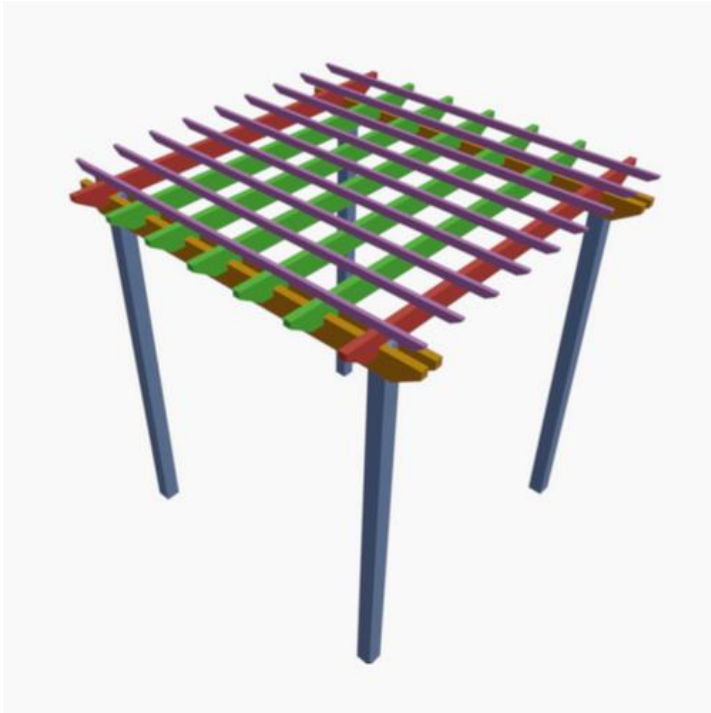


# PERGOLA WOODWORK PLANS



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# Project information

## DETAILS

These plans will help you build a structurally simple yet effective Pergola that will provide dappled shade in your garden and support even the heaviest of climber plants.

- Digital woodwork plan, downloadable immediately after purchase
- Detailed instructions, illustrated at every stage
- Chunky design specifically created to support heavy weight
- Traditional design that includes purlins
- Minimal power tool requirement
- Note: you will most likely need a helper as the chunky design makes it heavy

## ADDITIONAL INFORMATION

### DIMENSIONS

2.4 x 2.4m from edge to edge of longest top rafter.

2 x 1.95m from outer edge to outer edge of support posts.

### PLAN COMPLEXITY

Easy: there are not many parts to the build and everything is fixed using visible screws/ bolts.

### PHYSICAL DIFFICULTY

Medium-hard: the build itself is not complicated but the wood is heavy which makes this a physically hard job. A second person would be helpful, especially when lifting and securing the support posts into the ground.

# How to use this PDF plan

## GENERAL

Read these instructions from start to finish before starting to make sure everything makes sense.

Note the 'tip' boxes on some pages. these give helpful insights on how to make a specific step easier.

The instructions are written for absolute beginners so if you are an experienced DIYer, please adjust according to your preferences.

The instructions are written for those who have minimal power tools available. If you have power tools and would prefer to use them rather than using a hand saw, please do so.

## LINKS

On the following page you will find the table of contents. These are links to each part of the project. Click on them to be taken to the specified page. Each project page also has a 'Back to contents' link in the bottom left corner to return to the contents page to make navigation easier.



This symbol on the 'Materials required' pages is a link to the said material. These are suggestions on what is suitable to complete the build but you can of course buy different materials provided they meet the size requirements. Please note that the links used here are affiliate links which means that I may earn a small commission if you purchase these products to use in your project. Please see the full affiliate disclosure **here** for more information.

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# Materials required: wood



POSTS x 4

L:270cm W:10cm T:10cm



SIDE BEAMS x 4

L:240cm W:14.5cm T:4.5cm



SINGLE SLOTTED RAFTERS x 2

L:240cm W:12cm T:4.5cm



DOUBLE SLOTTED RAFTERS x 5

L:240cm W:12cm T:4.5cm



PURLINS x 9

L:240cm W:5cm T:2.5cm



# Materials required: fixings



GROUND POST FIXING x 4

N/A

The posts can either be cemented into the ground or fixed in place with post spikes/ support base



COACH BOLTS & NUTS x 8

Min 150mm

For fixing side beams to post



WASHERS x 8

Size for bolts bought

These washers are only required if your selected bolts don't already come with some (bolt link above includes washers)



SCREWS x 28

Min 100mm

For fixing rafters to side beams



SCREWS x 27

Min 70mm

For fixing purlins to rafters

# Tools required

## HAND TOOLS

### SAW

To cut all the wood down to the required size

### MEASURING TAPE

For measuring out the cuts and spacing of the pergola components

### RULER

For drawing cut guide lines

### PEN/ PENCIL

For drawing cut guide lines and marking screw placements

### LEVEL

For fixing the pergola into the ground

### HACKSAW

To cut down coach bolts that are used to attach side beams to posts (only required if your coach bolts are too long)

### WOOD CHISEL

To chisel out the slots in rafters

### HAMMER

To chisel out the slots in rafters

### SHOVEL

To dig post holes, if posts are being buried

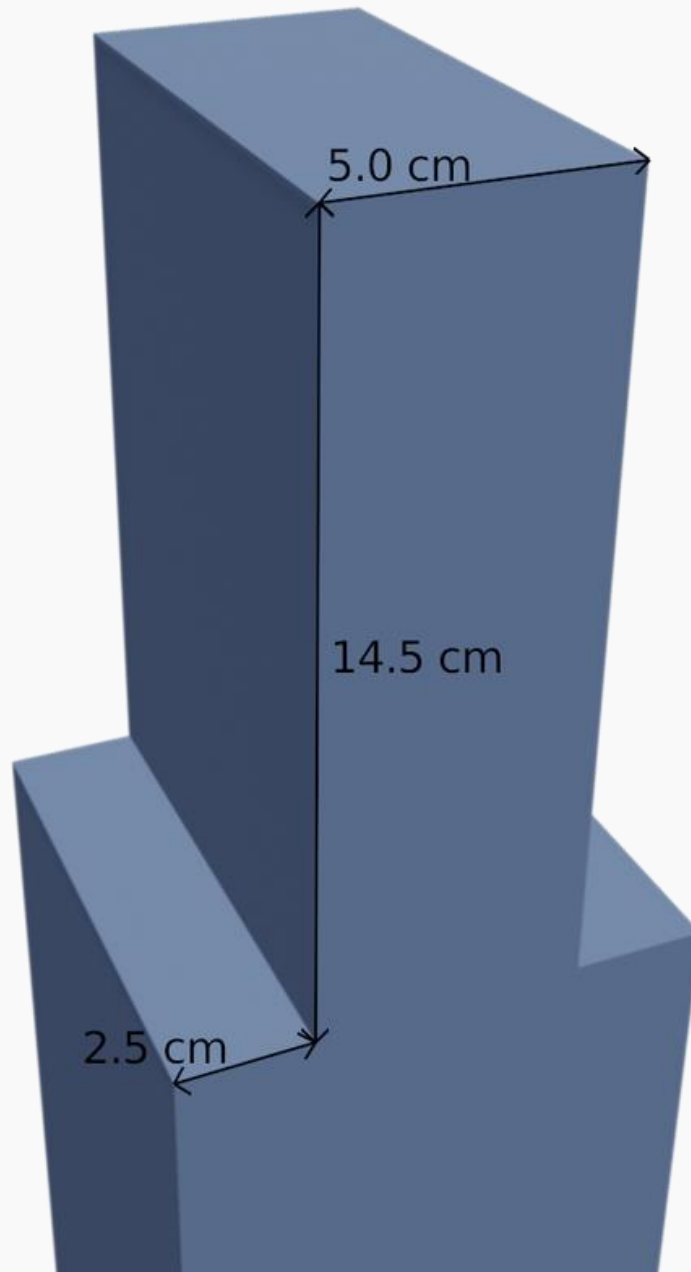
## ELECTRIC

### DRILL WITH BITS

You will need bits for drilling the bolt hole and fixing your selected screws. Pre-drilling of screw holes is recommended for which you would need a suitable drill bit



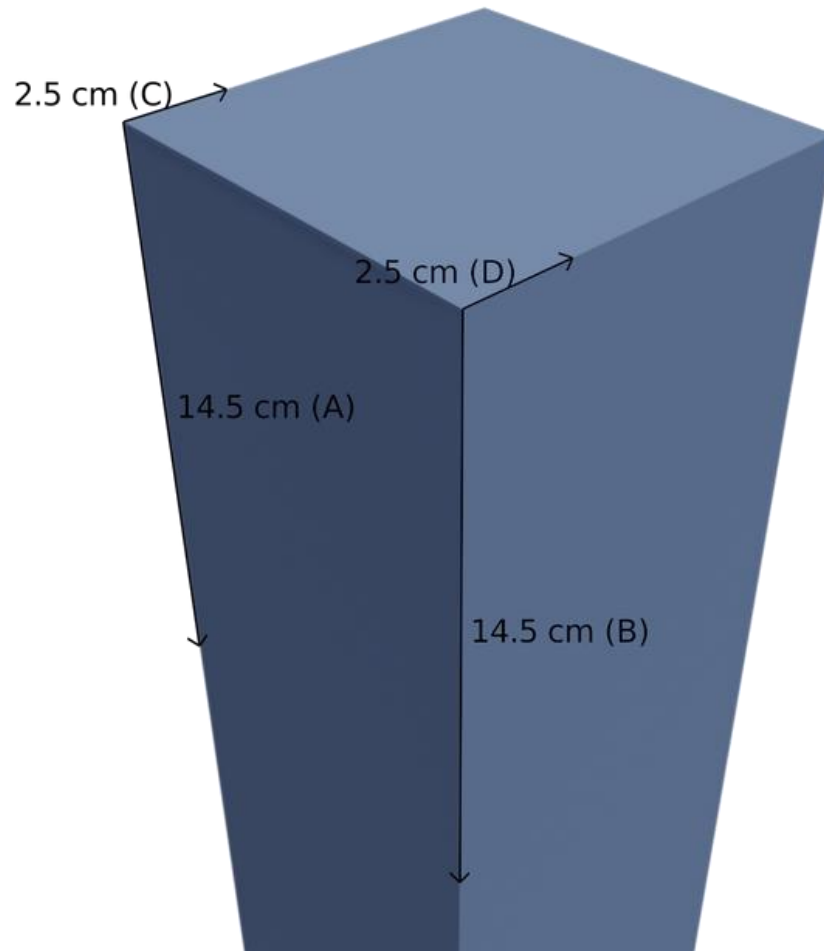
# Cutting the posts for fitting side beams



Repeat on all 4 posts

# 1

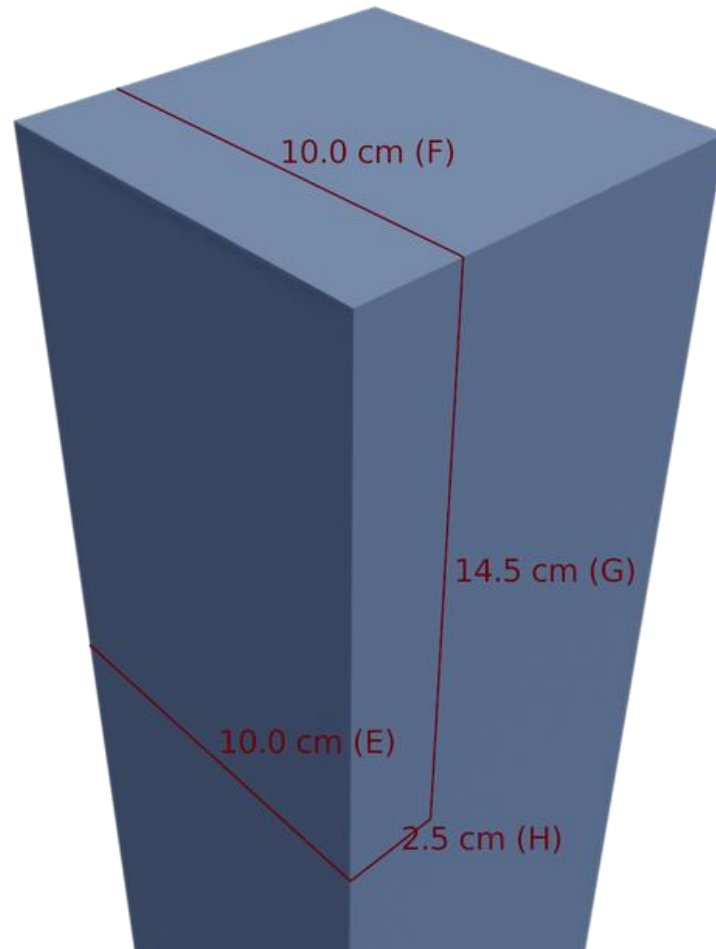
## Measuring



- Make sure that your posts are the length you require, if not cut them down first
- Measure 14.5cm from two corners down the length of the post, marking each point (A & B)
- Measure 2.5cm across the top of your post towards the opposite side, starting from the same two corners, and mark those points too (C & D)

# 2

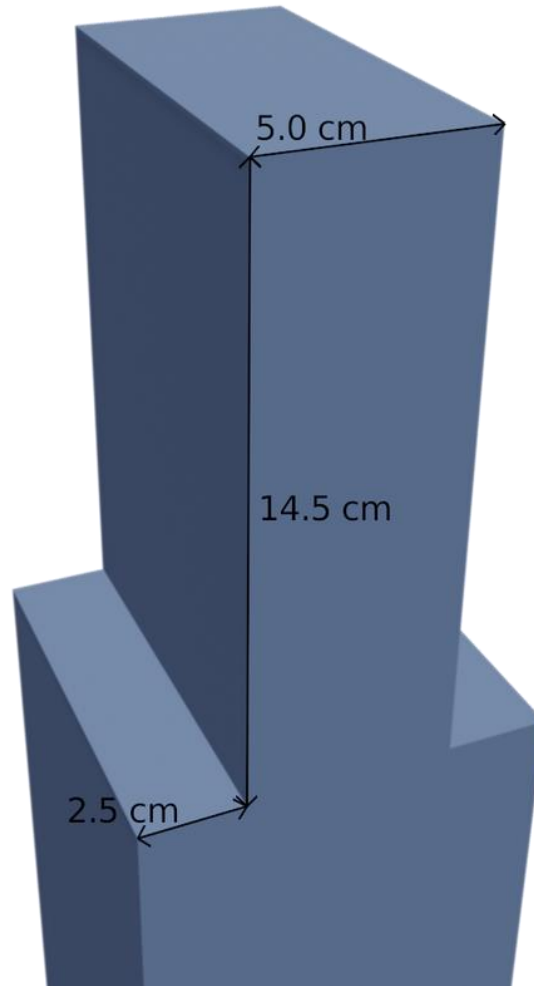
## Drawing



- Connect points A & B with a line (E) and points C & D with another line (F)
- Starting one end of line F, continue the line down the length of the post for 14.5cm
- Ensure that this line remains 2.5 cm away from the post edge (G)
- Join the end of this line to the end of line E (H)
- Repeat on the back of the post

