



- Shopping List:**
1. Five 2 x 4 x 10 boards
 2. #8 x 2" square stainless steel screws
 3. 3/16" countersink drill bit
 4. #120 sand paper
 5. Respirator for saw dust
 6. Wood glue
 7. 3/16" Wood Plugs (diameter of countersink)
 8. #2 Square drive screw driver
 9. Saw Horses (optional)
 10. Wood Saw
 11. Japanese Wood Saw (optional)
 12. Chalk (optional) for marking cuts
 13. Drill (cordless) (optional)
 14. Cut Resistant Gloves (optional but recommended)
 15. Safety glasses
 16. 4 x Wood clamps (optional)

Japanese Garden Bench

Combine five 2x4s, a handful of screws and a long afternoon to build a handsome and sturdy sitting spot for your deck or garden.

My father always has had a knack for doing more with less. He built the first house on our farm using a Skil saw, a drill and a hammer.

Sometime during my childhood he built a pair of these Japanese-looking benches using leftover 2x4s and framing nails. While visiting him one recent summer, I was struck by the fact that they have survived more than a dozen winters and still look good.

This project is really great for the beginning woodworker who doesn't have a lot of tools, skills or confidence. But the end result will make you look like you've got all three, in spades.

Trip to the Lumberyard

This bench is designed to be built using just five 10'-long 2x4s. You can build it from sugar pine, paint it and spend less than \$10. I al-

ways liked redwood for my outdoor projects (and that's what the originals were made from) so I spent the extra cash – about \$200.

No matter what species you choose, select the straightest, most knot-free 2x4s you can find. While you're at the lumberyard, pick up a pound of stainless-steel screws. Associate Editor Kara Gebhart (who helped me build this project) and I used #8 x 2" screws. Another excellent choice would be Miller Dowels (866-966-3734 or millerdowel.com).

Back in the Shop

You don't need a jointer, planer or table saw to build this bench. You don't even need a shop. A



We used a miter saw to cut our pieces to length. Here you can see that we clamped all the top boards together and "gang cut" them to length simultaneously.

drill, a saw, some sandpaper and a couple of sawhorses will get the job done right on your driveway.

Start by laying out your crosscuts on the 2x4s using chalk. Pick the best-looking boards for the five top pieces. Boards with too many knots or dings can be used as legs, which are mostly covered up by the top pieces.

Then cut all your pieces to

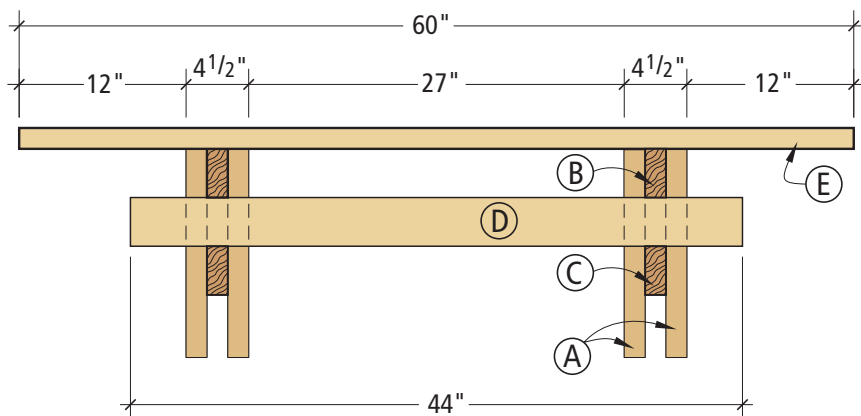
length as shown in the cutting list on page 82. What's important to remember here is that it's not critical if you cut your legs a bit long or cut the top boards a bit short. What is important is that you cut all the legs the same length, whatever that turns out to be. For that reason, I recommend "gang cutting" your parts.

"Gang cutting" is when you clamp together all the parts that are the same length and trim them to size simultaneously, as shown above. This works no matter what tool you use for crosscutting.

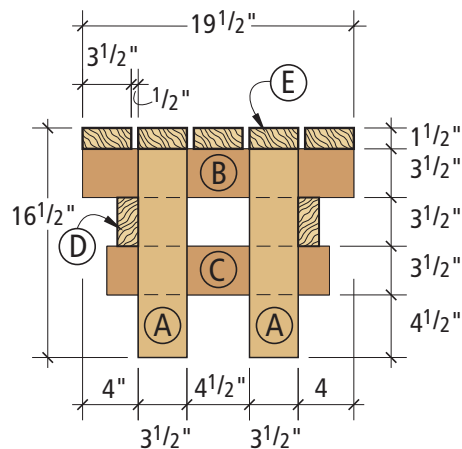
by Christopher Schwarz & Kara Gebhart

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Cut the 5 x 10' boards in half (i.e. 5' halves)



Elevation



Profile

Sanding (Insert Groan Here)

It's tempting to screw this project together immediately, but I'd suggest you do all you can to resist the urge to assemble.

A better bet is for you to sand all your pieces to remove marks and dings. This helps get them ready for whatever finish you'll be applying (paint, deck stain, tung oil or nothing).

Once the faces and edges have been sanded, you need to "break

the edges" of all the boards. This is pretty simple to do. Just grab some #120-grit sandpaper and take a couple of licks on all the edges of each board (you're trying to remove any sharp edges). This will make the bench more comfortable to sit on and less likely to splinter when it gets wet.

