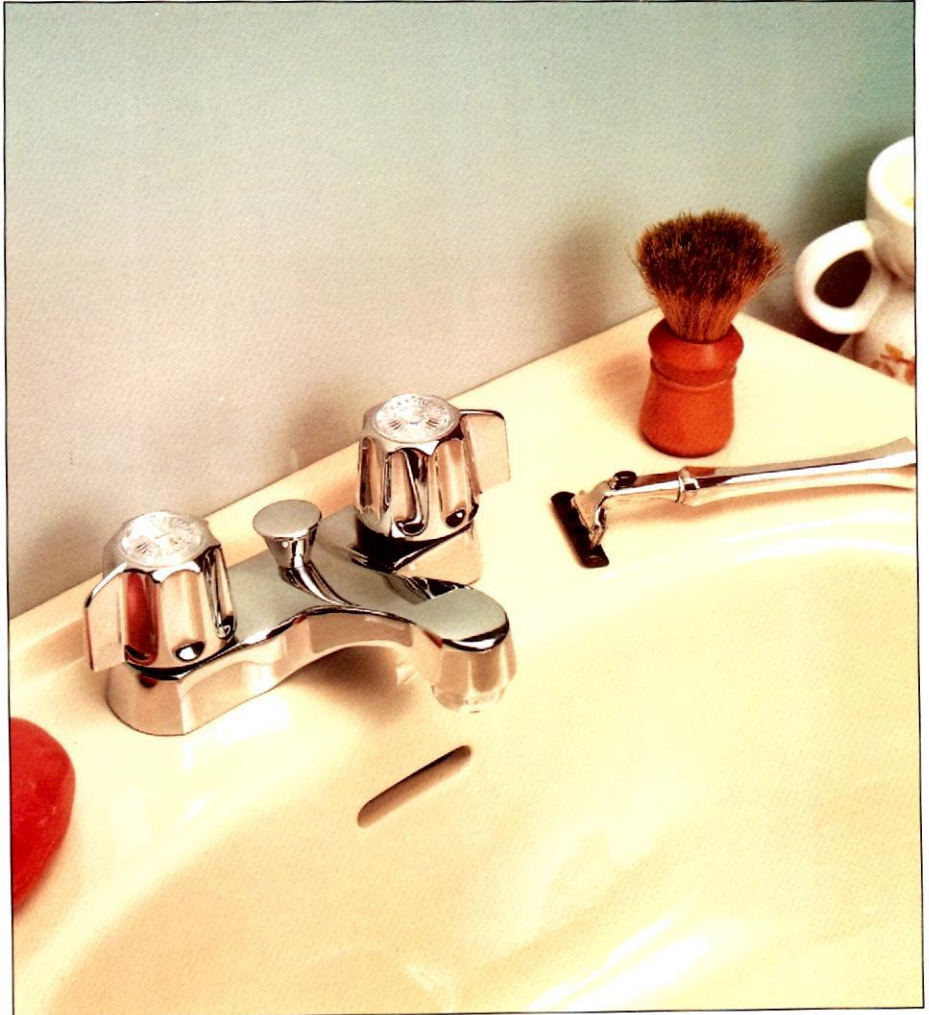
Inspect the valve seat after a couple of revolutions of the tool to see if the pitting has disappeared. The tool will turn smoothly when the seat is dressed. Shown here is a properly ground valve seat.

There are few sounds more annoying than the constant drip of a leaky faucet, especially when you think of the money that is being poured down the drain in the form of wasted water. Tightening the handle may only be a temporary fix. To correct the problem you will first need to disassemble the faucet. Fortunately, you do not need to be a licensed plumber to cure that annoying drip.

There are two types of faucets found in most homes today: compression and noncompression faucets. A compression, or stem and washer, faucet always has separate controls for hot and cold water. A non-compression faucet generally has a single lever that controls the flow of both hot and cold water by means of a ball or cartridge set in the faucet collar.

By design, compression faucets are much more prone to leaks than noncompression faucets. The handle

## Repairing a Compression Faucet



### KEYS TO SUCCESS

Save time by diagnosing the problem first. The location of the leaking water should tell you whether you need a new washer, new stem sealant, or a new or resurfaced valve seat.

Pay attention to the order in which the faucet is taken apart so that after the worn parts are replaced, the unit can be reassembled properly.

of a compression faucet rotates a threaded stem. When turned off, a washer at the bottom of the stem presses against a valve seat to block the flow of water. Turning the handle in the opposite direction releases the obstruction to the valve, allowing water to flow through the faucet.

A worn washer, deteriorated stem sealant or a damaged valve seat can cause a faucet to leak. If the leak comes from the faucet spout, the washer is probably to blame.

Problems with the stem sealant (which may be either packing string on an old faucet or an O-ring on a newer one) show up as leaks around the handle stem or from under the

bonnet covering the base of the faucet. These types of leaks are repaired with the addition or replacement of packing string, or with the insertion of a new O-ring.

If you replace the faucet washer and still have a drip, or if the washers wear out every few months, the valve seat is probably pitted or scored. The seat is made from soft brass and can be damaged by corrosion. Overtightening the faucet stem in an effort to correct a leak caused by a worn washer can also damage the brass. Valve seats can be ground smooth with a valve seat dressing tool. Some faucets have replaceable valve seats.

# 4

Group 7

# PLUMBING

## Repairing a Compression Faucet

### WHAT YOU WILL NEED

#### Tools

1. Adjustable wrench
2. Valve seat dressing tool
3. Screwdriver
4. Flashlight

#### Materials

Faucet washer  
 O-ring  
 Packing string  
 Steel wool  
 Rag or masking tape  
 for padding

### PLANNING

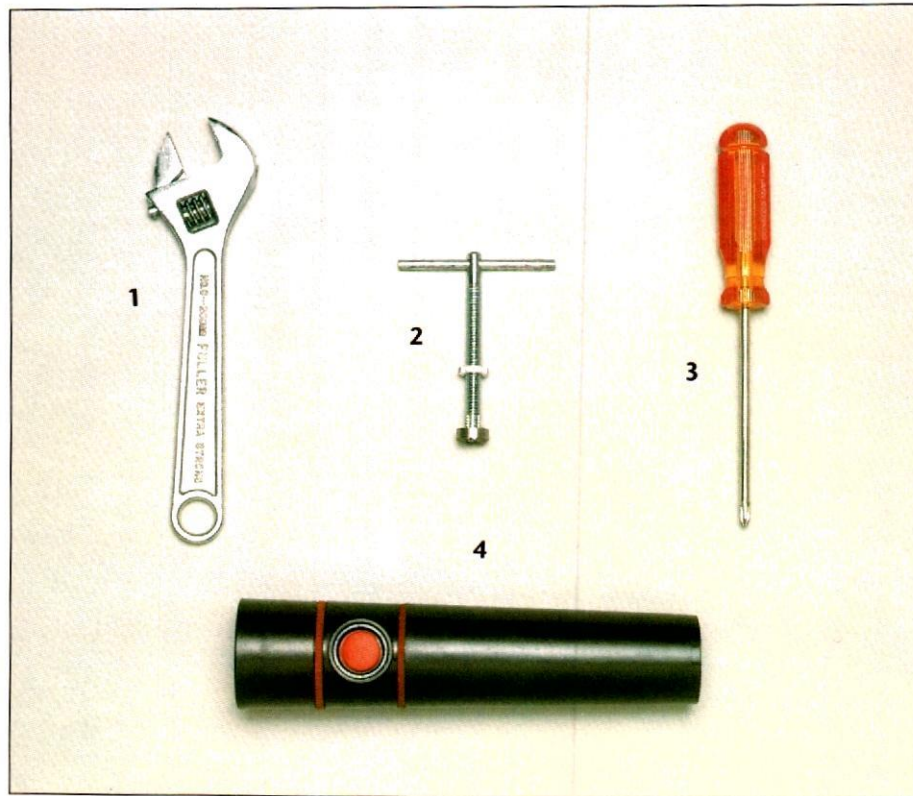
Bring the model numbers from your fixtures with you to the hardware store to purchase the parts that will fit.

Although the project should only take an hour or so to complete, plan to make the repairs during a time when no other household members will need to use that faucet.

Plan to work on your project during the local hardware store's business hours in case you need additional materials.

