

CARPENTRY COURSE NOTES



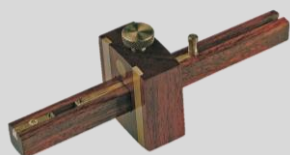
No L1944EW

Station Buildings, Waddon Station,
Epsom Road, Croydon, Surrey, CR0 4UP

Company Registration No. 5090488
VAT Registration No. 831 0403 81



ESSENTIAL TOOLS



Mortice Gauge



Chisel Set



Spirit Level



Tape Measure



Combination Square



Rasp



Sliding Bevel



Handsaw



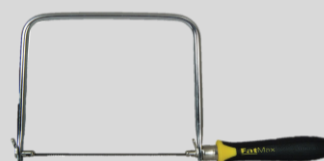
Tenon Saw



Plane



Claw Hammer



Coping Saw



Quick Clamp



Wood Drill Bit Set



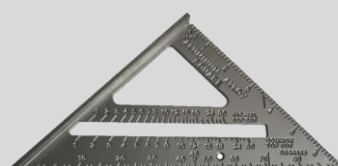
Mitre Block



Utility Knife



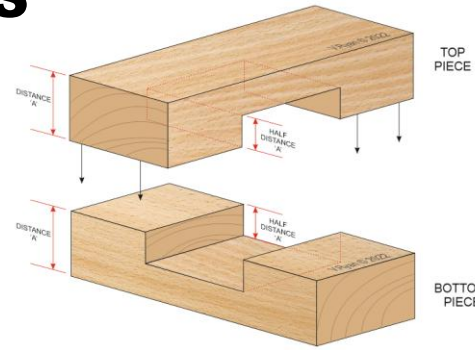
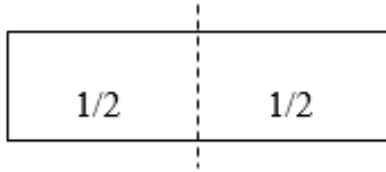
Pencils



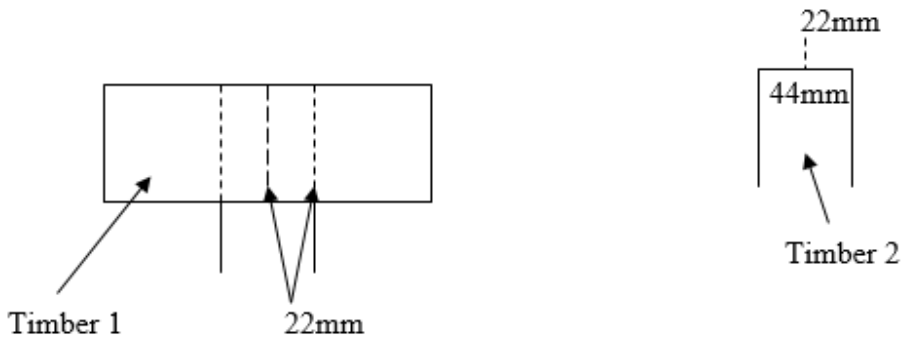
Speed Square

HALVING JOINTS

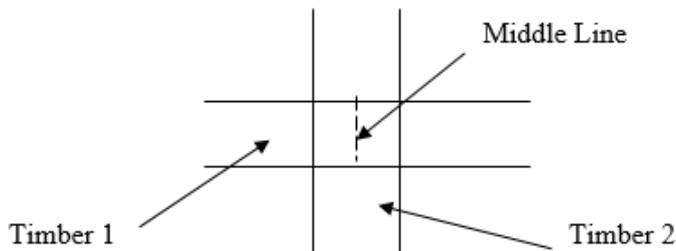
1. Take 1 piece of timber and cut into two equal lengths. Mark each piece with a face side (f) and face edge (v). Take piece 1 and measure half the length and draw a square line down the middle with a combination square.



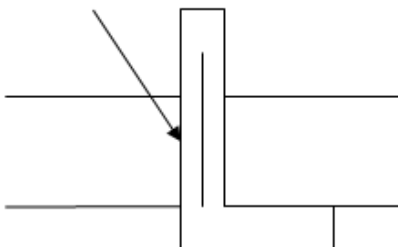
2. Measure the width of timber 2. Let's say (44mm) and half it (22mm). Then mark 22mm from the middle line of timber 1 (one to the left and another line to the right).



3. Take timber 2 and place it on the left line so it sits perfectly between your two outer marks.

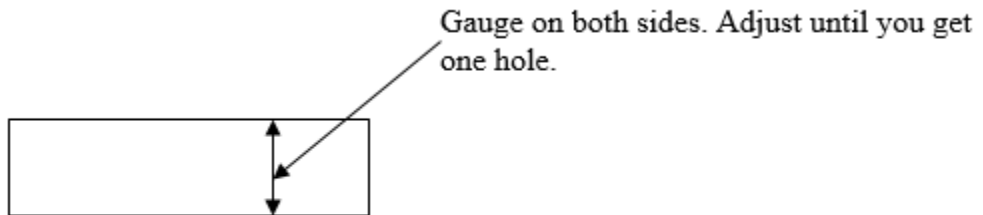


4. Square the outer marks around all four sides of Timber 1. Repeat steps 1–4 on Timber 2.



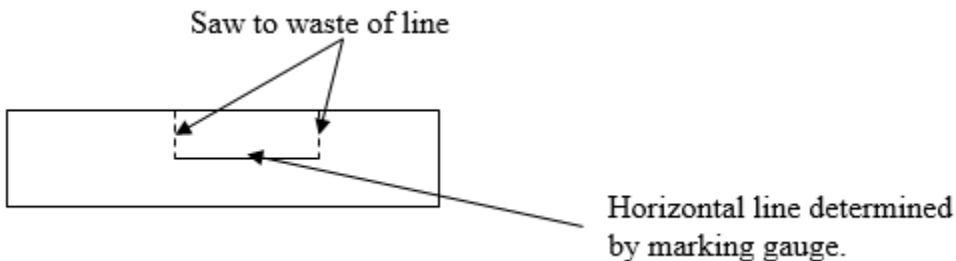
HALVING JOINTS

5. Using a marking gauge (1 pin) to find the centre of the depth of timber 1. First by estimating, then adjust gauge accordingly, until pin enters the same hole from top side to bottom side. Mark with a pencil along the gauge line in between the two lines already drawn square around your timber. This represents the depth of timber you need to cut out. You should also make sure at this point that you have a face side and face edge on both pieces. Note: Make sure the face side of each piece will be facing up after you join the pieces together.

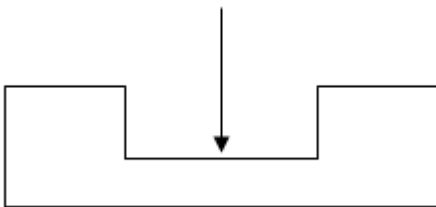


Repeat the above on Timber 2.

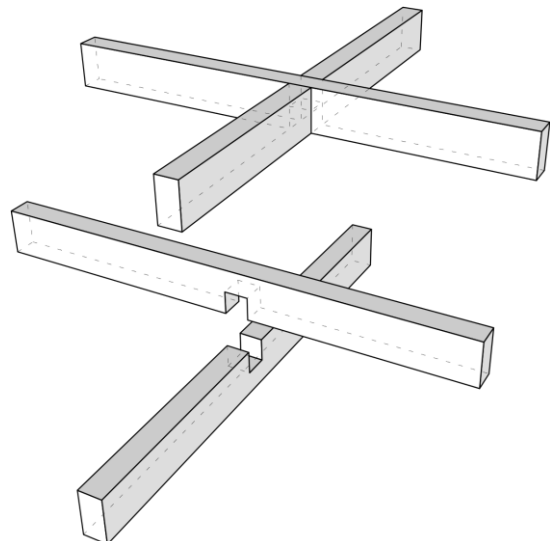
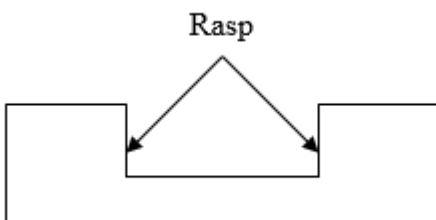
6. Saw to the waste side of the line half way through the timber to meet the horizontal line determined by the marking gauge. At this point you make 2 cuts on timber 1 and repeat the same on timber 2.



7. Chisel away the timber between your two cuts on each piece of timber.

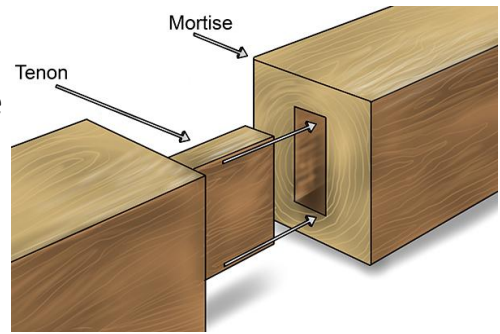
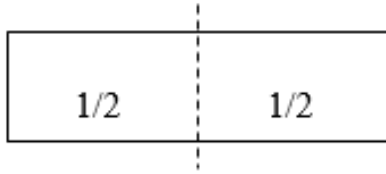


8. Rasp down for finish and fit joint together.

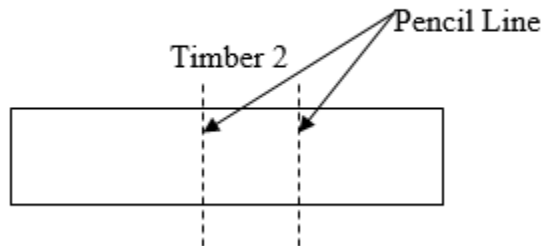
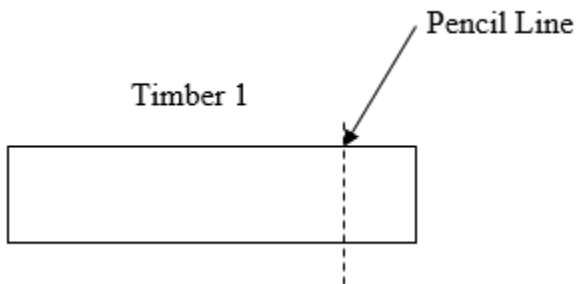
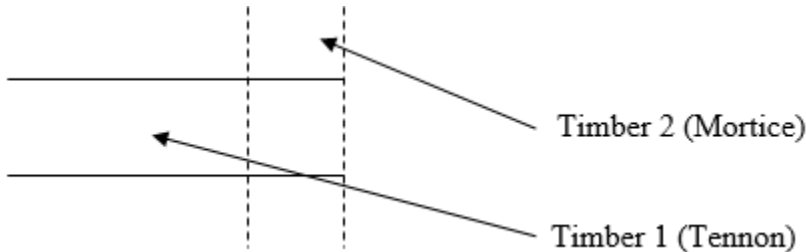


MORTICE AND TENON JOINTS

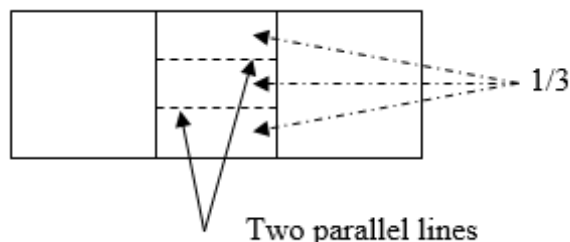
1. Take 2 pieces of timber. Take timber 1 and measure half the length and draw a square line down the middle with a combination square.