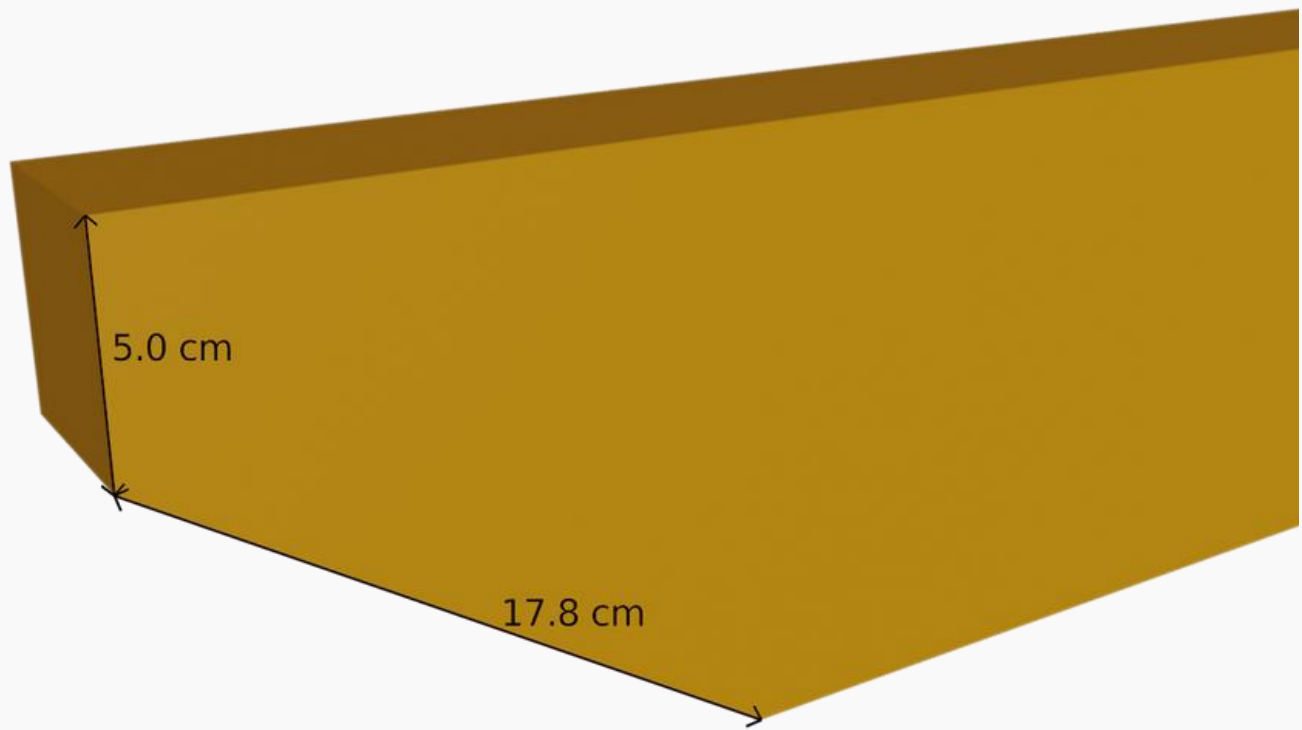
# 3

## Cutting



- Repeat the whole process on the opposite side of the post
- Using your saw cut starting at line F and follow it all the way down the length of the post, along line G, to the end of line G
- Pull the saw out and make another cut starting at line E
- Follow the cut along line H to meet the end of the first cut
- Remove the resulting block of wood and repeat on the opposite side of the beam

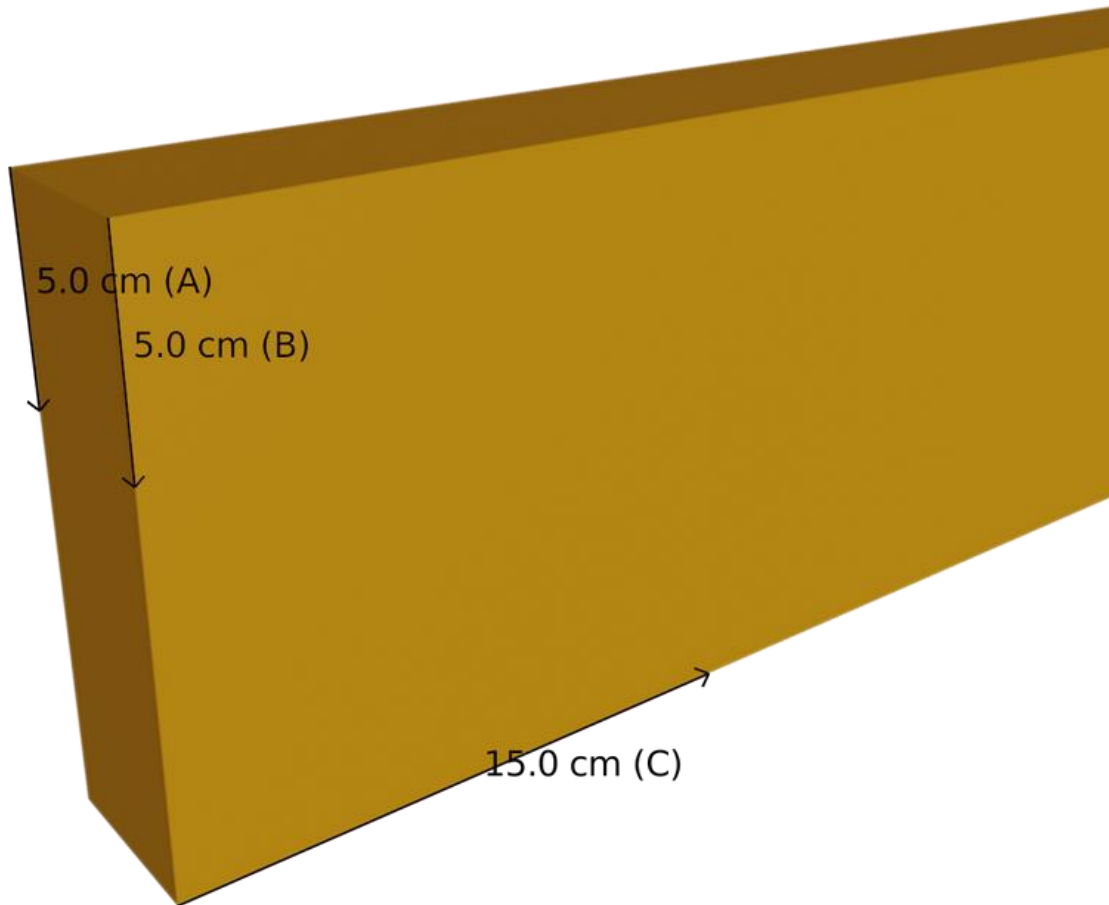
# Cutting the side beams



Repeat on all 4 beams

# 1

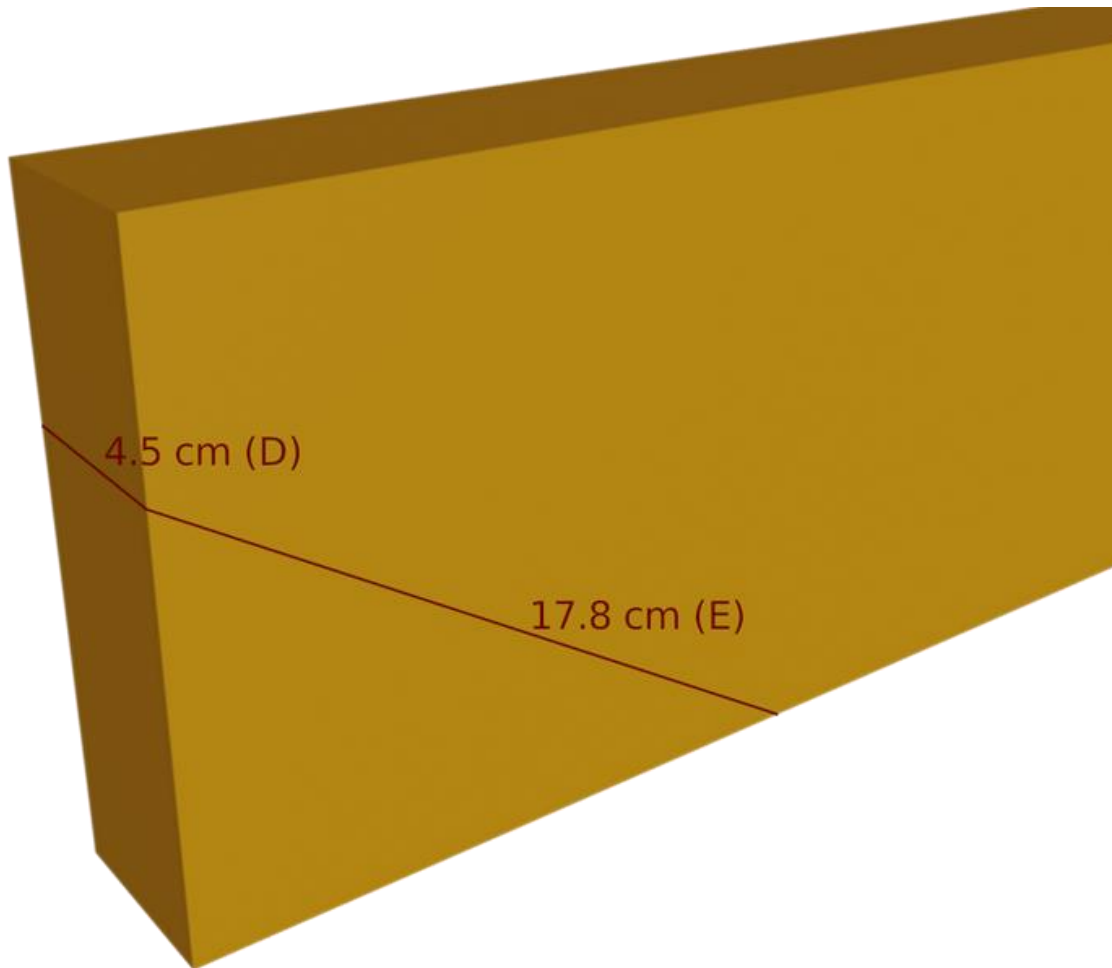
## Measuring



- Lay the beam horizontally
- Measure 5cm from the top two corners down the width of the beam and make a marking at each point (A & B)
- Measure 15cm from the bottom corner down the length of the beam, marking that point too (C)

# 2

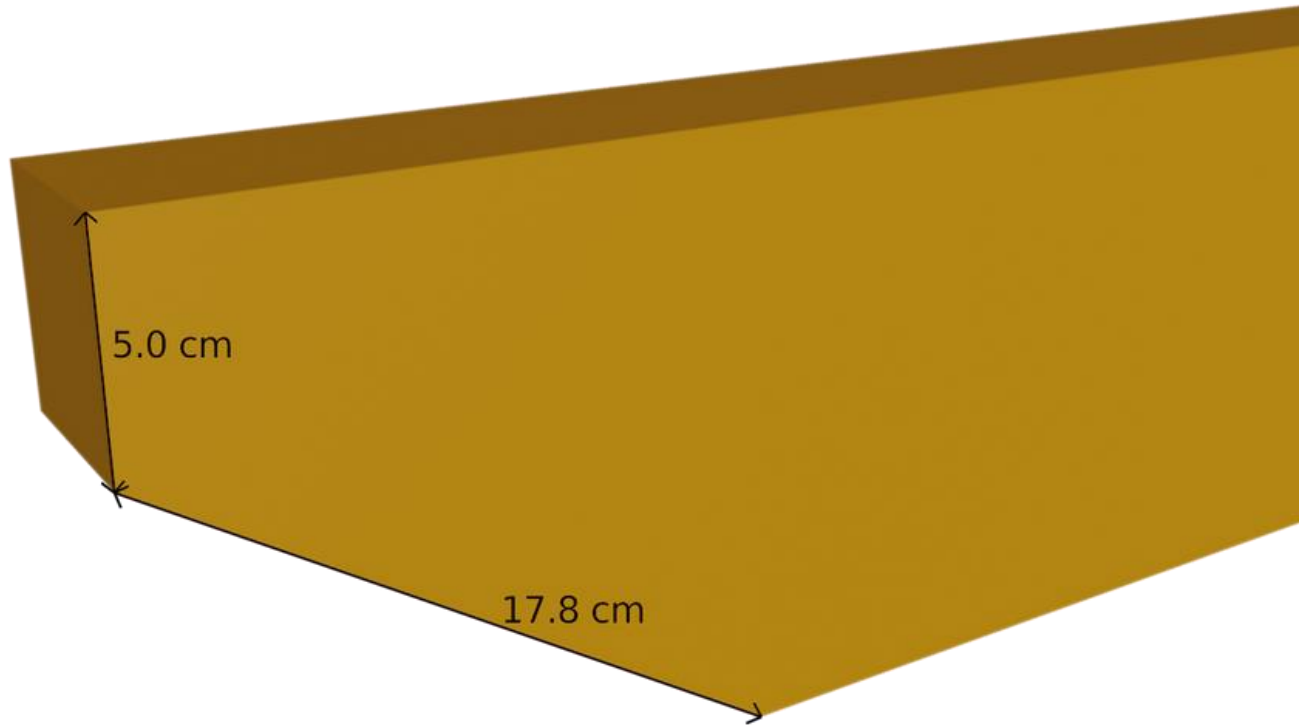
## Drawing



- Connect points A & B with a line (D)
- Connect the end of line D to point C
- You should now have a 17.8cm line running across your beam (E)

# 3

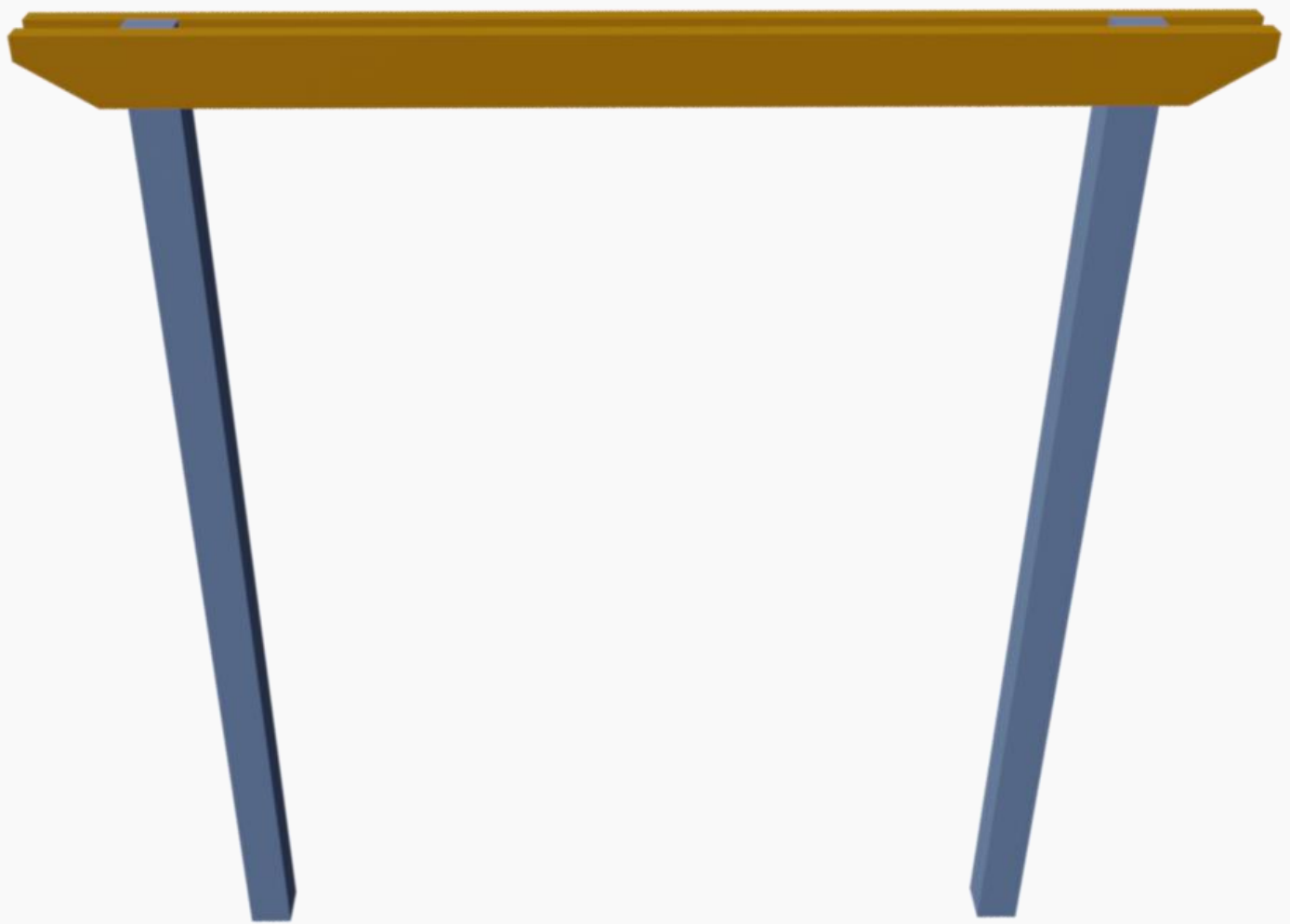
## Cutting



- Use your saw to cut starting at line D and make sure to angle the saw enough to follow line E all the way until the corner of the beam has been cut off
- Repeat all steps on the opposite edge of the beam, ensuring that the same corners are getting cut off (see page 2 for final shape)



