

**Kentucky
4H
Wood
Science
Plans Notebook**



Plans – Level 2



Ky 4-H Wood Science Plans - Level 2



JEWELRY BOX WS201

MATERIALS NEEDED:

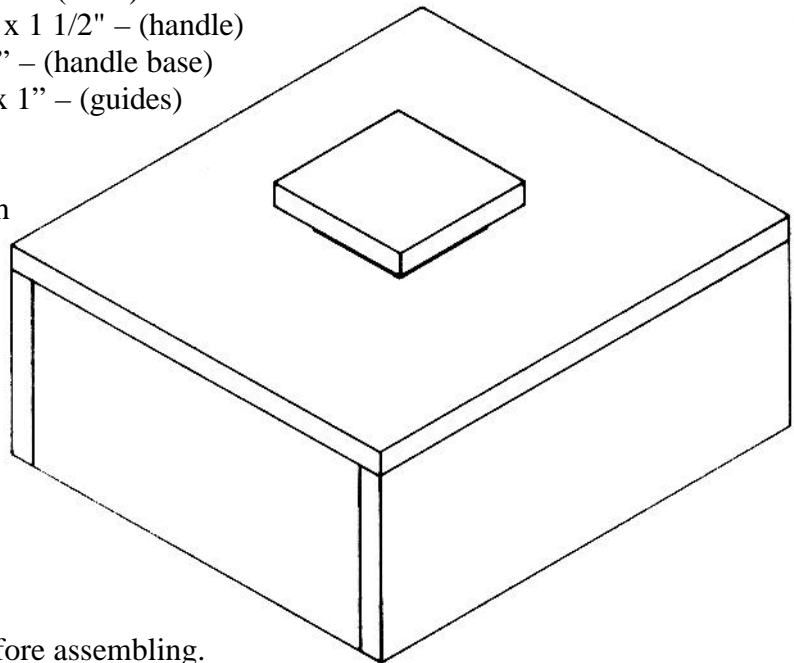
- 1 piece wood 1/4" x 4" x 4 1/2" – (bottom)
- 1 piece wood 1/4" x 4 1/2" x 5" – (top)
- 2 pieces wood 1/4" x 2" x 5" – (front and back)
- 2 pieces wood 1/4" x 2" x 4" – (sides)
- 1 piece wood 1/4" x 1 1/2" x 1 1/2" – (handle)
- 1 piece wood 1/4" x 1" x 1" – (handle base)
- 4 pieces wood 1/4" x 1/2" x 1" – (guides)
- Glue
- 1/2" Finishing nails
- Clear shellac or other finish

TOOLS NEEDED:

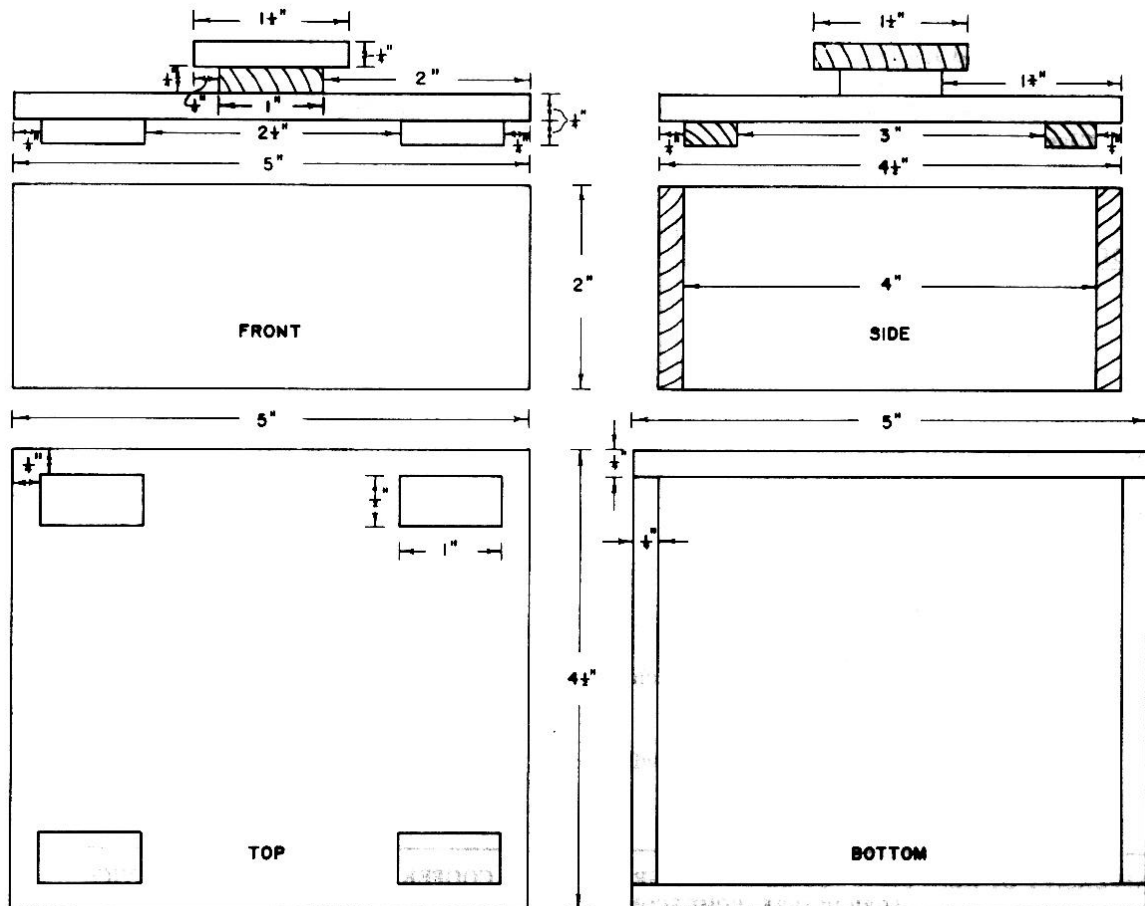
- Sandpaper
- Coping saw
- Brush
- Hammer

INSTRUCTIONS:

1. Cut pieces to size.
2. Sand pieces smooth before assembling.
3. Glue and nail the 2 sides to the front.
4. Place a small amount of glue on each edge of the bottom. Now slide it into place and nail tight.
5. Add the back, in the same manner with glue and finishing nails.
6. Glue the handle base to the handle making sure it is centered properly with a 1/4" lip on all sides.
7. Glue the guides to the underside of the top cover, spacing them as shown in the drawing.
8. Glue and nail the handle assembly to the top side of the cover. (nail from the underside.) Be sure to center the handle properly.
9. Give the jewelry box a coat of clear shellac or other finish. If desired place 4" x 4 1/2" felt in the bottom and a decal for outside decoration.



Ky 4-H Wood Science Plans - Level 2



Ky 4-H Wood Science Plans - Level 2

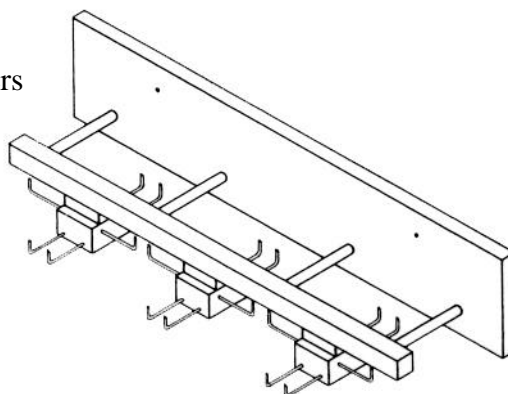


REVOLVING TIE RACK

WS202

MATERIALS NEEDED:

- 1 piece wood 1/2" x 4" x 20" – back
- 1 piece wood 3/4" x 3/4" x 18" – bar
- 3 pieces wood 1" x 2" x 1 5/8" – hook holders
- 3 pieces wood 1/2" x 3/4" x 1 1/2" – spacers
- 4 pieces wood 1/4" dowel, 3 1/2" long
- 24 1/4" dowel, 3 1/2" long
- 3 #8 roundhead woodscrews 2" long
- 6 small flat washers for #8 screws
- Glue



TOOLS NEEDED:

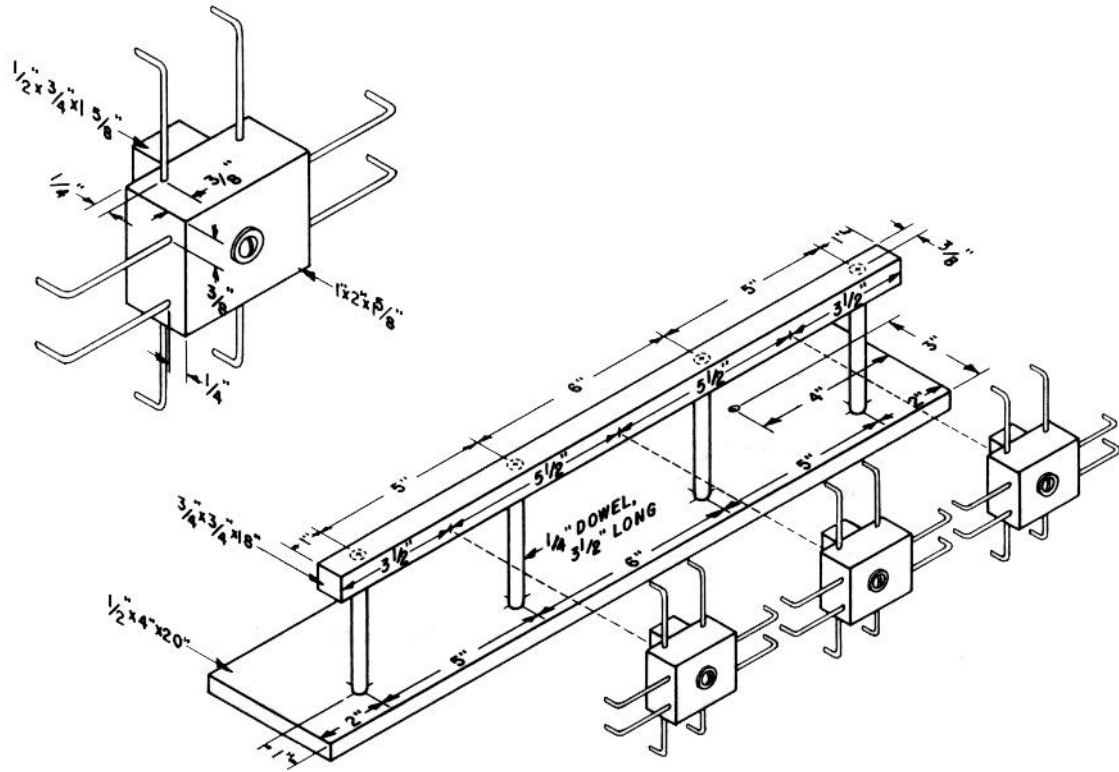
- Drill press or drill with stop gauge and 1/4", 1/8" and 1/32" bits.
- Screwdriver
- Sandpaper
- Stain or varnish

INSTRUCTIONS:

1. Cut pieces to size.
2. Drill 1/4" holes in bar, 1/2" deep. Use drill press or drill with stop gauge for uniform depth holes.
3. Drill 1/4" holes in back.
4. Drill 1/32" starter holes for screws in the bottom of bar.
5. Drill 1/8" mounting holes in back 4" in from ends and 1" from top edge.
6. Center spacers on hook holders and glue in place.
7. Drill a hole through the center of each holder for the No. 8 screw. Holder should turn free on screw.
8. Sand all pieces.
9. Drill pilot holes in holders for hooks, install hooks leaving them protruding about 1 5/8".
10. Mount the bar to the back using the four dowels. Be sure holes for screws are on bottom side of bar.
11. Attach holders to the bar by putting a screw with a washer up through each holder/spacer, put the other washer on and screw into hole so it will still turn freely.
12. Apply finish.