2. Take timber 2 and place on the end of timber 1 to determine the depth of the Tenon. Mark with a pencil and then square around all 4 sides. Also mark on timber 2 the width of timber 1, and then again square around all 4 sides.

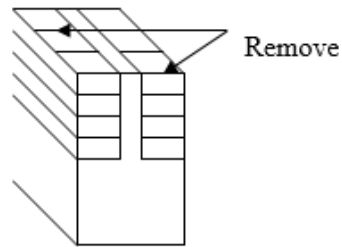


3. Using a mortice gauge (2 pins) set gap between pins to the width of the chisel. To find the centre of the depth of Timber 2 (Mortise), first by estimating, then adjust gauge accordingly, until the pins enter the same hole from top side to bottom side. Mark with a pencil along the gauge lines in between the two lines already drawn square around your timber. This represents the portion of timber you need to cut out to make your Mortise.

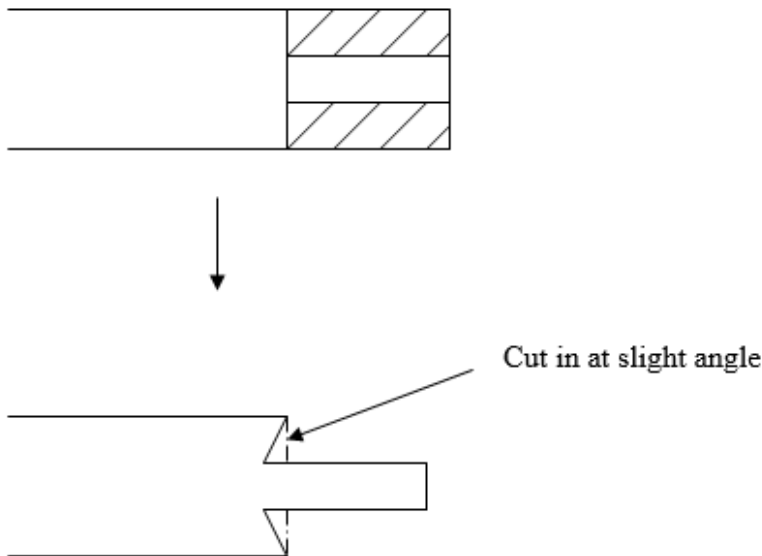


MORTICE AND TENON JOINTS

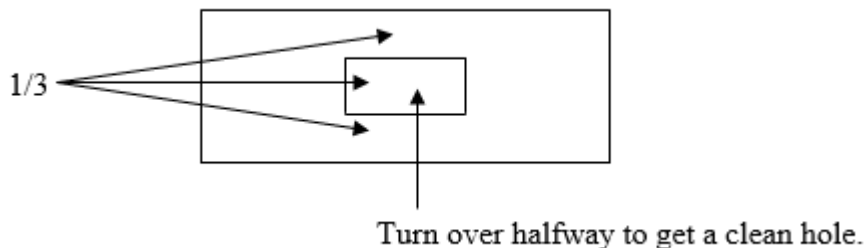
4. Using the same gauge setting for your mortice, mark the parallel lines around the end of timber 1 to mark out where the tenon will be. TIP: When you saw your tenon, place the timber in the vice at an angle and start to cut each side to start, and then turn timber vertical to finish off cuts.



5. Cut off shoulders by first scribing with a knife then cutting at a slight angle for a tight fit.

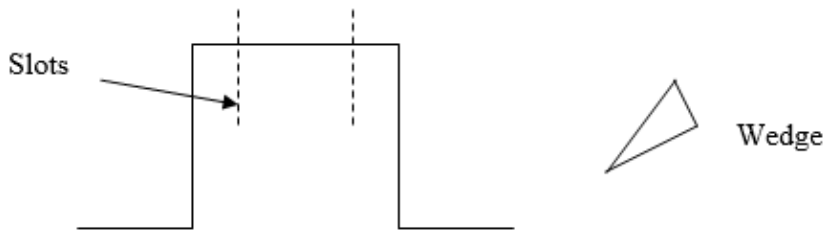


6. Chisel mortice out by cutting ends first. Then dig out half the depth and then turn over and repeat from other side. This way you get a clean hole.

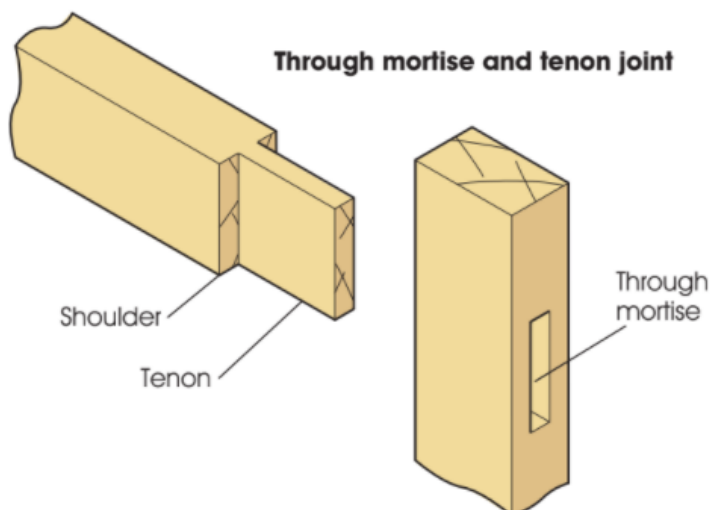
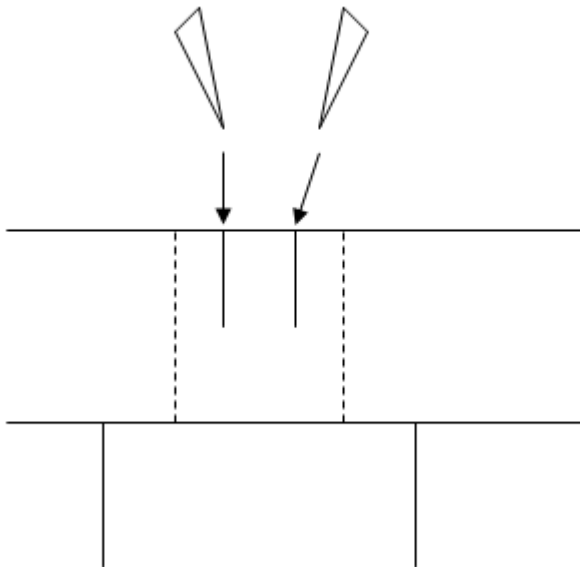


MORTICE AND TENON JOINTS

7. Cut 2 slots halfway into your tenon and also cut 2 wedges. The wedges need to be cut with the grain. These wedges will fit into your 2 slots when joint is put together



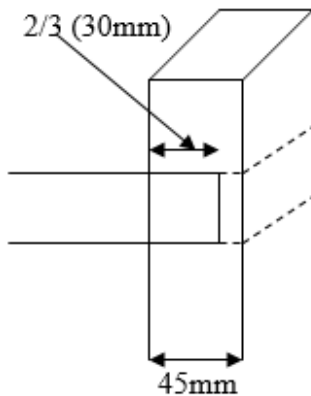
8. Fit joint together and drive in wedges to give a tight fit.



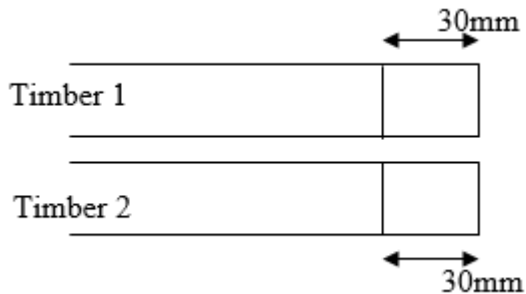
CORNER LEG JOINT



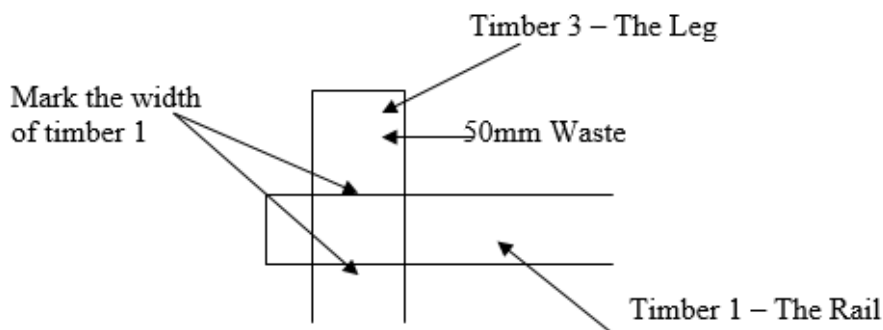
1. The side rails penetrate $\frac{2}{3}$ of the width of the leg. In this case, the leg is 45mm so the rail will penetrate in by 30mm.



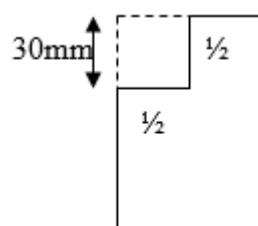
2. Take 2 pieces of timber (2 x 1). Mark 30mm from the end. Square around all 4 sides. Repeat this on timber 2.



3. Take a third piece of timber – Timber 3 (45mm x 45mm – The Leg). Mark 50mm from end. This is the waste allowance! Place timber 1 on the leg and mark the width of this timber. Square both these lines around timber 3.

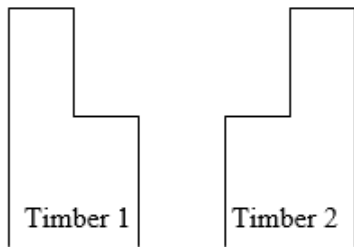


4. Using a marking gauge (1 pin) find the middle width of the narrow side of timber 1. Use this point to determine how much width you need to cut off to create your tenon.

