

Folding Bench and Picnic Table Combo

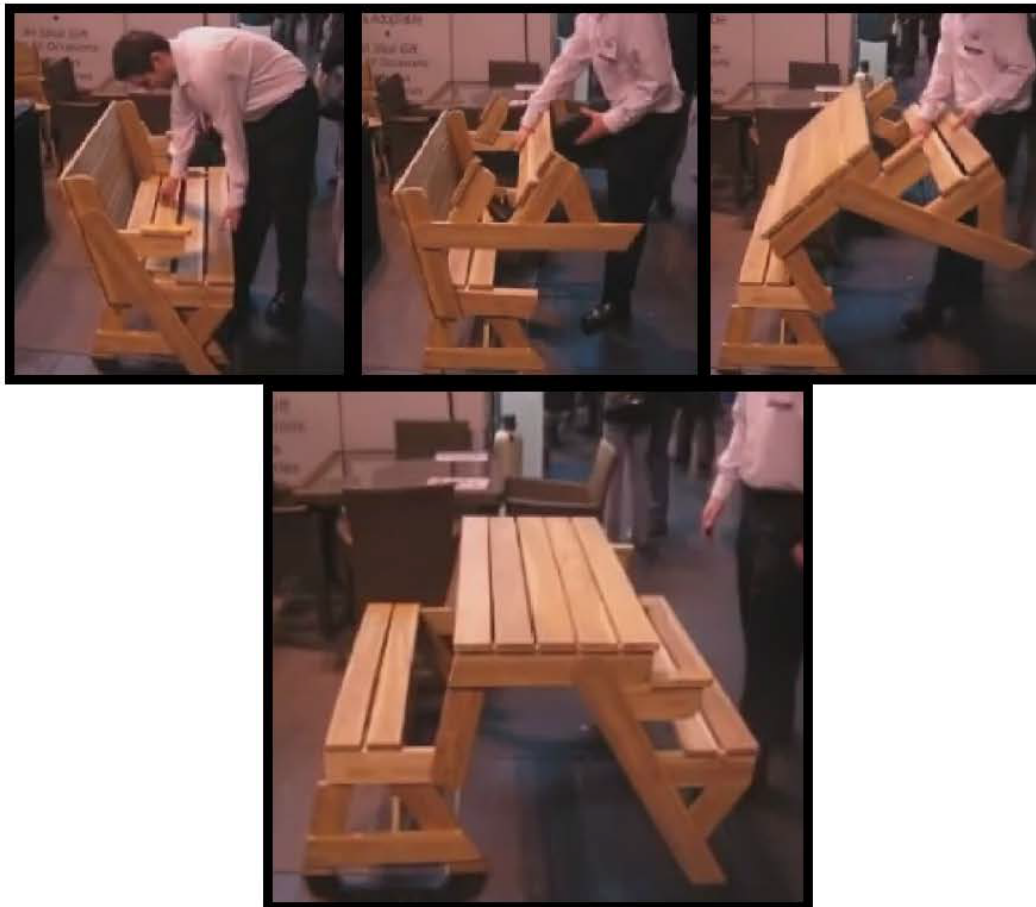
Full Woodwork Plans

Materials & Cut List



Ideal for those small spaces.
Picnic table folds down to bench seat.
Either a 2 1/2 seater bench seat (2 adult and a kid)
Or.....
a 5 seater picnic table

Front seat spans 1380 (54-3/8"); Rear seat spans 1245 (49"); Tabletop spans 1480 (58-1/4")



One piece folding Bench and Picnic Table



Folding picnic table in both bench-seat and picnic table mode

Introduction

Description

A single bench seat that can be changed into a picnic table with ease.

This 'Bench come Picnic Table' is ideal for those smaller areas where you don't want a picnic table taking up all the space, all the time.

When the eating is over and the table is no longer needed, it can be folded back into a comfortable single bench seat and put to one side, still very much usable but taking up minimum room.

It can be either a 2½ seater bench seat (2 adult and a kid), or a 5 seater picnic table.

The front seat spans 1373 mm (54"), the rear seat spans 1245 mm (49"), and the tabletop spans 1487 mm (58½")

Changing stock size and table length: This folding picnic table is constructed out of two different stock sizes.

To use a different stock size or change the length of the table go to **page 9** for details.

The measurements: The measurements throughout this documentation are given in both metric (mm) and imperial (inches).

The metric measurements are given first followed by the standard measurements in brackets ().

One piece folding Bench and Picnic Table

Materials List

The measurements given are the actual sizes.

Enquire at your local building supplies store regarding the availability of the stock sizes given in the table below. If different sizes are used, then slight adjustments will need to be made to the length of the bolts (4 only) and also the length of the rear seat boards and tabletop boards. Go to page 9 for details.

Sourcing the stock sizes

This project calls for two stock sizes - 90 mm x 45 mm (1½" x 3½"), and 90 mm x 32 mm (1¼" x 3½").

Both stock sizes are available in Australasia. In North America 90 mm x 45 mm (1½" x 3½") stock is widely available and 90 mm x 32 mm (1¼" x 3½") stock can be ripped out of 5/4 in. x 6 in. deck boards found at both Lowes and the Home Depot.