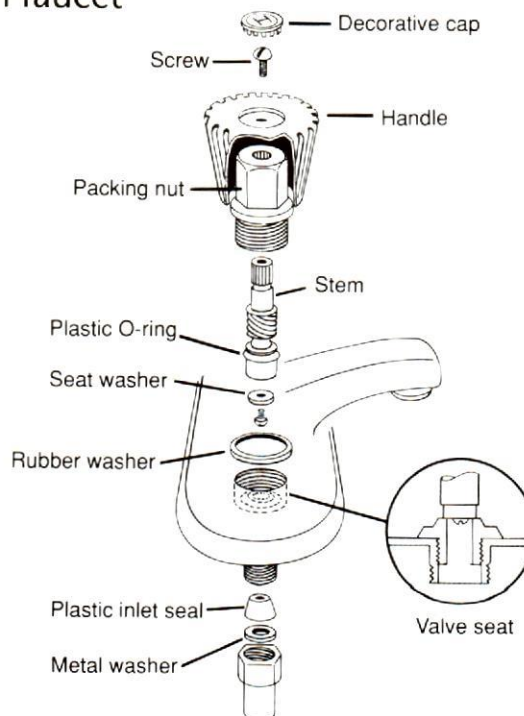
### STEP-BY-STEP

1. Shut off the water supply.
2. Disassemble the faucet.
3. Inspect for a worn washer, O-ring, packing or valve seat.
4. Replace the worn parts.
5. Reassemble the faucet.
6. Restore the water supply.



### A compression faucet

In a compression faucet, a rubber washer in each stem presses against a valve seat to control the flow of water. When turned on, the washer rises and water is allowed to flow to the spout. When turned off, the washer is compressed against the valve seat and the flow of water is stopped.



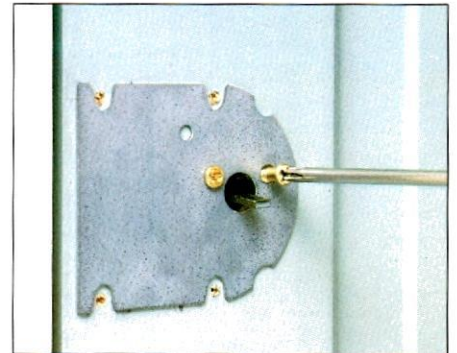




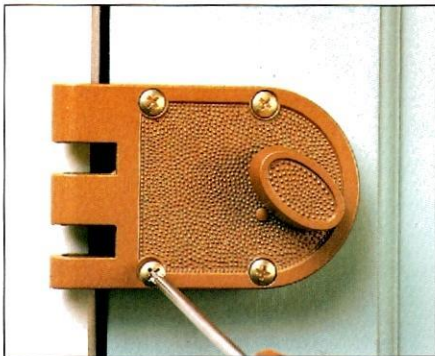
**4** Drill only deep enough for the guide bit to poke through the other side of the door. Then finish drilling from the outside. This prevents splintering the wood.



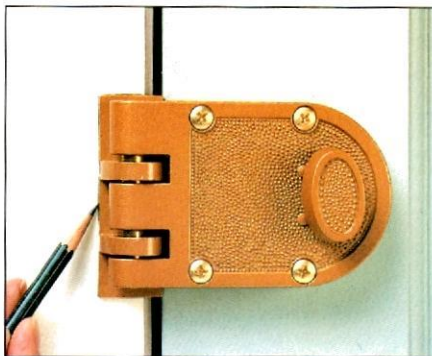
**5** Place the cylinder ring around cylinder. Then insert the cylinder and connecting bar into hole from outside of door. Position key-hole at bottom, trademark at top. Hold cylinder in place.



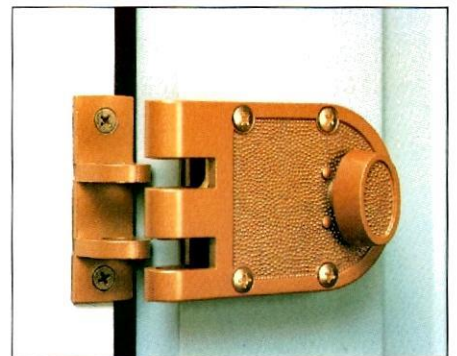
**6** Position backplate on inside; insert screws through plate into screw holes in cylinder. Plate will sit  $\frac{1}{8}$  inch from door edge. Connecting bar will extend through hole; break it off as described below.



**7** Set bolt in unlocked position. Fit the connecting bar into its slot on back of bolt. Attach bolt to inside of the door using the screws provided. Check that bolt works from both sides of door.



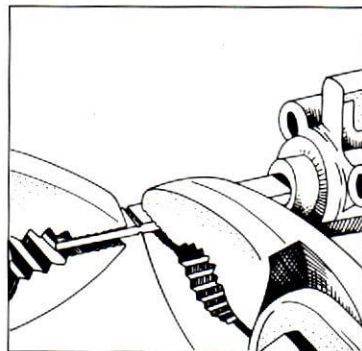
**8** Set lock strike in bolt in locked position. Mark the vertical measurement on door jamb. Then move the lock strike up so the latch bolts are centered and mark the top and bottom measurements.



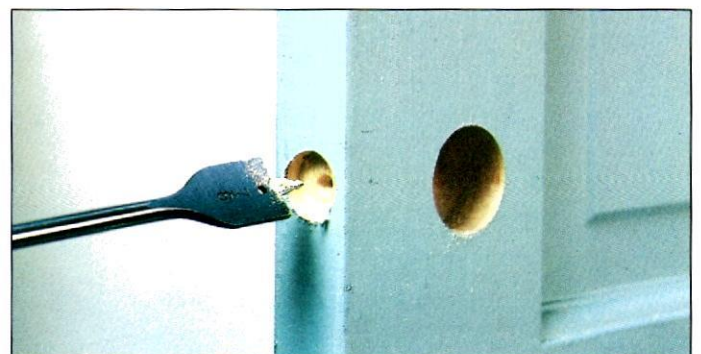
**9** Once the lock strike is in line with the lock, check to see if the lock strike needs to be shimmed or mortised into the door jamb, or if it sits correctly on the surface. Mortise if necessary and screw into place.

### Connecting bar

The connecting bar is provided with break-off points. Measure carefully; remove the cylinder and snap off excess with pliers so bar will protrude  $\frac{3}{8}$  inch beyond face of the backplate when installed.



### Internal Deadbolt



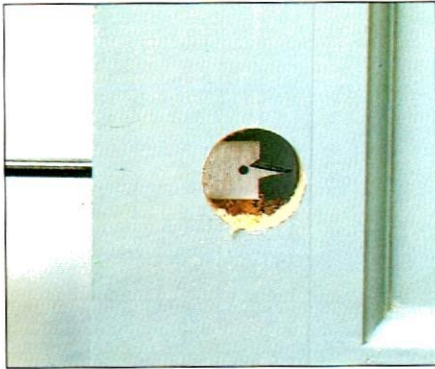
**1** After following Steps 1 to 4 for installing a surface-mounted deadbolt to mark and drill cylinder hole, drill bolt hole through side of door. Use  $\frac{1}{8}$ -inch drill bit or appropriate bit for your particular lock; be sure to drill straight.

## 2

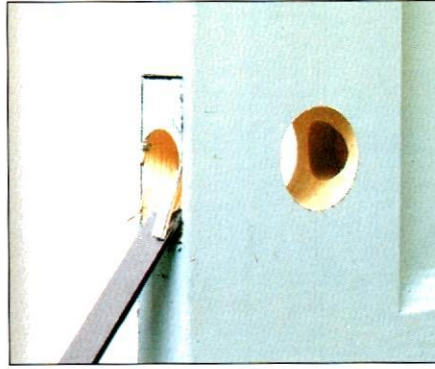
### Group 4

# SAFETY & PROTECTION

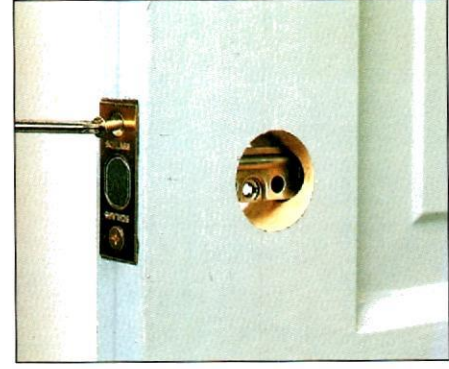
## Installing a Deadbolt Lock



**2** Drill straight through to center of cylinder hole, then continue drilling so bolt hole extends  $\frac{3}{8}$  inch beyond far side of cylinder hole. Use drill guide or have assistant present to guide you. Mark depth on bit.



**3** To recess the bolt plate flush with the door edge, shave away the wood in thin layers with a chisel. For a sharp outline to the mortise insert the bolt assembly and score around the plate with a utility knife.