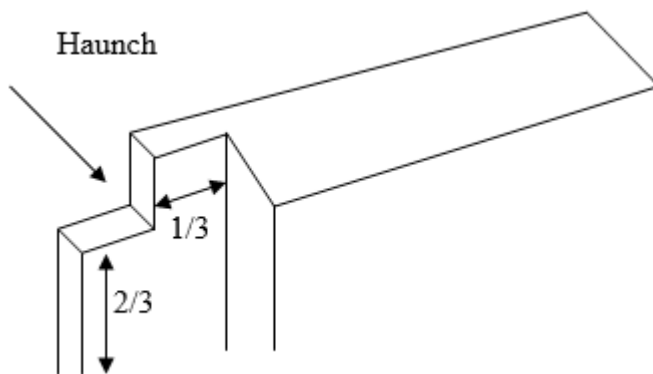


CORNER LEG JOINT

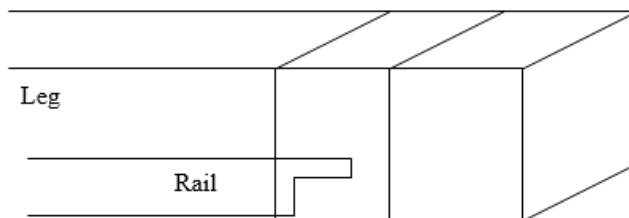
5. Cut out the tenon on Timber 1 and Timber 2.



6. Mark a haunch in your tenon. This need to be $\frac{1}{3}$ from your original 30mm line and $\frac{2}{3}$ the width of your timber.



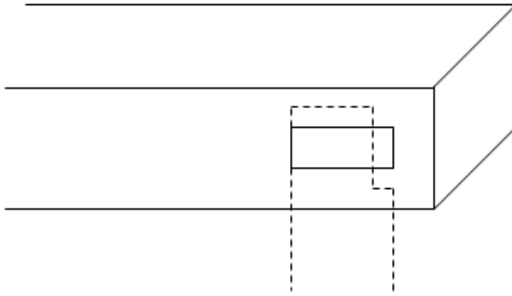
7. Place edge of timber 1, flush with side of leg (timber 3) and pencil mark to determine the location of your mortice.



8. After marking, turn tenon around and place in end on to determine the width of mortice. Join up all your lines.

CORNER LEG JOINT

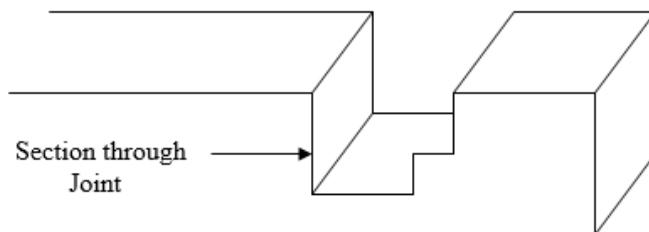
9. Place side of tenon against Timber 3 to determine width of the haunch.



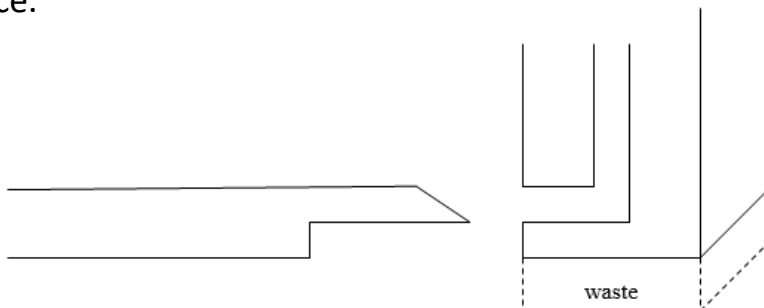
10. Chisel out mortice and check frequently with a square to check depth. Remember not to remove too much where the haunch will sit.



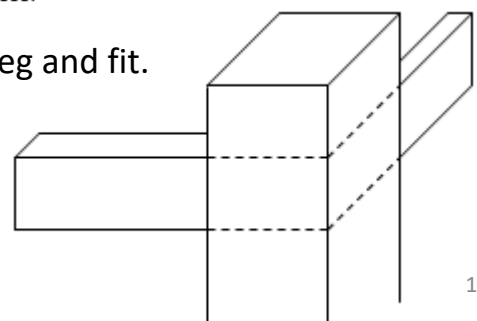
11. Chop out depth of haunch.



12. Cut a 45 Degree at end of tenon so ends mitre together when inserted into mortice.

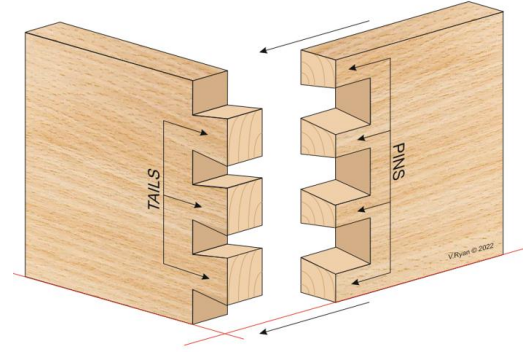
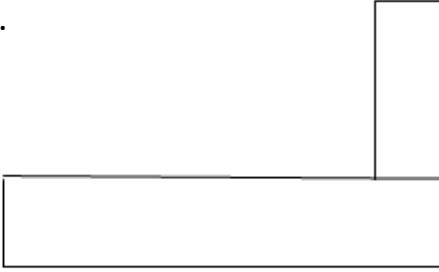


12. Repeat the above method on other corner of leg and fit.

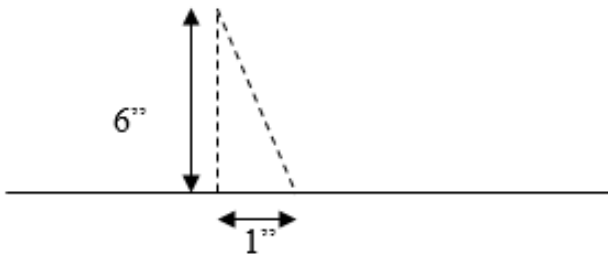


THROUGH DOVETAIL

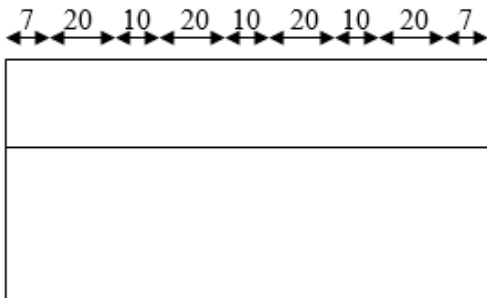
1. Cut both pieces of wood square and mark thickness of timber on the ends.



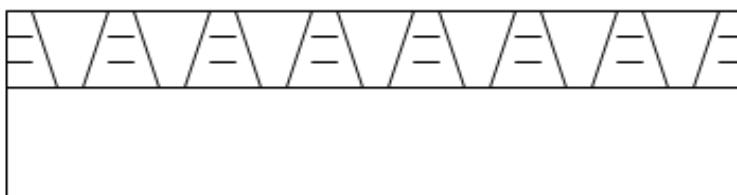
2. Set up a bevel square to a 1:6 gradient.



3. Mark edge of the first timber with 7mm pin then a 20mm dovetail this is followed by a 10mm pin then a 20mm dovetail etc. The end pins can be adjusted between 8mm and 12mm to allow for any size of wood.



4. Using 1:6 Bevel mark down each pencil point turning bevel round each time to create side cuts.

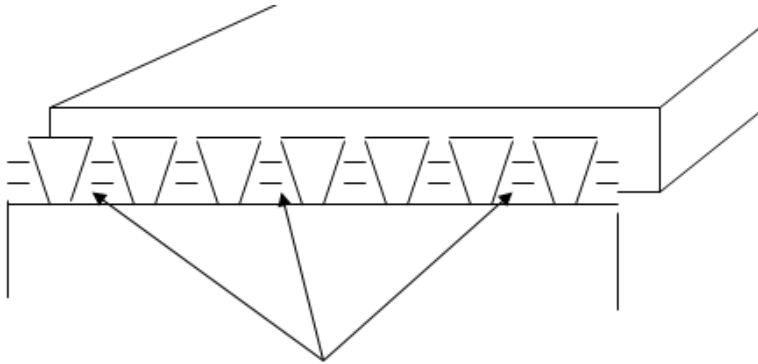


THROUGH DOVETAIL

5. Square across the top to complete marking.



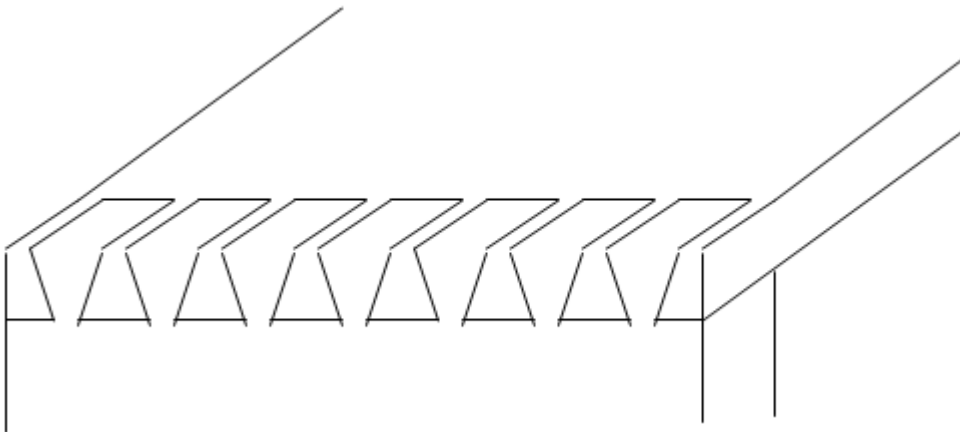
7. Mark gaps on end of other timber with a pencil and square them down on side



Pencil through gaps onto other timber

8. Saw out dovetails then chisel away sides keeping to the waste side of line.

9. Using 1:6 Bevel mark down each pencil point turning bevel round each time to create side cuts.



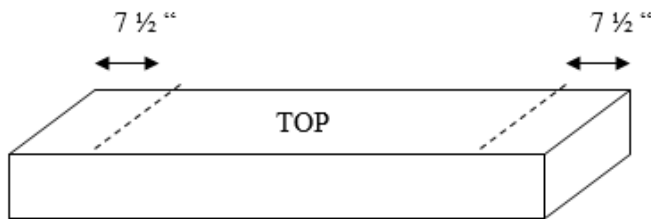
SAWING STOOL



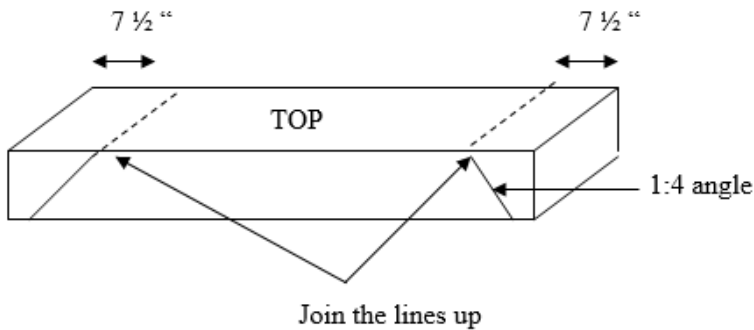
1. Cut a 3-foot length of 4x2 timber.