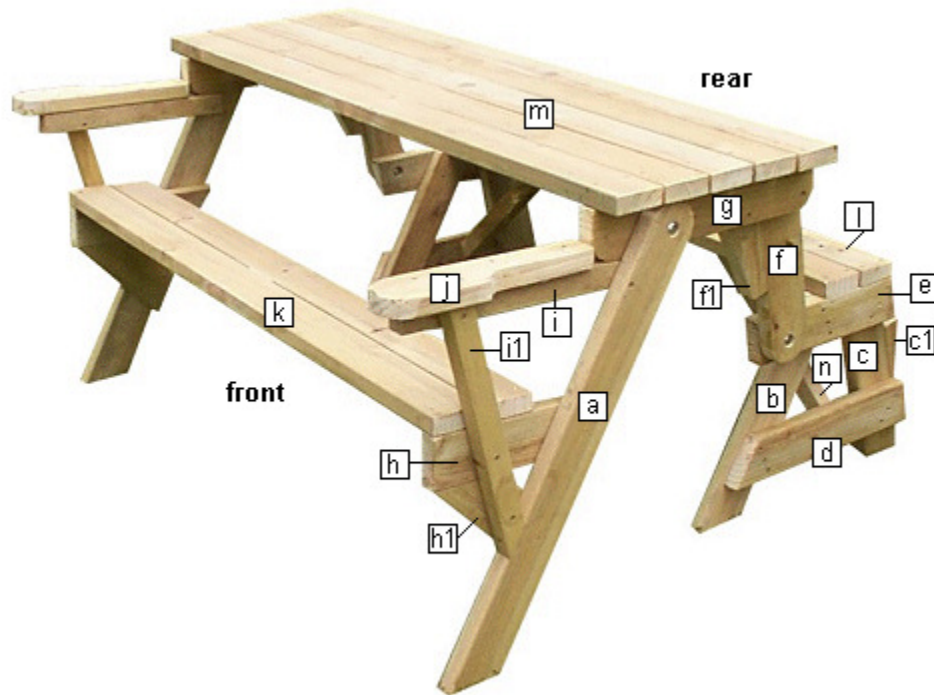
Ideally, if you can source or obtain both stock sizes all the better, but if you can only source the 90 mm x 45 mm (1½" x 3½") stock which is more widely available, then some changes to the plans would need to be made. Go to page 9 for details.

| Stock Size/ Material | Amount |
|---|--------------|
| 90 mm x 32 mm (1¼" x 3½") natural decay-resistant or treated wood | 16 m (53 ft) |
| 90 mm x 45 mm (1½" x 3½") natural decay-resistant or treated wood | 7 m (23 ft) |
| 10 mm (⅜") carriage bolts 70 mm (2¾") long and self locking nuts | 4 of |
| exterior type wood screws 50 mm (2") long | 100 of |
| exterior type wood screws 75 mm (3") long | 16 of |
| exterior wood glue | |

Note: In some cases the metric stock sizes are not an exact match to the equivalent imperial sizes. The metric measurements are more suited to Australasian standards. The imperial measurements are more suited to North American standards.

One piece folding Bench and Picnic Table

Identifying the pieces



- [a] front leg
- [b] rear leg (inner)
- [c] rear leg (outer)
- [c1] back stop
- [d] lower seat rail (rear)
- [e] seat rail (rear)
- [f] leg extension part 1 (rear)
- [f1] leg extension part 2 (rear)
- [g] table rail
- [h] seat rail (front)
- [h1] seat rail brace (front)
- [i] arm rail
- [i1] arm rail brace
- [j] arm pad
- [k] seat board (front)
- [l] seat board (rear)
- [m] tabletop board
- [n] seat brace (rear)