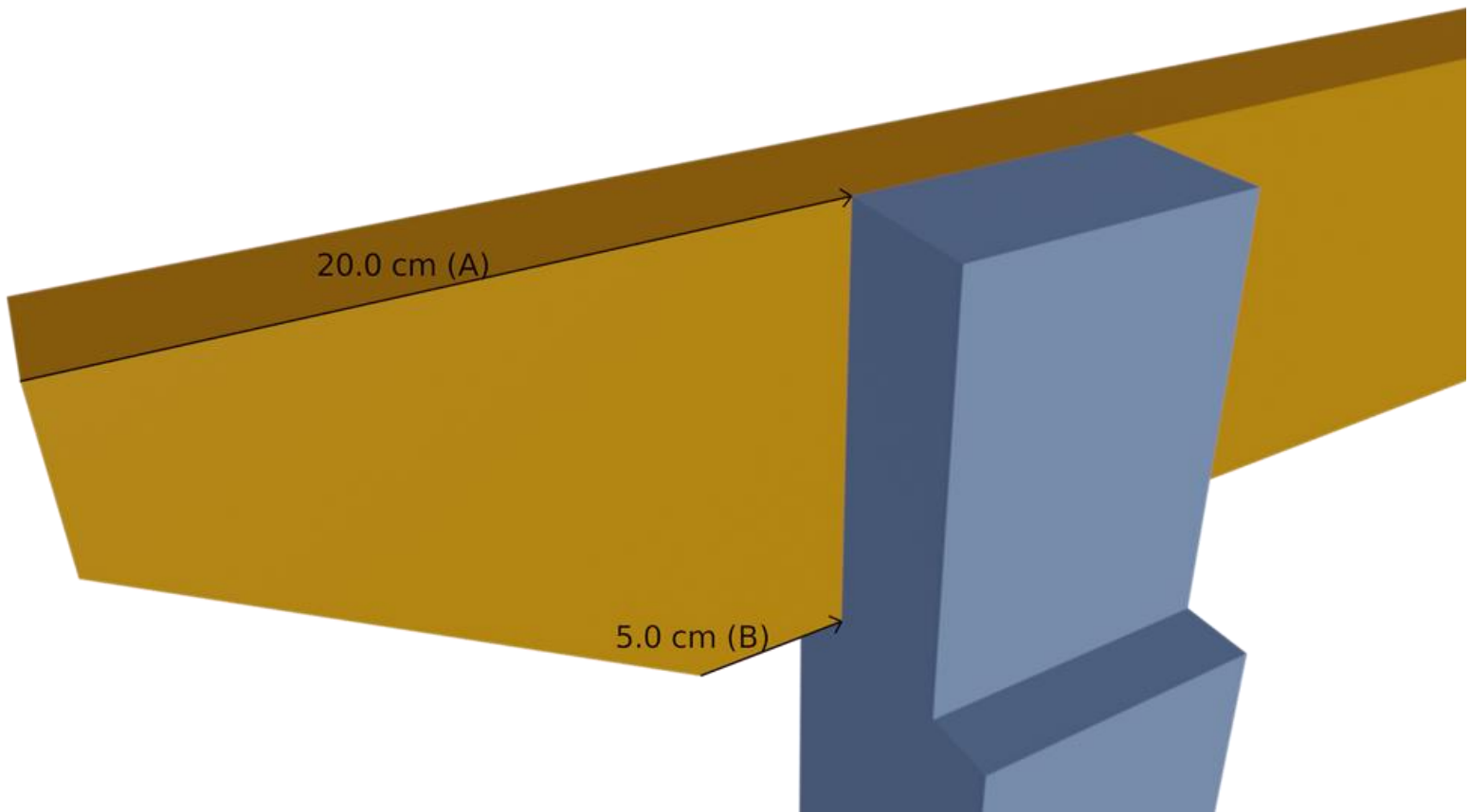
# Attaching side beams to the posts



Repeat on all 4 beams and posts

# 1

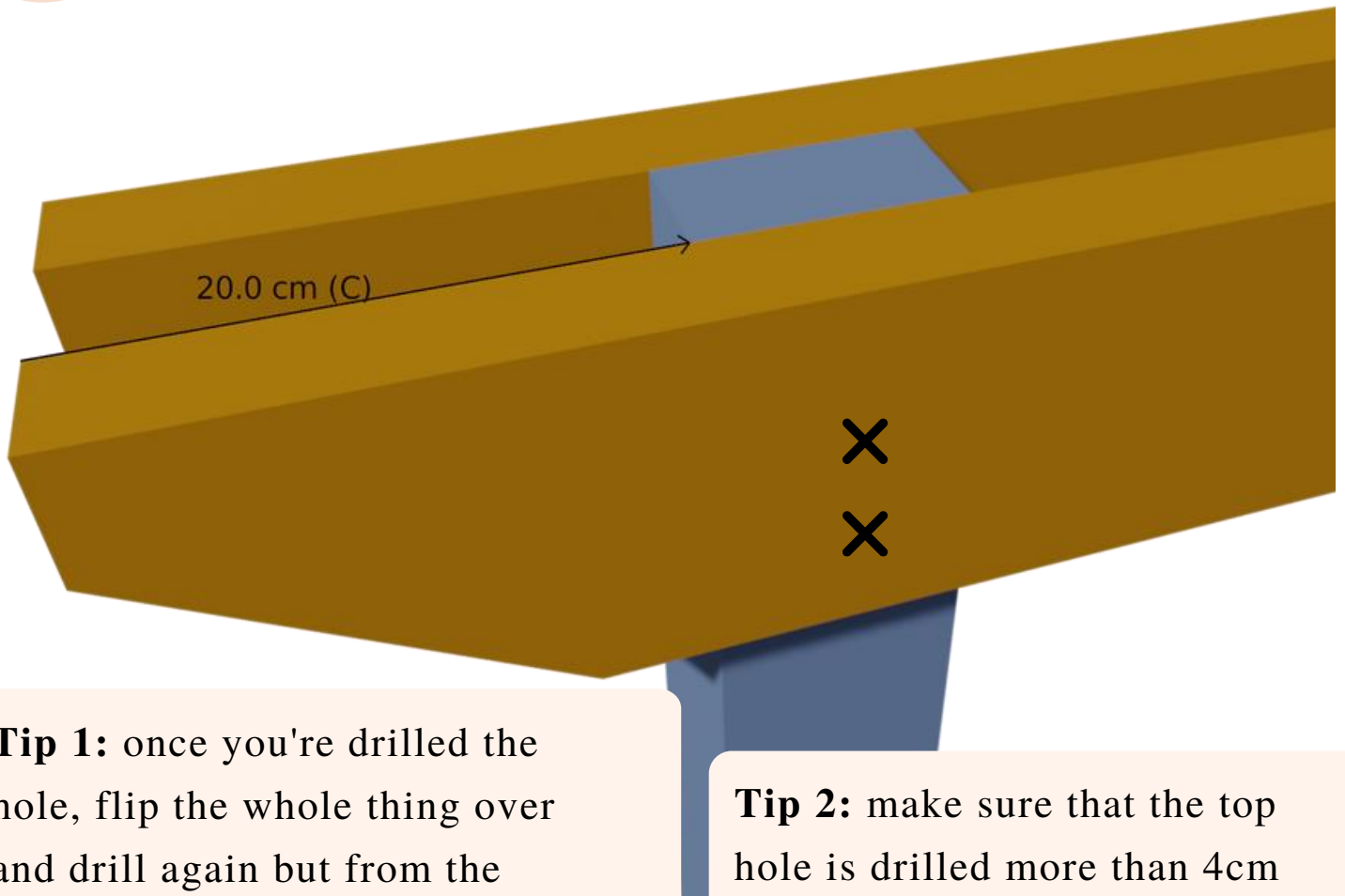
## Positioning first beam



- Lay a beam on one of its faces on a level surface
- Measure 5cm from a corner of the shorter length edge, mark the spot (B), and measure 20 cm from the corner of the longer length above it and mark the spot (A)
- Now lay a post on top of the beam ensuring that the post cut edge is lined up with markings (A & B)
- Repeat the same thing on the opposite side of the beam using a second post

# 2

## Positioning second beam



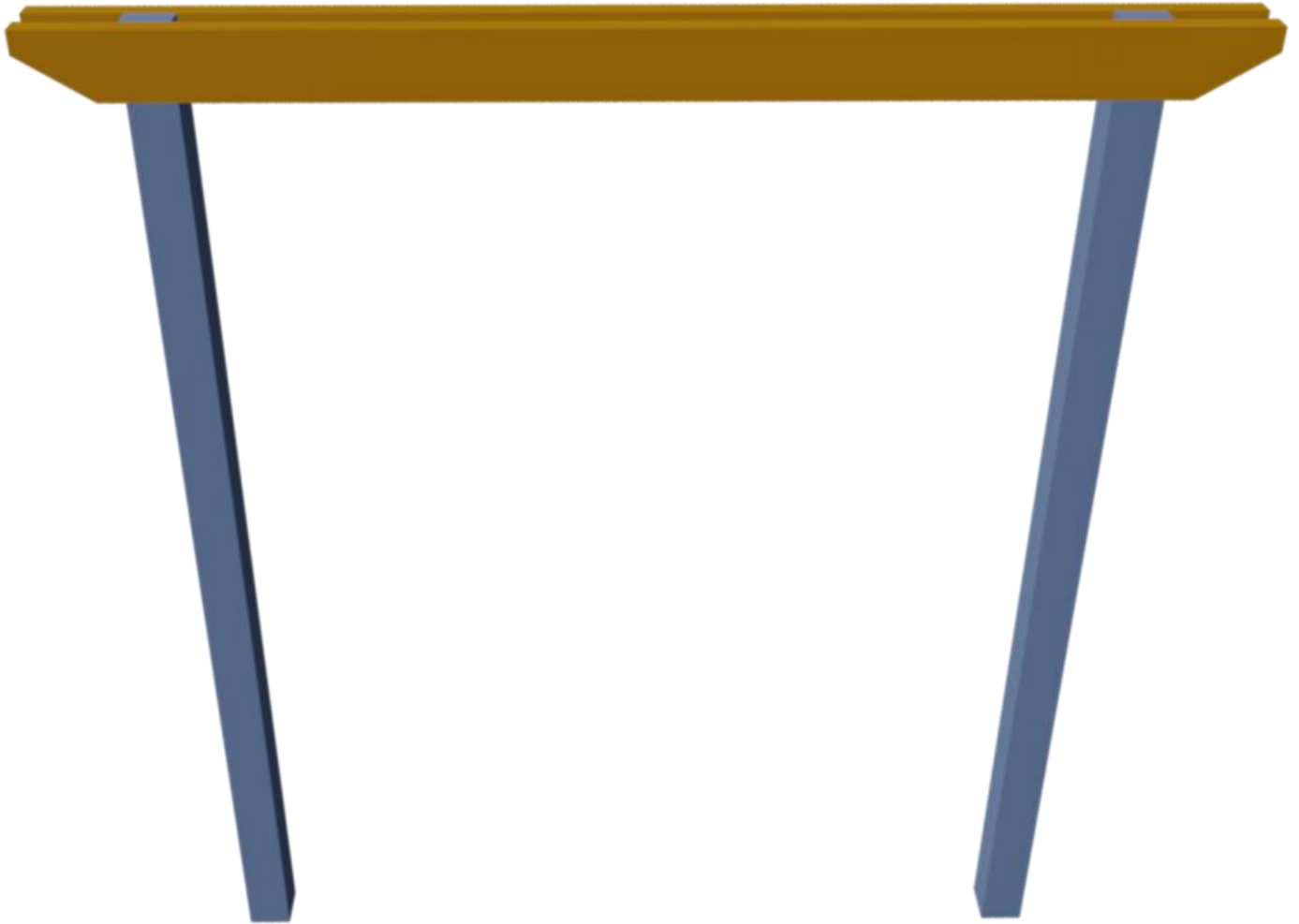
**Tip 1:** once you're drilled the hole, flip the whole thing over and drill again but from the 'back' hole. This will help with wood splitting when inserting the bolts

**Tip 2:** make sure that the top hole is drilled more than 4cm away from the top of the beam to ensure that a single slotted rafter can be fitted here

- Place a second beam across the top of the two posts, ensuring that it aligns perfectly with the first beam and measures 20cm from the edge to the beam to the post (C)
- Once everything is aligned, drill two holes using the drill bit wide enough for the bolts and slide the bolts in
- Add the washers and nuts and tighten