2. Measure 7 ½ inches (187 mm) from each end and square a line across the top.

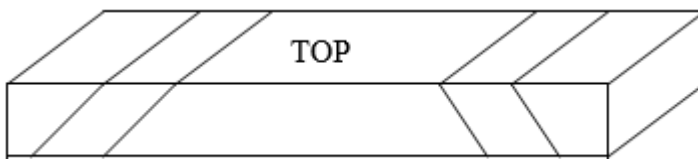


3. Set up the bevel to 1:4 and mark sides round from the 7 ½ inch line.



4. Cut 4 lengths of 2x2 (50mm) square timber 26 inches long for the legs.

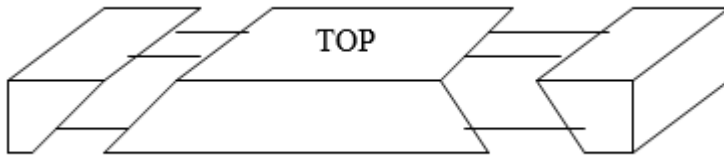
5. Using one of the timbers as a gauge mark the thickness from the existing lines inwards and repeat the squaring round parallel with the previous marks.



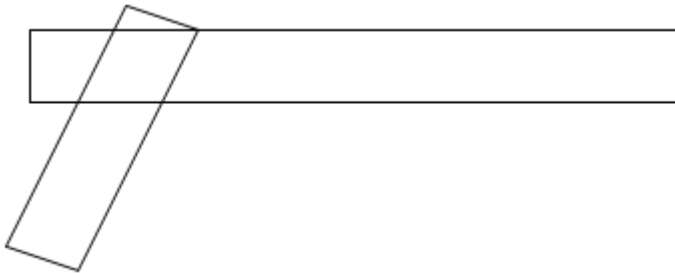
SAWING STOOL

6. Set up the marking gauge to half the width of the 2x2 (1 inch) (25mm) and scribe the pin between the pencil lines.

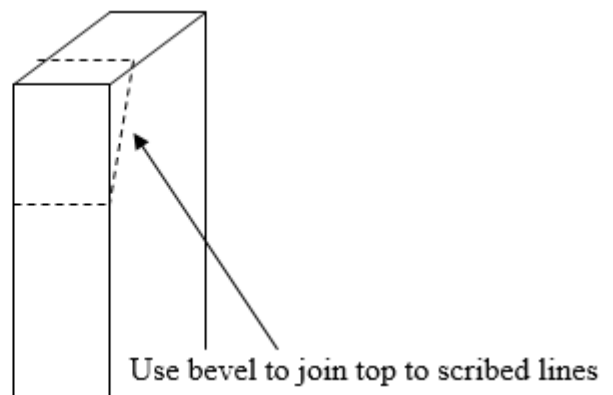
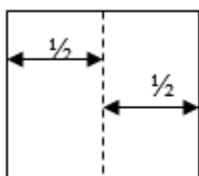
7. Saw out the joints on the waste of the line for a tight fit and chisel the block clear.



8. Place a leg in one hole with inner edge against top board and mark the upside-down lines for cutting.



9. Scribe the marking gauge on top of leg then join the scribed line to the marked lines shown in number 8.

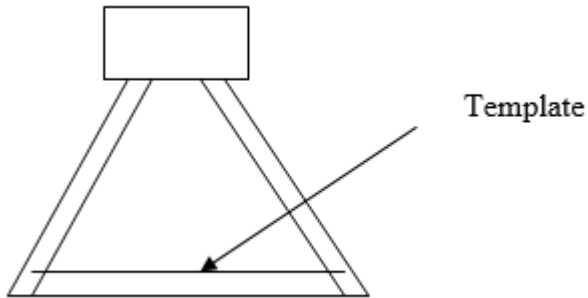


10. Cut out the section, fit and nail joint. Repeat with the other 4 legs.

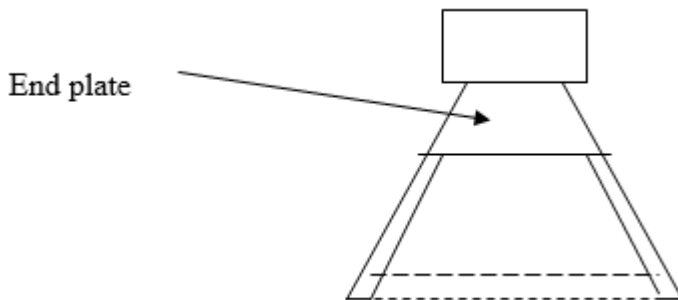


SAWING STOOL

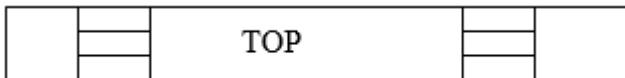
11. Make template for bottom of stool to keep legs same width.



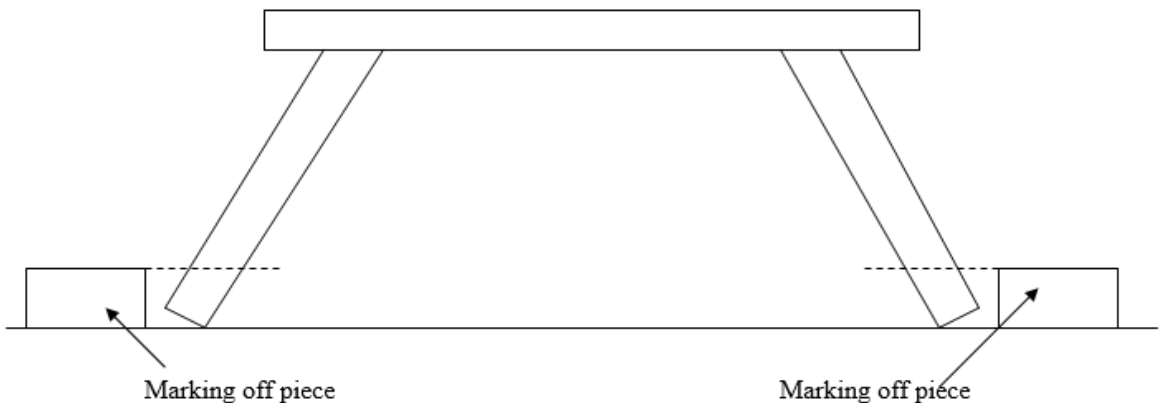
12. Cut out triangular end plates and nail to legs.



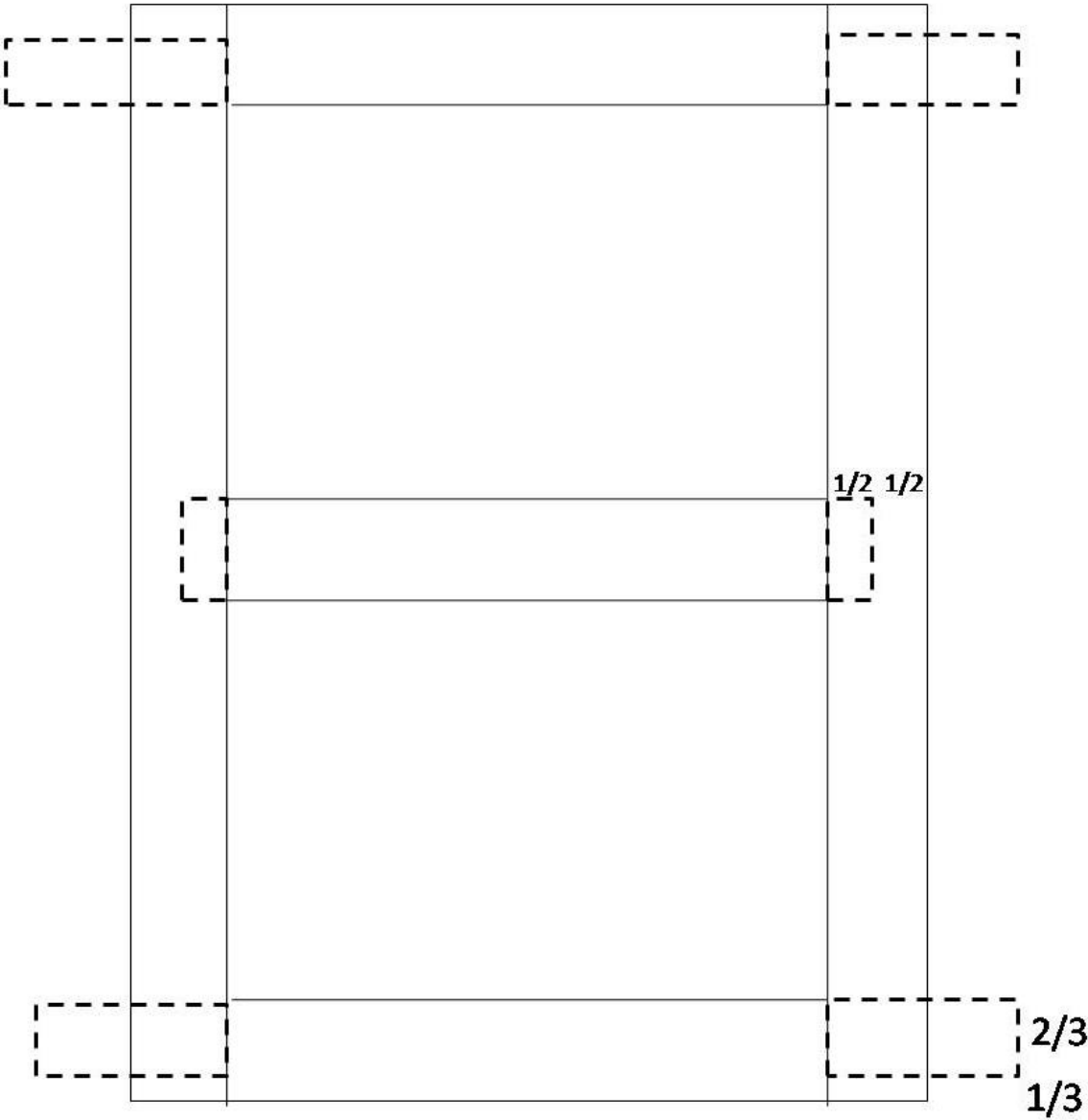
13. Cut off protruding top.