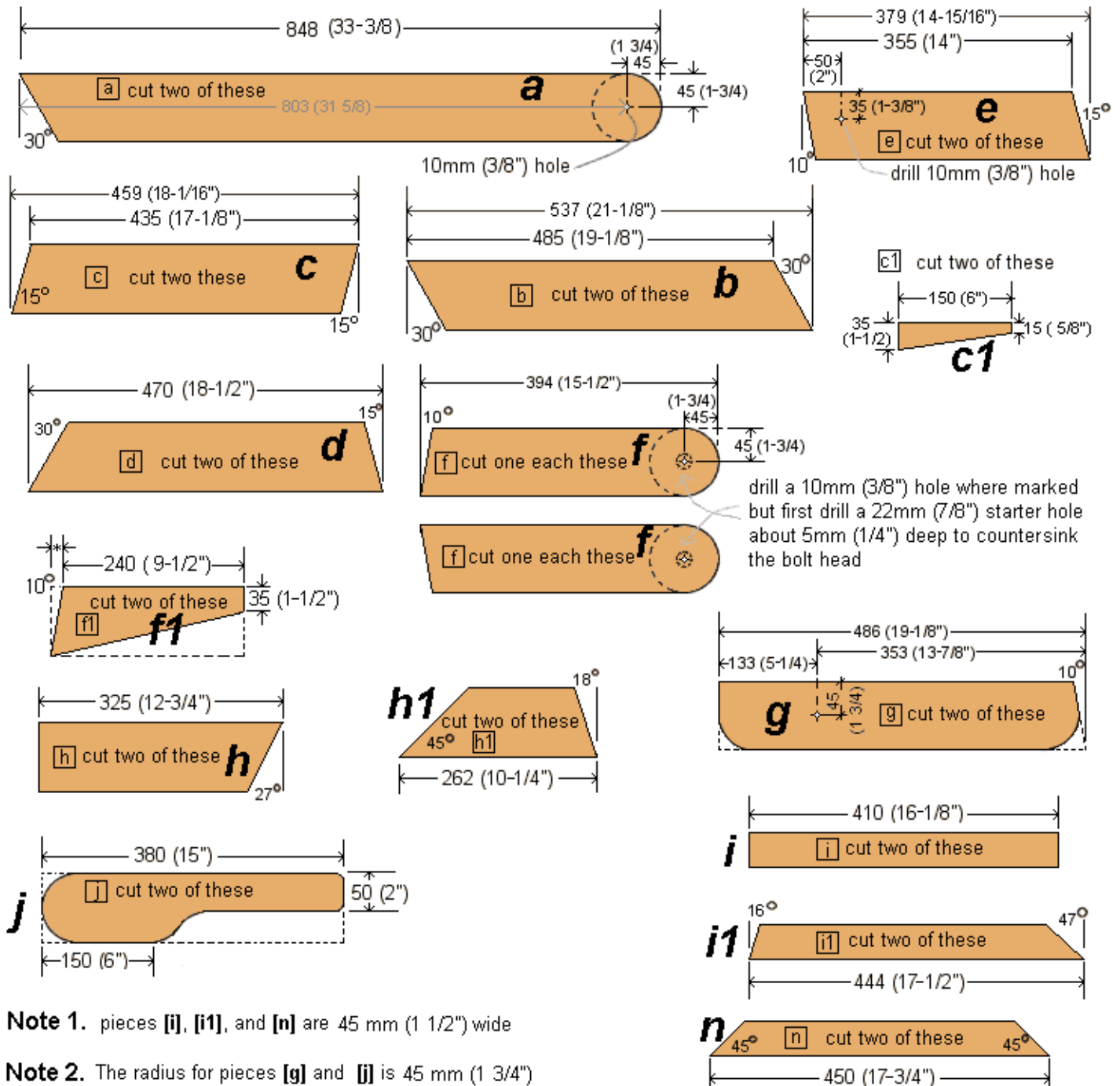
Tools you will need

• Circular power saw, • Drop saw (chop saw) - able to cut accurate angles, • Jigsaw, • hacksaw, • Electric drill, • Hammer, Hand saw, Measuring tape, pencil, square, screw driver, level, • 10 mm ($\frac{3}{8}$ ") drill bit for the bolt holes, • 3 mm ($\frac{1}{8}$ ") drill bit for the screw holes, • 22 mm ($\frac{7}{8}$ ") drill bit to countersink (embed) the bolt head. The bit must be a larger diameter than the bolt head.

One piece folding Bench and Picnic Table

Plans - The individual pieces (frame)

Cut all the pieces below from 90 mm x 32 mm (1 1/4" x 3 1/2") stock. Pieces **i**, **i1**, and **n** are from the same stock ripped in half. If you use a slightly different stock size, refer to 'Changing stock size and/or table length' on page 9.



Note 1. pieces **[i]**, **[i1]**, and **[n]** are 45 mm (1 1/2") wide

Note 2. The radius for pieces **[g]** and **[j]** is 45 mm (1 3/4")

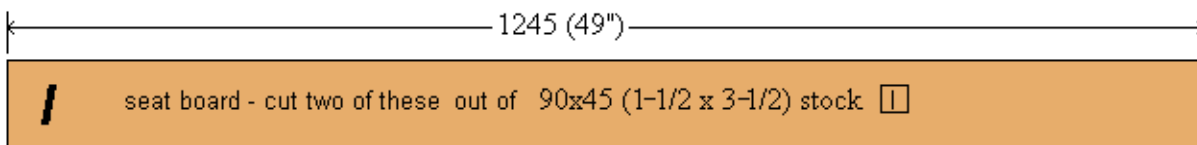
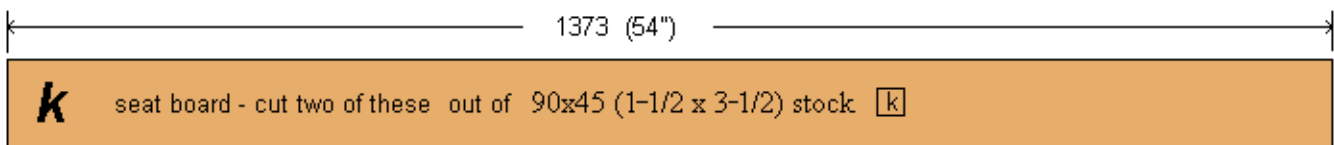
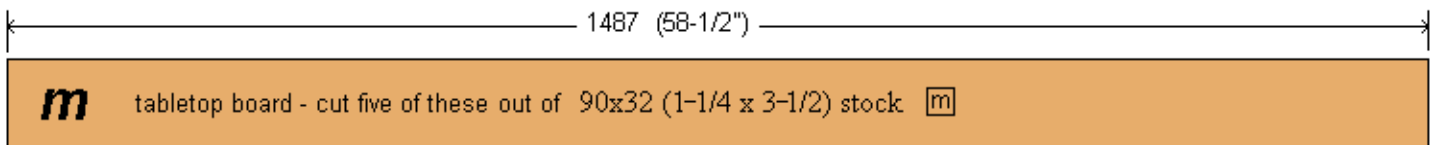
One piece folding Bench and Picnic Table

Plans - The individual pieces (tabletop and seat boards)

In the drawings below, the seat boards are from 90 mm x 45 mm (1½" x 3½") stock, and the tabletop boards are from 90 mm x 32 mm (1¼" x 3½") stock.

If you use a slightly different stock size, refer to 'Changing stock size and/or table length' on page 9.