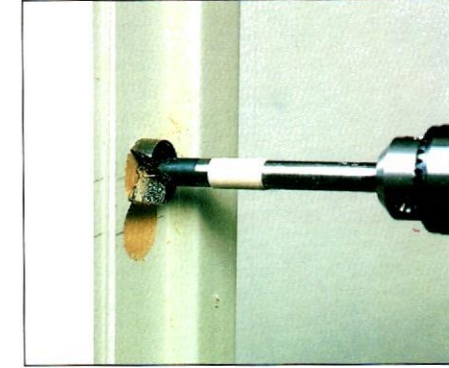
**4** Install latch bolt plate and screw into place. Insert cylinder into hole on outside of door, sliding connecting bar through its slot. Bar will extend to inside of door.



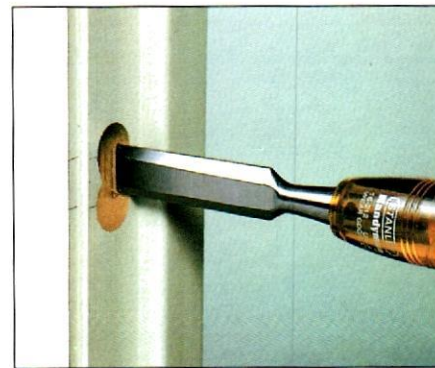
**5** Rotate connecting bar to vertical position and install thumbturn. Secure with mounting screws. Make sure bolt projects and retracts easily.



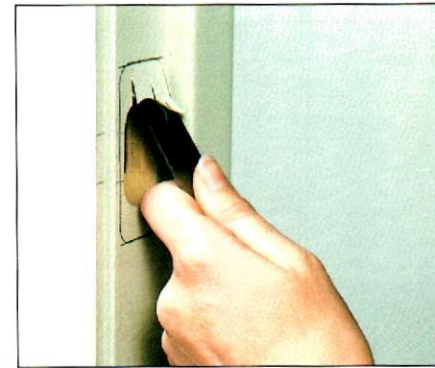
**6** Trace bolt onto door jamb. Use a square and level to continue line around to inside edge of door jamb. Measure and mark the vertical center point where bolt will go into jamb.



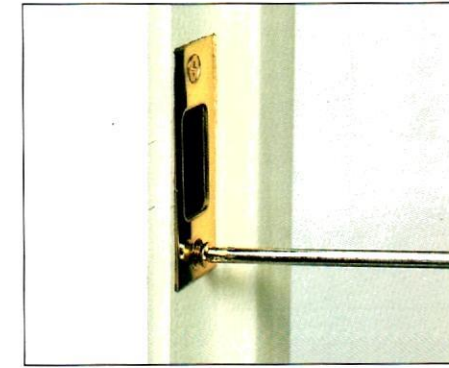
**7** Bore two  $\frac{7}{8}$ -inch holes,  $\frac{3}{8}$  inch above and below the center line with a forstner bit (or spade bit),  $1\frac{1}{2}$  inch deep into door jamb.



**8** With a chisel, work the wood out between the two holes to form one long hole in which the strike box will fit.



**9** Align strike plate on the jamb and scribe around it. Mortise about  $\frac{1}{4}$  inch deep, until strike box and its reinforcing plate fit snugly.



**10** Install strike box and reinforcing plate. Mark holes for the screws and drill with  $\frac{3}{16}$ -inch bit. Use 3-inch screws, so strike cannot be torn from the door with a sharp kick.

You can add a great deal of security to your home in the hour it takes to install a deadbolt lock on a solid wood door. The locks that are standard equipment on most exterior doors today are attractive and do provide some protection, but studies show there are often quick ways to break or circumvent them. A deadbolt has no springs to complicate or weaken it — it is “dead” in the lock. You hold the key (or from the inside, the thumbturn) to your family’s increased security.

## Installing a Deadbolt Lock



### KEYS TO SUCCESS

Install the new lock no less than six inches above the existing lock. Check that it will not interfere with the screen or storm door handles.

When drilling large holes for the cylinder and bolt, it is important to drill straight, level and true. Use a drill guide, or have an assistant watch the horizontal line while you watch the vertical.

Precise measurement of depth when drilling is also important. Measure and mark the depth on your drill bits and spade bit with masking tape.

When mortising, pare out thin strips of wood, pushing on the chisel or tapping lightly with a hammer. Check the depth of the mortise frequently.

A surface-mounted deadbolt outshines most any other kind of lock for total security. It resists prying, picking, kicking or jimmying and since it is installed on the inside surface of the door, there is no quick way for a burglar to get to it. If there is glass in or around your door that a burglar could break to reach inside, consider a model that turns by key inside as well as out. Check with local authorities before installing this type. In some places these are illegal, considered fire hazards, because they can prevent exit as well as entrance.

If you object to the appearance of this powerful lock, an internal deadbolt is also an excellent choice. It takes a little longer to install; two holes must be bored in the door for the cylinder and bolt, and the jamb must be bored and mortised to receive the bolt.

With either surface-mounted

or internal deadbolt, the cylinder and bolt (latch bolt and latch plate) go on or in the door. The lock strike (strike box, strike plate) go on or in the door jamb.

Steps and photos on these cards show the installation of both a surface-mounted and an internal deadbolt. Exact measurements for your lock may vary, so check the manufacturer’s instructions, but the installation process will be basically the same.

Before purchasing a lock, measure door thickness, observe whether you have a right-handed or left-handed door (right-handed has hinges on the right, outside) and whether it opens in or out. With this information the salesperson can guide you to the right lock. He can also then help you determine the correct size drill bits, spade bit, and hole saw you will need to install your lock.

**WHAT YOU WILL NEED**

**Tools**

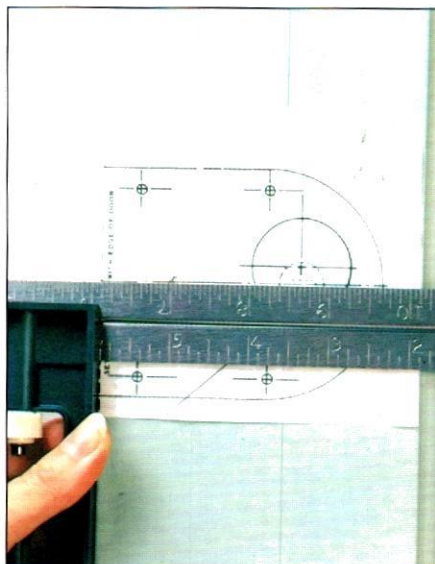
1. 3/4" chisel
  2. Hammer
  3. Combination square
  4. Adjustable hole saw bit or 1 1/2" and 1 1/4" hole saw bits
  5. 7/8" spade bit
  6. 7/8" forstner bit
  7. 1/8" and 3/16" drill bits
  8. Electric drill
  9. Tape measure
  10. Pliers
  11. Awl
  12. Phillips-head screwdriver
- Drill guide (optional)  
Utility knife

**Materials**

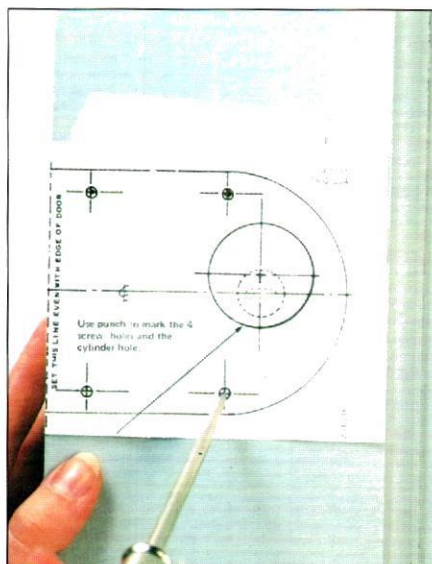
- Locks  
Masking tape



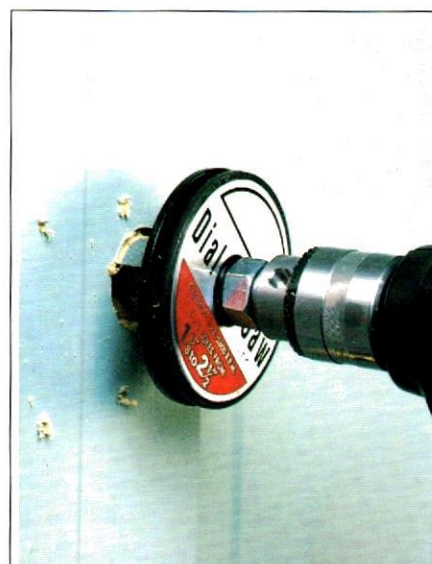
**Installing a Surface-Mounted Deadbolt**



**1** Tape the template that came with your lock to the inside edge of door, following guide lines. Use straightedge and level to ensure it is placed correctly and perfectly level on the door.



**2** Shut door or wedge firmly. With awl, punch holes for drilling where template indicates for the four screw holes and center of cylinder hole. Use the 1/8-inch drill bit and hold drill straight to drill the 4 screw holes, 3/4 inch deep.