14. Pack any legs that are rocking the stool and cut them square by placing wood on the floor parallel with legs to retain flat position.



DOOR SIZE



Width

Height

2'

2'3"

2'6"

2'9"

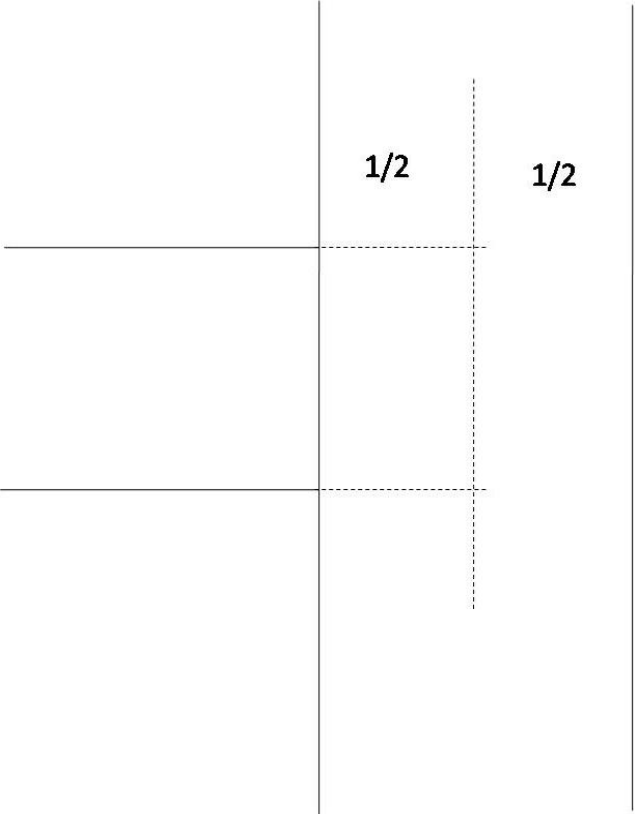
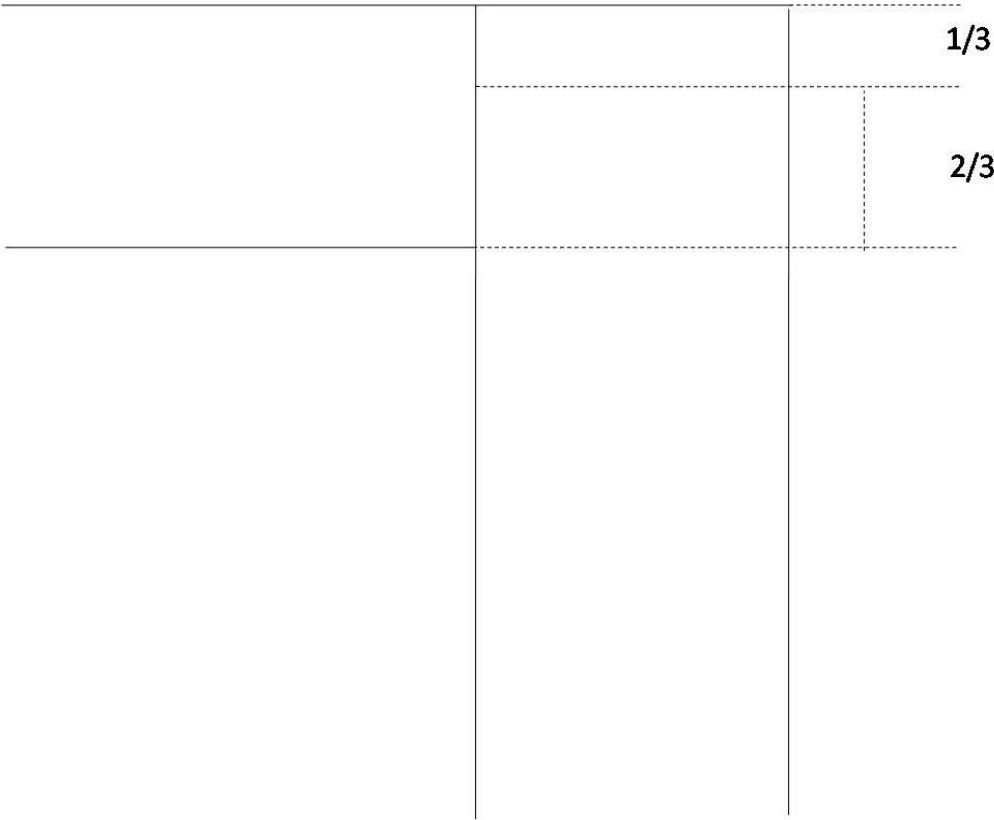
3'

3'2"

6'6" (78")

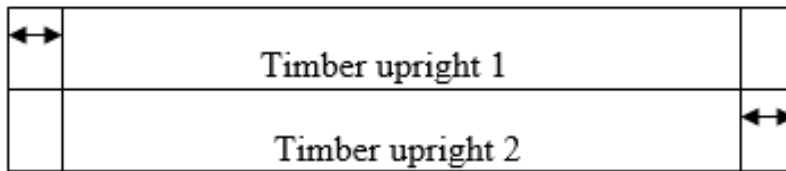
80"

DOOR JOINTS

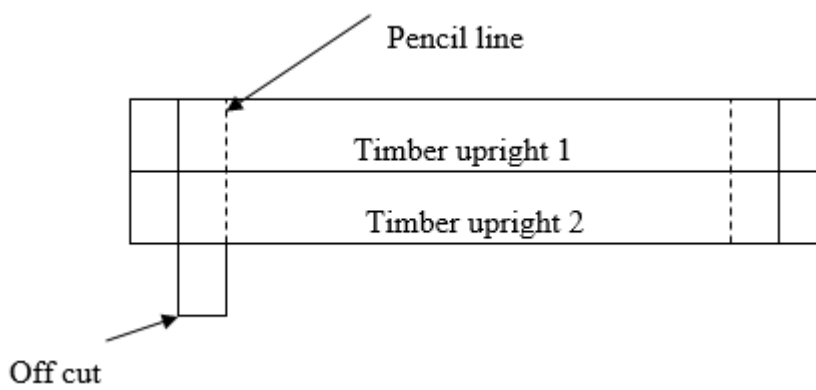


MAKING A TWO PANEL DOOR

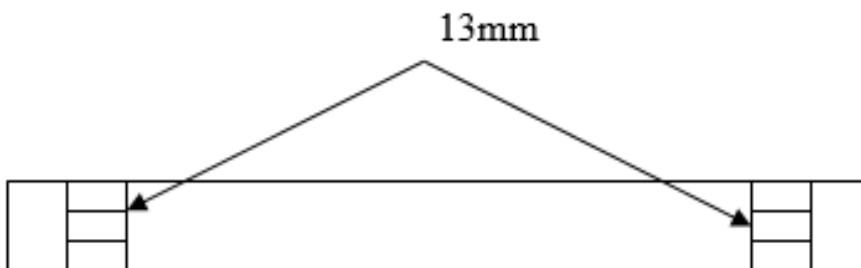
1. Cut two lengths 6'10" long and square round lines two inches in from each end.



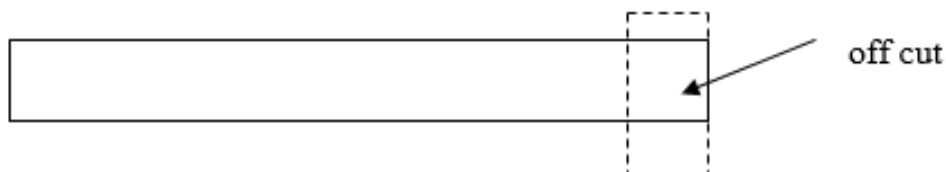
2. Get off cut and mark width of joint on inside of both pieces then square around all four sides.



3. Set up mortice gauge for a 13 mm chisel and scribe lines between the dimensions of the joint. On the inside allow for a haunch.

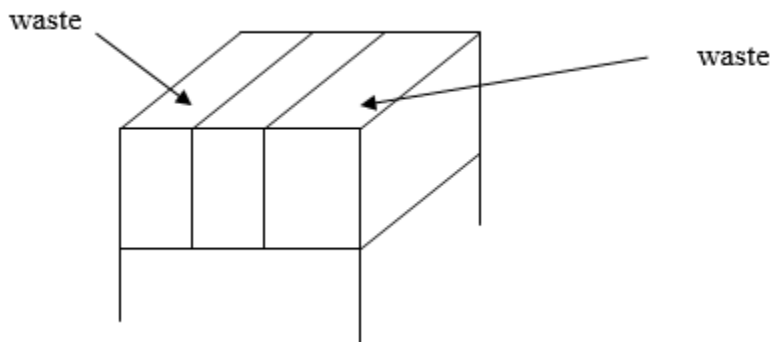


4. Cut 2 cross rails 30 inches long and mark widths from end with off cut for joint sizes.

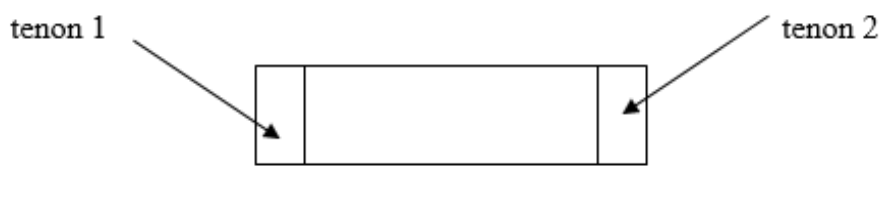


MAKING A TWO PANEL DOOR

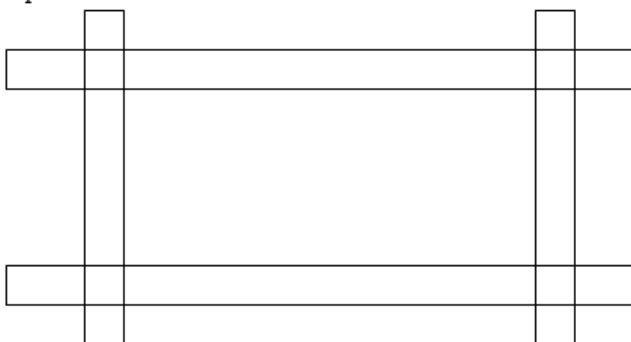
5. Using gauge mark round outside of joint to make cut lines for tenon.



