

JACKSON VAN BUREN'S

CORNHOLE PLAYERS.net



3x2 BUILDING INSTRUCTIONS

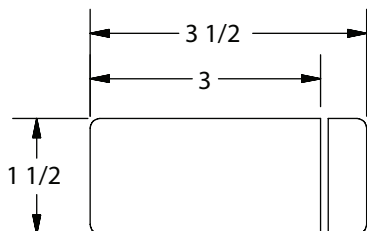
Lumber	
QTY	DESCRIPTION
2	1/2" x 2' x 4' Plywood
3	8' x 2" x 4" Stud

Hardware		
QTY	IMAGE	DESCRIPTION
36		Coarse Drywall Screw
16		2 1/2" Deck Screw
4		3/8 x 4" Carriage Bolt
8		3/8" Fender Washer
4		3/8" Standard Nut
4		3/8" Jam (Lock) Nut

The minimum tools to complete this assembly are as follows: circular saw, drill, box/crescent wrench, and either a 6" hole saw or a spiral saw/dremel tool with a circle jig to bore the large hole. If any more suitable power/bench tools are available, use as appropriate. As with all power tools, know how to operate them and observe the manufacturer's safety precautions.

I. PREPARE THE LUMBER

First, create a square edge along one side of the stock. This will minimize the seam between the frame and top of the finished boards. Rip-cut the 2 x 4s using a radial arm saw or a table saw, or a planer down to 3 inches. Repeat for the other two lengths.



Each template will produce about 2-3 inches of scrap.

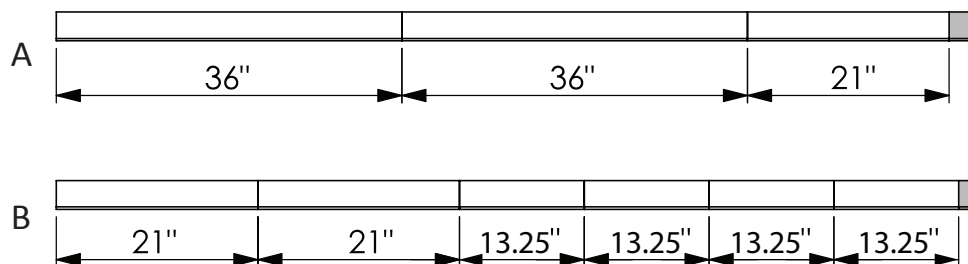
After you've made your cuts you should now have (4) 36 inch, (4) 21 inch, and (4) 13 1/4 inch lengths that we will use as the sides, front/rear, and legs of the frame respectively.

Using a circular saw, trim the plywood to 2' x 3' leaving just a hair so that it will sit proud on the frame and can be sanded down later for a smooth seam.

Then make the cross-cuts as dimensioned in the figure below. Use template **A** for 2 of the boards and template **B** for the final board.

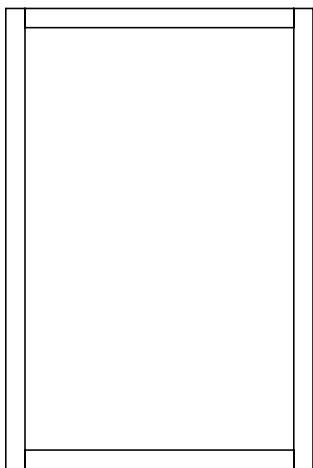
Proceed to the next step.

Cutting Template

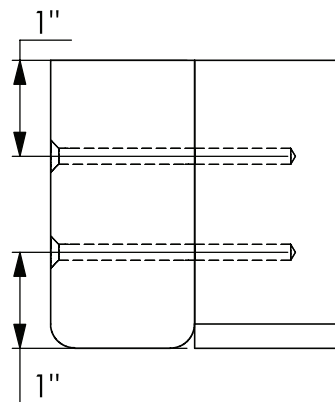


2. ASSEMBLE THE FRAME

Begin by arranging (2) 36 inch and (2) 21 inch lengths according to the figure below. Take care that all the freshly squared surfaces face the same direction. (If working on level surface, it may help to face them all down.)



Add wood glue between the butt joints and secure temporarily with bar clamps. Then, taking care that the frame is square and the planed surfaces are flush, secure with deck screws as shown at right.



It is necessary to predrill so as not to split the endgrain. If you are planning on surface finishing the boards upon completion, don't forget to countersink as well.

Repeat for each corner.

Repeat **step 2** using the remaining 36 inch and 21 inch lengths to assemble the other frame.