**3** Insert the 1 1/4-inch hole saw or, as here, an adjustable hole saw in your drill. Position the center guide in the hole you punched for the cylinder. Hold drill very straight and begin drilling. Use a drill guide or have an assistant help you.

Is there an area in your home where you imagine having that one extra storage space, that one more small private room, that one special place for activities? If you know how to use a few hand tools such as a hammer, framing square and saw, and can take measurements and follow simple instructions, you can build an interior nonbearing wall.

The following is a guide for building a simple partition, conventionally framed with 2x4s every 16 inches on center, and finished off with drywall. It will be a nonbearing wall, one that does not support any structural house weight.

When building a wall it is important that it be anchored securely. If the wall is to run parallel

## KEYS TO SUCCESS

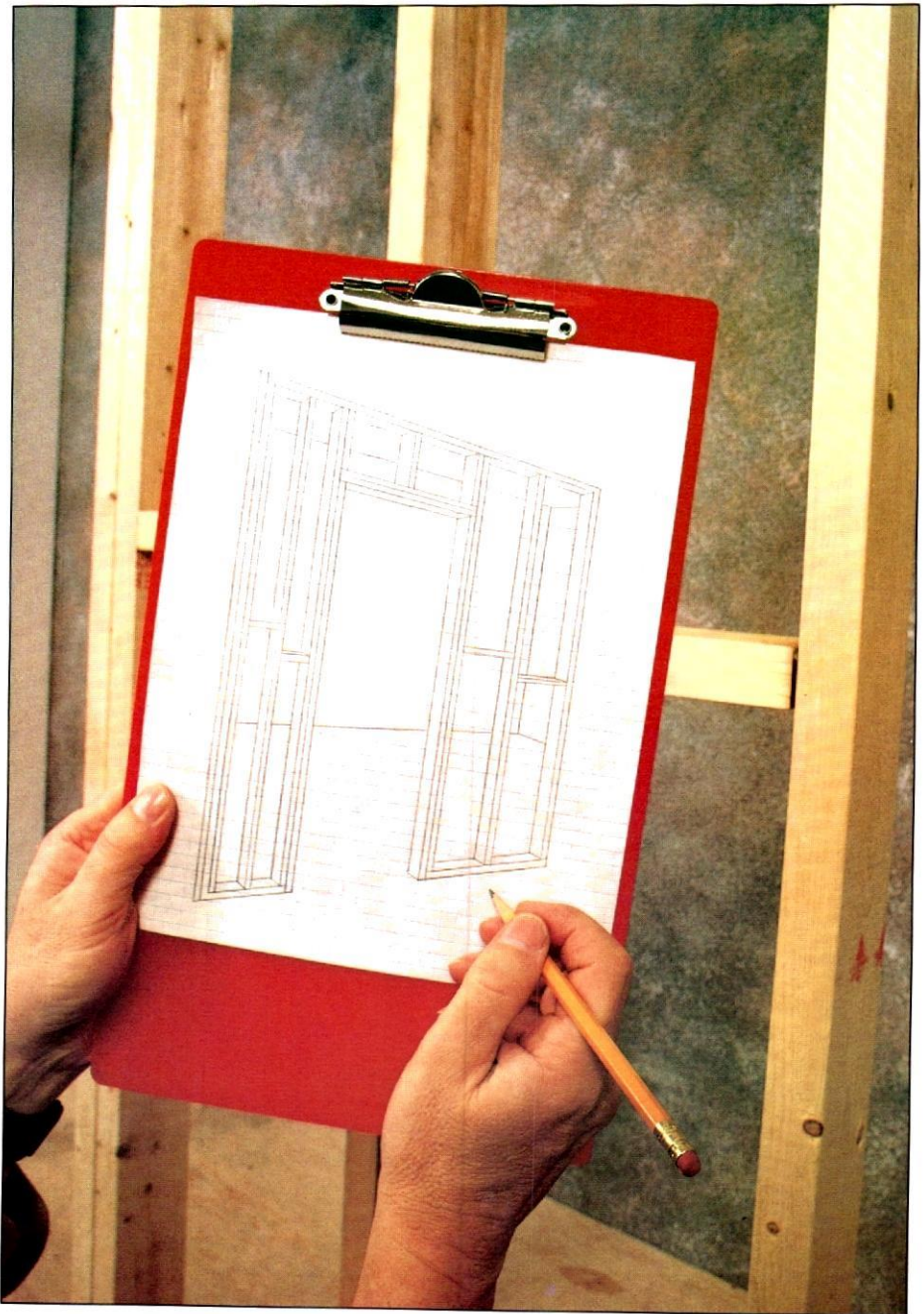
Take the time to select good stock. Slight crooks, warps, bows are acceptable, but use the straightest 2x4s for end pieces, plates and around door openings.

Be sure measurements are correct. Measure twice and cut once, as the old-timers say.

If the new wall will be in a damp area — bathroom or kitchen — use water-resistant drywall.

Choose drywall in the size which best corresponds to ceiling height; for a high ceiling, 4x10 or 4x12.

## Building an Interior Wall



to the ceiling joists, the frame should be located directly under and nailed to a joist. If the wall cannot be located under a joist, use a good construction adhesive and toggle bolts to secure the top plate to the ceiling. If the wall is more than 16 feet long, however, you should open up the ceiling and insert 2x4 cross blocks be-

tween the ceiling joists for nailing the top plate to. If the wall will run perpendicular to the ceiling joists, secure the top plate where it intersects the joists. The frame should also be anchored at each end by nailing into the studs of the existing wall. If this is not possible, use construction adhesive and toggle bolts here as well.

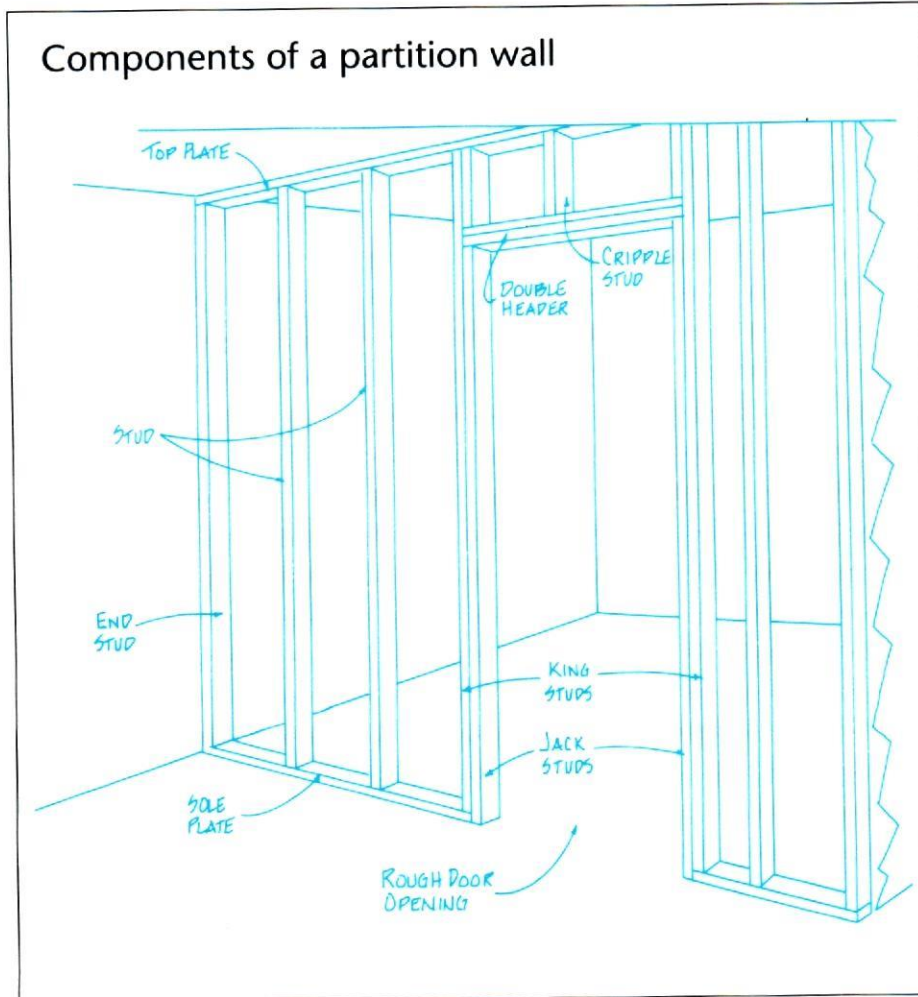
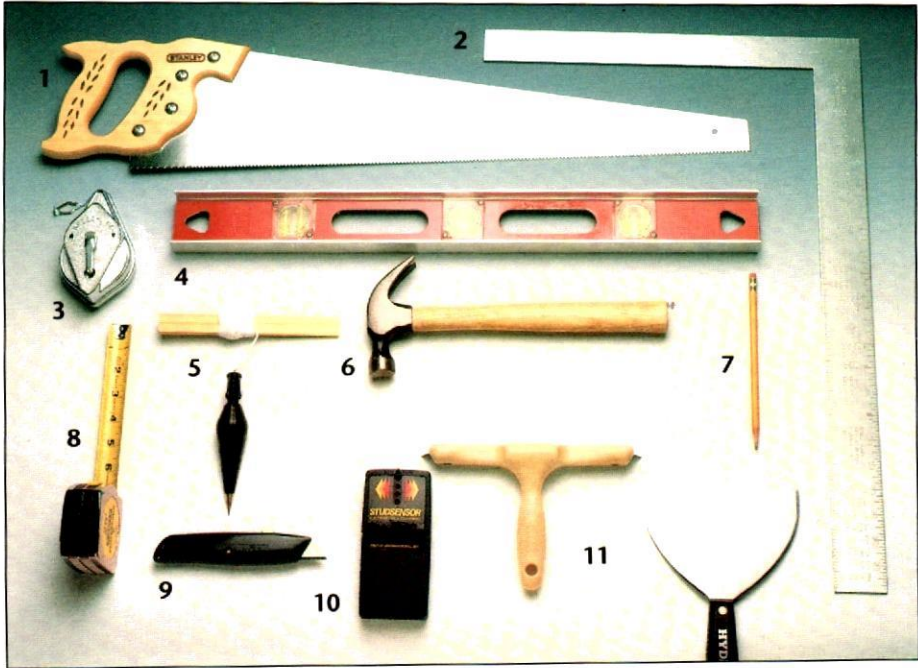
# 1