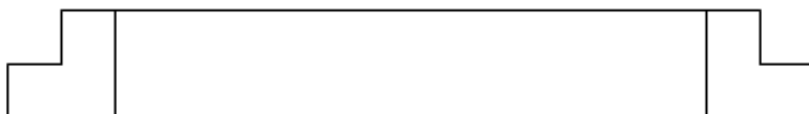
6. Saw out 4 tenons, two on each length.



7. Lay out uprights face side up face edge inwards on all 4 bits of timber then sketch position of haunches.

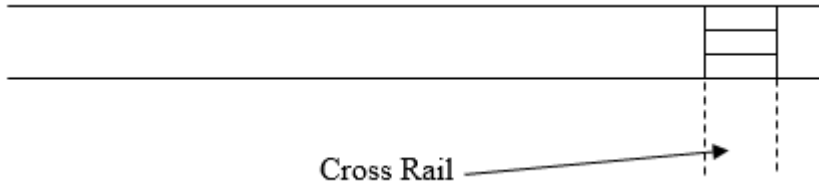


8. Measure haunches $\frac{1}{3}$ from inside and $\frac{2}{3}$ from bottom then cut them off

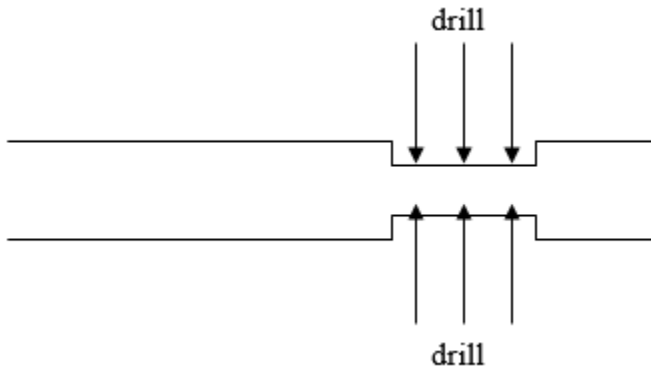


MAKING A TWO PANEL DOOR

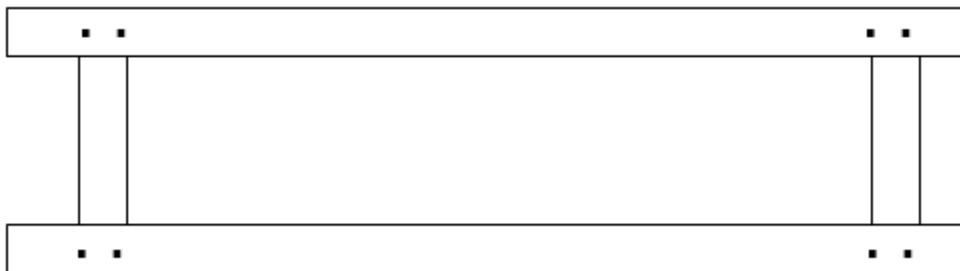
9. Place tenon over upright mortise line and mark position of haunch.



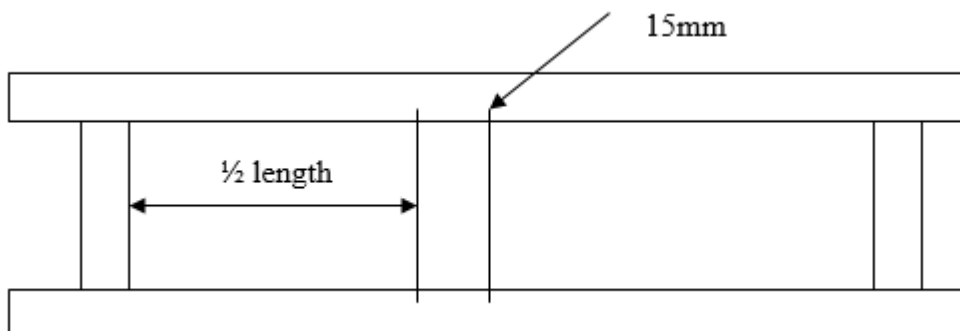
10. Cut small slot in mortice (upright) then drill from both sides and finally cut slot clear with a chisel.



11. Pair the joints to fit, then assemble frame.

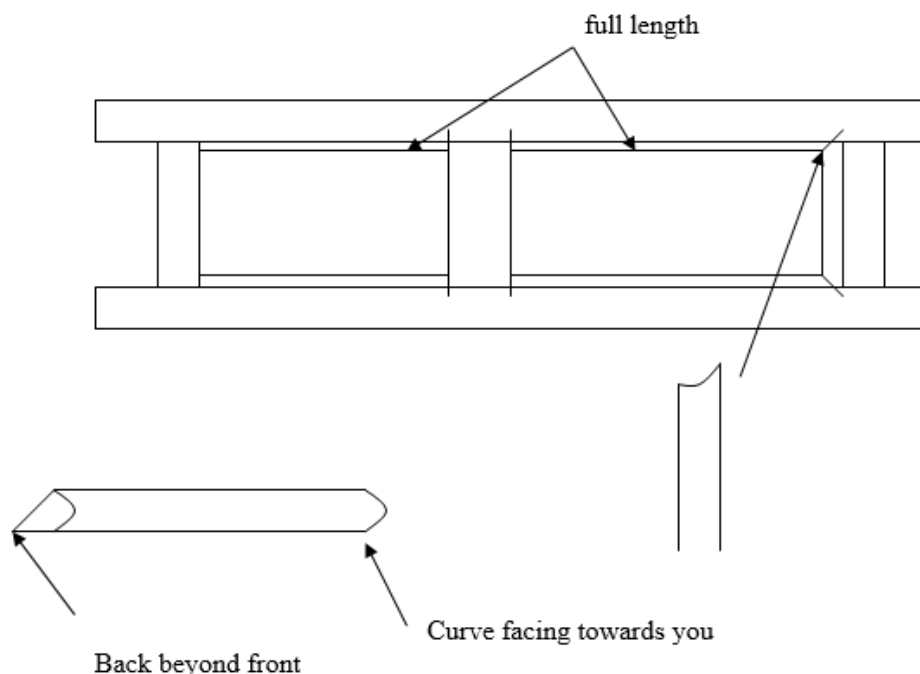


12. Mark out centre rail using an off cut as a template, and then cut stopped mortice and tenon to fit centre rail.



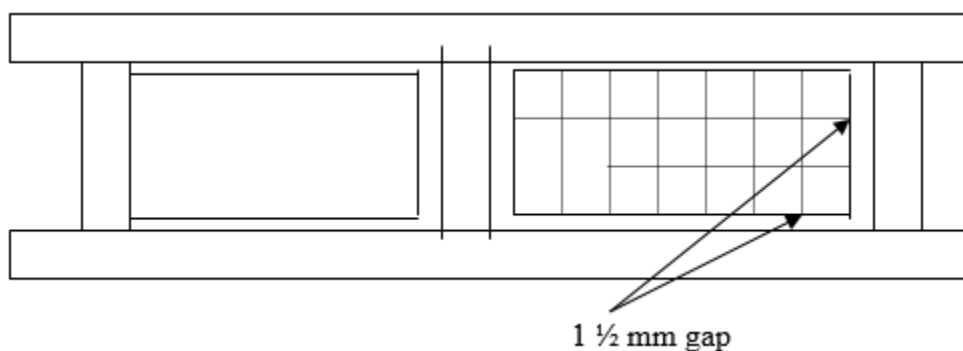
MAKING A TWO PANEL DOOR

13. Nail longer lengths of quadrant beading which have been cut to full length of upright panel. On shorter lengths cut the beading at 45 degrees with the back poking out further than front.



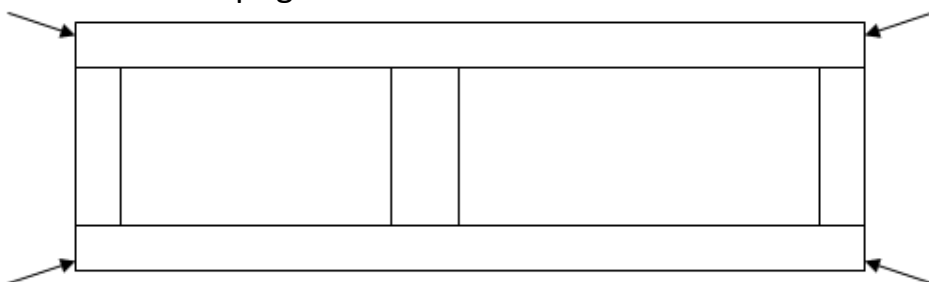
14. Back cut with coping saw around curve to scribe in then nail.

15. Turn over door and cut a panel 3mm shorter than opening in both directions. Position the panel.



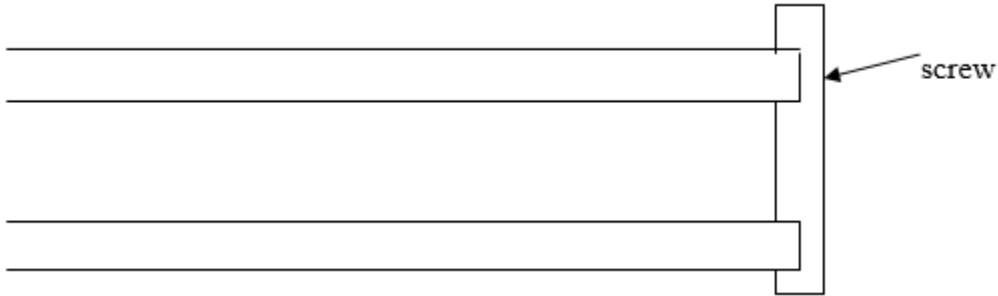
16. Secure the panel with quadrant on reverse side of door but mitre only this time (first cut of scribe)