Ky 4-H Wood Science Plans - Level 2





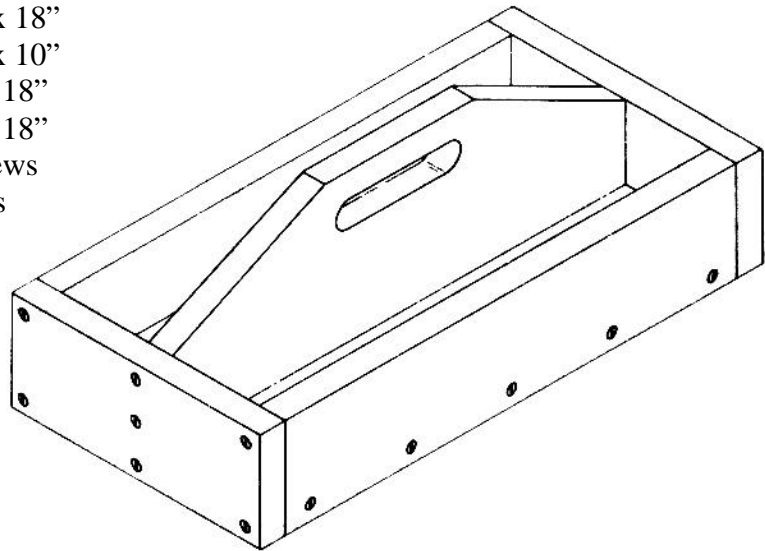
TOOL TRAY WS203

MATERIALS NEEDED:

- 2 pieces wood 3/4" x 4" x 18"
- 2 pieces wood 3/4" x 4" x 10"
- 1 piece wood 3/4" x 8" x 18"
- 1 piece wood 3/4" x 6" x 18"
- 4 – 1 1/2" x #8 wood screws
- 25 – 2" x #8 wood screws

TOOLS NEEDED:

- Saw
- Screwdriver
- Drill, 1" bit
- Coping saw
- Round wood rasp or file
- Sandpaper

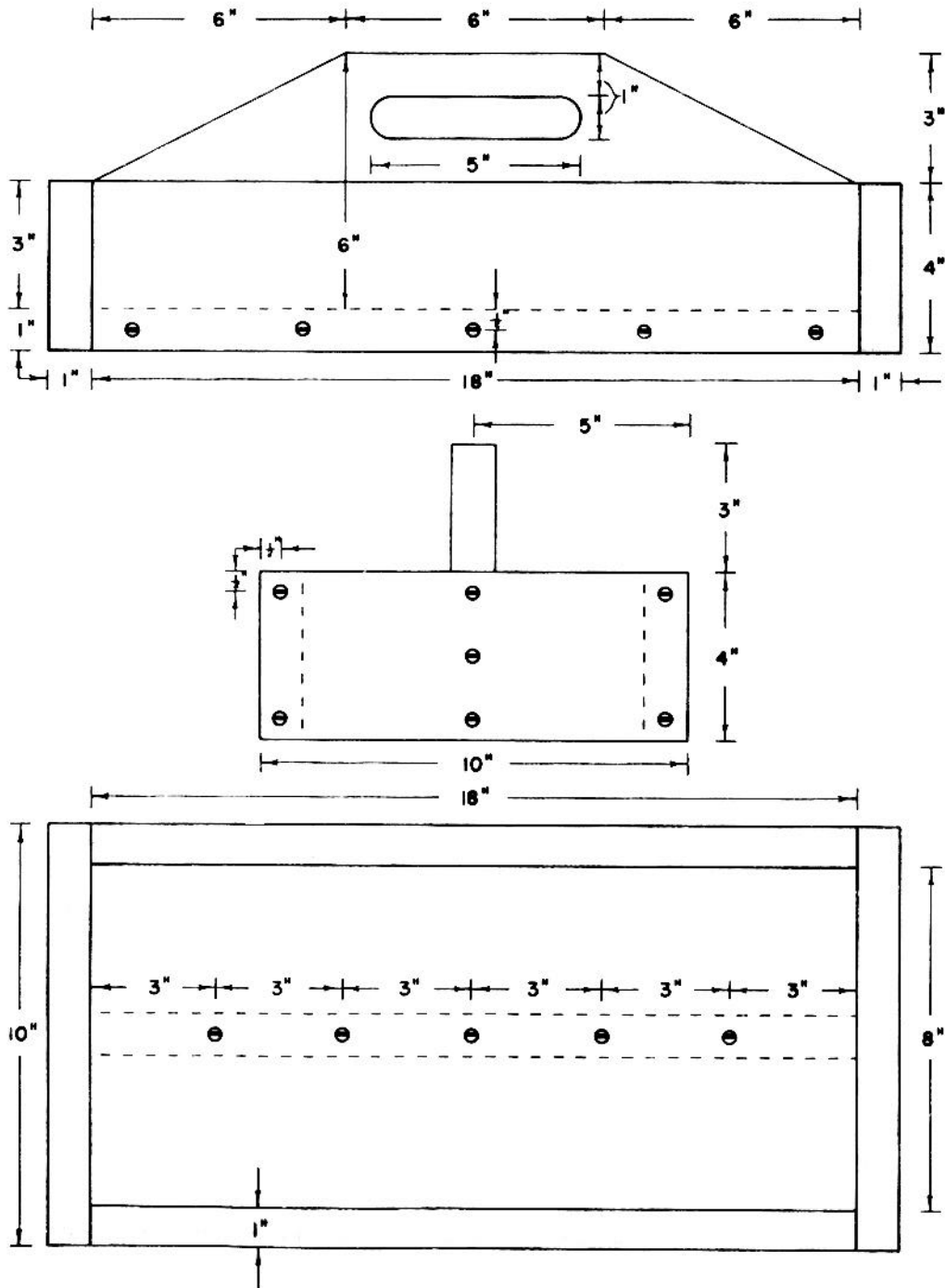


INSTRUCTIONS:

1. Cut pieces to size
2. Mark the angled cuts on the handle as shown in the drawing. Now make the cuts with the saw leaving 1/16" or so for sanding.
3. Mark the hole for the handle. Drill a 1" hole at each end of the mark and remove the rest with a coping saw. Use a round wood rasp or file to even the handle edges. Sand the handle smooth and break the sharp corners.
4. Draw the center line on the long axis of the 3/4" x 8" x 18" bottom. Drill holes every 3" on that line and screw the handle to the bottom using 2" wood screws.
5. Drill holes in the 3/4" x 4" x 18" sides, 1/2" from the 18" sides. Space the holes as shown in the diagram. Now screw both sides to the edges of the bottom slab, using 2" screws.
6. Add the ends in the same manner, except use 1 1/2" screws in the bottom corners of each piece. This will prevent conflict with the corner screws of the sides.
7. For added strength drill 3 holes in each end piece centered on the short axis. Space them as shown and insert a 2" screw in each hole.



Ky 4-H Wood Science Plans - Level 2



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Ky 4-H Wood Science Plans - Level 2



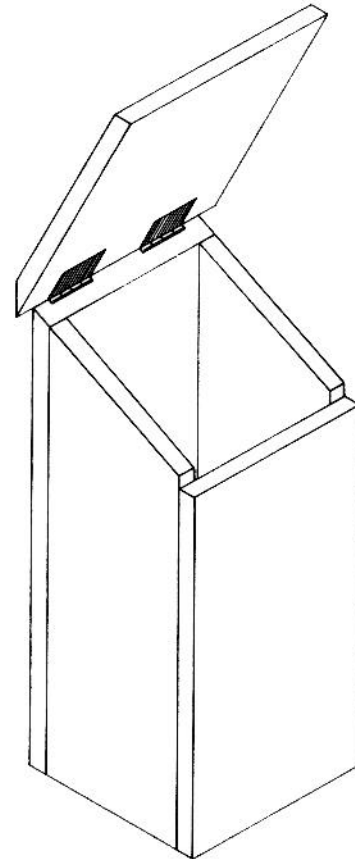
LETTER BOX WS204

MATERIALS NEEDED:

- 1 piece wood 1/2" x 5" x 12"
- 1 piece wood 1/2" x 6" x 6"
- 1 piece wood 1/2" x 4" x 4"
- 1 piece wood 1/2" x 5" x 9 13/16"
- 2 pieces wood 1/2" x 4" x 12"
- Waterproof Glue
- 1" finishing nails
- 2, 1 1/2" butt hinges
- 2, #6 x 1/4" flathead wood screws
- 4, #6 x 3/8" flathead wood screws
- Varnish or stain, brush

TOOLS NEEDED:

- Saw
- Hammer
- Screwdriver
- Chisel
- Sandpaper



INSTRUCTIONS:

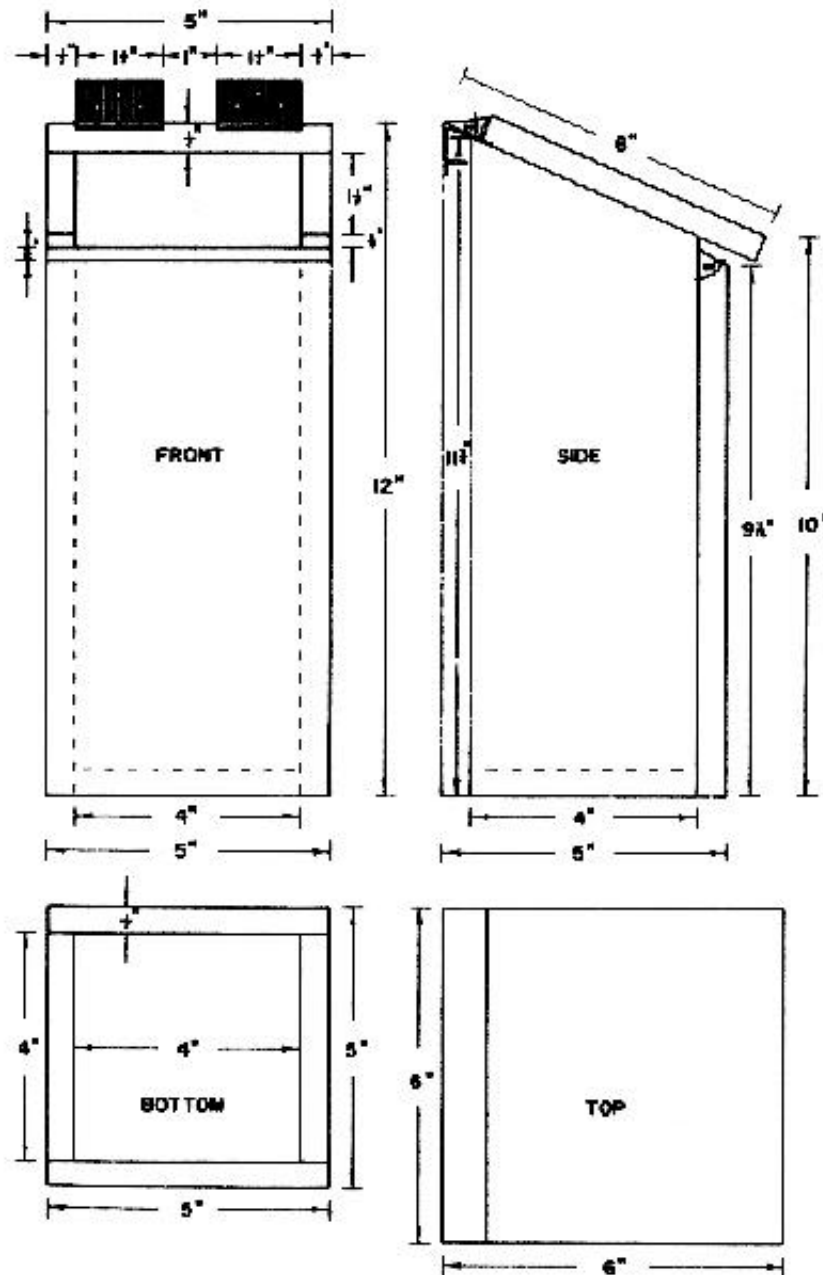
1. Cut pieces to size.
2. Mark the angle on the 1/2" x 4" x 12" sides, from the left corner to 2" down from the right corner. Make the cuts on both pieces.
3. On the 1/2" x 6" x 6" top make a 30 degree bevel cut on one edge.
4. On one of the 5" sides of the 1/2" x 5" x 12" back make a bevel cut as shown in the drawing.
5. On one of the 5" edges of the 1/2" x 5" x 9 13/16" make a front cut 60 degree bevel.
6. On the back piece, along the beveled side mark spaces for the hinges 1/2" from either end on the large face. Chisel out a recess for each hinge to the depth of the hinge pin.
7. Take the top piece, and on the side with the 30 degree bevel, chisel out a recess 1" from either side, the thickness of the hinge on the larger face to accommodate the hinges.
8. Mount the hinges on the top. Pre-drill the holes and use 1/4" screws in the holes nearest the edge and 3/8" screws in remaining holes.



Ky 4-H Wood Science Plans - Level 2



9. Glue and nail the 2 sides to the 1/2" x 4" x 4" bottom. Nail through the sides into the edge of the bottom.
10. Glue and nail the back to the bottom and long edges of the sides.
11. Glue and nail the front to the bottom and short edges of the sides. The front should fit flush with the bottom.
12. Screw the top, via attached hinges, to the back with 3/8" screws.
13. Sand smooth and finish as desired.



Ky 4-H Wood Science Plans - Level 2



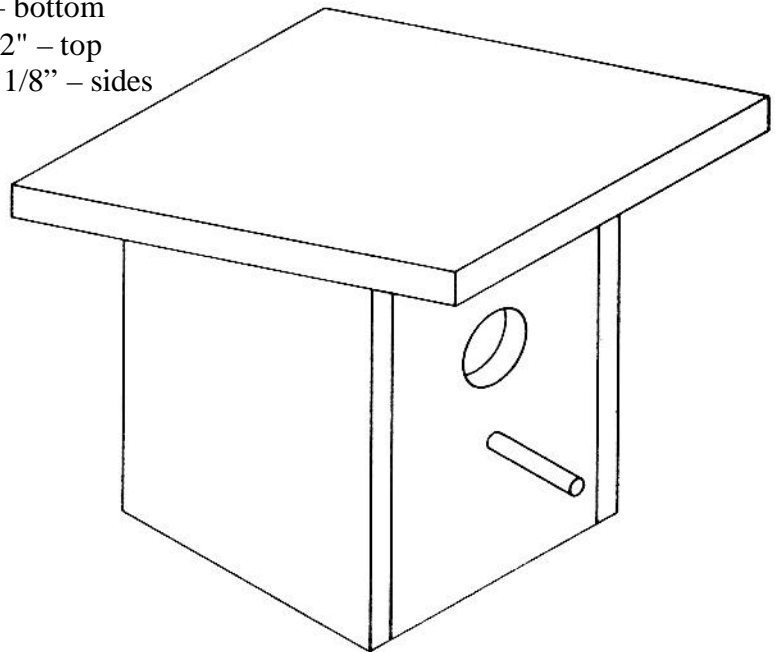
BLUEBIRD HOUSE WS205

MATERIALS NEEDED:

- 1 piece wood 1/2" x 5" x 8 1/2" – front
- 1 piece wood 1/2" x 5" x 6 1/2" – back
- 1 piece wood 1/2" x 5" x 5" – bottom
- 1 piece wood 1/2" x 8" x 9 1/2" – top
- 2 pieces wood 1/2" x 6" x 15 1/8" – sides
- 3 dozen 1" wire brads
- 1 - 3/8" dowel, 3" long
- Glue
- Varnish, stain or paint finish

TOOLS NEEDED:

- Saw
- Drill, 1 1/2" and 3/8" bit
- Hammer
- Sandpaper
- Wood File

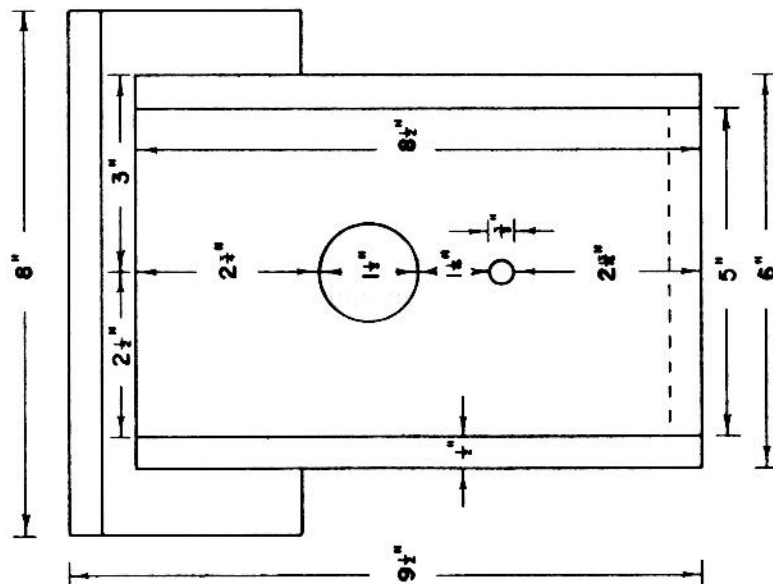
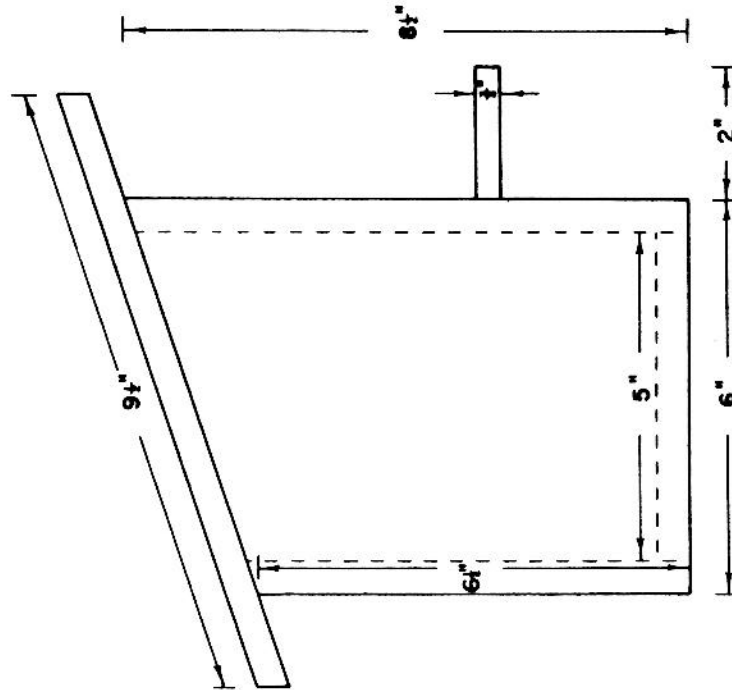


INSTRUCTIONS:

1. Cut pieces to size. Measure 6 1/2" from one end of the 1/2" x 6" x 15 1/8" piece. From that same end measure 8 1/2" down the opposite edge. Draw a line through these two points and make the cut.
2. Nail the back to one edge of the bottom.
3. Nail the two sides to the edges of the bottom and back.
4. Drill a 1 1/2" diameter entrance hole in the front piece as shown. Drill a 3/8" hole for the dowel also as shown. Glue the dowel in place.
5. Slip the front in place and nail to the front edge of the bottom. Now nail through the sides into the side edges of the front.
6. File bevels to match the slope of the sides on the top edges of the front and back.
7. Nail the top to the top edges of the assembly.
8. Sand smooth and finish if desired.