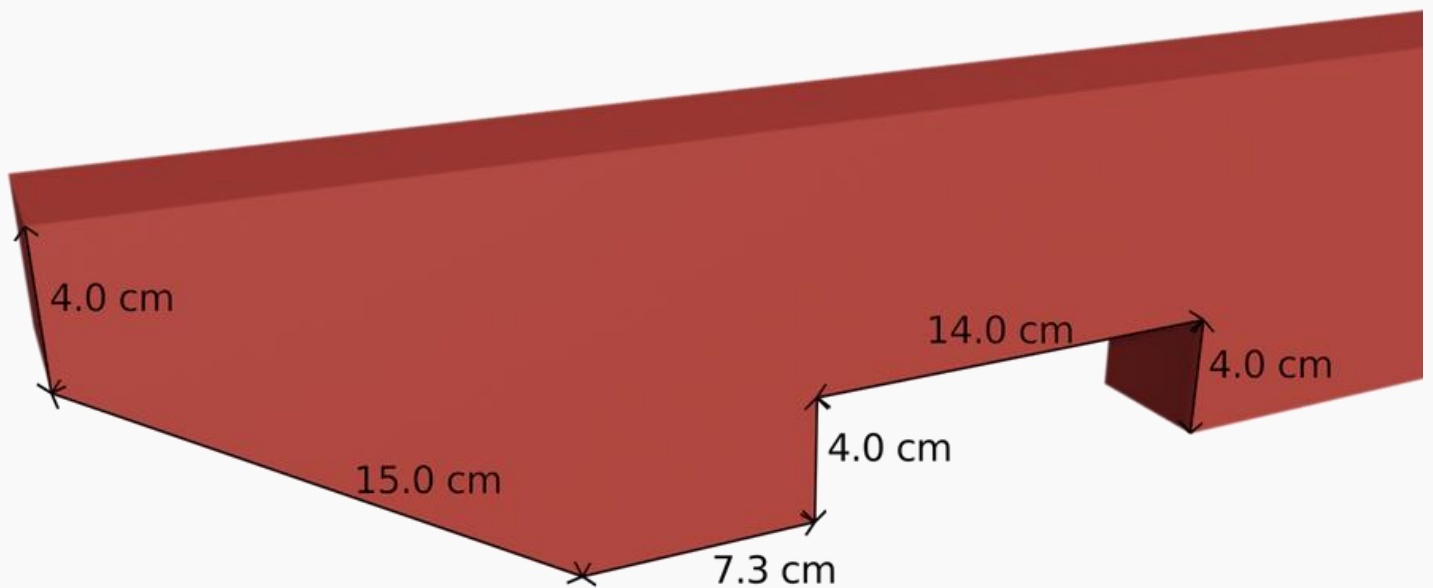
# 3

## Repeat on the other side



- Repeat the drilling and bolting on the opposite end of the beam with the second post
- At this stage if your bolts were too long and are hanging out too much you can use a hacksaw to cut them down

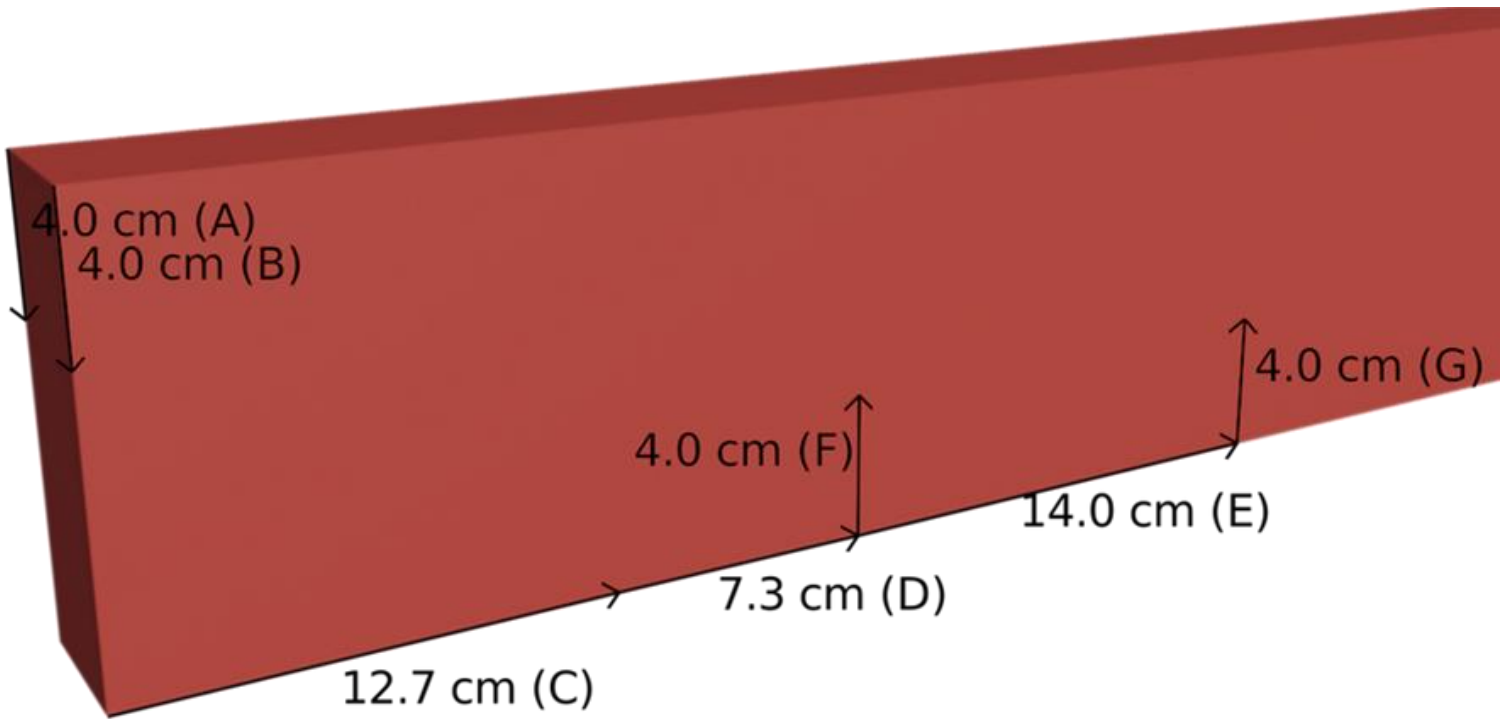
# Cutting the single slotted rafters



Repeat on 2 beams

# 1

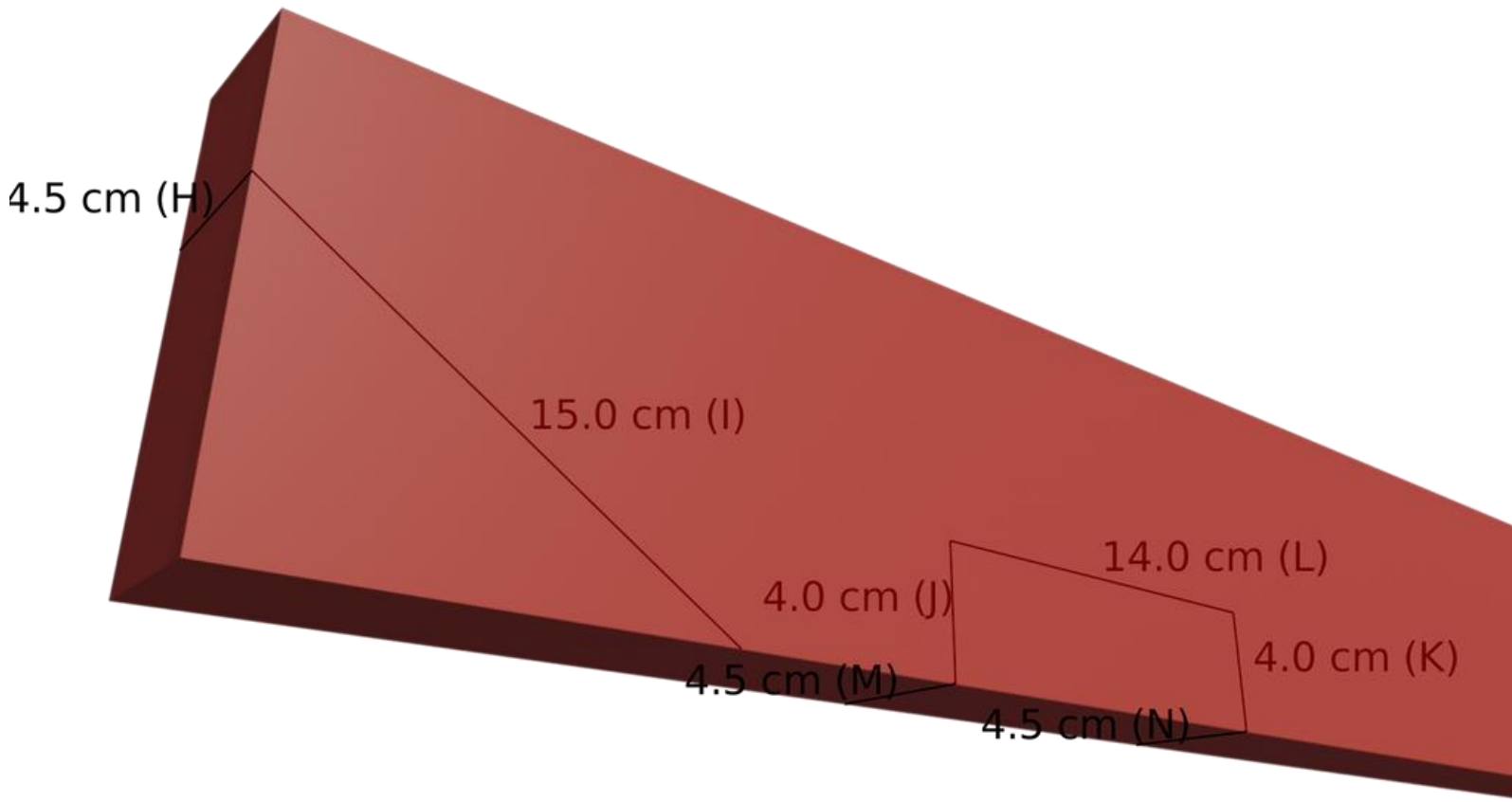
## Measuring



- Lay the beam horizontally
- Measure 4cm from the top two corners down the width of the beam and make a marking at each point (A & B)
- Measure 12.7cm from the bottom corner down the length of the beam, marking that point (C)
- From point C, measure a further 7.3cm and 14cm, marking each point (D & E)
- From points D & E, measure 4cm up along the width on the beam and mark the points (F & G)

# 2

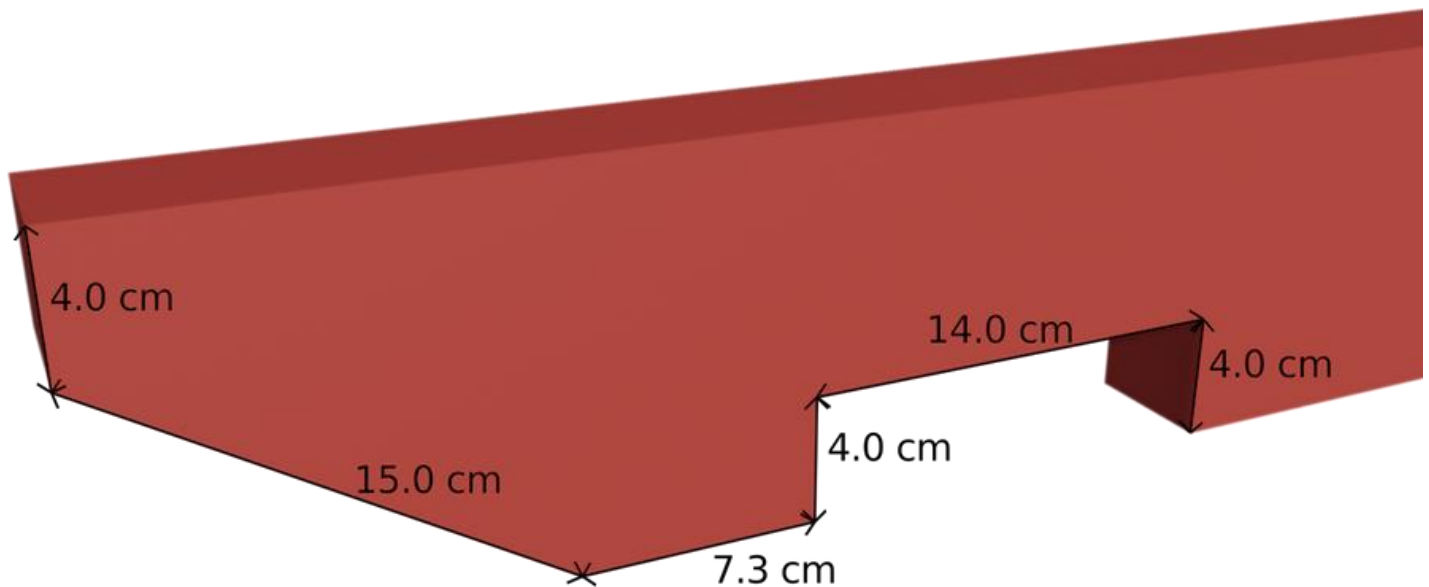
## Drawing



- Connect points A & B with line H and points B & C with line I
- Connect points D & F with line J, E & G with line K and F & G with line L
- Now connect points D & E to the other side of the beam, across the thickness (M & N)
- Make sure that these lines are straight and parallel to the edge of the beam

# 3

## Cutting



- Use your saw to cut starting at line H and follow line I all the way until the corner of the beam has been cut off
- Make a cut starting at line M, following line J until line L is reached. Repeat starting at N, following along K
- Make a series of cuts in between these two cuts, making sure that each one ends at line L
- Use the chisel and hammer to scrape out the wood, clearing the whole rectangular area below line L
- Repeat all steps on the opposite edge of the beam (see page 2 for final shape)



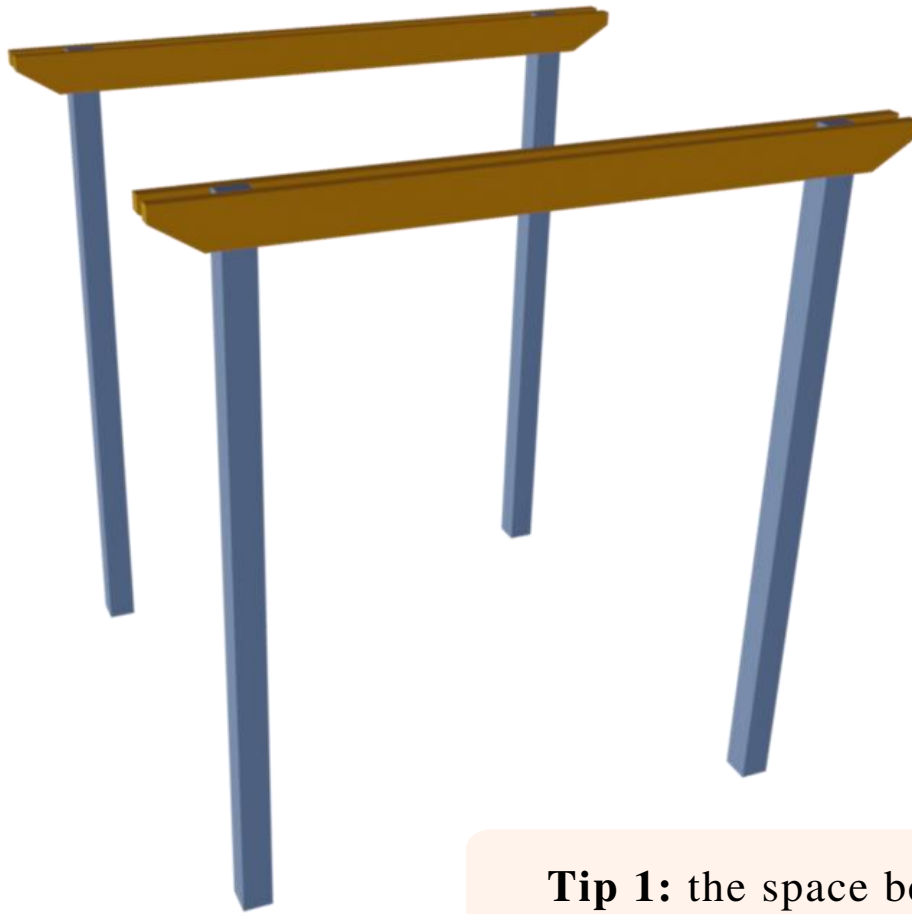
# Attaching single slotted rafters to the side beams and fixing posts in place