17. Saw off waste on ends of the uprights.

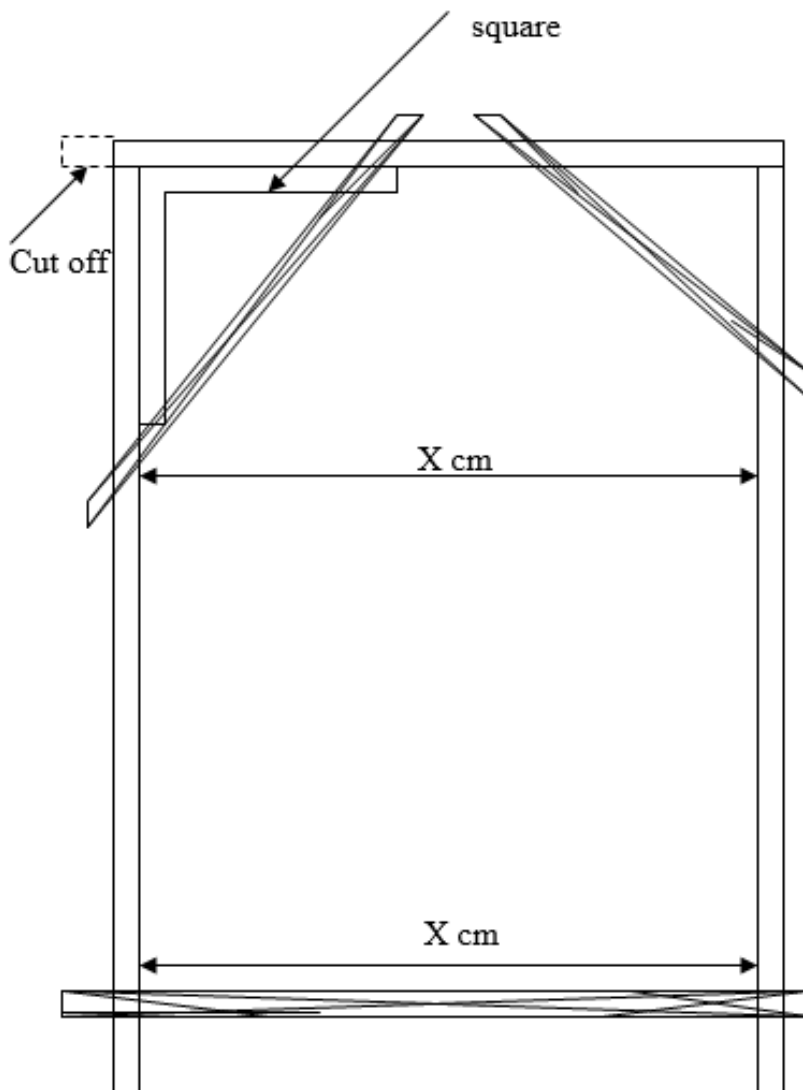


MAKING THE FRAME

1. Using a kit, fix upright ends into halved rebates of top rail then screw

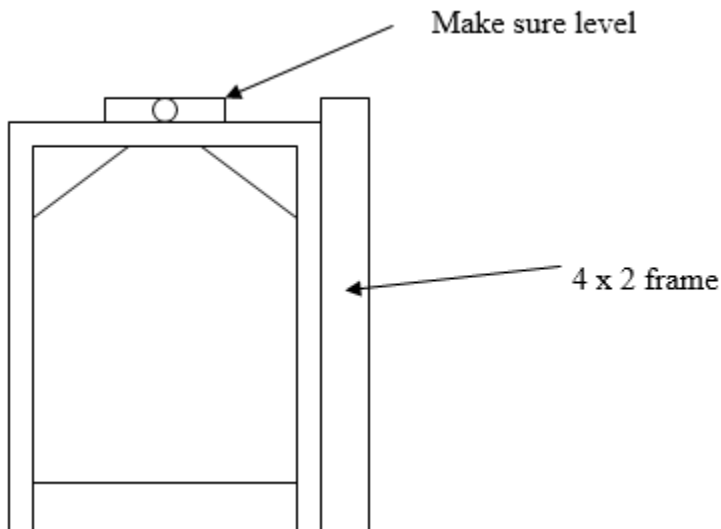


2. Using an internal square make sure the corners are square then hold in place by nailing two diagonal straps in place. This ensures the corners stay square. Also put a horizontal strip across the bottom of frame ensuring the width is the same as the top of the door. Then cut off overhangs.

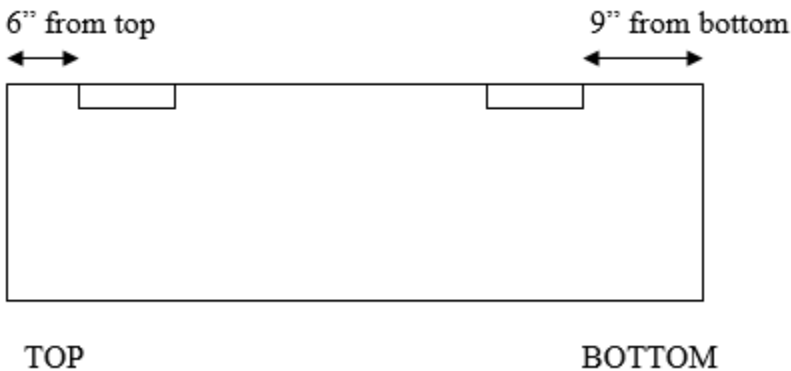


FIXING THE FRAME INTO STUD WALLS

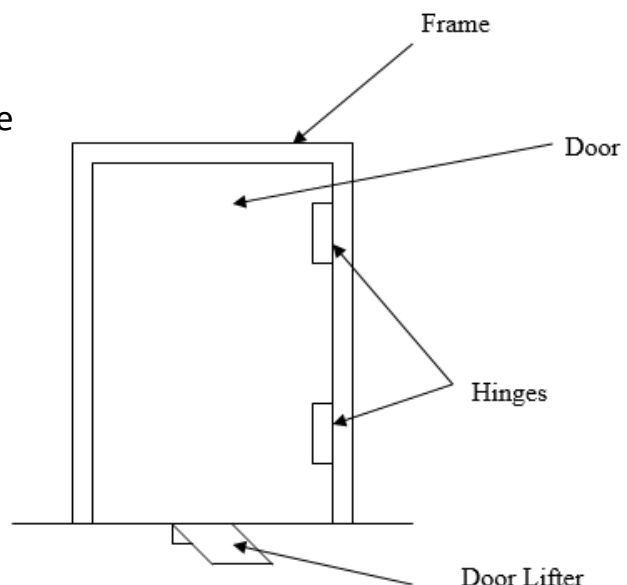
1. Fix one side of the frame to a piece of 4 x 2 of stud wall allowing thickness of plasterboard between frame and 4 x 2 timber
2. Make sure frame is level at the top.



3. Put the hinges on the door

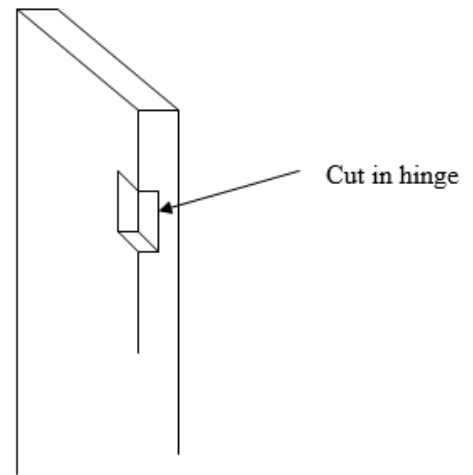


4. Hang the door in the frame. Put the hinges in to give distance. Raise the door with a door lifter then mark position of hinges on the frame.

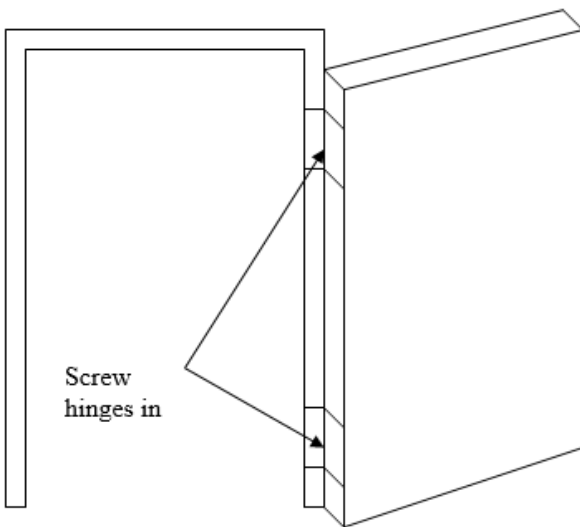


FIXING THE FRAME INTO STUD WALLS

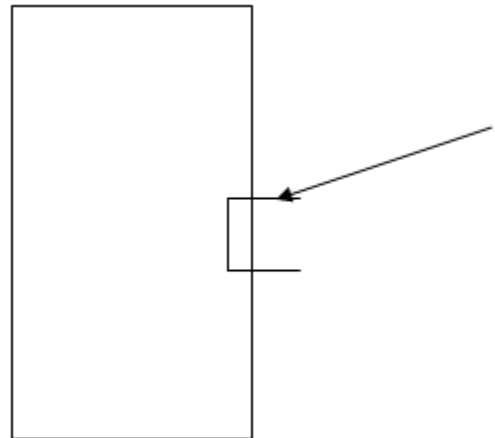
5. Mark round the hinge line and chisel out the rebate for the hinge in the frame.



6. Fit in door and screw the hinge in



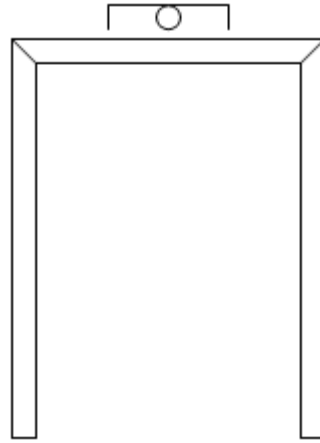
7. Fit lock to door. Mark out lock then drill hole. Place lock in hole. Mark around plate then chisel out timber so plate sits flush in the timber frame.



8. Position the lock to cut frame hole. To get lateral position of the lock, measure front against a square.

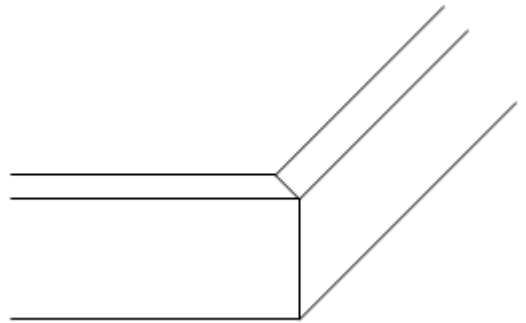
ARCHITRAVE

1. Make sure frame is level at top.
2. Cut a 45-degree mitre on the corners.
3. Use nails to attach the architrave.



SKIRTING

1. Cut external joints with a mitre saw at 45 degrees.
2. For internal cuts, cut a 45-degree internal mitre.
3. Make the second cut with a coping saw cutting back following the scribed line.