Leg Assembly

This bench goes together quickly. Chuck a bit in your drill to give

JAPANESE GARDEN BENCH

	LET.	NO.	ITEM	DIMENSIONS (INCHES)			MATERIAL
				T	W	L	
<input type="checkbox"/>	A	8	Legs	1 1/2	3 1/2	15	Redwood
<input type="checkbox"/>	B	2	Top cross braces	1 1/2	3 1/2	19 1/2	Redwood
<input type="checkbox"/>	C	2	Low cross braces	1 1/2	3 1/2	16	Redwood
<input type="checkbox"/>	D	2	Stretchers	1 1/2	3 1/2	44	Redwood
<input type="checkbox"/>	E	5	Top boards	1 1/2	3 1/2	60	Redwood

you a 3/16" pilot hole and a countersink simultaneously. These bits are available from most home-supply or hardware stores.

Begin by assembling one of the leg structures. First find a piece of scrap that's 4 1/2" wide and place it between two of the leg pieces.

Center the top cross brace on the two legs, flush everything up, then glue and screw the cross

brace to the legs using two screws in each. You can use polyurethane glue or a water-resistant glue such as Titebond II.

Put another piece of scrap 2x4 against the top cross brace and center the low cross brace below that scrap. Then glue and screw the low cross brace to the legs.

Next, put two more legs on top of the cross braces and place the 4 1/2" scrap spacer between them. Glue and screw these two legs to the cross braces. Repeat this same procedure for the other leg assembly. You're almost done.

Plug It Up

For a finished look, we took a few minutes to plug the holes made by the countersink. Our countersink made a 3/8"-diameter hole.

You can plug the hole with store-bought 3/8" plugs or 3/8"-diameter dowels. We took some 3/8" x 3/8" square stock, whittled one end and glued it in place. The



Use scraps as spacers to ensure that your leg assemblies go together just right. This is a lot easier than measuring everything. Then screw it together using stainless steel screws.



square corners of the wood cut the round hole into a square one. Once your plugs are glued in place, cut or sand them flush.

Final Assembly

Stand the legs upright on your work surface and put the stretchers in place between the two cross braces. Glue and screw the stretchers into place and plug the holes left by the countersink.

Then arrange the five top boards on the base. Because the pith side of flat-grained wood is more prone to raised grain, make sure you place all your boards bark-side up. (Look at the growth rings.)

To ensure everything was spaced evenly, we first attached the top pieces at the front and back of the bench using glue and screws. Then we centered the middle board between those.

Finally, we put the remaining two boards in place and figured out what gap should be between each board. We then glued and screwed these two boards in place. Finally, we plugged the holes.

Check out Bob Flexner's advice on protecting exterior wood below. We chose to leave the wood in its natural state and allow it to turn a silvery-gray, which will happen when left outside. **PW**

SUPPLIES

McFeelys

800-443-7937 or mcfeelys.com

#8 x 2" • Stainless steel screws,
\$10.96 for 100

Prices as of publication date.

PROTECTING EXTERIOR WOOD

There is probably more misunderstanding about how to protect wood outdoors than about any other aspect of wood finishing.

The need for a quality coating to protect exterior wood is great because when sunlight or water come into frequent contact with wood, the wood can lose its color, split, warp and often rot.

The best way to protect exposed wood is to apply a paint or finish that blocks sunlight and moisture, and holds up to these elements.

- Light is the principal enemy of paints and finishes. Over time, ultraviolet rays, which are strongest from direct sunlight, break down paints. If you catch it before the paint is damaged all the way through, you can rub off the dull, chalky result with abrasives (contained in many car polishes, for example) and expose paint that looks shiny and new.

UV rays also break down clear finishes, but most of the damage here will come when they peel. The finish peels because the UV rays penetrate the film and destroy the lignin that holds the cellulose cells of wood fiber together. The surface cells separate and the finish bonded to these cells peels.

The best sun-blocking agents are pigments (contained in paints and stains). But pigments hide the wood, and many people would rather have it visible. Other good sun-blocking agents are UV absorbers, which are similar to sun-

screen agents used in suntan lotions. They convert UV light energy to heat energy, which dissipates. UV absorbers don't hide wood, and they are effective at preventing deterioration, but they are expensive, and a significant amount (1 percent to 3 percent by weight) has to be in the finish to be effective.

- Moisture also causes paints and finishes to peel when it gets between the coating and the wood. Paints resist moisture penetration well, but most clear finishes don't. Water repellents, which contain a low-surface-tension waxy substance, cause water to bead but water repellents don't totally keep moisture out of the wood.

The best moisture-resistant clear finishes are varnishes called spar or marine varnish that are made to be very flexible so they can keep up with extreme wood movement. Varnishes made with phenolic resin and tung oil are best because they don't crack as quickly as those made with polyurethane resin.

The best way to protect wood outdoors is to paint it. Paint repels water and blocks UV rays effectively. There are two major categories of paint: oil-based and water-based (also called latex).

Oil-based paints are best for objects such as chairs and picnic tables because latex paints don't wear as well. Oil-based primer also is best on wood that has been exposed to the weather for a month or more because it penetrates

deeper than latex primers. If the wood is freshly milled or sanded, acrylic-latex primers perform well.

Water-based or latex paints offer the best protection for wood siding because they allow moisture vapor to pass through better than oil-based paints. If the water vapor can't get through the paint and to the outside environment, it will build up behind the paint and cause it to peel. A primer coat of oil-based

paint is not thick enough to stop the penetration of moisture.

No clear finishes work as well as paint if they are exposed to bright light, but expensive marine varnishes come closest. Keep in mind, however, that these finishes are very glossy and relatively soft (for flexibility), and you need to apply eight or nine coats to reach maximum UV resistance.

— Bob Flexner, contributing editor



Left unfinished, white oak and other weather-resistant woods will turn a silvery-gray. This Adirondack chair has survived 10 seasons outside with little deterioration.