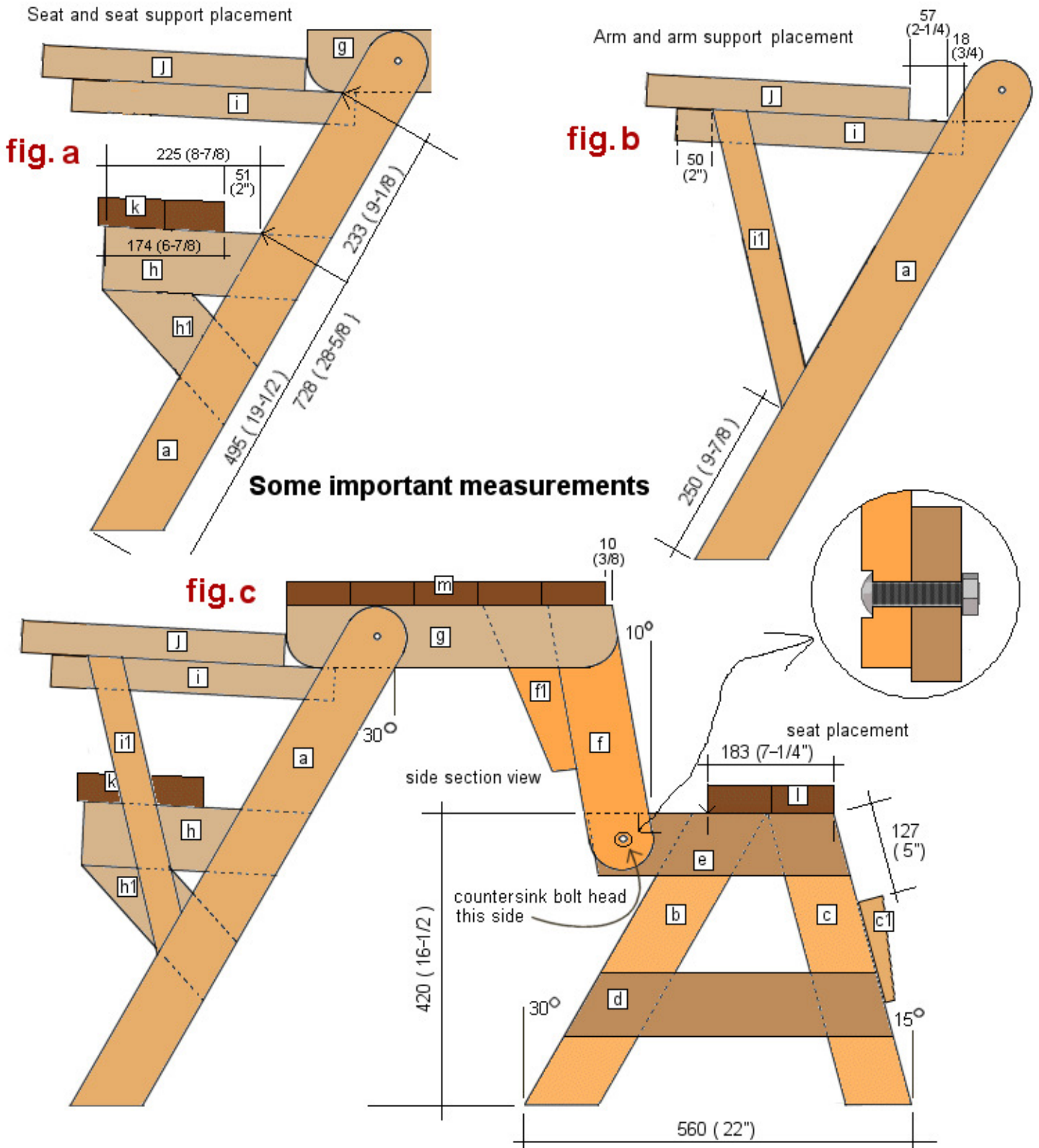
tabletop boards and seat boards



- m** 90x32 (1-1/4 x 3-1/2") stock 5 lengths at 1487 (58-1/2") long for tabletop m
- k** 90x45 (1-1/2 x 3-1/2") stock 2 lengths at 1373 (54") long for seat k
- l** 90x45 (1-1/2 x 3-1/2") stock 2 lengths at 1245 (49") long for seat l

One piece folding Bench and Picnic Table

Plans - Sectional details



One piece folding Bench and Picnic Table

Important points

Some fairly accurate measuring, drilling, and cutting is required for this folding table to work in the manner that it is meant to, however, due to Murphy's law, wood sizes being different, and dare we say it, a slight error in measurements, the table might not work as smooth as it should so some precautions can be taken.

Point 1. Pay special attention to the paragraph in **step 3** that says "Special care should be taken for the following....."

Point 2. piece **[c1]** is a back stop. It stops the tabletop going down too far when the table is folded into bench seat mode. Because the placement of this piece is important, it is advisable to temporary place it, i.e., hold it in place with only one screw until the folding motion has been tried. A slight adjustment may then be required.

Point 3. The placement of seat **[k]** along seat rail **[h]** is also crucial. Study the dimensions shown in **fig.a** in the plans on page 9. Because the placement of this seat is important, it is advisable to temporary place it, i.e., hold it in place with only one screw each end of each piece, until the folding motion has been tried. A slight adjustment may be required.

A bit about the wood size

All the wood used is 90 mm x 32 mm (1¼" x 3½") stock except the seat boards **[k]** and **[l]** which are 90 mm x 45 mm (1½" x 3½") stock.

If 90 mm x 32 mm (1¼" x 3½") stock is unavailable in your area, and you choose to use 90 mm x 45 mm (1½" x 3½") stock instead, then adjustments will need to be made to the length of the bolts (4 only), the rear seat boards **[l]**, and the tabletop boards **[m]**.

Sourcing the stock sizes

This project calls for two stock sizes - 90 mm x 45 mm (1½" x 3½"), and 90 mm x 32 mm (1¼" x 3½").

Both stock sizes are available in Australasia. In North America 90 mm x 45 mm (1½" x 3½") stock is widely available and 90 mm x 32 mm (1¼" x 3½") stock can be ripped out of 5/4 in. x 6 in. deck boards found at both Lowes and the Home Depot.