Group 11

# REMODELING

## Building an Interior Wall

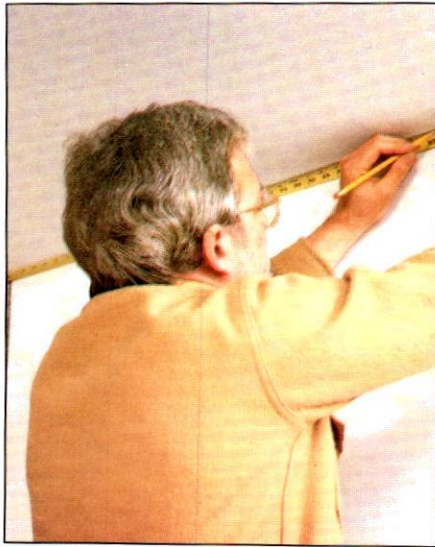
- ### WHAT YOU WILL NEED
- Tools**
1. Crosscut handsaw
  2. Framing square
  3. Chalk line
  4. Level
  5. Plumb bob
  6. Hammer
  7. Pencil
  8. Tape measure
  9. Utility knife
  10. Stud locator
  11. Broad knives (10" and 6")
- Materials**
- 2x4s for studs and plates
  - Nails: 8d and 16d common
  - Wood shingles for shims
  - Metal connectors
  - ½" drywall to cover both sides of wall
  - Drywall nails or screws
  - Joint compound
  - Fiberglass joint tape



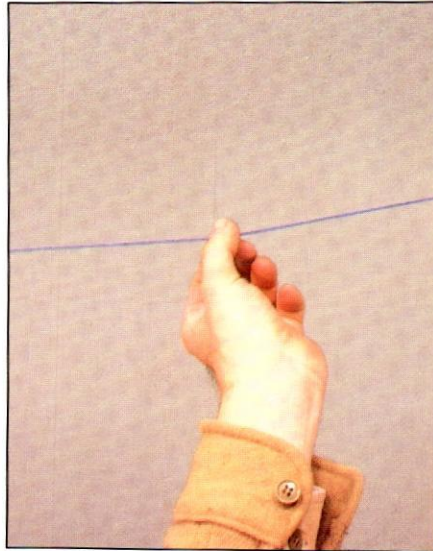
- ### PLANNING
1. Choose exact location of wall.
  2. Choose location of door and draw plans to scale on graph paper.
  3. Clear a large work area in the room. Wall will be built in place.

- ### STEP-BY-STEP
1. Measure and mark wall position.
  2. Snap chalk lines for top plate, end studs and sole plate.
  3. Mark the stud locations and the door opening on top and sole plates.
  4. Install top and sole plates.
  5. Measure, cut and install studs and door frame.
  6. Install and finish drywall.

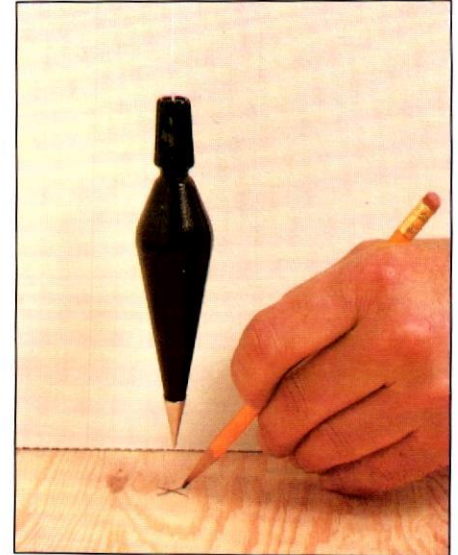
### Laying Out the Partition



**1** Measure along edge of ceiling from the top of existing wall to the point where one end of new wall will intersect, and mark with a pencil. Repeat this step at the opposite end of the room.

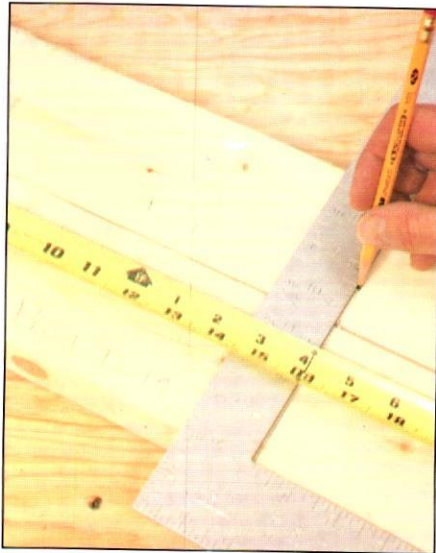


**2** Drive a nail halfway at the mark at each end. Stretch a chalk line between the nails and snap it. This marks the line for the outside edge of the top plate on the new wall.

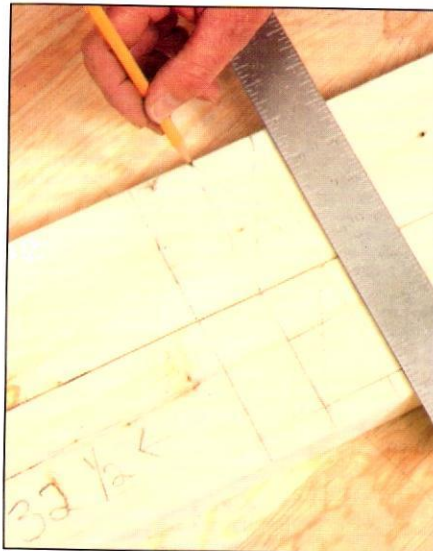


**3** Drop a plumb bob from each end of chalk line to floor and mark with an X. Snap a line between the two points to mark edge of sole plate. Snap lines on walls connecting ceiling and floor lines.

### Framing the Partition



**1** Measure the ceiling and floor lines and cut the top and sole plates. They may not be exactly the same length, so label the boards as "top" and "bottom." Mark the placement for studs every 16 inches using a framing square.

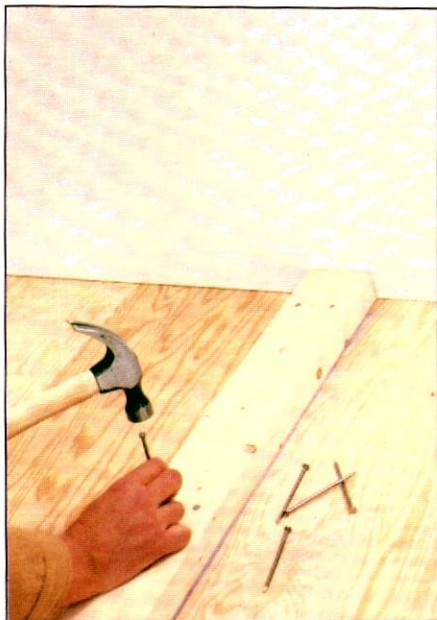


**2** Mark the location for the door. The rough opening (r.o.) for any door is  $2\frac{1}{2}$  inches wider and  $1\frac{1}{4}$  inches higher than the door itself. Door sizes vary, but a common size is 30 inches by 6 feet 8 inches. Using a 30-inch door, the r.o. would be  $32\frac{1}{2}$  inches by 6 feet  $9\frac{1}{4}$  inches.