Use all parts cut so far

# 1

## Positioning posts

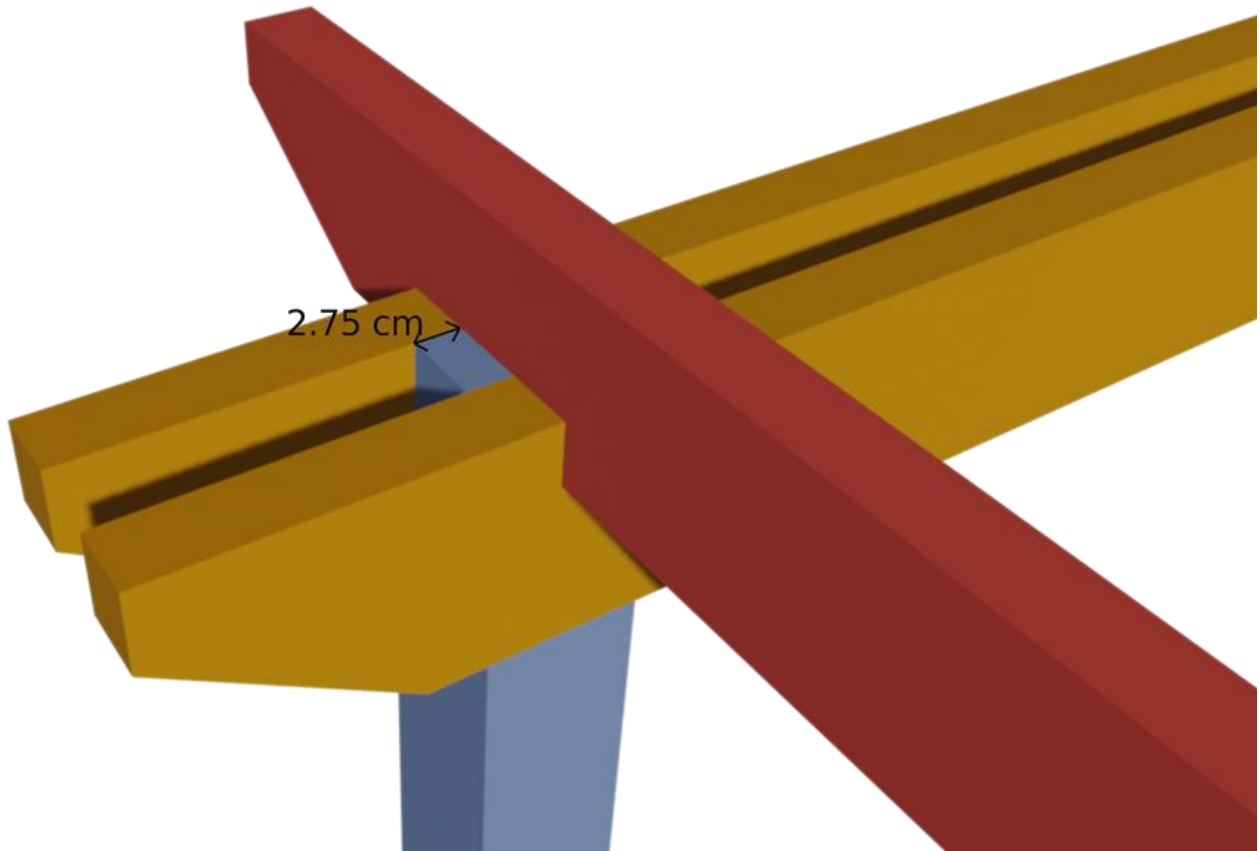


**Tip 1:** the space between post outer edges from this front view is 2m. The space between post outer edges the other way is 1.95m

- Dig the 4 holes of about 60-70cm depth ready for posts to be lowered into
- Lower both of the frame parts into the holes
- Use your preference to decide which side of the pergola will be the 'front'. There is no right or wrong way

# 2

## Positioning single slotted rafters



- Position both single slotted rafters either end of the frame, such that the ground posts sit in the rectangular slot in the rafter, with equal post ‘hangover’ either side of the rafters. This ‘hangover’ should measure 2.75cm on either side of each rafter
- This will ensure that the rafters are perfectly centered relative to the ground posts

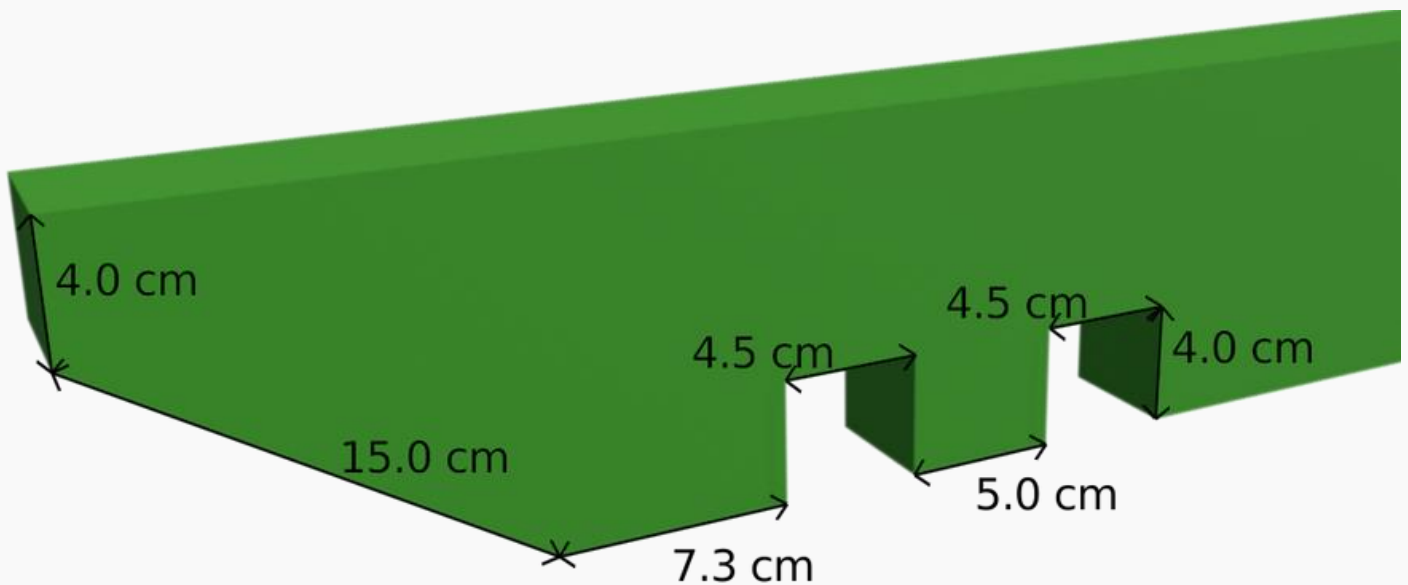
# 3

## Fixing together



- Use the manufacturers instructions to secure your posts into the ground, using your level to make sure that the frame is perfectly straight and that the single slotted rafters remain in place. This helps ensure that you pergola sides don't end up closer together than planned. This is a lot easier with a second person helping
- Once the posts are set, use your drill to pop 2 screws into each side of the rafter such that you use 4 per rafter
- It is recommended to pre-drill the holes to make this easier but please follow the instructions on your box of screws

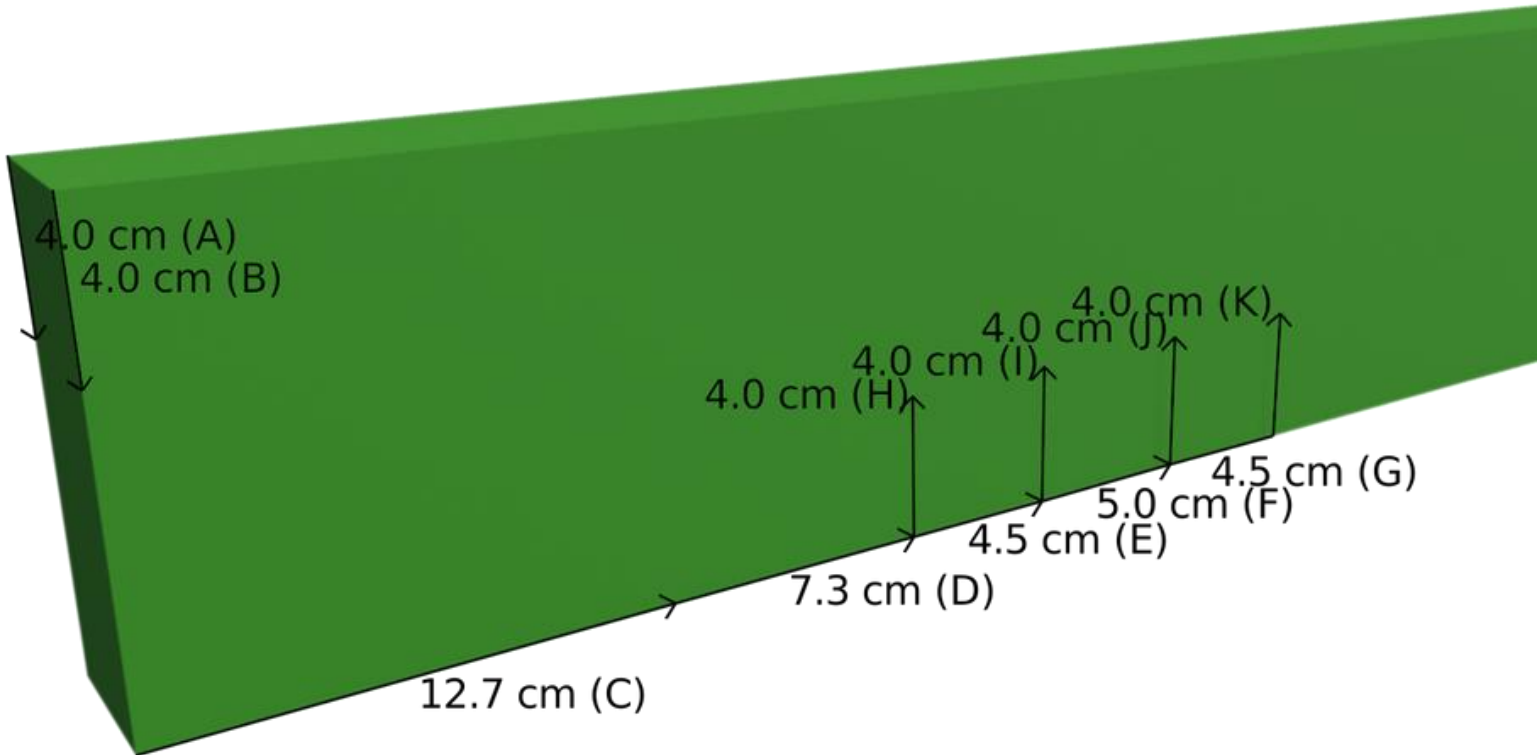
# Cutting the double slotted rafters



Repeat on 5 beams

# 1

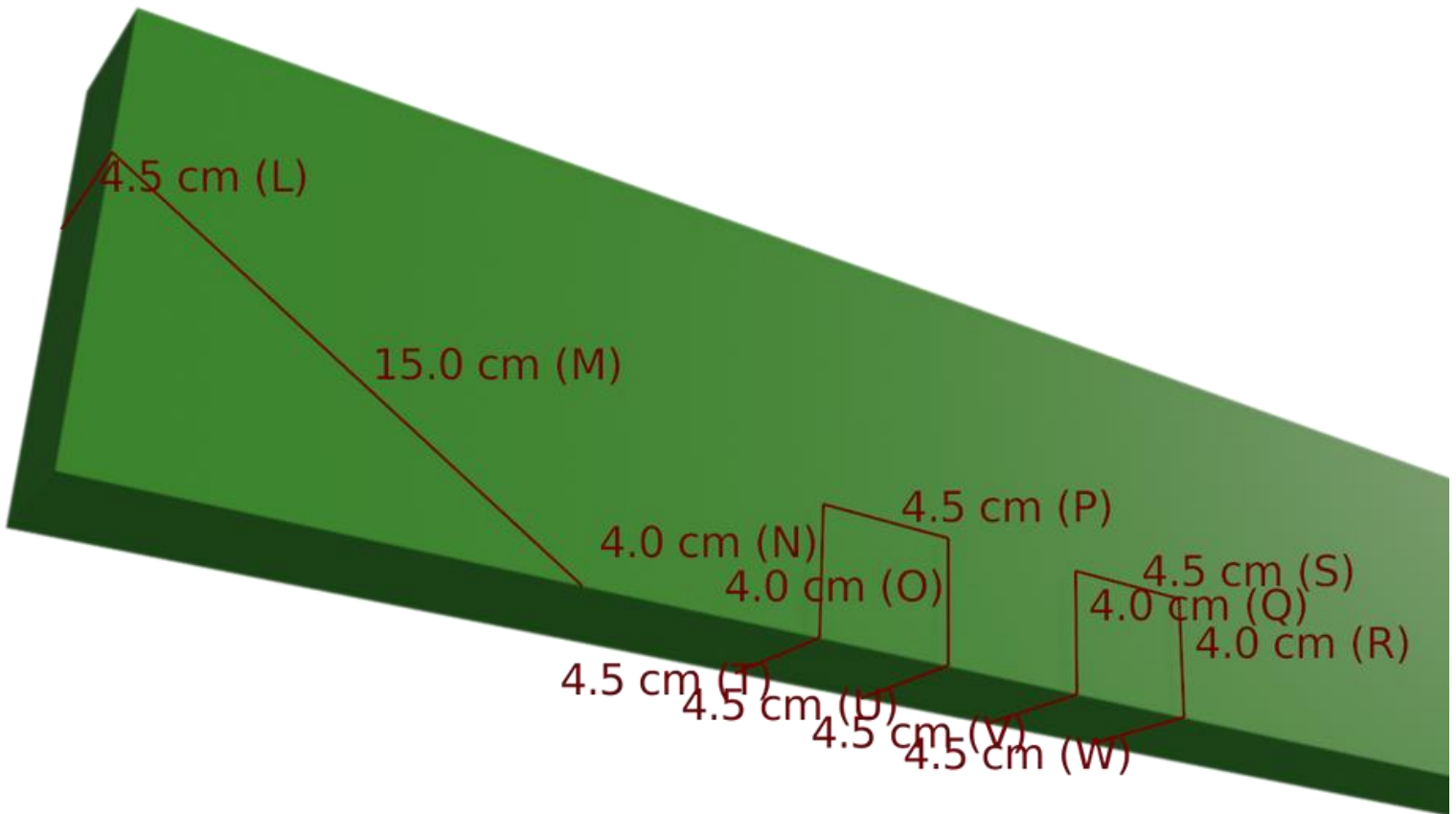
## Measuring



- Lay the beam horizontally
- Measure 4cm from the top two corners down the width of the beam and make a marking at each point (A & B)
- Measure 12.7cm from the bottom corner down the length of the beam, marking that point (C)
- From point C, measure a further 7.3cm, 4.5cm, 5cm and 4.5cm
- Mark each point (D, E, F & G)
- From points D, E, F and G measure 4cm up along the width on the beam and mark the points (H, I, J & K)