Ky 4-H Wood Science Plans - Level 2



Ky 4-H Wood Science Plans - Level 2



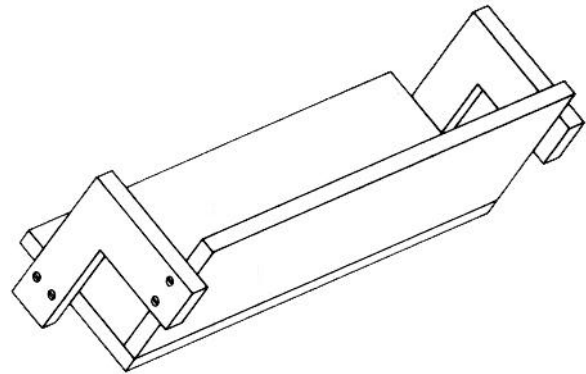
BOOK RACK WS206

MATERIALS NEEDED:

1 piece wood 3/4" x 8" x 18"
1 piece wood 3/4" x 6" x 18"
1 piece wood 3/4" x 7" x 15"
Note: Wood may be 5/8" or 1/2" thick
13, #6 x 1 1/8" flathead wood screws
Varnish

TOOLS NEEDED:

Saw
Screwdriver
Drill with a 1/8" bit and countersink
Brush
Sandpaper

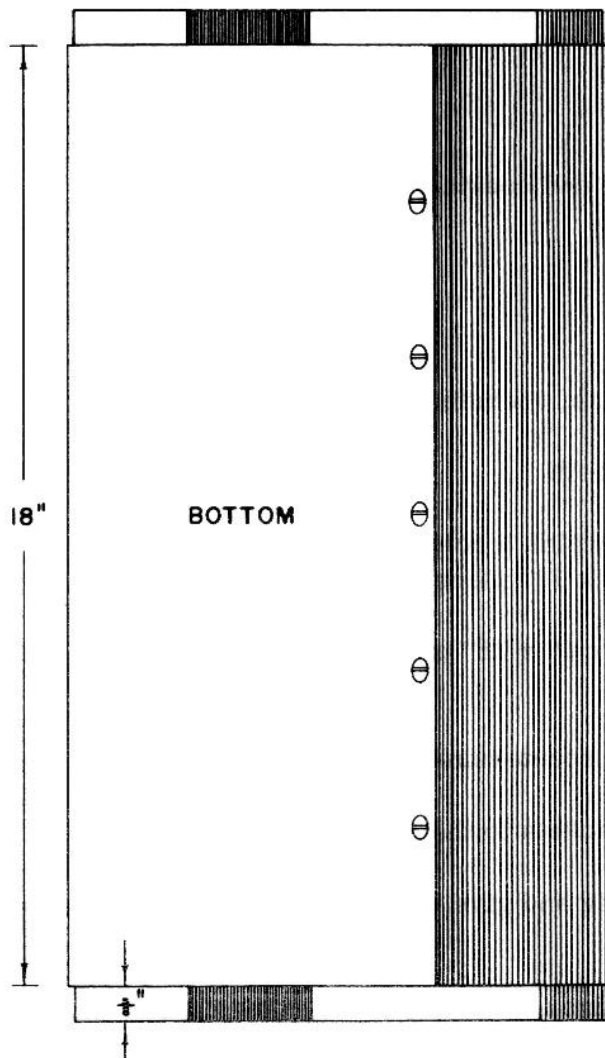
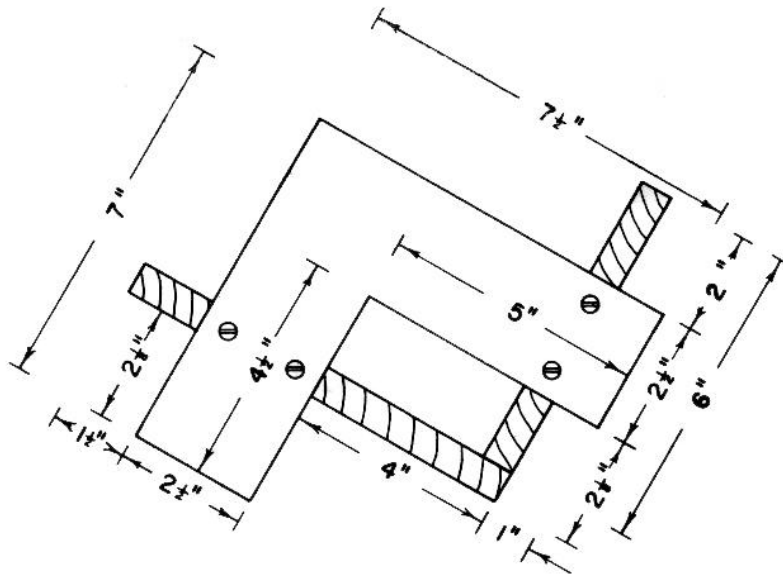


INSTRUCTIONS:

1. Cut pieces to size, including the two L-shaped ends.
2. Sand pieces smooth.
3. Drill and countersink 5 holes 3" apart 5/16" from the edge on a long edge of the 3/4" x 8" x 18" piece.
4. Screw the 3/4" x 6" x 18" piece to the 3/4" x 8" x 18" piece using 1 1/8" wood screws.
5. Mark, drill and countersink the 4 holes in each L-bracket.
6. Screw the L-brackets to the ends of the shelf assembly.
7. Complete sanding and give the book rack 2 coats of clear varnish or other finish.



Ky 4-H Wood Science Plans - Level 2



Ky 4-H Wood Science Plans - Level 2



4-H KEY HOLDER WS207

MATERIALS NEEDED:

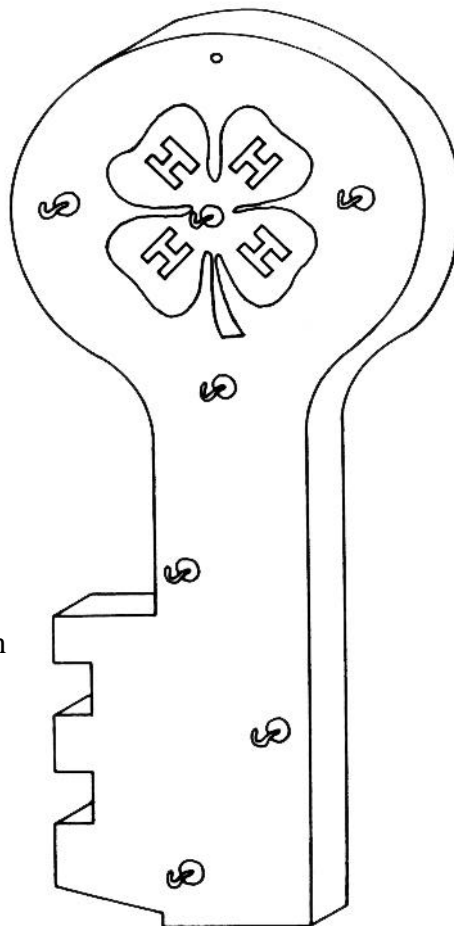
1 piece wood 1/2" x 6" x 11"
7 small screw hooks
Carbon paper

TOOLS NEEDED:

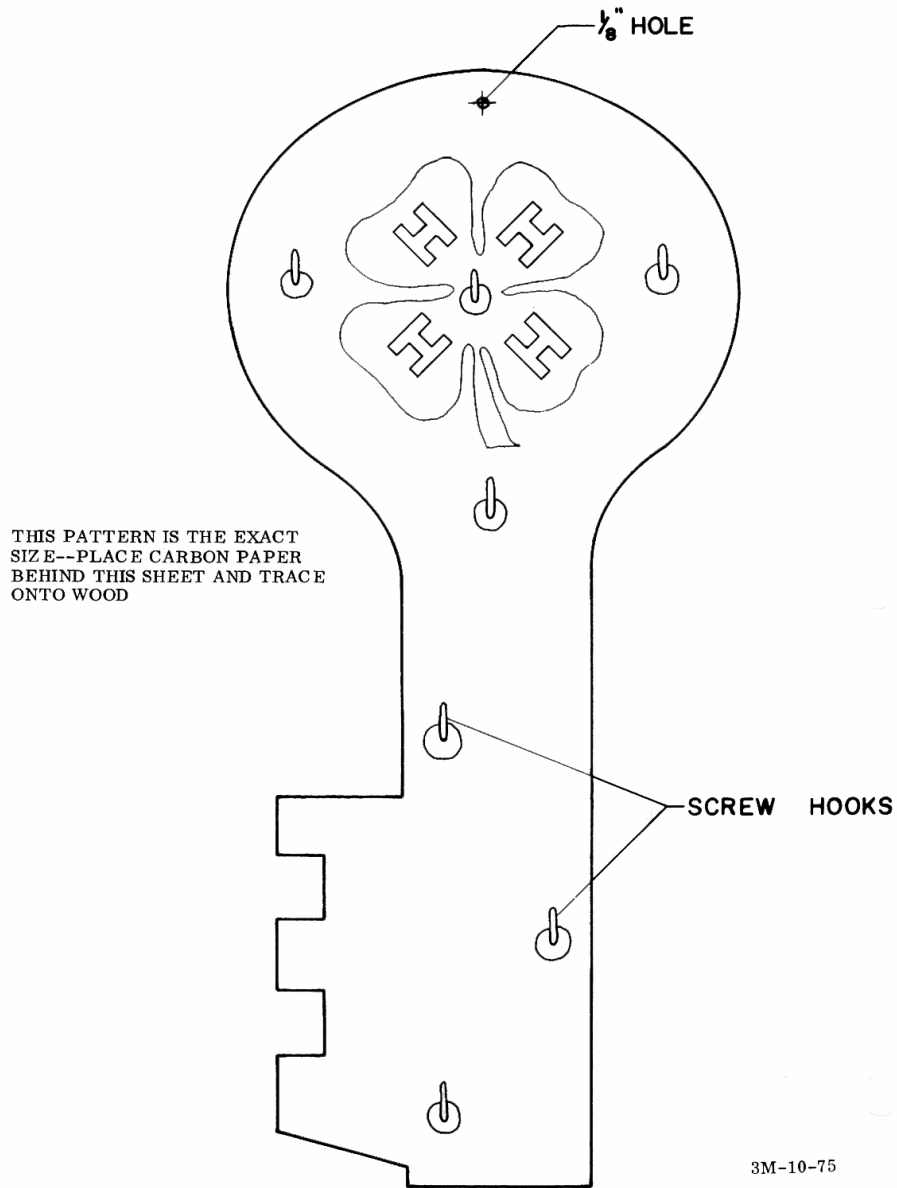
Jig saw or equal saw
Drill with 1/8" bit
Sandpaper
Paint (green and white), stain and varnish

INSTRUCTIONS:

1. Trace pattern onto wood using carbon paper.
2. Cut out the key using jigsaw.
3. Drill 1/8" hole at top for hanging.
4. Sand piece smooth.
5. Take pattern and remark for clover/4-H design and screw hook placement.
6. Paint clover green and H's white.
7. Stain and varnish the entire piece.
8. Install hooks.