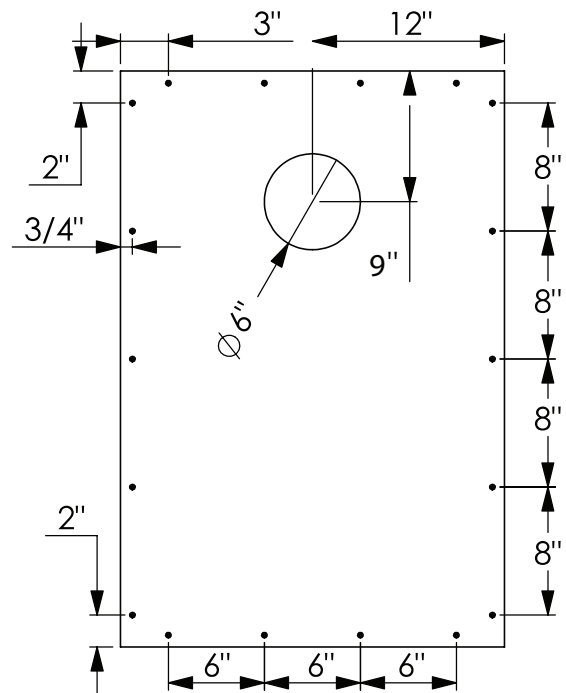
3. ADD THE TOP & CUT THE HOLE

Dry-fit the 2' x 3' plywood atop the squared edge of the assembled frame. A little overhang on each side is desirable. Then remove the plywood and apply a bead of wood glue along the mating surface of the frame. Reattach the plywood top and secure with drywall screws. If you are planning on surface finishing, countersink first. Otherwise, drive the screw heads just under the plywood surface.

Work from one corner to the other and then return to where you started and finish in the opposite corner.

The screws are positioned 3/4 inches from the outside edge. The length-wise run is 2 inches off the front/rear edge and 8 inches apart. The width-wise run is 3 inches off the side edges and 6 inches apart.

Bore the 6 inch hole centered 9 inches off the rear edge and 12 inches equidistant from the sides using a hole saw, or a spiral saw/dremel with a circle cutting jig.

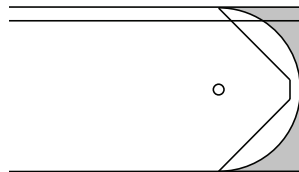


If using a spiral saw/dremel tool, cut at progressive depths and back it off often. Trying to remove too much material at once will overheat the bit and possibly scorch the wood or snap the bit. 3 or 4 passes should be sufficient.

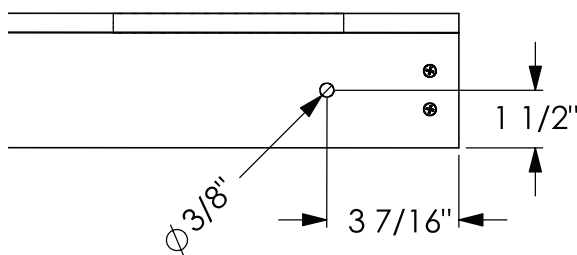
4. LEG ASSEMBLY

First select a 13 inch section and mark a point 3/4 inches from the square, factory round and butt edges. This will be the pivot point on which the leg swivels on the bolt shaft.

In order for the leg to be able to swing open and closed, the shaded area in the figure at right must be removed.



The simplest way to do this, is to cut notches as indicated. Perform these cuts on each of the 13 inch sections and proceed to bore a 3/8 inch through-hole (using a drill press if available) through the center marks.



Now bore a matching hole through the sides of the frame as indicated. Be sure that you are working on the correct end of the boards as you do this! You may also find it helpful to transfer your mark to the inside of the frame and use your leg peice as a guide for the drill bit. Put the factory rounded face against the back of the plywood as you do this.

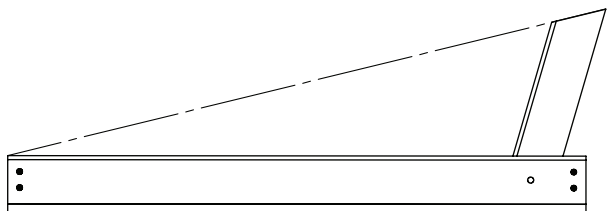
Repeat for each leg. Note that each may be a little different so it may be helpful to place an identifying mark (eg; A, B, C, ...) on matching leg and frame peices if employing the method above.

READ THIS BEFORE ADVANCING!

There are two methods for cutting the miters on the bottom of the legs: the String Method, and the Dimensional Method. The former compensates for small imperfections that may have arisen during assembly and is strongly recommended. Only 1 method need be applied. Select which you prefer, execute, and move on to **step 5**.

4A. THE STRING METHOD

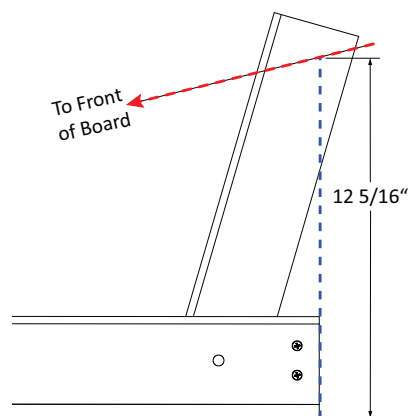
The String Method, as proposed by #####, suggests using a straight edge to define the cut line for the leg miters. The instructions that follow are adapted to 2' x 3' boards using 1/2 inch plywood.