# 2

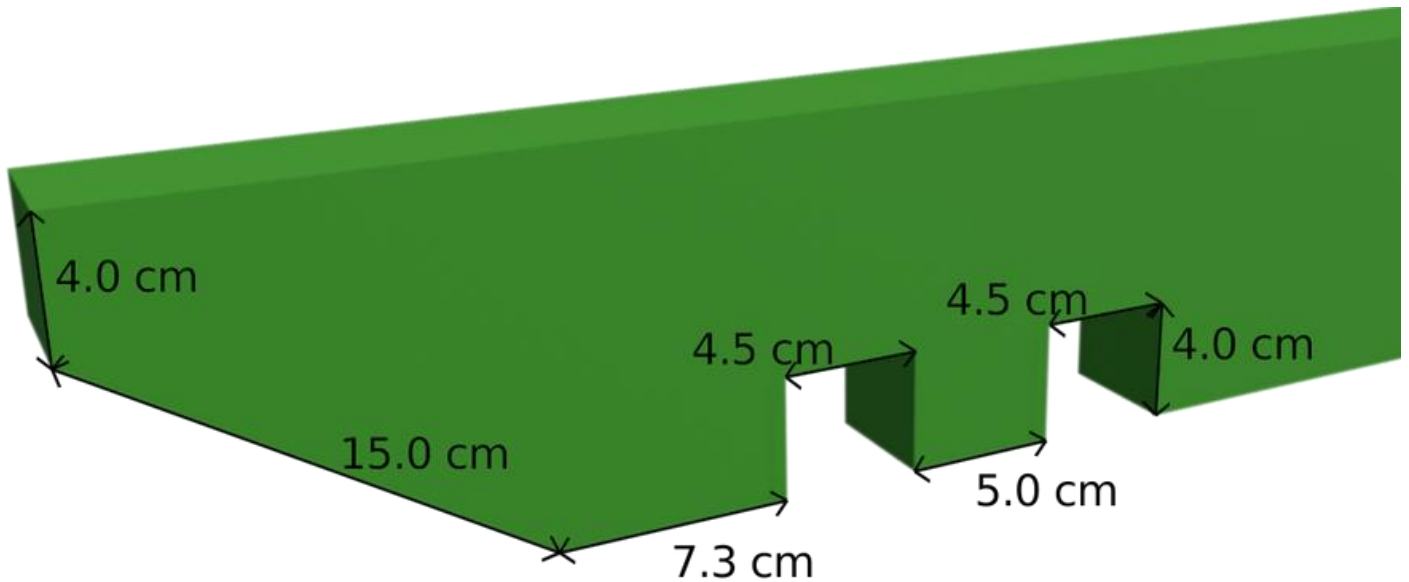
## Drawing



- Connect points A & B with line L and points B & C with line M
- Connect points D & H with line N, E & I with line O, F & J with line Q, G & K with line R, H & I with line P and J & K with line S
- Now connect points D, E, F & G to the other side of the beam, across the thickness (T, U, V & W)
- Make sure that these lines are straight and parallel to the edge of the beam

# 3

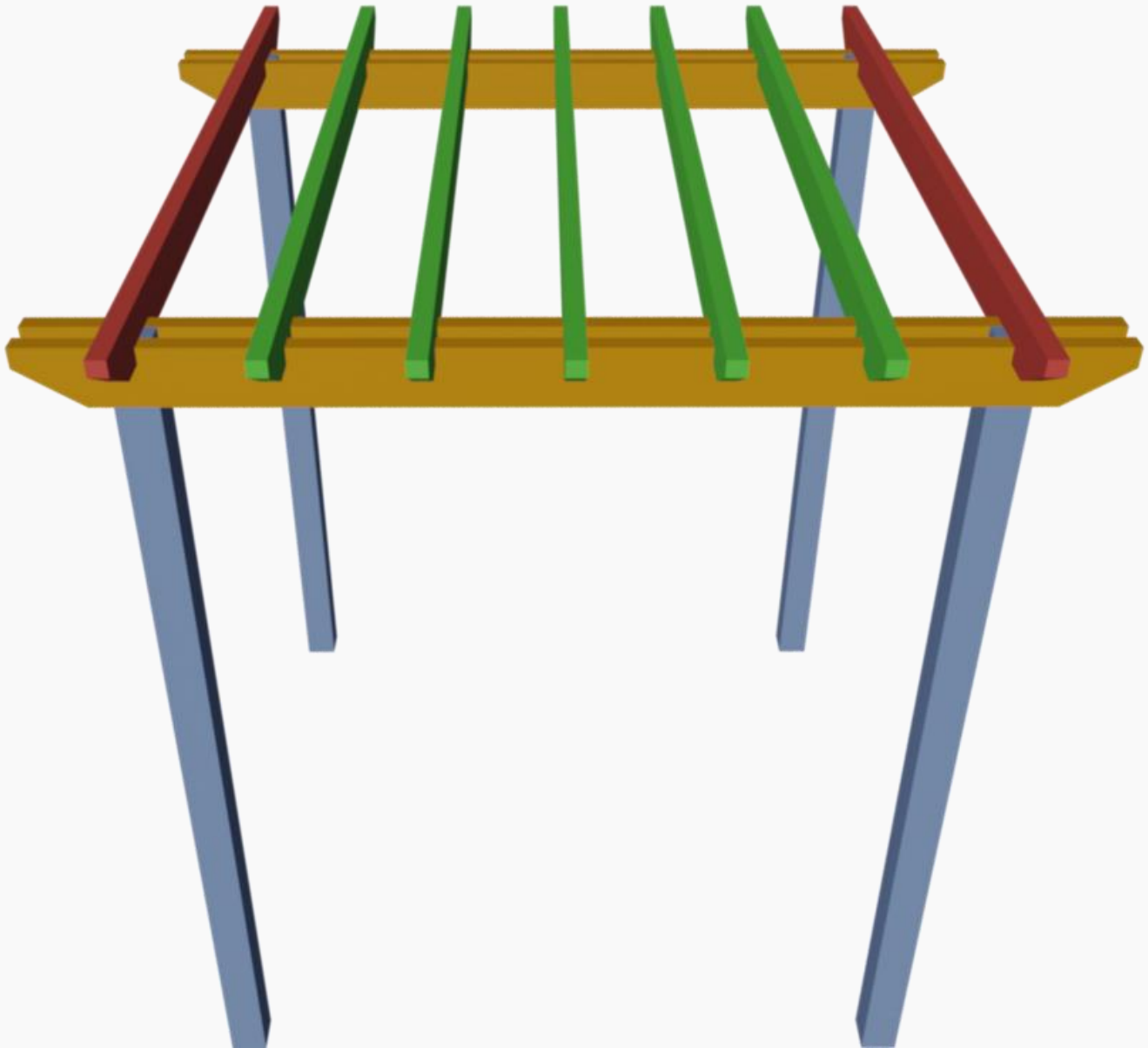
## Cutting



- Use your saw to cut starting at line L and follow line M all the way until the corner of the beam has been cut off
- Make a cut starting at line T, following line N until line P is reached. Repeat starting at U, following along O
- Make a series of cuts in the space in between these two cuts making sure that each one ends at line P
- Use the chisel and hammer to scrape out the wood, clearing the whole rectangular area below line P
- Repeat with the rectangular area below line S
- Repeat all steps on the opposite edge of the beam (see page 2 for final shape)



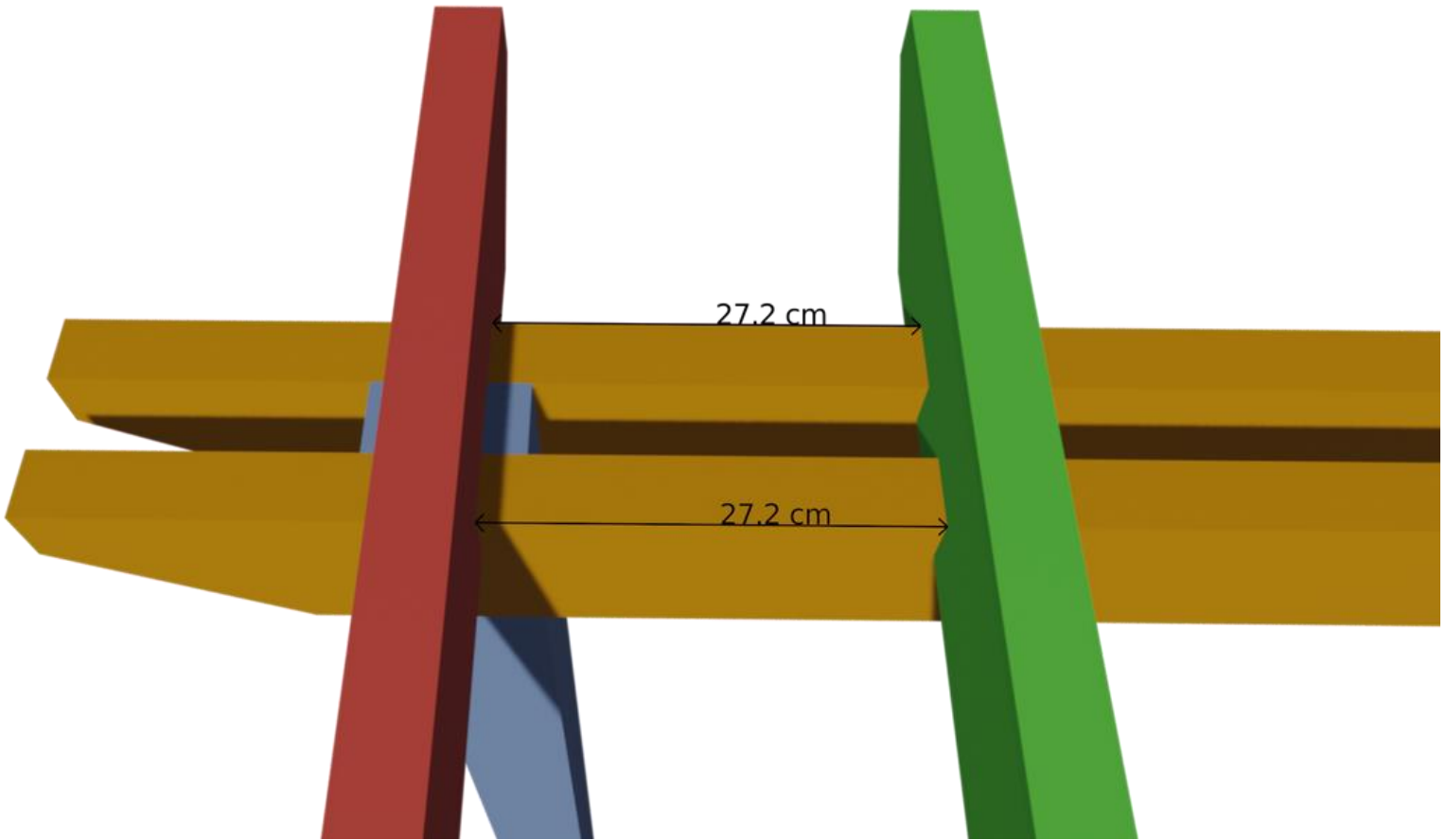
# Attaching the double slotted rafters



Use the 5 cut rafters

# 1

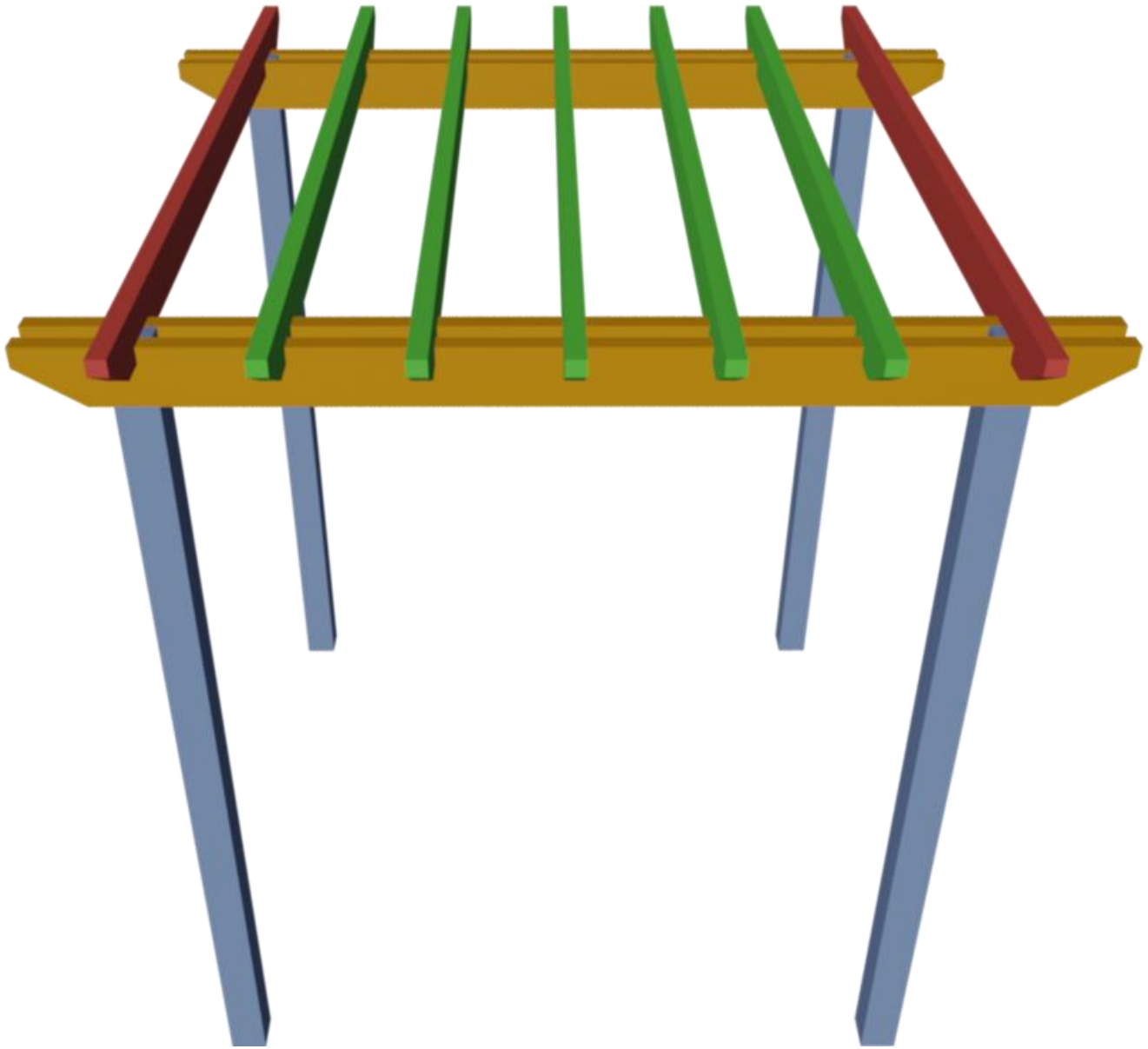
## Positioning



- Position the double slotted rafters evenly spaced in between the single slotted rafters
- There should be a gap of just under 27.2cm between all the rafters