Ky 4-H Wood Science Plans - Level 2



Ky 4-H Wood Science Plans - Level 2



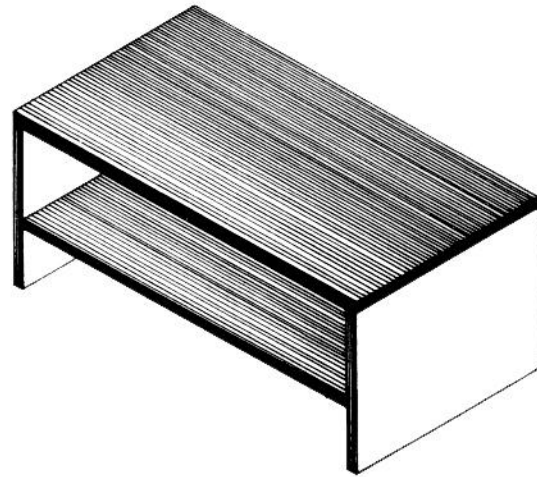
SERVING DISH SHELF WS208

MATERIALS NEEDED:

2 pieces wood 3/4" x 6 1/2" x 8"
1 piece wood 1/2" x 8" x 17"
1 piece wood 1/2" x 8" x 15 1/2"
1 1/2" Finishing nails
Paint or varnish

TOOLS NEEDED:

Hammer
Saw
Sandpaper
Brush

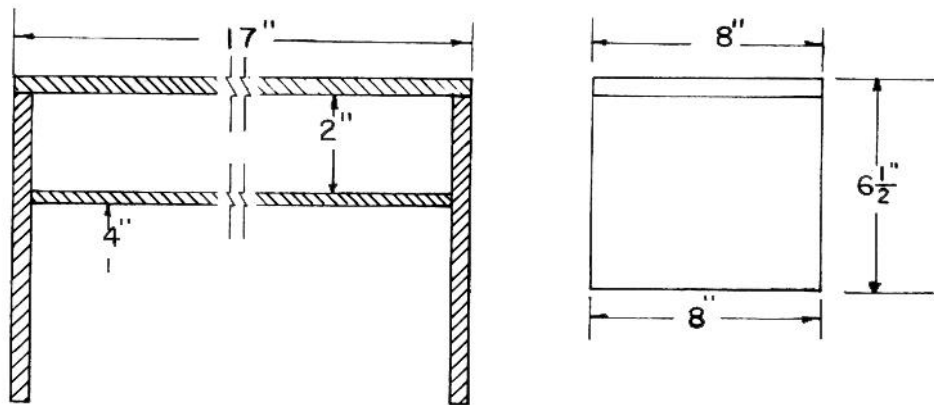
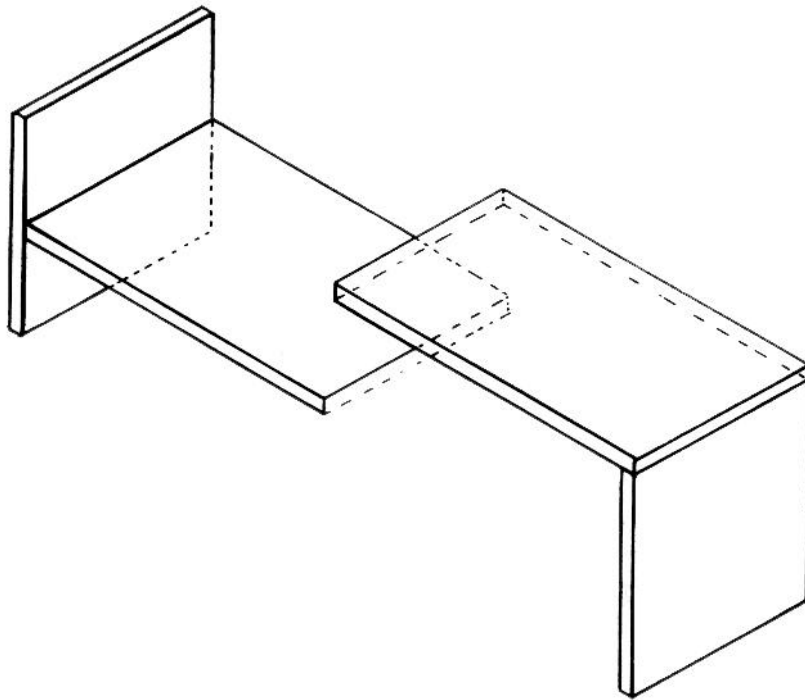


INSTRUCTIONS:

1. Cut pieces to size.
2. Sand pieces smooth.
3. Nail the 15 1/2" shelf to both ends, 4" from the bottom and 2" from the top.
4. Nail the 17" shelf to the top edge of the two sides.
5. If plywood shelves are used, finish with paint. If not, use paint or varnish.



Ky 4-H Wood Science Plans - Level 2



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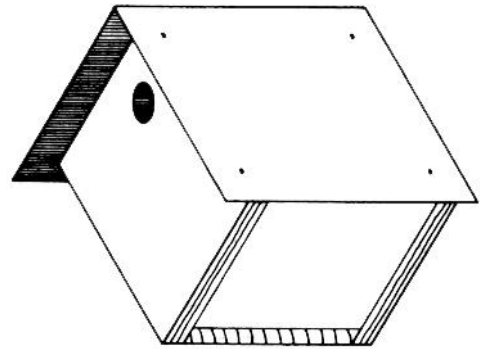
WREN HOUSE WS209

MATERIALS NEEDED:

- 1 piece wood 5/8" x 5 5/8" x 24" long
- 1 piece sheet metal 7" x 13 1/4", 22 gauge or thinner.
- 6 – #6 x 1 1/2" flathead woodscrews
- 8 – #6 x 3/4" round head screws
- Paint

TOOLS NEEDED:

- Saw
- Screwdriver
- Drill with 1" and 1/8" bits
- Sandpaper
- Brush
- Tin Snips (metal shears)

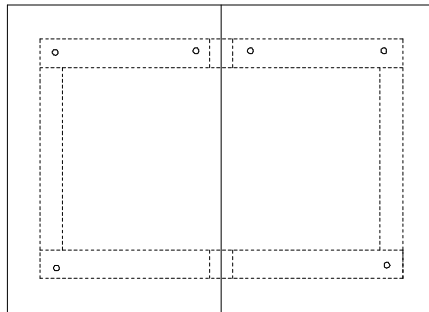


INSTRUCTIONS:

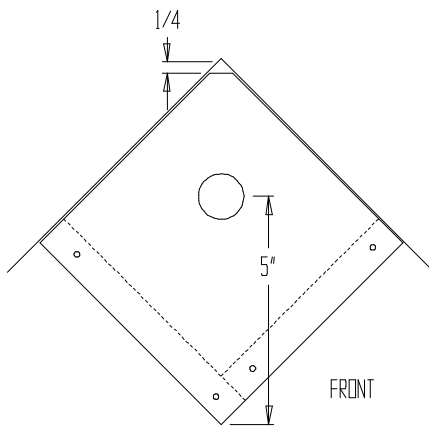
1. Cut pieces to size. Be sure to cut 1/4" off the top corners of the front and back for the vent.
2. Drill a 1" diameter entry hole as shown.
3. Screw the 4" x 5 5/8" bottom to the front. Screw the 4" x 4 7/8" bottom to the front, screw the back to the edges of the 2 bottom pieces.
4. Sand assembly smooth.
5. Make the roof by folding a 7" x 13 1/4" piece of sheet metal in half leaving 2 surfaces 7" x 6 5/8". BE CAREFUL OF SHARP METAL EDGES.
6. Drill holes for the roundhead screws in the roof. Screw the top to the house.
7. Finish with paint or leave natural.



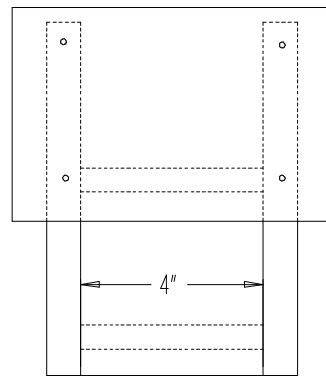
Ky 4-H Wood Science Plans - Level 2



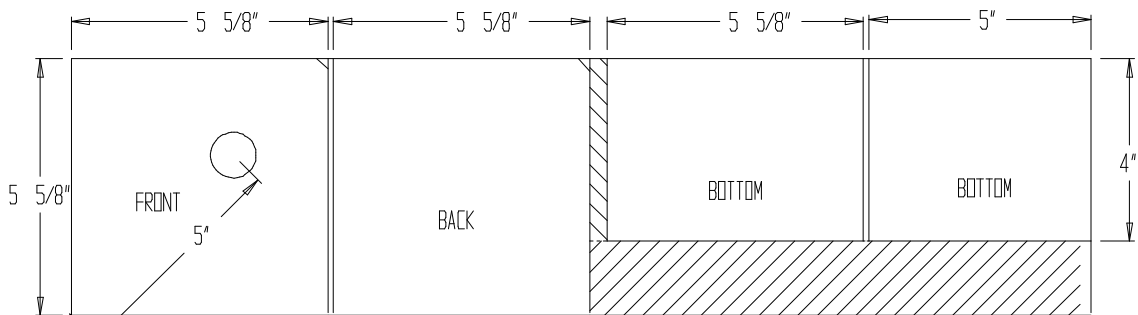
TOP



FRONT



SIDE



CUTOUT FROM 5 5/8" x 23"

WREN HOUSE



Ky 4-H Wood Science Plans - Level 2



1.

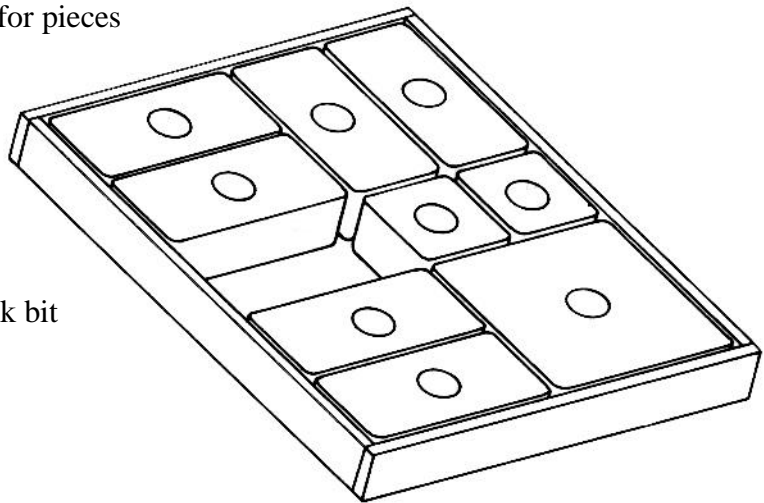
NINE – BLOCK PUZZLE WS210

MATERIALS NEEDED:

- 2 pieces wood 1/8" x 1/2" x 5" for frame
- 2 pieces wood 1/8" x 1/2" x 4 1/4" for frame
- 1 piece wood 1/8" x 4 1/4" x 5 1/4" for base
- 6 pieces wood 1/2" x 1" x 2" for pieces
- 2 pieces wood 1/2" x 1" x 1" for pieces
- 1 piece wood 1/2" x 2" x 2" for pieces
- Glue
- 1/2 inch brads

TOOLS NEEDED:

- Tack hammer
- Saw
- Drill with 3/8 inch countersink bit
- Sandpaper
- Paint or stain and varnish



INSTRUCTIONS:

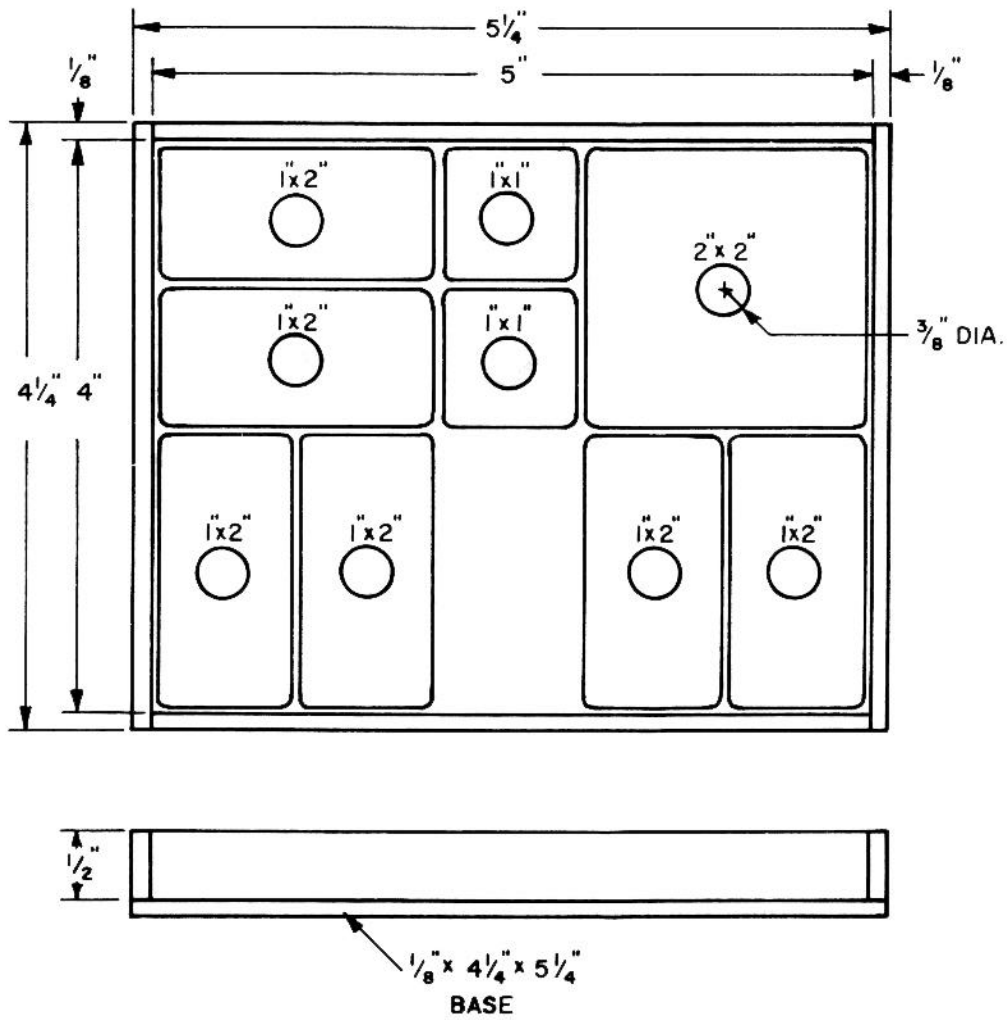
1. Cut all pieces to size.
2. Glue and nail frame together and then glue and nail to base.
3. Drill a shallow countersink hole in the middle of the nine blocks so they can be easily moved.
4. Sand all pieces and round corners so they will move easily in frame.
5. Finish as desired.

PLAYING INSTRUCTIONS:

Start from position shown. Object is to move the large block from the upper right corner to the upper left corner. This takes a minimum of 47 moves.



Ky 4-H Wood Science Plans - Level 2



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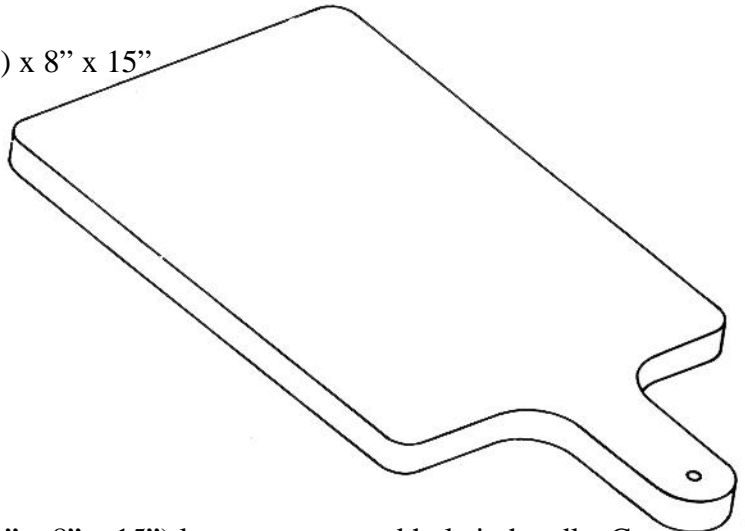
CUTTING BOARD WS211

MATERIALS NEEDED:

1 piece hardwood 1" (or 3/4") x 8" x 15"

TOOLS NEEDED:

Drill with 1/4" bit
Jig saw
Sandpaper
Varnish

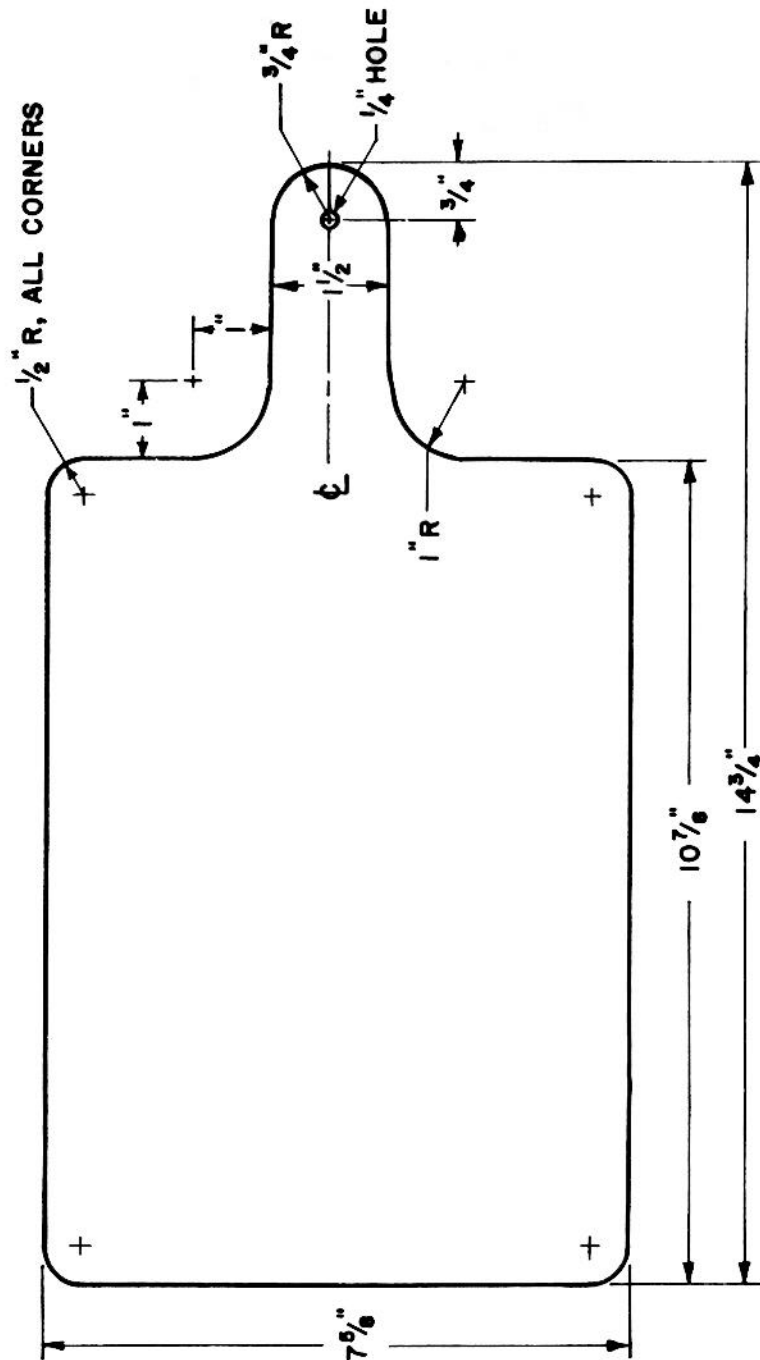


INSTRUCTIONS:

1. Cut piece to rough size (1" x 8" x 15") layout curves and hole in handle. Cut out curves and drill hole.
2. Sand and finish with 2 or 3 coats of varnish. Buff with steel wool between each coat.
3. Apply 1 or 2 coats of wax and buff with soft cloth.



Ky 4-H Wood Science Plans - Level 2



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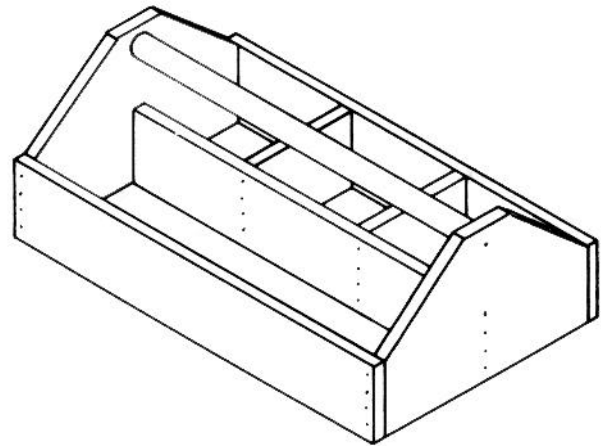
NAIL & TOOL TRAY WS212

MATERIALS NEEDED:

- 1 piece wood 1/2" x 24" x 24" (Use exterior plywood or other appropriate lumber.)
- 1 piece wood 3/4" dowel 15 1/2" long
- 1 1/4" or 1 1/2" finishing nails
- 2 # 8 x 1" flathead wood screws
- Glue

TOOLS NEEDED:

- Hammer
- Saws
- Screwdriver
- Drill, 3/4" bit
- Sandpaper
- Paint or shellac

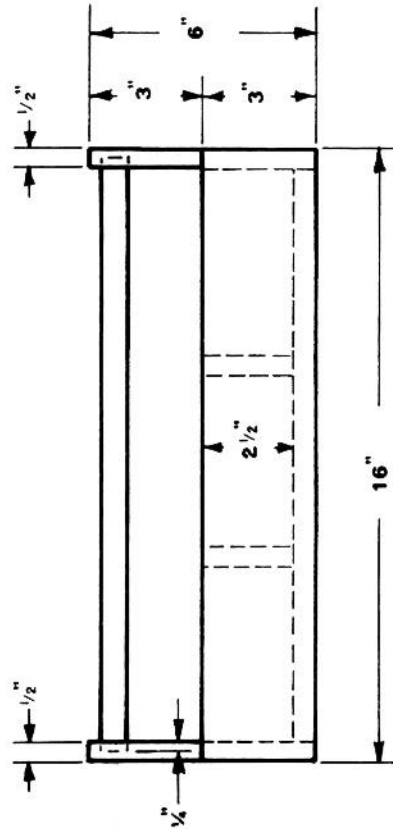
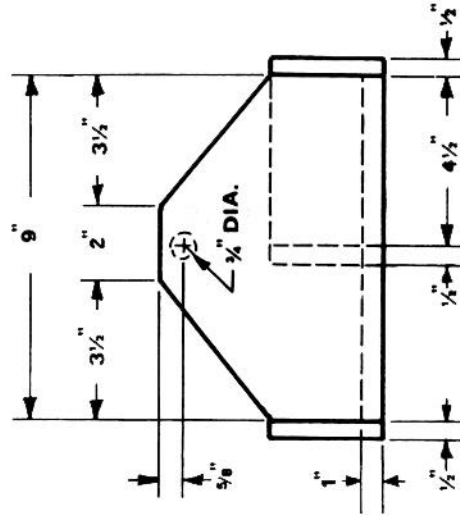
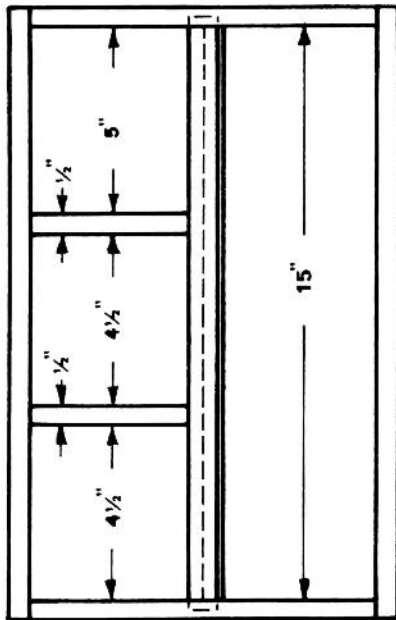


INSTRUCTIONS:

1. Cut pieces to size.
2. Drill 1/4" deep in end pieces for dowel.
3. Sand all pieces before assembly.
4. Glue and nail partitions to base.
5. Glue dowel between ends and fasten with screws.
6. Fit end/handle section over base, glue and nail.
7. Glue and nail side pieces to unit.
8. Apply finish.



Ky 4-H Wood Science Plans - Level 2





PLANT FORCING BOX WS213

MATERIALS NEEDED:

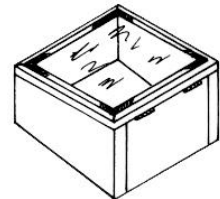
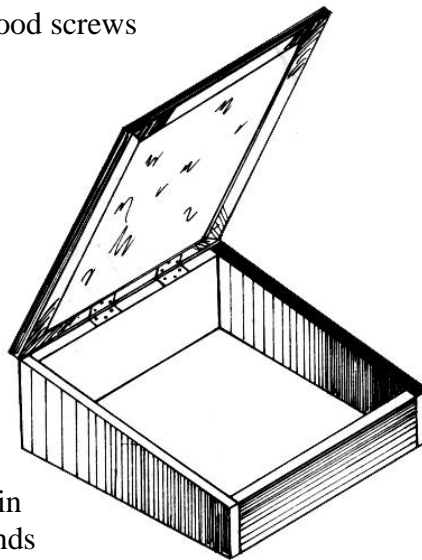
- 1 piece wood 3/4" x 11 1/2" x 13"
- 1 piece wood 3/4" x 11 1/2" x 12 1/2"
- 2 pieces wood 3/4" x 1 1/4" x 12 3/8"
- 2 pieces wood 3/4" x 1 1/4" x 14"
- 1 piece clear rigid plastic, 1/8" x 12 3/8" x 14"
- 6d finishing nails
- 2 hinges, 2" with flat head wood screws
- 23 #6 x 5/8" round head wood screws
- Glue

TOOLS NEEDED:

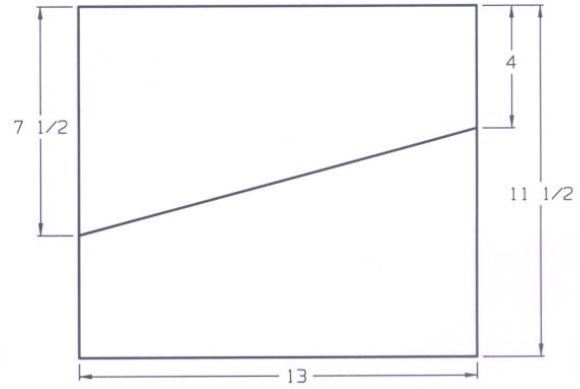
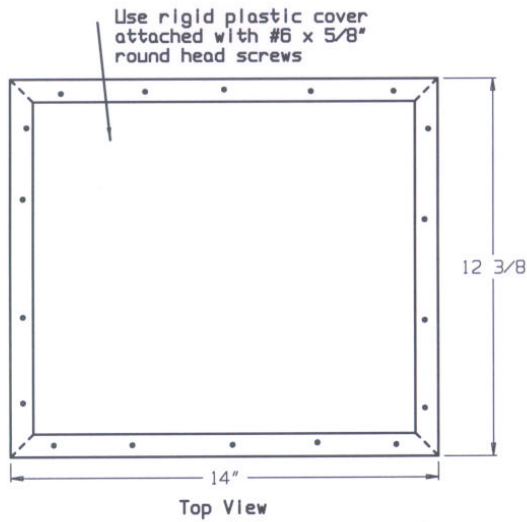
- Wood saw
- Sandpaper
- Wood file
- Hammer

INSTRUCTIONS:

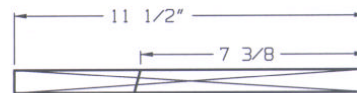
1. Cut pieces to size.
2. Cut notches for hinges in back piece 2" from ends and depth of folded hinge.
3. Glue and nail box ends and sides together.
4. Glue and nail frame for plastic cover.
5. Attach rigid plastic cover with #6 x 5/8 screws
6. Fasten top to box with hinges.
7. Paint entire box (except plastic) with exterior paint.



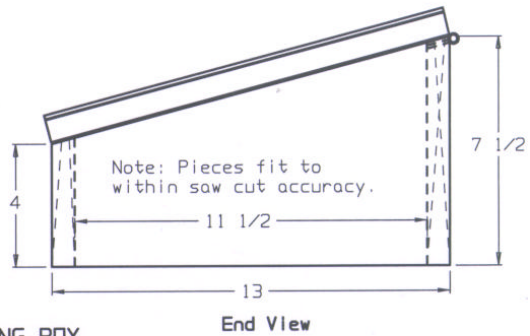
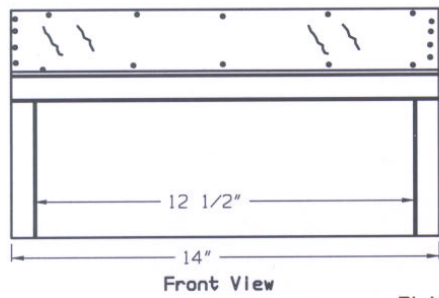
Ky 4-H Wood Science Plans - Level 2



Cut 11 1/2" x 13" board for end pieces



Rip 11 1/2" x 12 1/2" board at 15 degrees for front & back pieces



PLANT FORCING BOX



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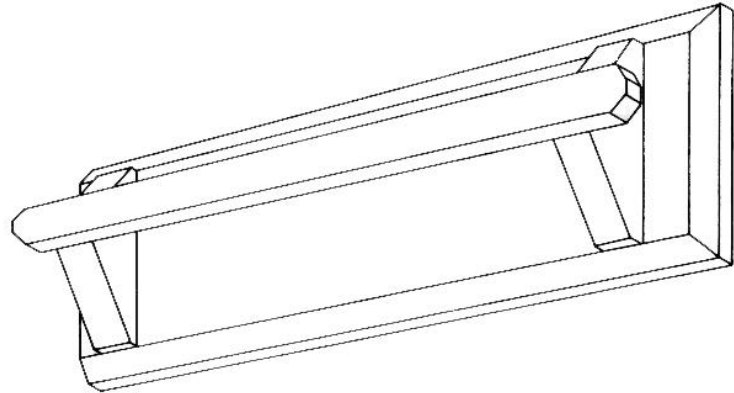
TIE RACK WS214

MATERIALS NEEDED:

- 1 piece wood 5/8" (or 3/4") x 3 1/2" x 12"
- 1 piece wood 3/8" x 5/8" x 11 1/4"
- 1 piece wood 5/8" (or 3/4") x 1 5/8" x 6"
- 2 #6 x 3/4" round head screws
- 4 #7 x 1 1/4" flathead screws
- Varnish

TOOLS NEEDED:

- Screwdriver
- Band saw or miter box
- Shaper or table saw
- Paintbrush
- Sandpaper
- Drill

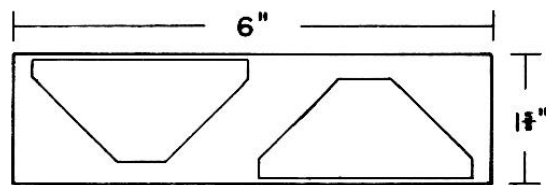
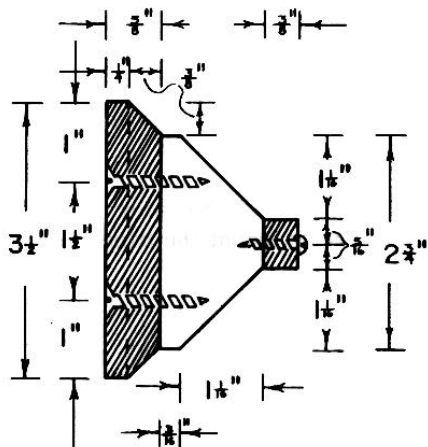
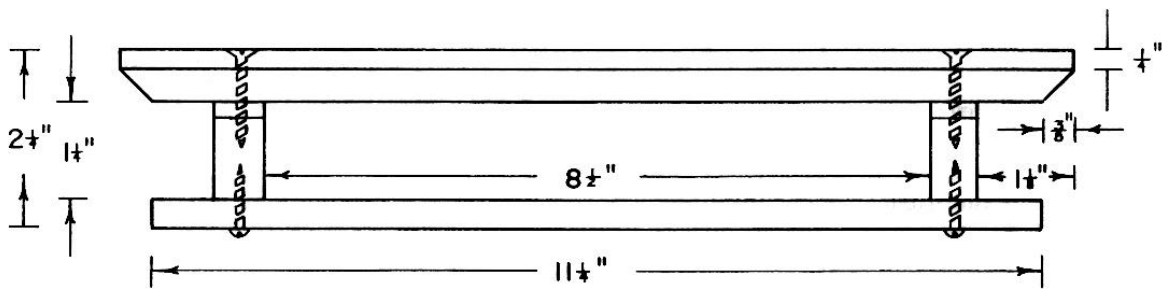
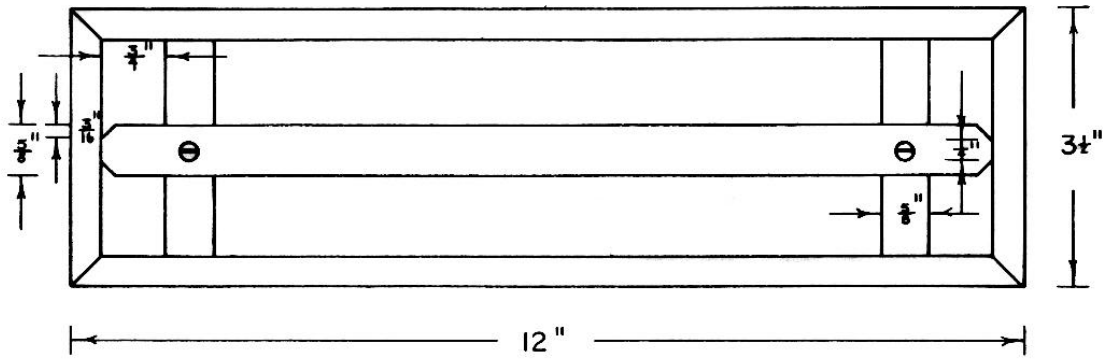