#### TIPS



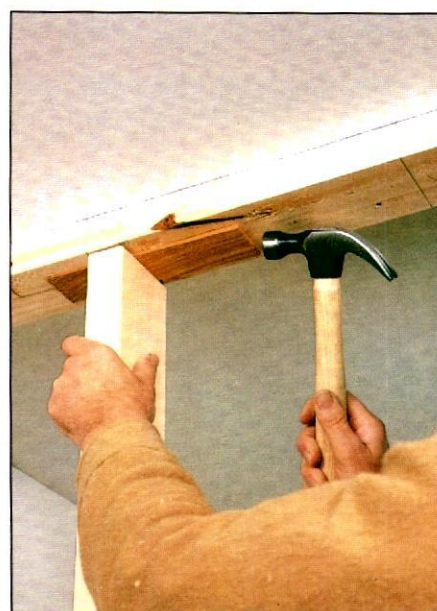
□ When you mark the rough opening on the sole plate, you will have 3 lines showing placement of the wall stud and placement of the jack stud butting it. At the middle line, cut halfway through from the bottom side of the plate. When you remove this section of the sole plate from the doorway later, you can cut through from the top without marring the floor.



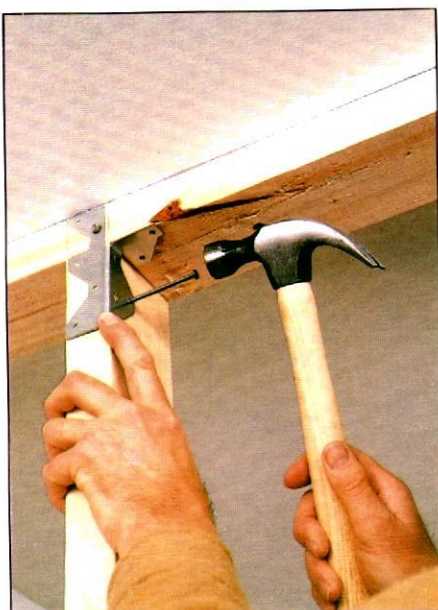
**3** Double nail (2 nails driven side by side) the bottom plate to the floor along the chalk line; use 16d nails. Begin a few inches from the wall and drive nails about every 16 inches along the plate through the subfloor.



**4** If the wall is parallel to and directly under a ceiling joist, nail the top plate to it. If perpendicular, locate ceiling joists and nail top plate to joists where they intersect every 16 inches on center.

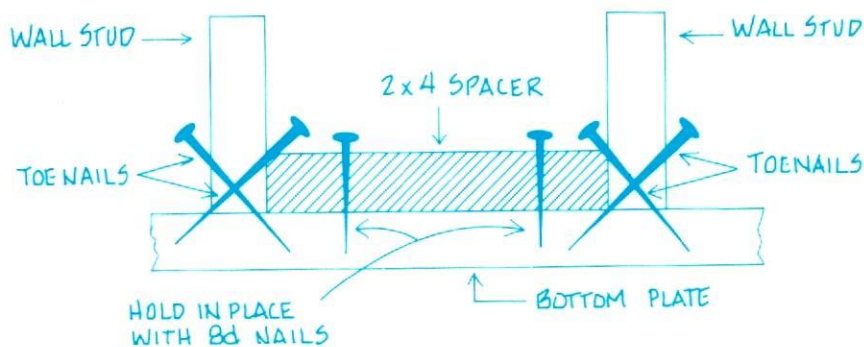


**5** Measure and cut studs individually. Nail them into top and bottom plates where marked. If a stud is cut a little short, shim it at the top plate with a piece of wood shingle.



**6** Fasten each stud to the plates at the top and bottom with metal connectors, using 8d nails. Alternately, toenail the studs to the plates (right), using 16d nails. While working, use level to check that studs are plumb.

**Toenailing**



Toenailing is the term used for driving nails in at an angle to fasten one member to another that is perpendicular to it. It can be frustrating if you have not had practice: The stud walks off the mark with each blow, the angle of the nail is wrong so the nail splits the stud end or misses the plate completely, or, using your foot as a brace, you nail your boot to the plate. Until you get the knack, cut a spacer 14½ inches long and nail loosely into place to brace each stud against the previous one. Nail against this first; then, removing the spacer, brace the nailed side with your foot and carefully toenail from the opposite side.



### Framing the Doorway



**1** Saw through the top of the sole plate at the inside edges of the king studs, to meet the cut you made earlier in the bottom. Remove the cut portion of the plate.



**2** Measure and cut the two jack studs to be  $1\frac{1}{4}$  inches longer than the height of the door.



**3** Nail the jack studs to the frame studs with 8d nails placed one foot apart from top to bottom.

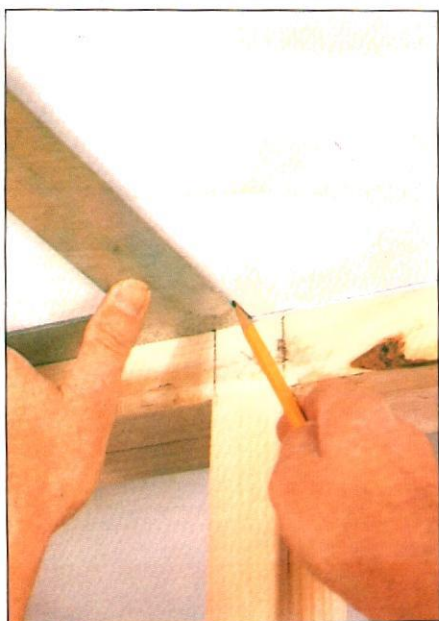


**4** Cut two 2x4s each  $35\frac{1}{2}$  inches long (for a 30-inch door) and nail them together. Place this double header on top of the jack studs. Secure them by driving two 16d nails through each side of the door frame studs.



**5** Measure the opening between the top of the header and the top plate, and cut three cripple studs. Nail one against each frame stud, and center the third over the door opening.

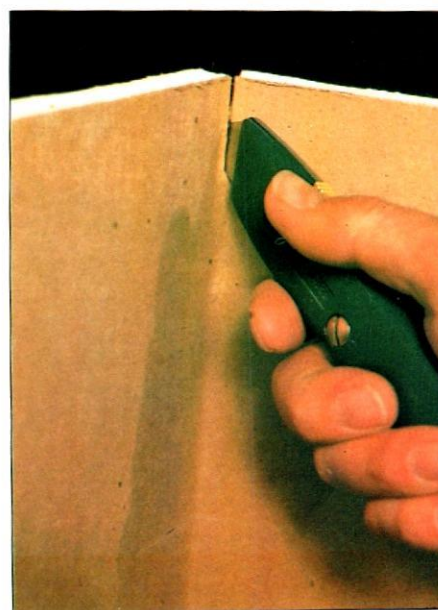
### Installing Drywall



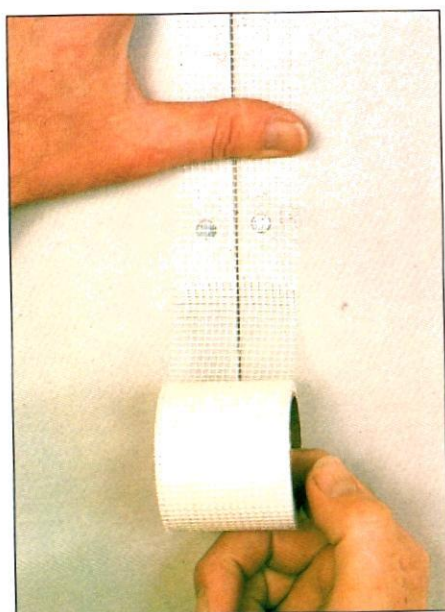
**1** Lightly mark the center of each stud location on the floor and ceiling with pencil. This will provide you with the lines for nails or screws when drywall is in place.



**2** After measuring and marking, cut the drywall with the utility knife along the face of the sheet, using the framing square as a guide.



**3** Break the drywall along cutline with a gentle snapping motion. Fold it up and cut the paper along the back of the sheet.

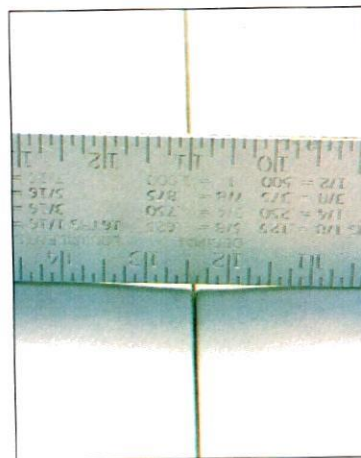


**4** After nailing or screwing in place along the top and bottom plates and studs every 16 inches, apply fiberglass joint tape to the seams, with the sticky side to wall.