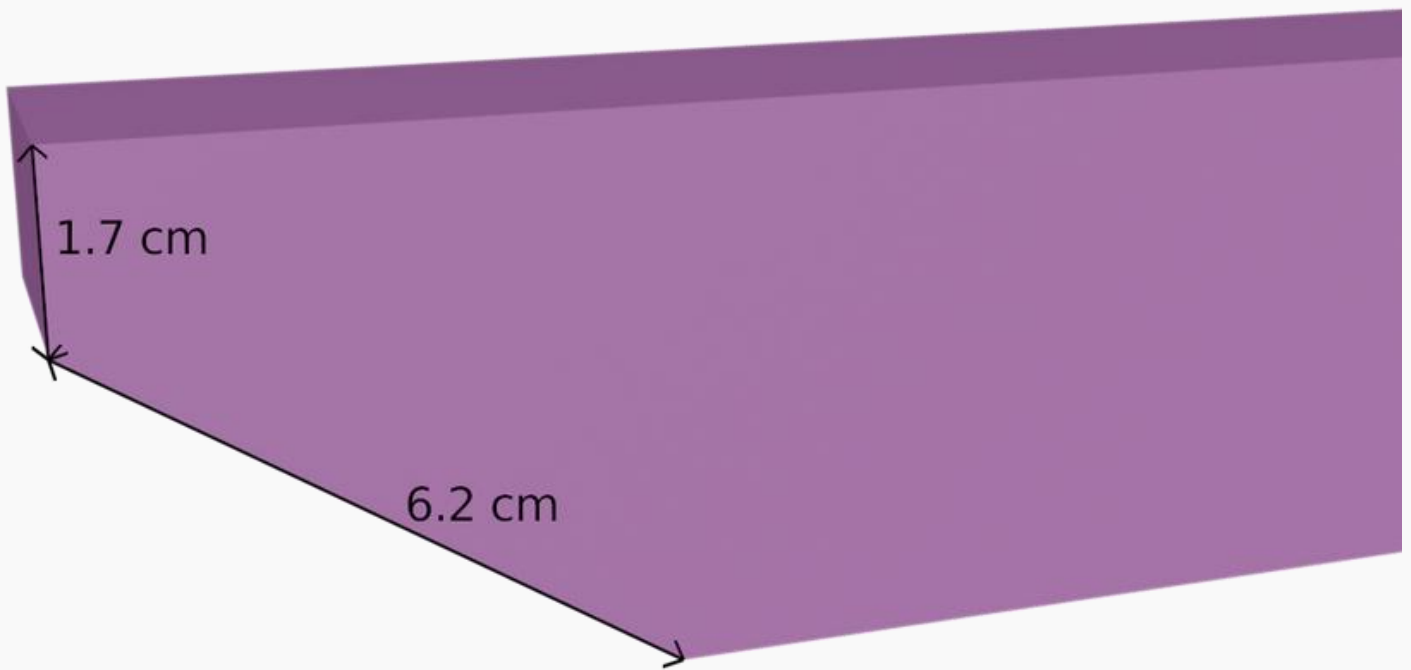
# 2

## Attaching



- Use your drill to pop 2 screws into each side of the rafters, 1 screw in each 'slot' such that you use 4 per rafter
- It is recommended to pre-drill the holes to make this easier but please follow the instructions on your box of screws

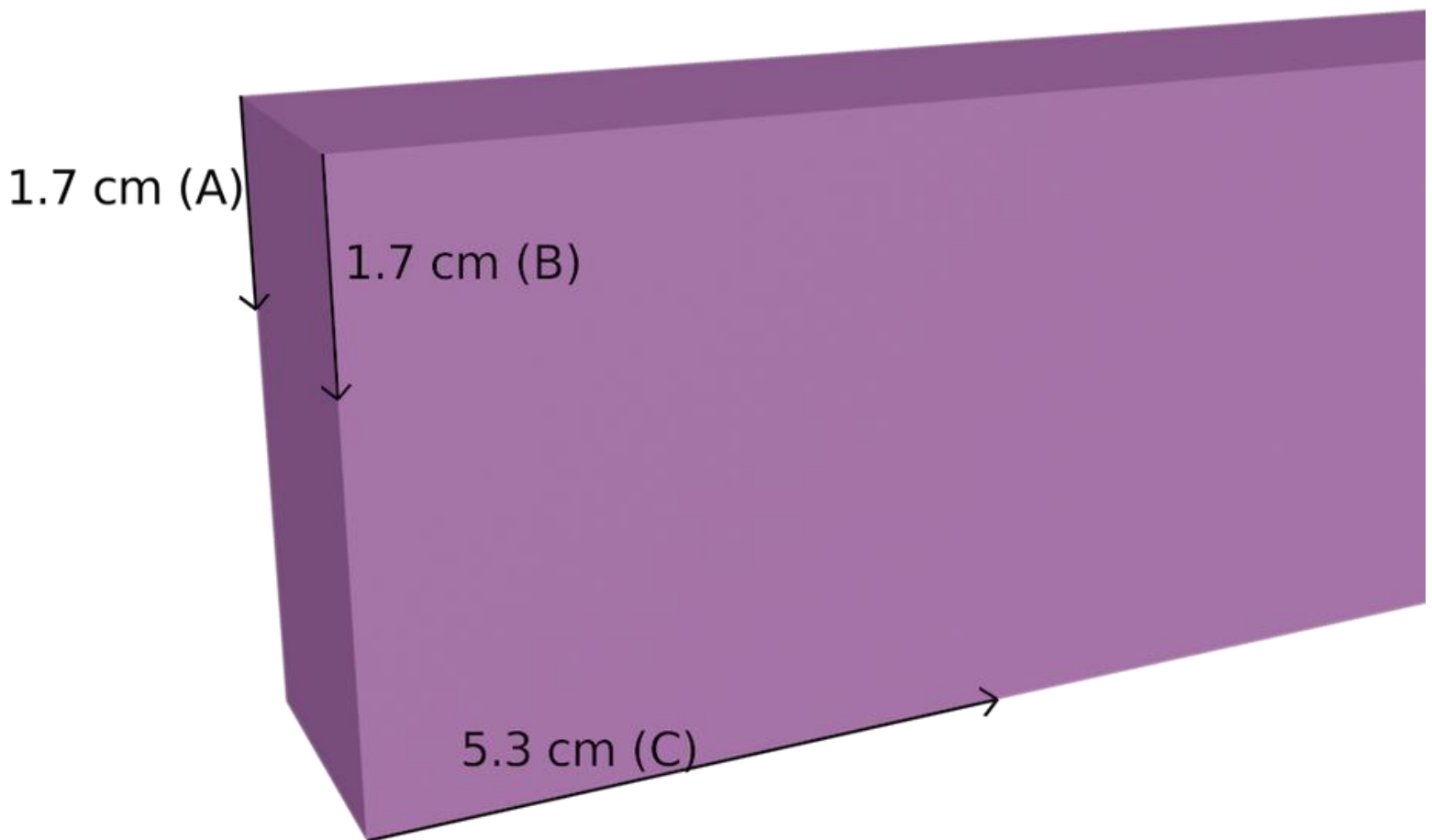
# Cutting the purlins



Repeat on 9 beams

# 1

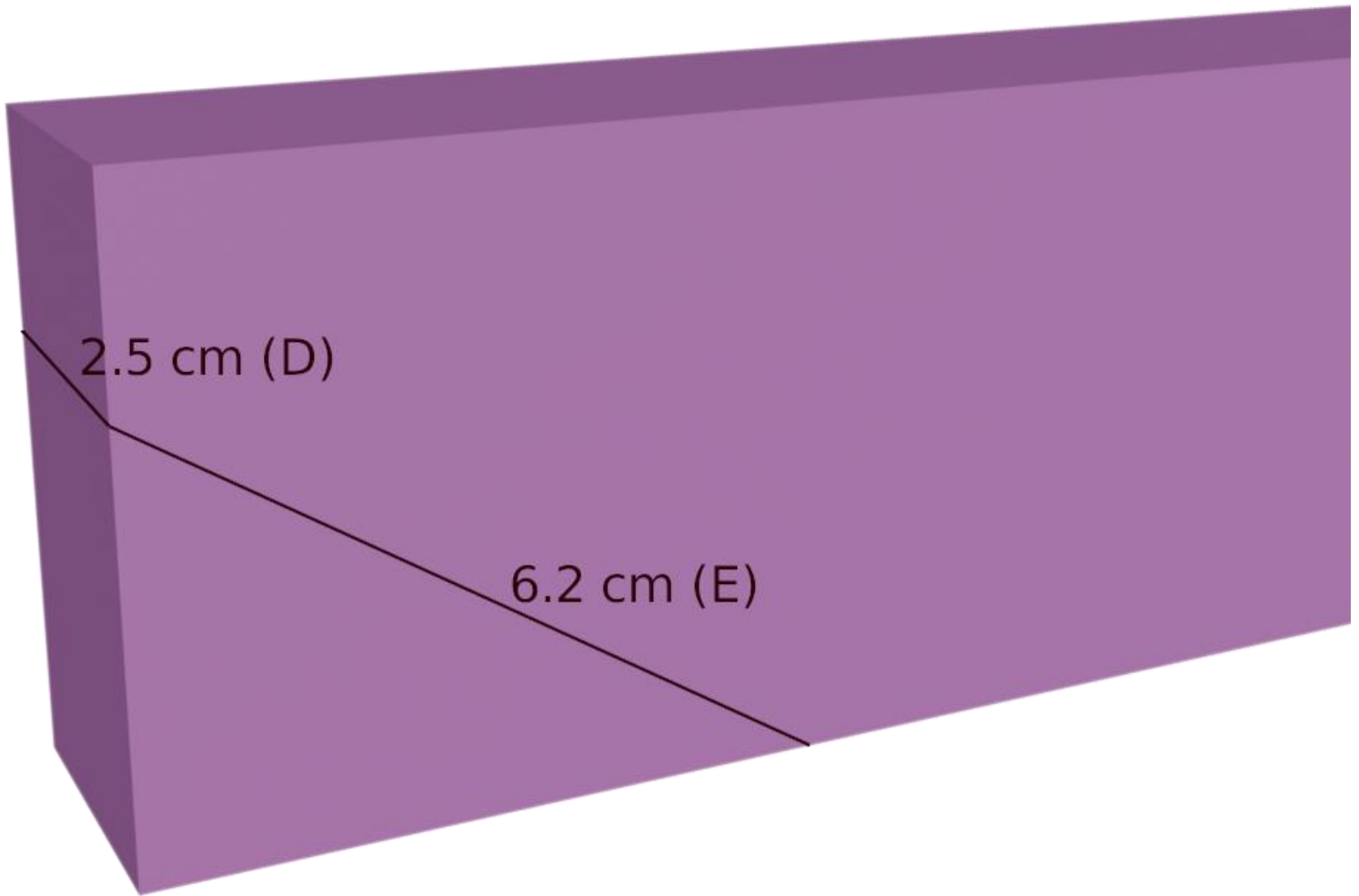
## Measuring



- Lay the beam horizontally
- Measure 1.7cm from the top two corners down the width of the beam and make a marking at each point (A & B)
- Measure 5.3cm from the bottom corner down the length of the beam, marking that point too (C)

# 2

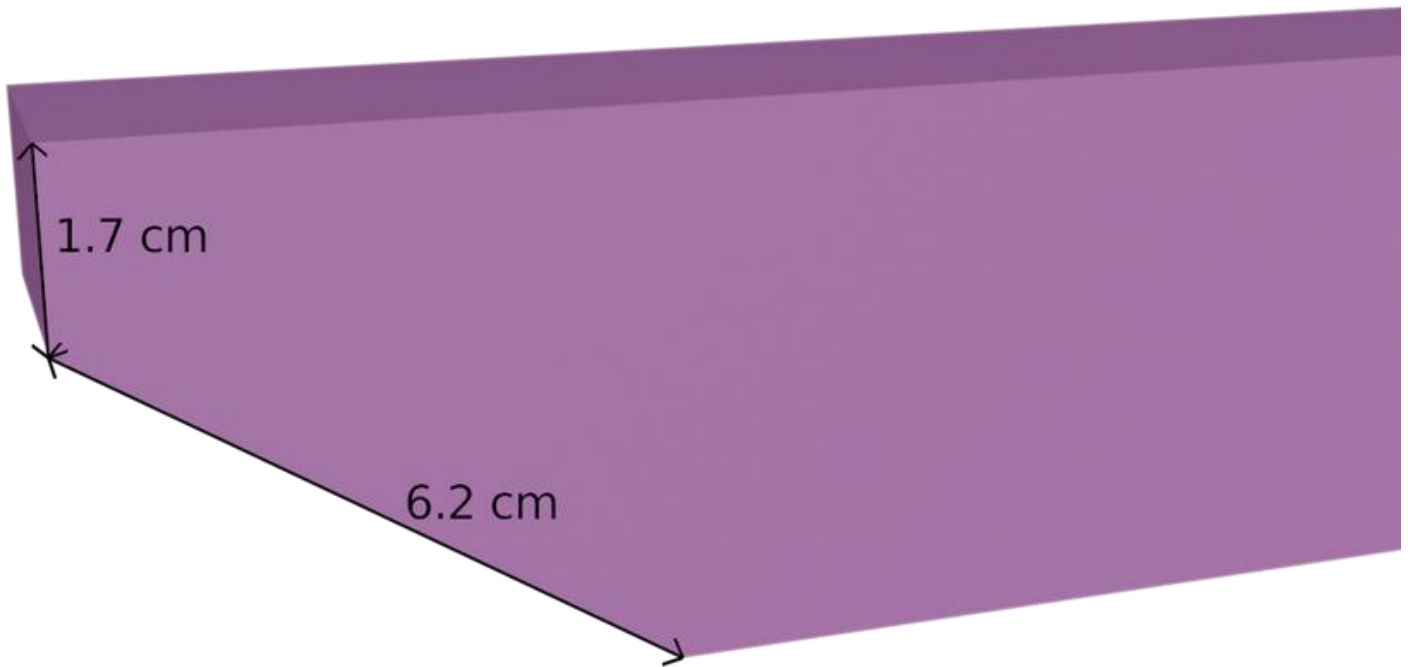
## Drawing



- Connect points A & B with a line (D)
- Connect the end of line D to point C
- You should now have a 6.2cm line running across your beam (E)