INSTRUCTIONS:

1. Cut pieces to size. Using 45° bevel on the table saw, bevel off the sides of the 5/8" x 3 1/2" x 12" back. Using a 45° angle, cut out the brackets as shown in the drawing from a piece of 5/8" x 1 5/8" x 6" wood. With the same 45° angle cut the ends of the 3/8" x 5/8" x 11 1/4" hanger bar as shown in the drawing.
2. Bore 4 holes from the back of the 5/8" x 3 1/2" x 12" into the brackets, the holes should be 1 7/16" from each end and 1" from the top and bottom. Mount the brackets using 4 #7 x 1" flathead wood screws.
3. Bore 2 holes in the hanger bar, 1 1/16" from each end and on center of the 5/8" face. Use 2 #6 x 3/4" round head screws to mount the hanger bar.
4. Sand the tie rack smooth and apply 2 coats of varnish.



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SHOP TOOL RACK & SHELF WS215

MATERIALS NEEDED:

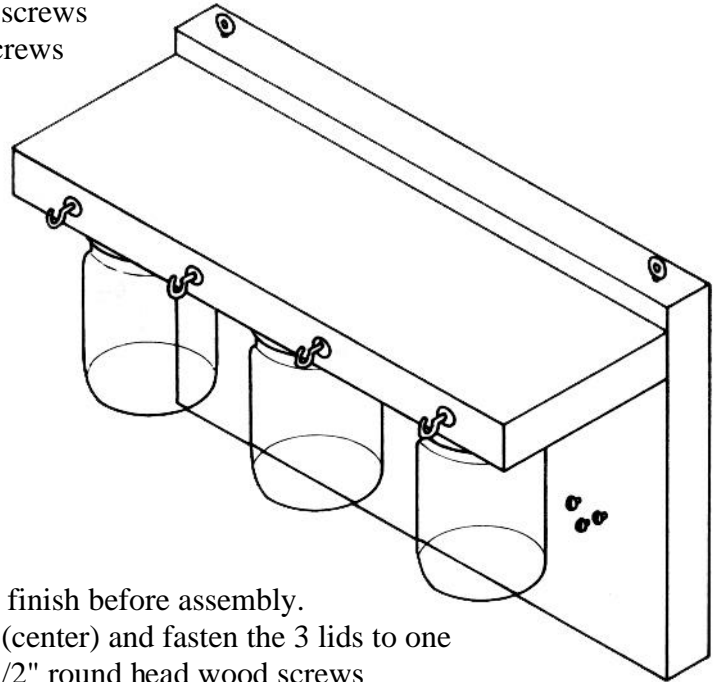
- 1 piece wood 1" (or 3/4") x 8" x 12" – back
- 1 piece wood 1" (OR 3/4") x 4" x 12" – shelf
- 3 – Baby food (or similar) plastic jars with screw type lids
- 7 #8 x 1 1/4" round head wood screws
- 3 #6 x 1/2" round head wood screws
- 4 small cup hooks
- 2 screw eyes, 1 1/2" long
- 4 6d finishing nails
- Glue

TOOLS NEEDED:

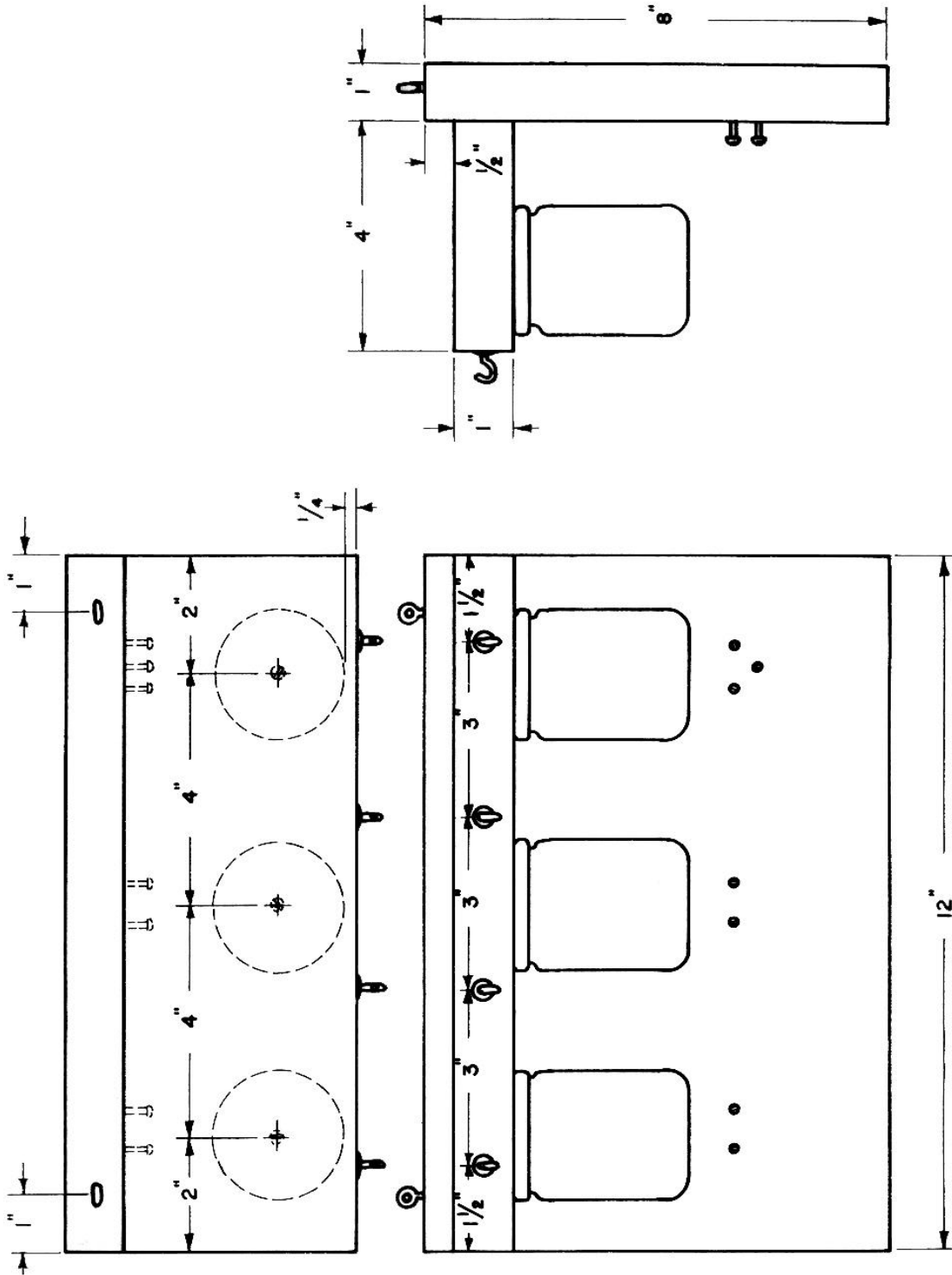
- Screwdriver
- Hammer
- Sandpaper
- Shellac

INSTRUCTIONS:

1. Cut pieces to size, sand and finish before assembly.
2. Punch a hole in each jar lid (center) and fasten the 3 lids to one side of shelf with the #6 x 1/2" round head wood screws
3. Glue shelf to back and nail with 6d finishing nails.
4. Insert 5 to 7 #8 x 1 1/4" screws in front to hold tools desired.
5. Put screw hooks on front edge of shelf.
6. Put screw eye in top edge of back spaced 1" from each end.
7. Fasten to wall with nails or screws through eyes.



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LADDER TOY WS216

MATERIALS NEEDED:

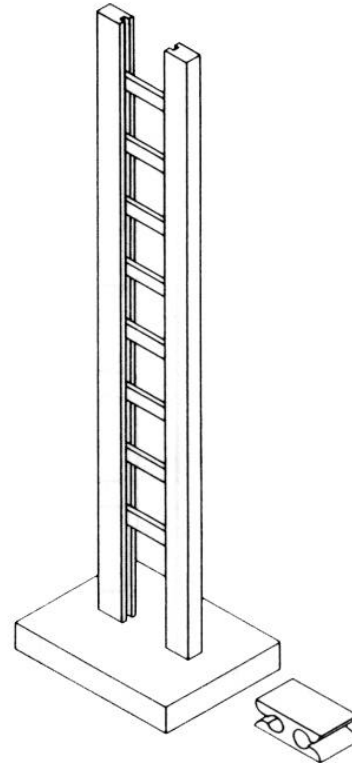
2 pieces wood 3/8" x 5/8" x 13 3/4"
8 pieces wood 1/8" x 5/16" x 1 3/8"
1 piece wood 5/8" x 3" x 4"
1 piece wood 5/8" x 1" x 1 3/4"
2 – 1 1/4" nails
Glue

TOOLS NEEDED:

Table saw
Band saw
Drill with 3/8" bit
Hammer
Sandpaper
Varnish or paint (non-toxic)

INSTRUCTIONS:

1. Cut pieces to size. Set table saw blade for 1/8" depth cut and cut grooves in ladder uprights 1/8" wide.
2. Glue rungs to ladder uprights with spacing shown in drawing.
3. Glue ladder to base and put one nail up through base into end of each upright.
4. Drill 3/8" holes where shown in "tumbler." Cut 1/8" slots on band saw and round out to edge as shown.
5. Sand and finish.
6. Set the "tumbler" on the top rung (slipped through slot into hole" and watch it fall from rung to rung.



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