Ideally, if you can source or obtain both stock sizes all the better, but if you can only source the 90 mm x 45 mm (1½" x 3½") stock which is more widely available, then some changes to the plans would need to be made. Go to page 9 for details.

One piece folding Bench and Picnic Table

Changing stock size and/or table length

Changing a stock size

This project calls for two stock sizes - 90 mm x 45 mm (1½" x 3½"), and 90 mm x 32 mm (1¼" x 3½"). The latter is readily available in some places, but not so in others.

Ideally, if you can source or obtain both stock sizes all the better, but if you can only source the 90 mm x 45 mm (1½" x 3½") stock which is more widely available, then the following changes to the plans would need to be made:

The bolts would need to be ½" inch longer (there are only four),

Pieces (**K** - longer seat boards) would need to be 1" longer, and pieces (**m** - tabletop boards) would need to be 1½" longer.

Pieces (**I** - shorter seat boards) would remain the same.

To use a different stock size or change the length of the table apply The '**The formula**' below.

Changing the table length

You can change the overall length of the unit simply by changing the length of the tabletop boards, the seat boards, and the bolts. But there is a formula...

The formula is worth considering if you want to make the table and seats longer (or shorter), or use a different stock size for the side frames.

The formula -

The difference in length between the shorter and longer seat boards is the sum of the thickness of four side framing members.

For example, if the side framing members are 45 mm (1½") thick, four times that is 180 mm (6").

Therefore 180 mm (6") will be the difference between the length of the front and rear seats boards.

The difference in length between the tabletop boards and the longer seat boards is the sum of the thickness of two side framing members plus 50 mm (2") for the end overhangs.

For example, if the side framing members are 45 mm (1½") thick. Two times that is 90 mm (3"), and plus the 50 mm (2") overhang = 140 mm (5").

Therefore, In that case the table boards will be 140 mm (5") longer than the longer seat boards.

One piece folding Bench and Picnic Table

Instructions

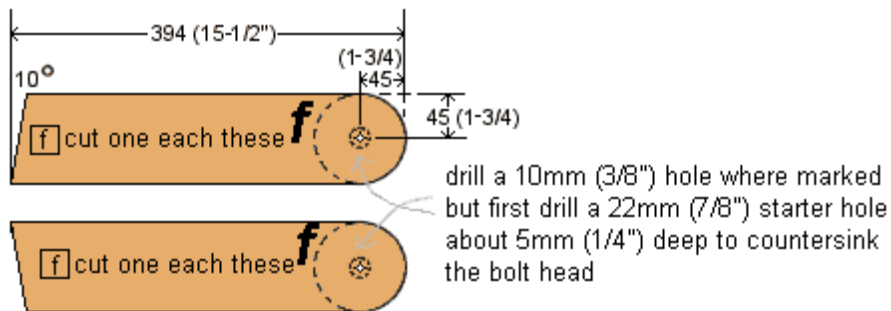
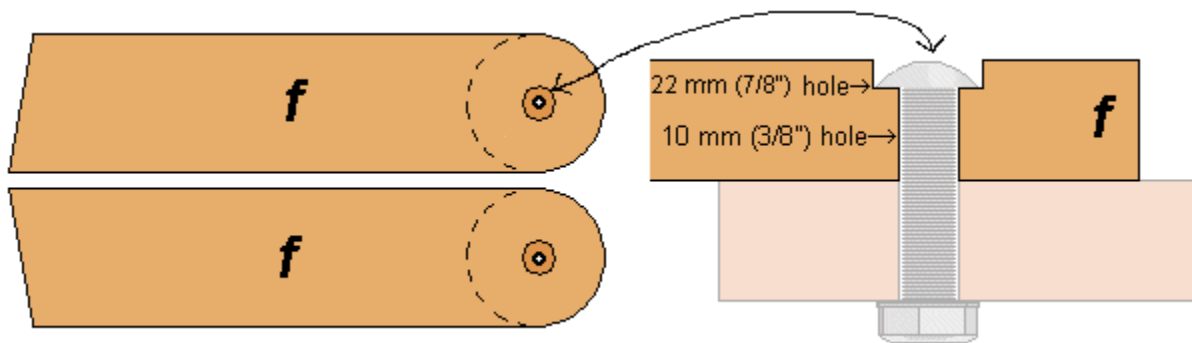
Step 1. Cut and drill all the pieces



Cut all the pieces to the length as shown in 'Plans - The individual pieces (frame)' on page 7. Mark the holes and curves. Pay particular attention as to the marking of the holes.

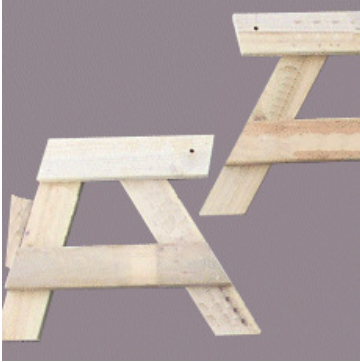
Cut the curves and drill 10 mm ($\frac{3}{8}$ ") holes where marked.

In pieces [f] only, first drill a 22 mm ($\frac{7}{8}$ ") starter hole about 5 mm ($\frac{1}{4}$ ") deep to countersink the bolt head. Refer to the picture below or piece [f] on page 7.