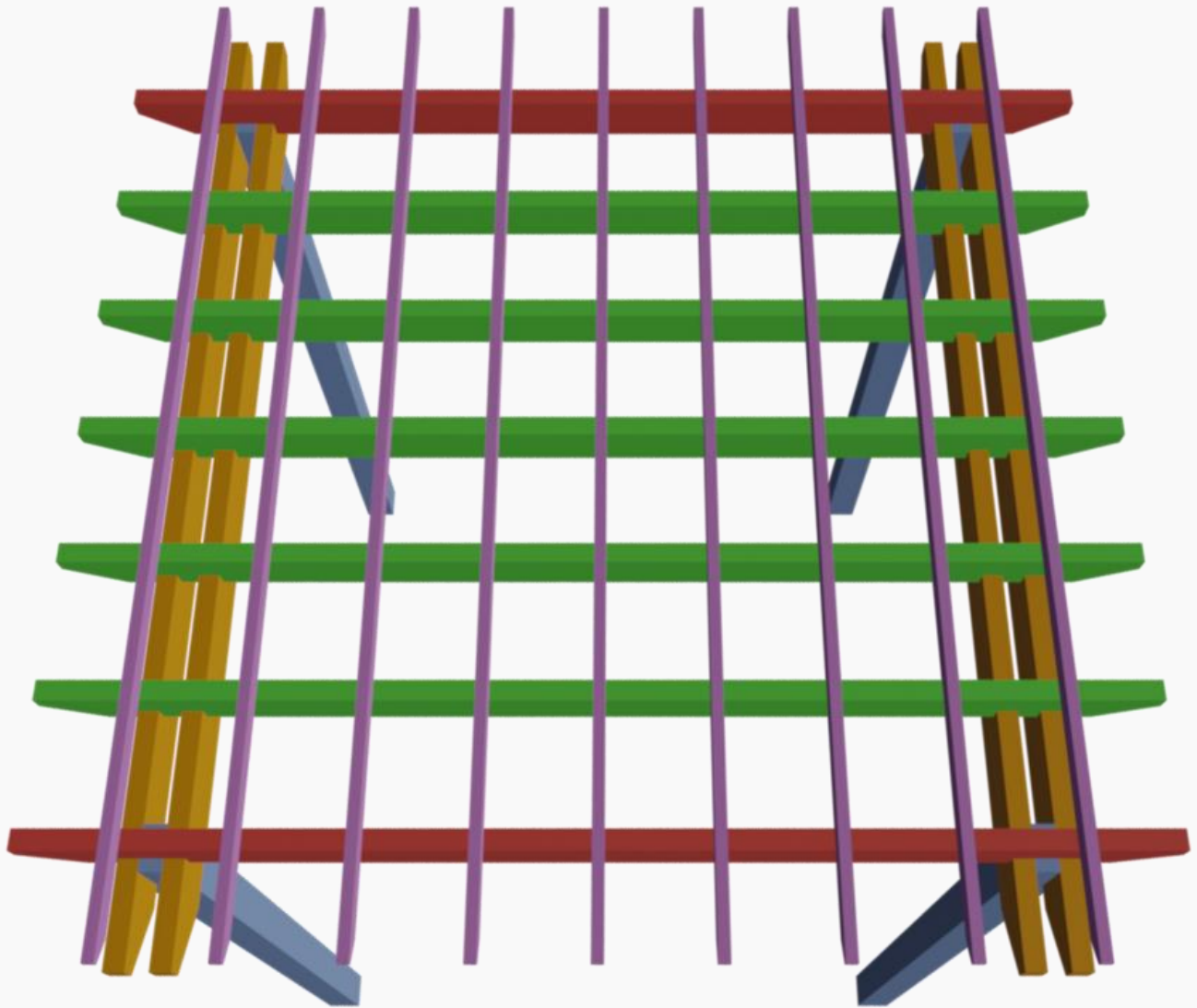
# 3

## Cutting



- Use your saw to cut starting at line D and make sure to angle the saw enough to follow line E all the way until the corner of the beam has been cut off
- Repeat all steps on the opposite edge of the beam, ensuring that the same corners are getting cut off (see page 2 for final shape)

# Attaching the purlins

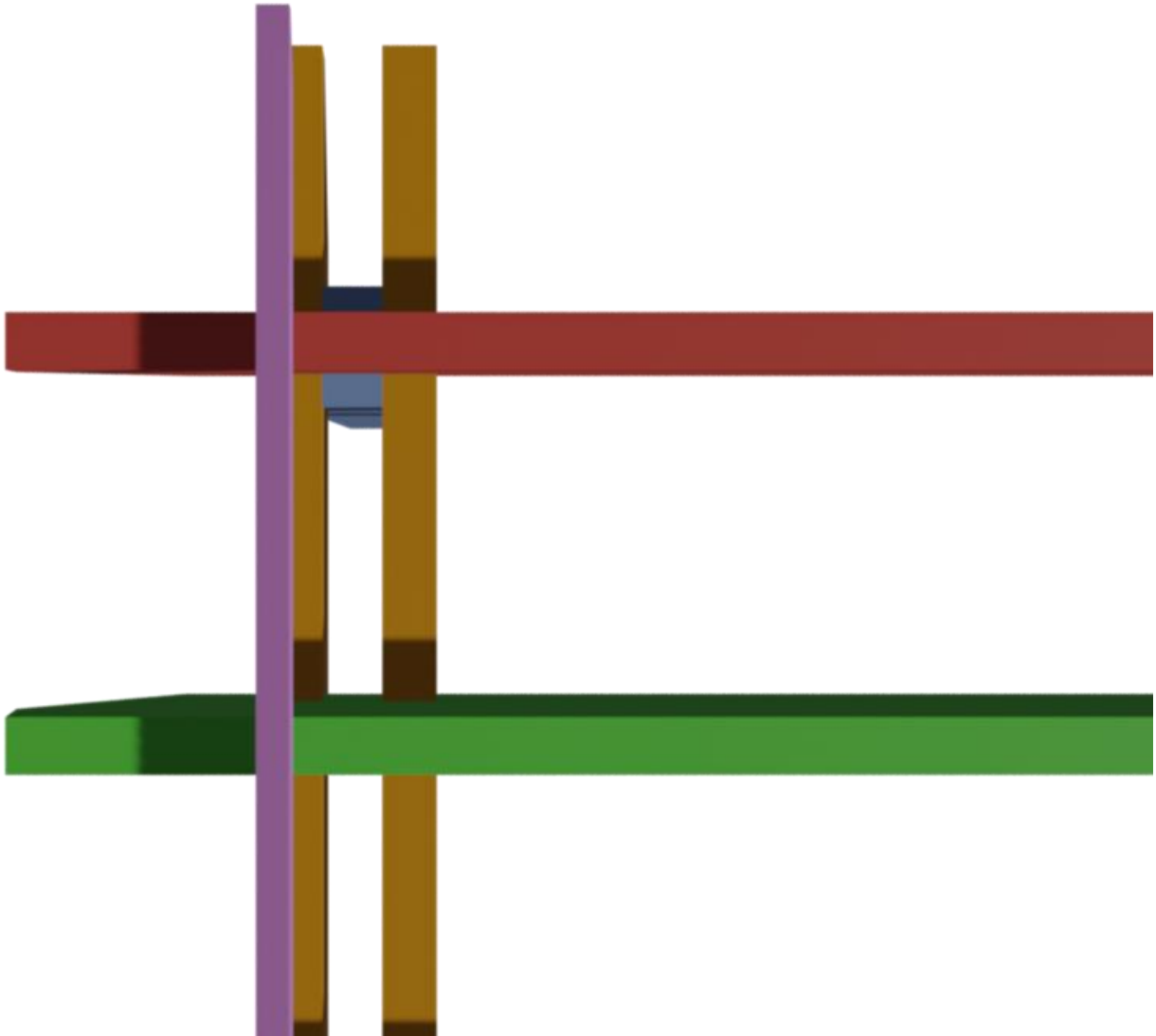


Use the 9 cut purlins



# 1

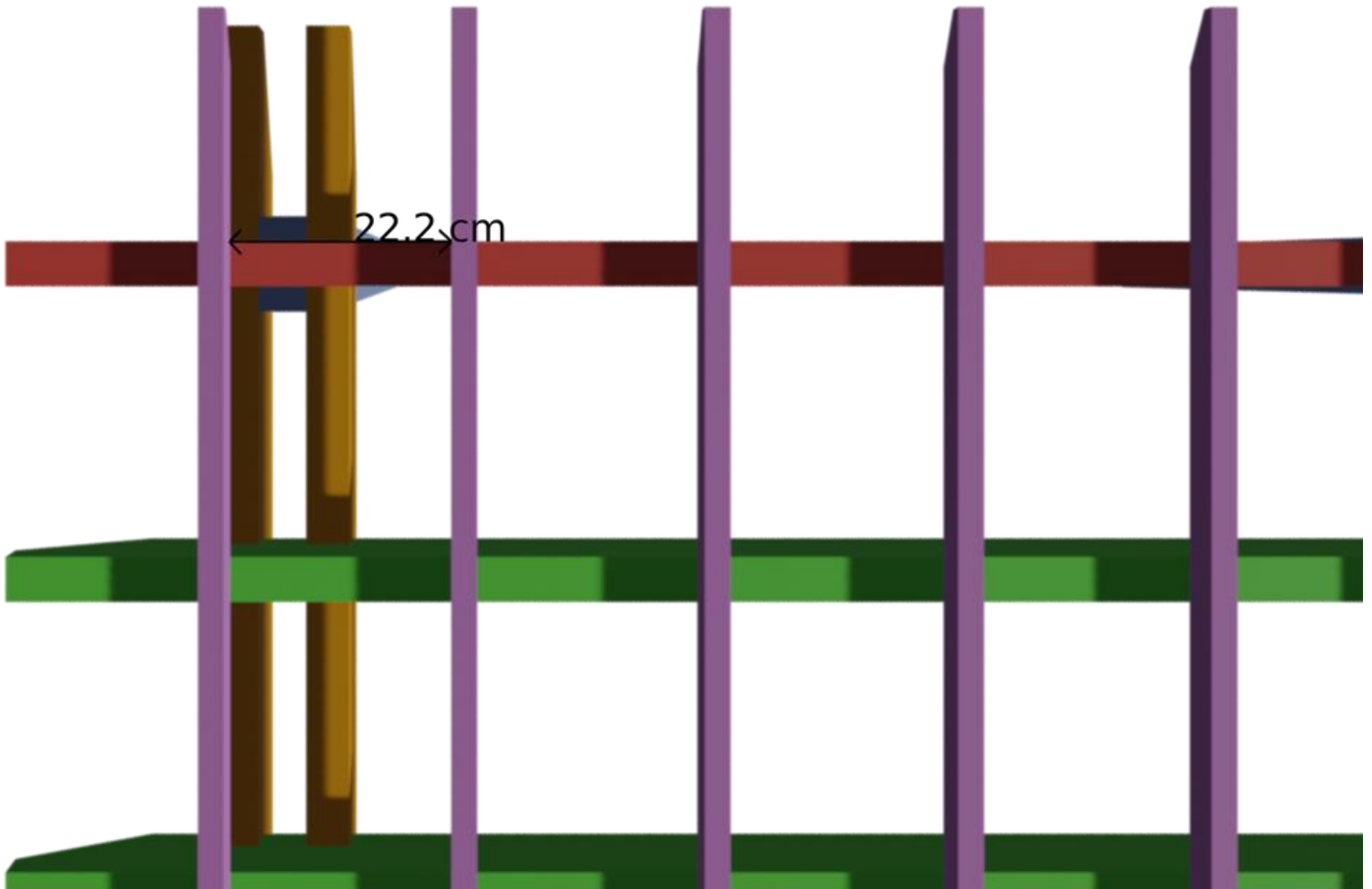
## Attaching outer purlins



- Position the first purlin on top of the rafters, such that it sits exactly above the outermost side beam
- Use your drill to screw the purlins to the beams using 3 screws: one at either end of the Pergola and one in the middle
- It is recommended to pre-drill the holes to make this easier but please follow the instructions on your box of screws

# 2

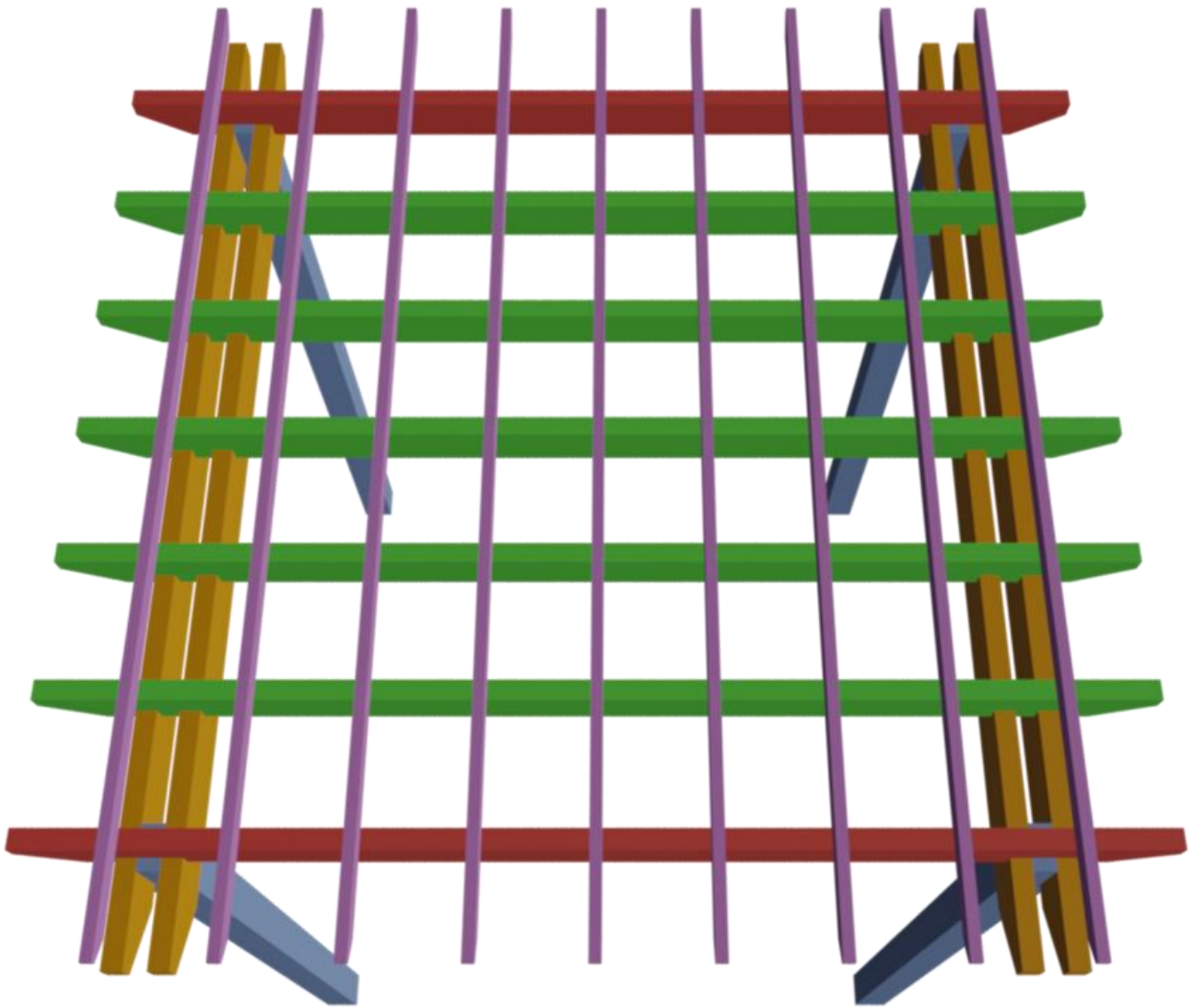
## Position inner purlins



- Position all the purlins, spacing them evenly so that the last purlin sits right above the outermost side beam on the opposite side of the pergola
- There should be roughly 22.2cm between each purlin

# 3

## Attaching inner purlins



- Use your drill to pop 3 screws into each purlin securing them into place

# Congratulations, you are finished!

Note from the author:

---

Hi!

My name is Ida and I have a small blog which is a humble place for all aspiring woodworkers, decorators, upcyclers, general DIYers, gardeners and other creatives.

If you enjoyed this project, check out our other inspiring projects by clicking below.

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