**5** Apply joint compound over tape with 6-inch broad knife and smooth out over the seam by holding handle at a tight angle to the wall. Let dry at least 24 hours, sand, and repeat process using 10-inch broad knife. Let dry and sand.

#### Tapered edges



The two long sides of drywall are tapered to create a trough when placed edge to edge, so that joint tape and joint compound can be applied without bulging out too far beyond the wall surface.

New wallpaper can change a room's period, style or ambience, and make a dark room bright literally overnight. The ability to plan and a keen eye for detail, not strength or technical expertise, are the important skills necessary for successful wallpapering. The most difficult part of the job is deciding which pattern you like best.

Like most home renovation jobs careful preparation is crucial to a satisfying end result. When you paper over new or painted walls, you do not have to strip off old paper, but you will have to treat a new wall if the builder did not prime it for you. Paint an oil-based primer on the walls with a roller.

## KEYS TO SUCCESS

Large prints will make a room seem smaller and cozier. Vertical patterns make ceilings seem higher. Widely-spaced patterns are harder to match than small repeat patterns.

In old buildings, the walls, windows and doors are often not "plumb" (which means perfectly vertical). The resulting wedge-shaped angles will show up more on paper with vertical stripes in the pattern.

Repaint trim, if necessary, *before* hanging new paper.

Seal the wall surface in rooms where there is dampness, like bathrooms and kitchens.

Add diluted paste when using prepaste wallpaper.

Start in the most inconspicuous corner and work around the room in one direction.

## Papering Bare Walls



Oil-based paint creates a hard surface; latex paint will soak in. Next, size the walls: Sizing is a bonding agent between the wall and the paste. It is often tinted blue to show clearly where it has covered the white primer.

Paper is always sold in large "double-roll" bolts; measuring and ordering is done by single-roll increments about 15 feet long. Roll width varies from 20½- to 35-inch widths. Wallpaper manufacturers usually slip a useful sheet of specifications and instructions into double-roll packages about 10 feet into

one of the rolls. In addition to any special instructions for hanging, it gives the distance from one repeat pattern to the next (called "drop"), width of roll, washability, style and pattern codes.

Most wallpaper available today is plastic coated, which makes it washable. The thicker the plastic coating, the more washable the paper is. "Strippable" (peelable) paper is easy to remove, which simplifies future repapering projects. Vinyl wall covering requires special handling during installation as it is heavy and it stretches.

# 1

Group 5

# WALLPAPERING

## Papering Bare Walls

### WHAT YOU WILL NEED

#### Tools

1. Bucket
2. Paste brush
3. Paint roller
4. Broad or spackling knife
5. Sponge
6. Straightedge/combination square
7. Sandpaper and sanding block
8. Roller
9. Wallpaper brush
10. Utility knife
11. No. 1 hard pencil
12. Scissors
13. Tape measure

#### Materials

- Primer
- Wall sizing
- Wallpaper
- Premixed wallpaper paste



### PLANNING

Consider the visual effect you want and degree of washability and abrasion resistance you need.

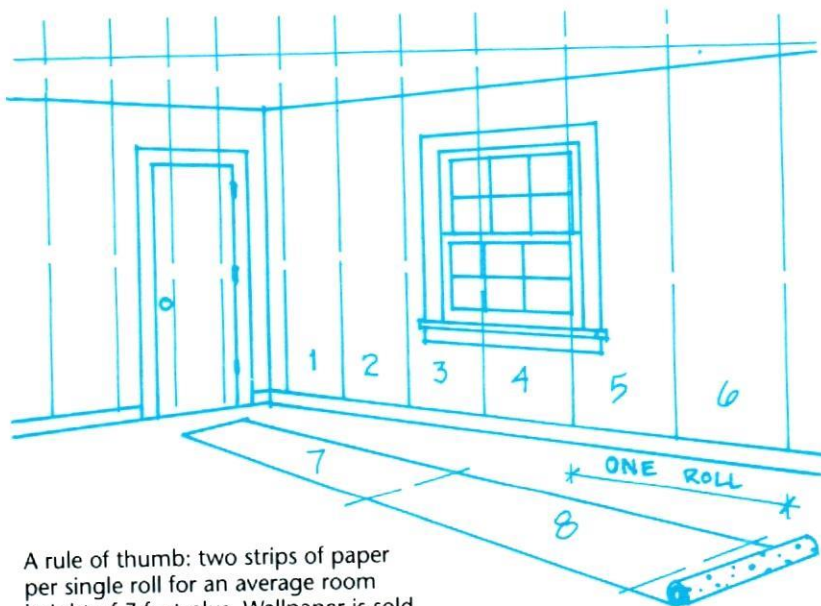
Measure the room and estimate the number of rolls you will need.

Assemble the necessary materials and tools including a stepladder.

### STEP-BY-STEP

1. Prepare wall surfaces.
2. Start in an inconspicuous corner with a true vertical line.
3. Measure, cut and paste wallpaper strips.
4. Hang wallpaper and trim to obstructions.

### Measuring to buy wallpaper



A rule of thumb: two strips of paper per single roll for an average room height of 7 feet plus. Wallpaper is sold in double-roll bolts. Ask about returning unused whole double rolls—partial rolls cannot be returned.

### Preparing, Measuring, Cutting and Pasting



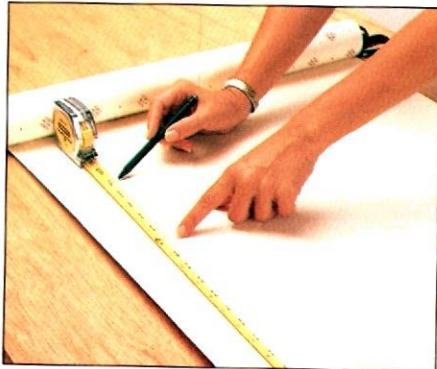
**1** Apply oil-based primer which dries to a hard finish, to protect walls from moisture and make stripping easier later. Let dry and sand lightly.



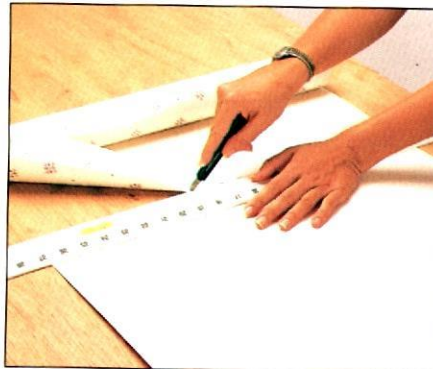
**2** Paint sizing over entire surface with roller and brush so paste will adhere. Watch for a color tint to show that you are covering evenly.



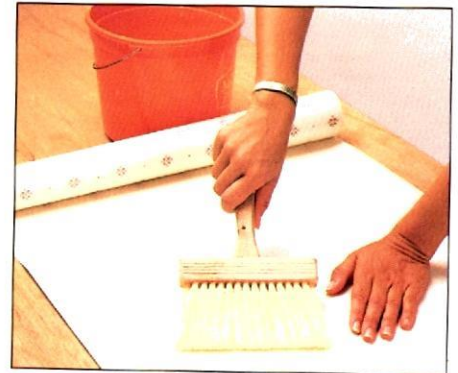
**3** To start papering, use the level to establish a true vertical guideline from floor to ceiling one width of the roll plus 8 inches away from an inconspicuous corner.



**4** Measure the height from the baseboard to the ceiling. Mark off this distance plus 4 or 5 inches on the first strip of wallpaper.



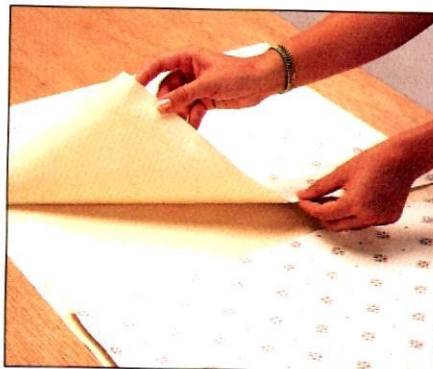
**5** Cut the first strip to the correct length. Increase the length of subsequent strips as necessary to match patterns.



**6** Brush paste onto the first strip starting at the top. If there is no arrow to indicate which end is up, turn strip over to check pattern.



**7** Double over about one-sixth of the paper's length from one end so the pasted side is touching itself. Do not crease the fold or it will show later when paper is hung.