One piece folding Bench and Picnic Table

Step 2. Make the rear seat side-frames



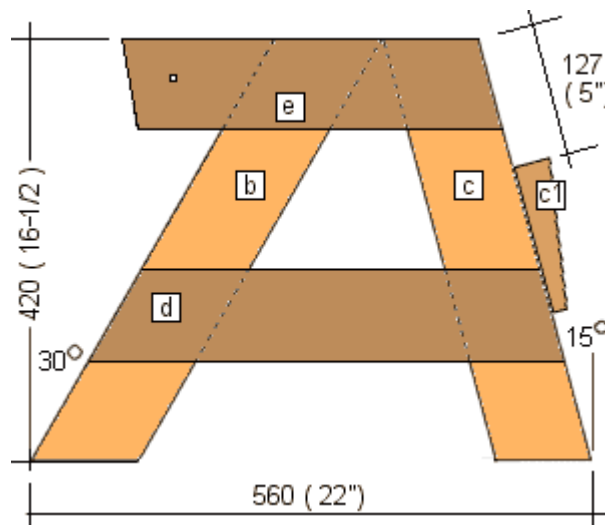
Assemble both rear seat side-frames. Make one to the dimensions shown in the drawing below.

Fix horizontal pieces **[d]** and **[e]** to pieces **[b]** and **[c]** with screws and exterior wood glue. Use 3 screws per meeting. Pre-drill the screw holes through the horizontal pieces.

Make up the second in the same way but as a **mirror image** of the first.

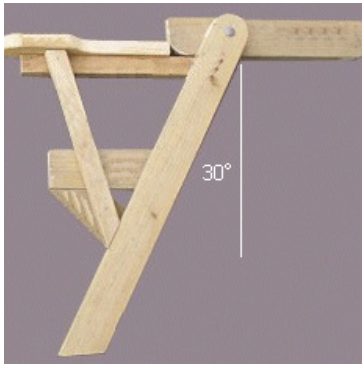
Ensure that the bottoms of pieces **[b]** and **[c]** and the horizontal pieces **[d]** and **[e]** are parallel.

Temporary fix [c1]. Piece **[c1]** is a back stop. It stops the tabletop going down too far when the table is folded into bench seat mode. Temporary place it for now. Hold it in place with only one screw until all the mechanism is working and the folding motion has been tried. A slight adjustment may then be required.



One piece folding Bench and Picnic Table

Step 3. Make the front side-frames



Assemble the two front side frames. Make one to the dimensions shown in the drawing below.

Make up the second in the same way but as a **mirror image** of the first.

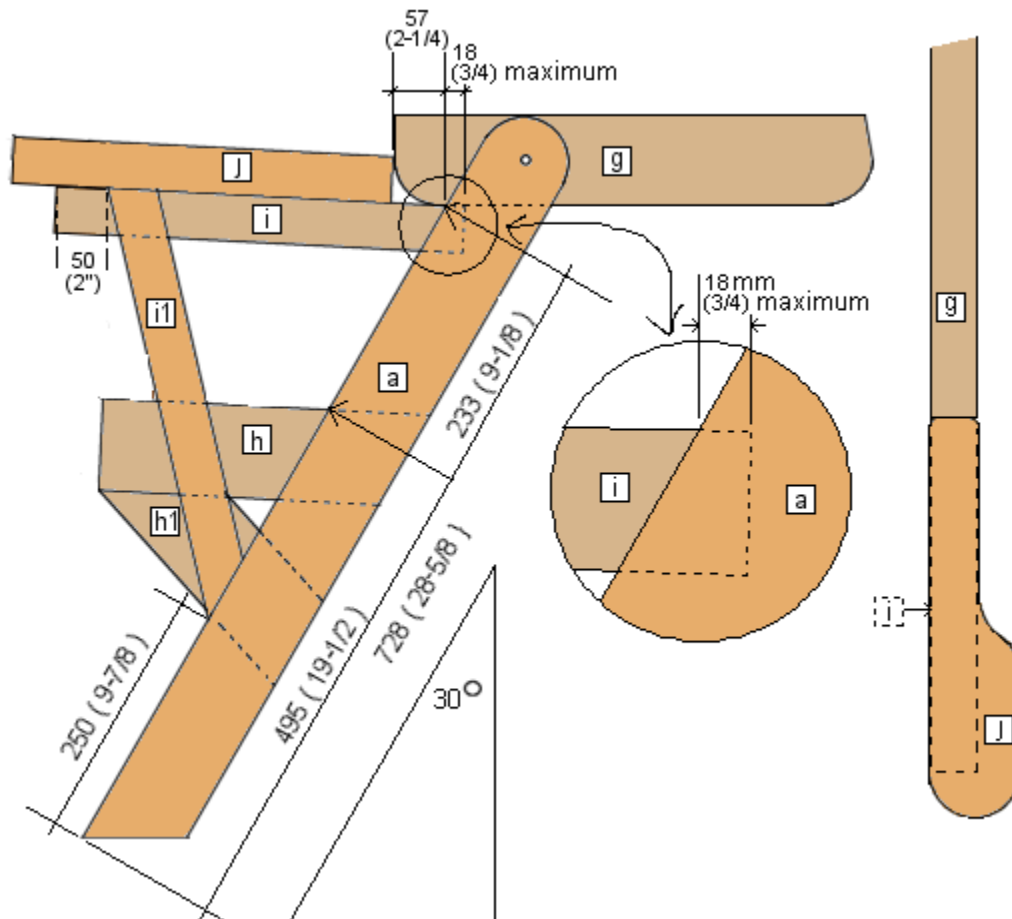
Special care should be taken for the following.....

When piece **[a]** is 30 degrees off right angles to piece **[g]** (as in the picture), ensure that the arm rail **[i]** is tucked up firmly under the table rail **[g]**, and also that the top of the arm rail **[i]** does not encroach into piece **[a]** by more than 18 mm ($\frac{3}{4}$ "). See the insert in the drawing below.

The end of the arm pad **[j]** should be touching the table rail **[g]**.

The arm pad also acts as a brake to contain the unit from spreading out too far.