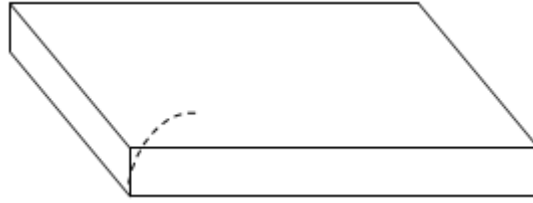


SCARFING TIMBER

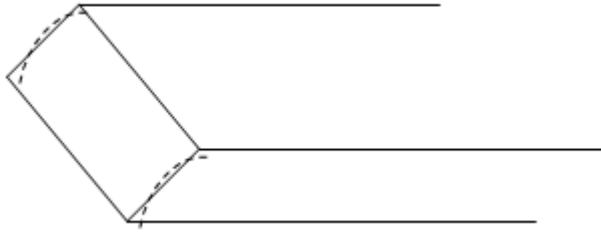
1. Cut out a boat shaped replacement piece of timber.
2. Use this as a template to draw around the area that needs repair.
3. Cut out the boat shaped into the timber to be repair and then using glue, wedge the replacement into the hole.
3. Once the glue is dry you can plane off excess timber to leave a smooth finish.

FASHIONING A CURVE ON WOOD

1. Using a round object like a cup or can, mark a curve on the edge of a piece of timber.



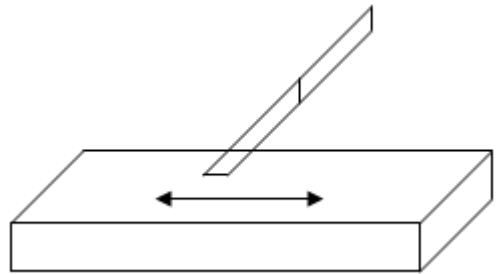
2. Plane corners tangent to corners



3. Repeat until as much of the timber is removed to the required curve. Sand around for a perfectly smooth curve.

SHARPENING CHISELS

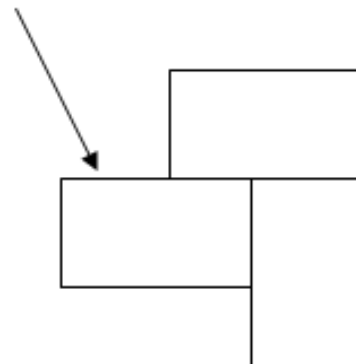
Using a sharpening stone keep chisel flat and work backwards and forwards to create a sharp edge. Use 3 in 1 oil to oil the stone.



STUD PARTITIONING

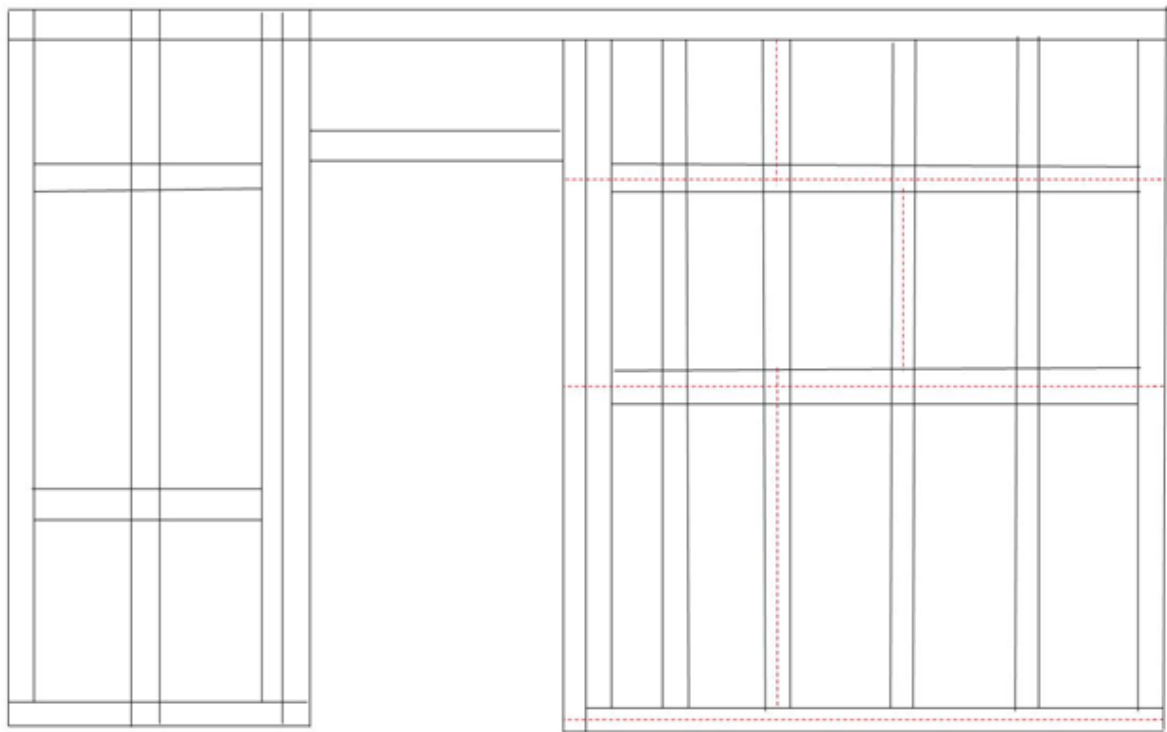
For plasterboard to fix to.

When building a stud partition, the uprights and noggins need to be 400mm from each centre apart. Always work from bottom edge. When you come to a corner you must have 3 uprights so that plaster board can be fixed on both sides.



PLASTERBOARD

- 900 – 1800 mm = 300 c/c or 450 c/c
 - 1200 – 2400 mm = 300 c/c or 400 c/c
- Styles
- 900 – 1800 mm = 900 c/c
 - 1200 – 2400 mm = 600 c/c
- Noggings

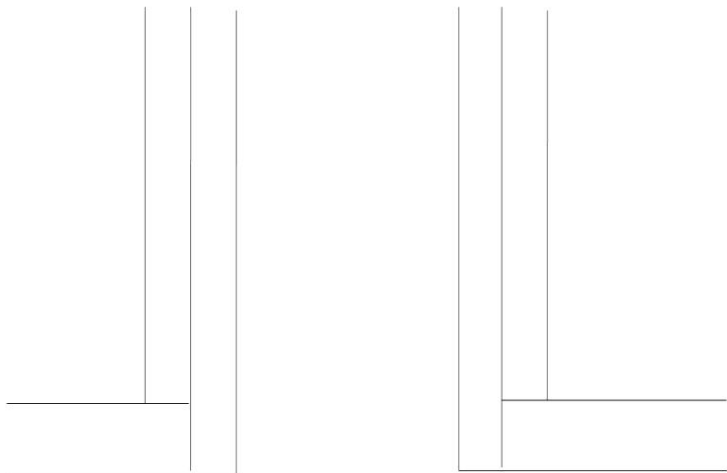


Door Opening

Width = Door + 3"

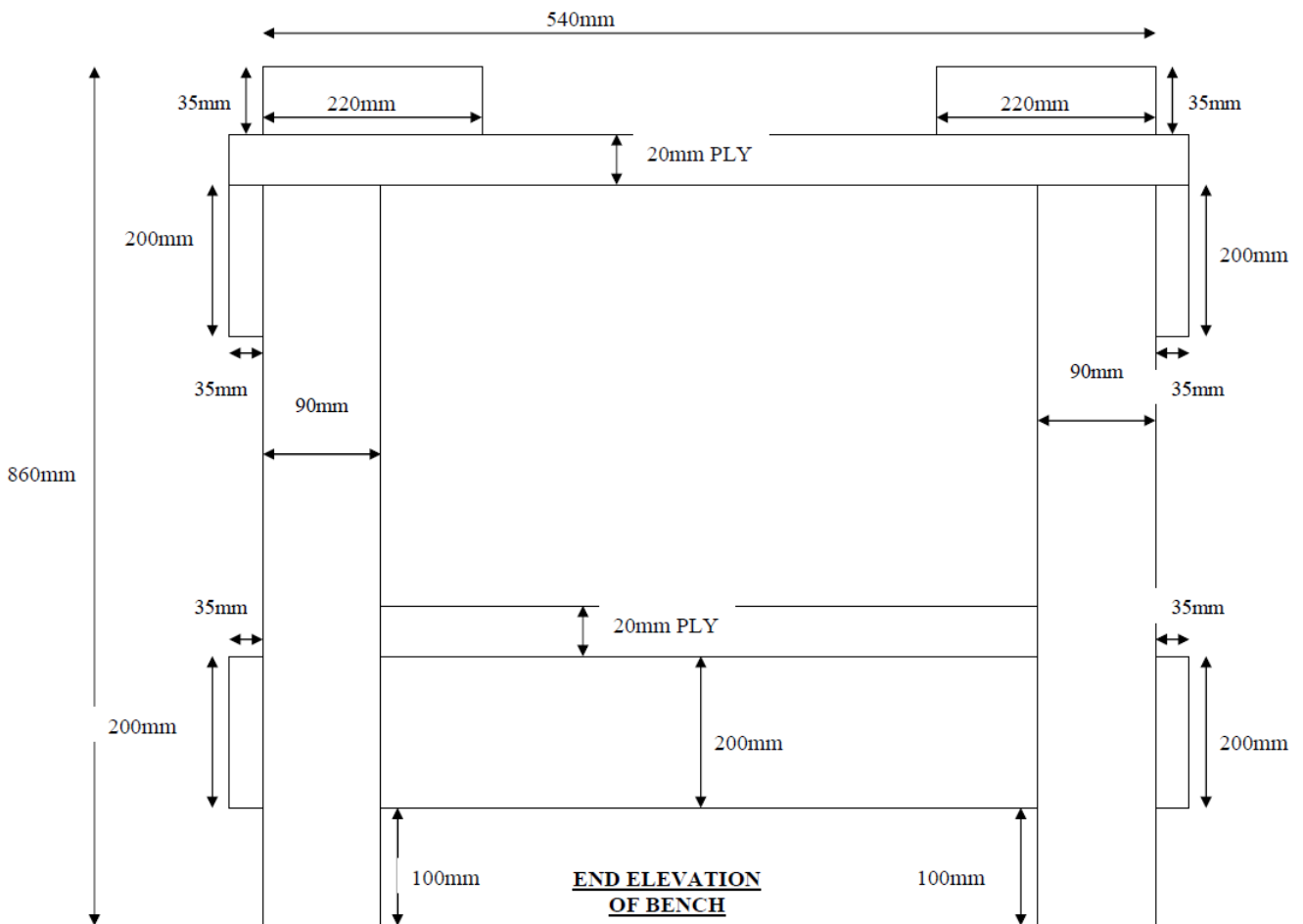
Height = Door + 2½"

STYLES AROUND DOORS



WORKBENCH PLANS

These are plans of the workbenches used in the carpentry workshop, in case you want to adapt these and try building one at home.



WORKBENCH PLANS