First slip the carriage bolts into the frame and leg slots making sure that the squared face is against the frame. Sink down a nut to keep the leg from wobbling and open to the fully extended position.

Then measure 12 5/16" up from the rear outer surface of the frame as indicated in the figure to the right. Make a mark on the leg and using a straight edge or chalk line, create a line from that point that extends to the front bottom lip (now facing up) of the boards. Now extend that line across the leg.

Repeat for each leg.

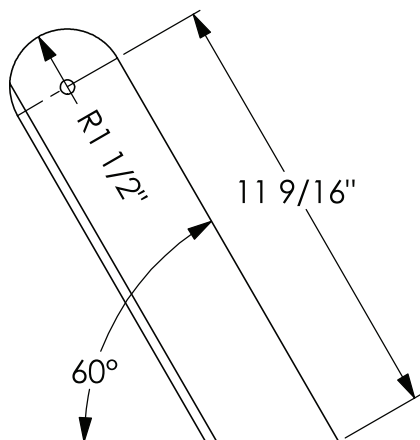


Now you may back the nuts out and remove the legs from the boards. With a miter saw or circular saw, cut the profile on each leg.

If executed properly, when reassembled the rear edge of the playing surface should stand approximately 12 inches off the ground plane.

4B. THE DIMENSIONAL METHOD

In this method, you simply cut the legs to the size and dimensions as follows:



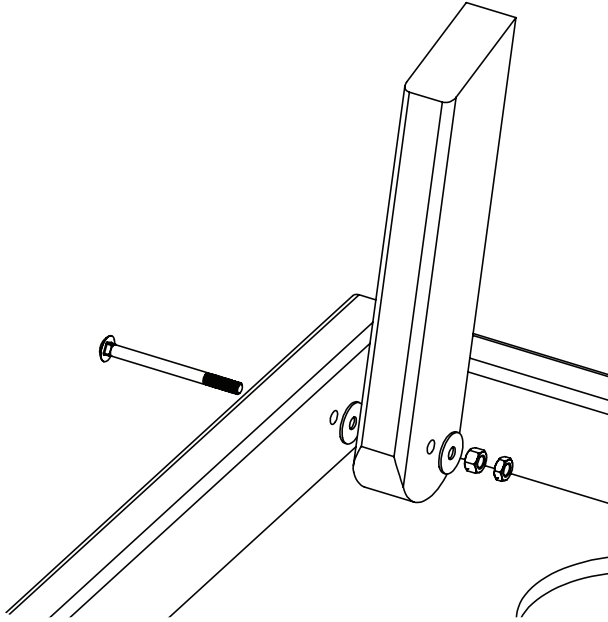
Once again, make sure that the squared surface (the one that will eventually face out when the legs are extended) is where the long side of the miter reside.

Although simpler and more expeditious than the String Method, it is less accurate due to the twisting and bowing that will occur during assembly. So you

may have to tweak the cuts slightly for wobble-free play on asphalt or concrete. Any adjustments you decide to make should be as slight as you can muster. Remember: you can always cut more off, but you can't add any material back to the leg.

5. ATTACH THE LEGS

To attach the legs, refer to the image below.



You will need a carriage bolt, (2) fender washers, a standard nut, and a jam nut for each leg.

Hand tighten the standard nut as far as you can. Then using a box wrench or crescent wrench, tighten until the square shoulders of the bolt are buried in the outside of the frame leaving only the domed surface. Then back off the nut just enough to allow the leg to open and close with relative ease. Finally, thread on the lock nut and sinch down to hold everything in place.

As a sidenote, the washer between the frame and leg serves primarily to keep the two sections from rubbing up against one another. This is desirable especially if you plan on painting or finishing your boards.

Repeat for each leg.

Verify that when the legs are opened and the boards sitting upright, the surface is level and does not wobble or jitter. Verify that the rear edge is approximately 12 inches from the ground.

6. FINAL CLEAN-UP

If you are not planning on finishing or painting your boards and visible screw heads or plywood chipouts or a proud playing surface don't bother you, congratulations! You are done!

However if you plan to apply a surface finish or any of the above imperfections stiffles you, you'll need to put just a little more work in. Start by taking the lip from the plywood and frame mate down by using a router with a flush trim bit or a belt sander.

Next, concentrate on all the little chipouts and countersinks and apply a paintable/stainable wood filler. Make sure you get all of them cause you'll have to wait for the filler to harden before you can start sanding.

When the wood filler has completely hardened, begin sanding with an orbital sander. Work up from about a 100-grit paper to about a 220-grit sandpaper.

At this point, after you wipe the boards down you're ready to apply a varnish or primer coat or whatever you think you'd like on your boards. Whatever you choose, remember to seal with a clear poly coat once complete. UV resistant mixes are available and ideal if you're concerned about yellowing over time.

Congratulations! You've completed this guide.

-Jackson Van Buren

NOTES

String Method Links: forum discussion <http://www.cornholeplayers.net/forum/viewtopic.php?f=1&t=1383>,
H Calculator (web) http://me211group1.tripod.com/Cornhole/H_calc.html