Fix together with screws and glue.



One piece folding Bench and Picnic Table

Step 4. Assemble the side-frames

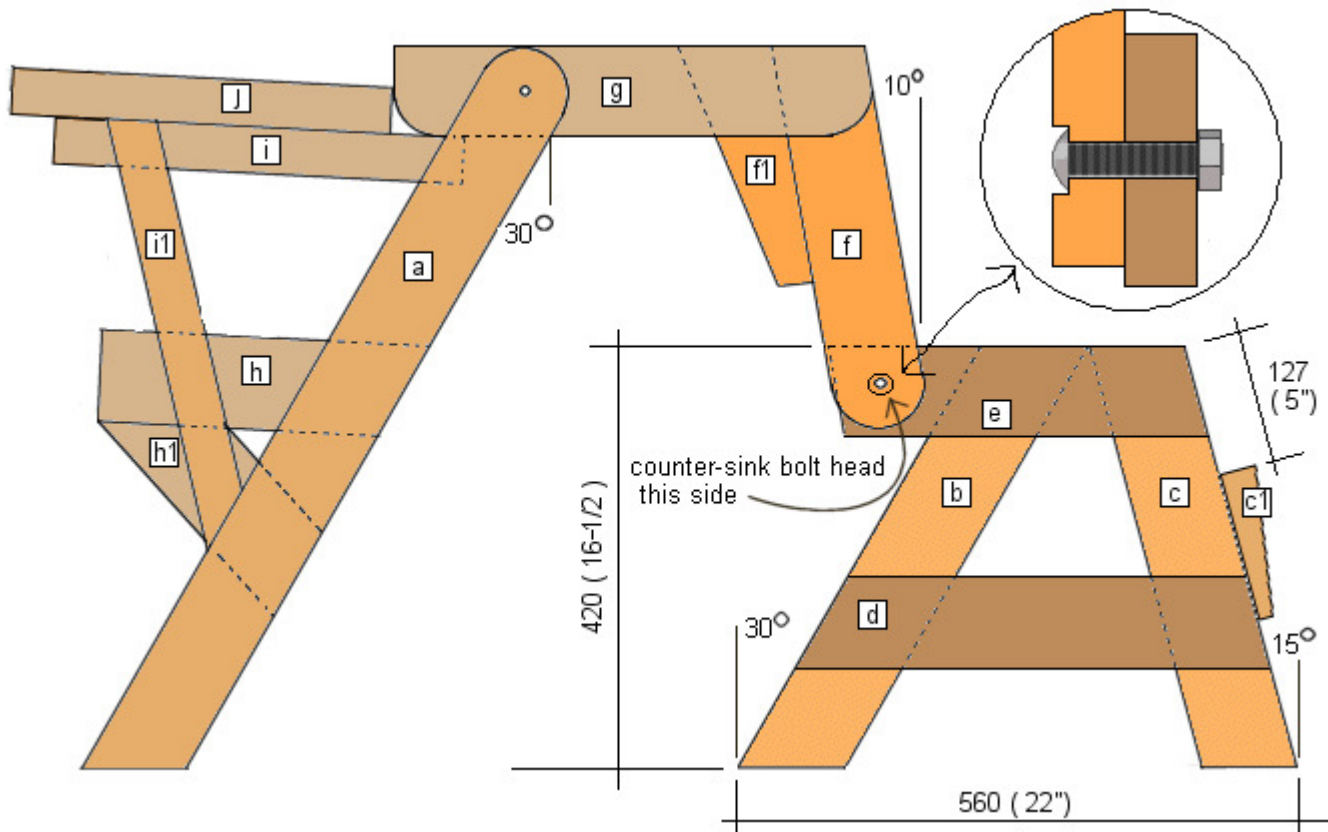


The two complete side-frames can now be assembled.

This is simply a matter of joining pieces **[f]** and **[f1]** together with screws and glue, then fixing them to the table rail **[g]** (with screws and glue), and also to piece **[e]** (with a bolt). Refer to the drawing below.

Make one complete side as shown in the drawing below, and then make up the second in the same way, but as a mirror image of the first.

Take note which side of piece **[f]** has the countersink hole.



One piece folding Bench and Picnic Table

Step 5. Hold the table / seat boards together



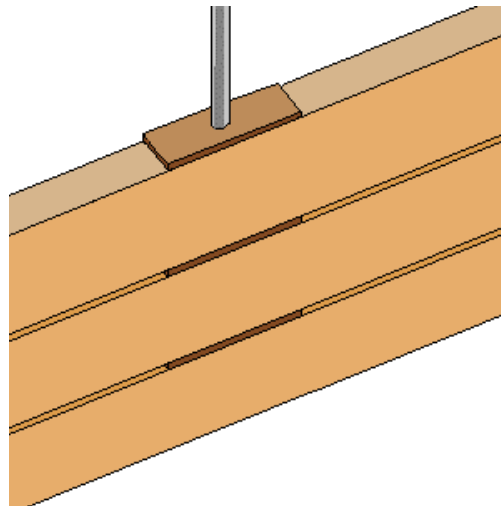
The tabletop boards and the seat boards need to be held together at the middle to stop warping and creating an uneven tabletop or seat.

One way of doing this:

Drill a 10 mm ($\frac{3}{8}$ ") hole widthways through the center of all the tabletop / seat boards and drill a countersink hole wherever there is a nut and washer to go.

Align the packers between the boards and run a 10 mm ($\frac{3}{8}$ ") threaded rod through all the holes. Add nuts and washers, tighten, and cut off any rod excess with a hacksaw.

The packers or spacers can be either washers, or thin strips of wood with holes drilled through them. (see picture).