**8** From the other end, double over about half of the remaining length, so that the top edge almost touches the bottom edge. This is commonly called "booking."

#### TIPS

- A lot of people find that a roller—instead of a brush—applies paste faster and just as evenly.
- Rule and trim paper on the back so any pencil lines do not show *unless* your pattern repeats at intervals greater than 4 inches. (Some large patterns are as much as 18 inches apart.) In that case, turn the paper printed-side up so you can see where you must cut it to match the patterns.

### Hanging Wallpaper



**1** Drape pasted paper over your arm as shown and carry it to the wall. Install the top of paper just over the ceiling line.



**2** Allowing 2 inches to extend onto the ceiling, unfurl the top section, holding the right edge against vertical guide line. Press into place.



**3** Brush to make the paper stick to the wall and drive out air bubbles. Work from the top down and from the center to the sides.



**4** Fold out the bottom half; hold it in place along vertical guide. Press and brush quickly. As paste dries, it is harder to remove bubbles.



**5** Press blade of broad knife into ceiling joint to crease paper. Cut off excess paper along crease with utility knife, using broad knife as a straight edge. Wipe off excess paste.



**6** Brush strip again and trim excess paper at bottom with sharp utility knife, using broad knife as straight edge.



**7** Position subsequent strips on the wall about 1/4 inch away, then slide them gently into place. If the paper does not slide very easily, gently lift and reposition, then brush.



**8** After the paper has been up for 10 to 15 minutes, press seams firmly with a roller. Wipe off excess paste with a towel.

#### TIPS

- Patterns rarely match along the entire seam, so match your pattern at the most obvious place — eye level.
- Be sure the blade on your utility knife is always sharp. When in doubt, insert a new blade.
- Bubbles in the wallpaper rarely form if you keep on brushing as you go. If you do get a bubble that just will not smooth out, poke it with a pin before it dries and work the air out.

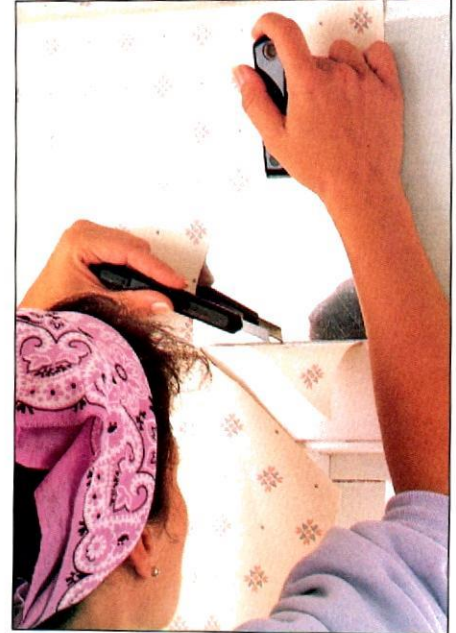
## Fitting Wallpaper Around Obstacles



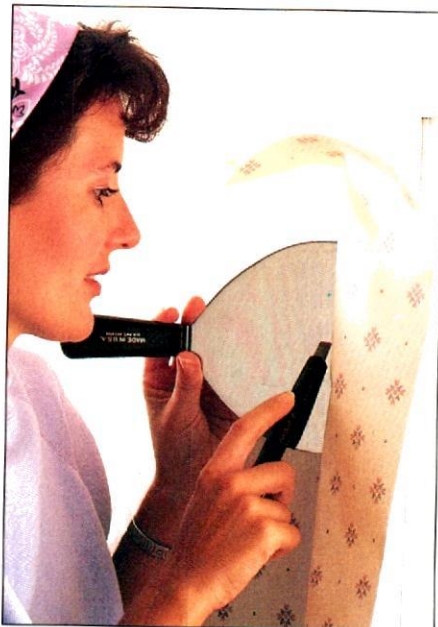
**1** Wallpapering around door and window frames is tricky. Precutting to fit is the riskiest way to deal with these obstacles. Instead, put up a whole strip of wallpaper and brush it into place as far as the point where the wall meets the obstacle.



**2** At the top or bottom of the door or window frame, cut the wallpaper with scissors diagonally (miter-cut) to permit separation into two sections: one to extend along the side of the frame, the other horizontally.

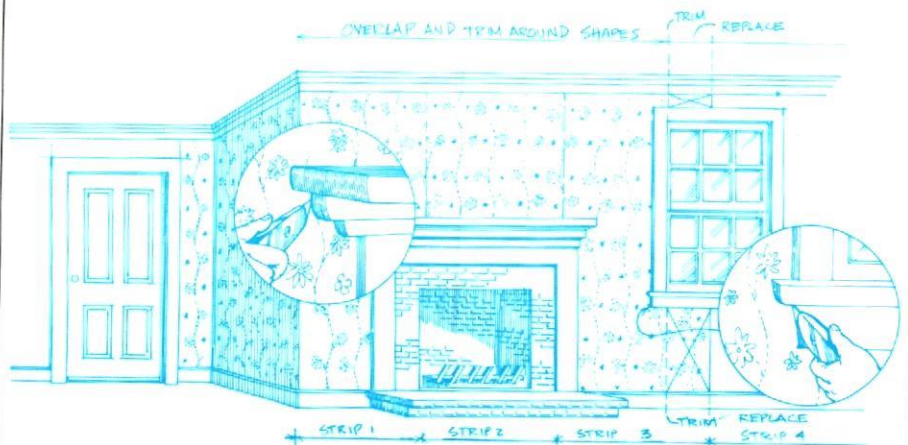


**3** Brush horizontal section into place. Crease into corner with back edge of broad knife and trim with sharp utility knife against the blade of the broad knife still pressed into crease.



**4** Trim the vertical edge next, using broad knife and sharp utility knife. Follow the corner formed where the wall meets the frame.

### How to fit around ledges and windows



### 3 Group 5

## WALLPAPERING Papering Bare Walls



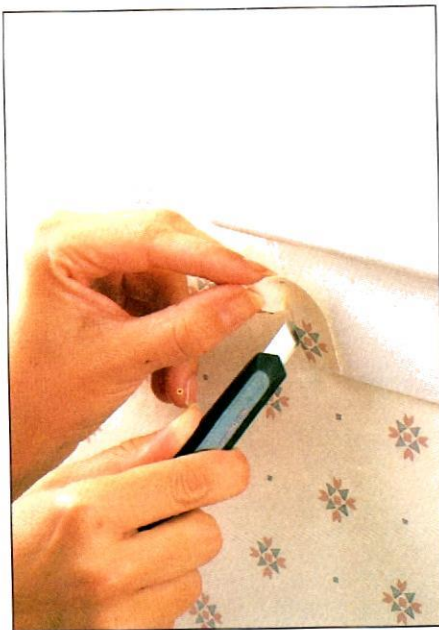
**5** Where the protrusions are more complex, as in the case of a jutting window sill, brush the paper as close to the obstacle as possible without risking a tear. Crease the paper into small spaces. In a tight spot, use a towel or a face cloth.



**6** Make horizontal cuts above and below the obstacle, to the end but not beyond the obstacle. Use scissors for the larger initial horizontal cuts to the edge of the obstacle. Use a utility knife to make the smaller horizontal cuts.



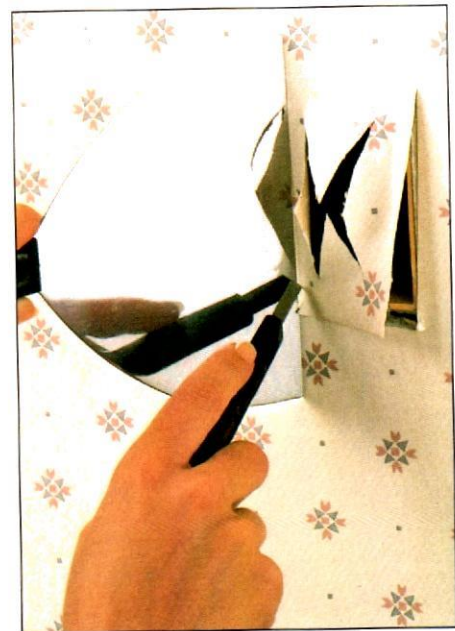
**7** After brushing any completed sections into place, make whatever additional cuts are necessary to get an exact fit. Here, a horizontal slit is being made between the two sections of sill, one of which sticks out further than the other.



**8** Make final paper cuts only after you have been able to brush the paper into place against the obstacle. The loose vertical section alongside the window frame can now be easily trimmed.



**9** Always turn off electricity when working around switches and outlets. Remove plates. With current still off, hang paper. Make X-shaped slits over exposed fixtures.



**10** While holding the broad knife against the outlet to form a straight edge, trim the paper around inside edges with utility knife. Replace the faceplate.