How thick are the packers?

The overall tabletop width is 460 mm ($18\frac{1}{8}$ "), and the overall seat width is 183 mm ($7\frac{1}{4}$ ").

Evenly spread the tabletop boards and the seat boards over those widths respectively, and that will determine the gap between each board - hence the thickness of the required packers (spacers).

One piece folding Bench and Picnic Table

Step 6. Add the table and seat boards



First fix the seat boards [k] and [l] to their respective seat rails [h] and [e] ensuring the frame is square, level and plumb.

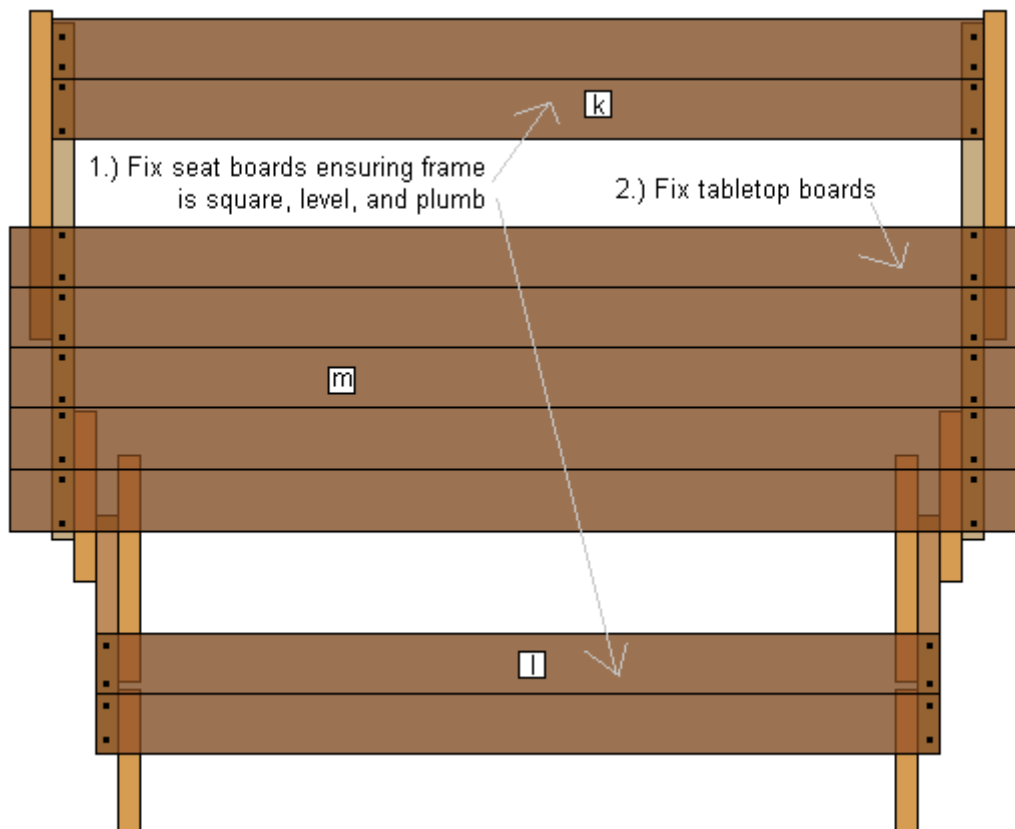
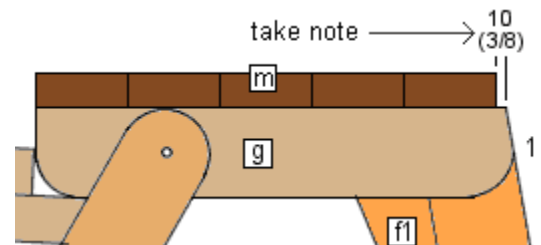
The placement of the seats along the seat rails is crucial. Refer to the dimensions shown in **fig.a** on page 9.

Because the placement of this seat is important, it is advisable to hold it in place with only one screw each end of each piece, until the folding motion has been tried as a slight adjustment may be required.

Next screw the tabletop in place. It starts 10 mm ($\frac{3}{8}$ ") in from the rear of the table rail [g]. See picture.

Ensure that the overhang at each end of the table side-frames are equal.

All seat and tabletop boards should be pre-drilled and screwed with two screws at each meeting.



One piece folding Bench and Picnic Table

Step 7. Brace the rear seat



Turn the table upside down and prop or sit the rear seat on something solid. Ensure that the seat side-frame and the seat are at right angles to each other and fix the braces in place. Just like in the picture.

Flip the folding table up the right way and see how it works. Make any necessary adjustments as described in **point 3** on page 10.

All done!



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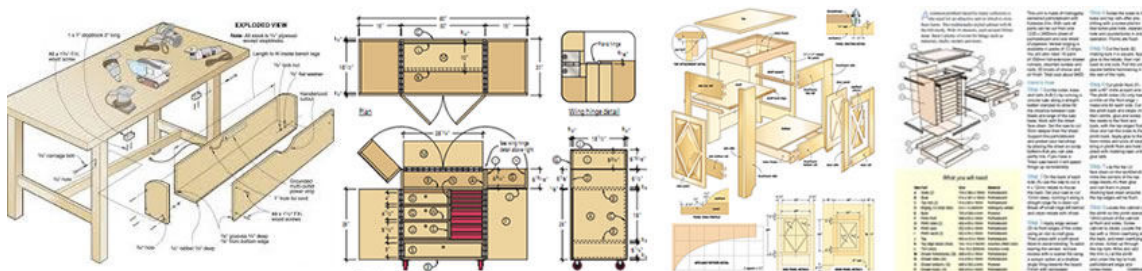
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