



Design out the box

Time 30-40 mins approx

Level of difficulty ★★☆☆☆

By the end of this tutorial you will be able to...

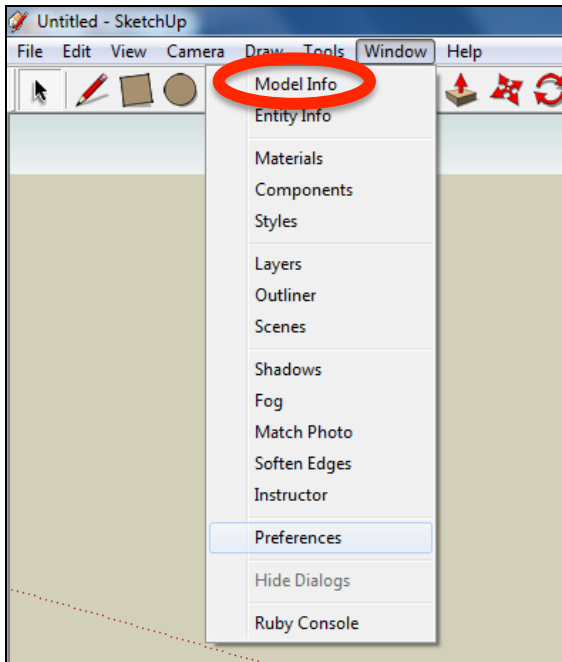
- Link basic shapes
- Use the Arc tool
- Use the Follow Me tool to produce a rounded edge
- Use construction lines/points
- Colour/render your finished toy boat

Skills to be used in this project...

Basic Skills	New and Higher Skills
Zoom tool	Construction lines and points
Orbit tool	Tape Measure tool
Pan tool	Arc tool
Line tool	Follow Me tool
Rectangle tool	Loading new toolbars
Circle tool	Paint Bucket tool
Eraser tool	
Push/Pull tool	

Basic skills are those required to do very basic drawings and are detailed as part of this presentation.

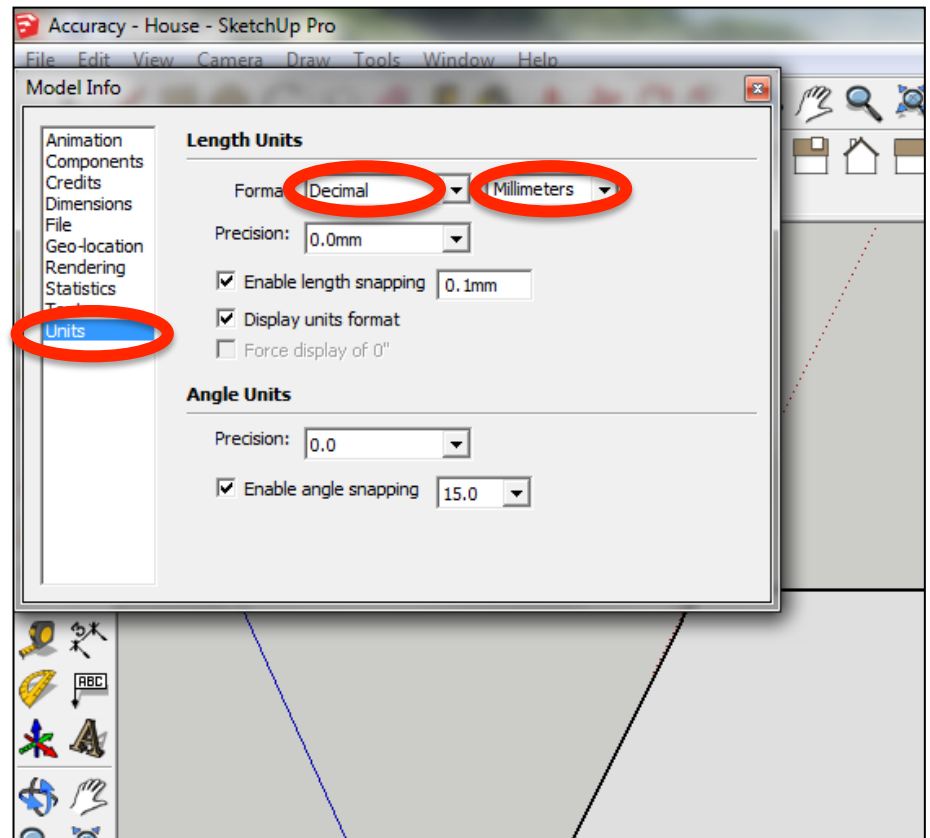
New and higher skills may be new to the novice and are the focus for learning in this presentation.



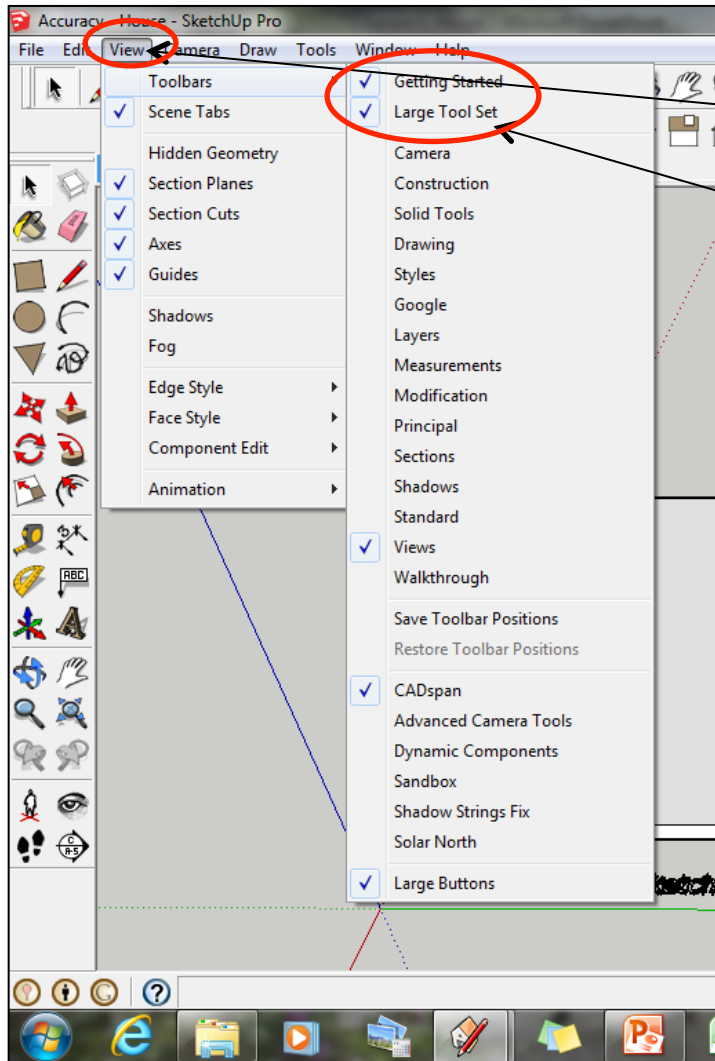
1. Open the sketch up drawing. Once you have opened SketchUp, go to **Window** and select **Model Info**

2. Select **Units** and choose **Decimal Millimetres**. We are using this template because we are doing a product design.

Note: It is often necessary to start a new file to use the new template. Go to **File** then **New**.



3. Now select the **View** then **toolbars** and ensure **Getting Started** and **Large Tool Set** are ticked

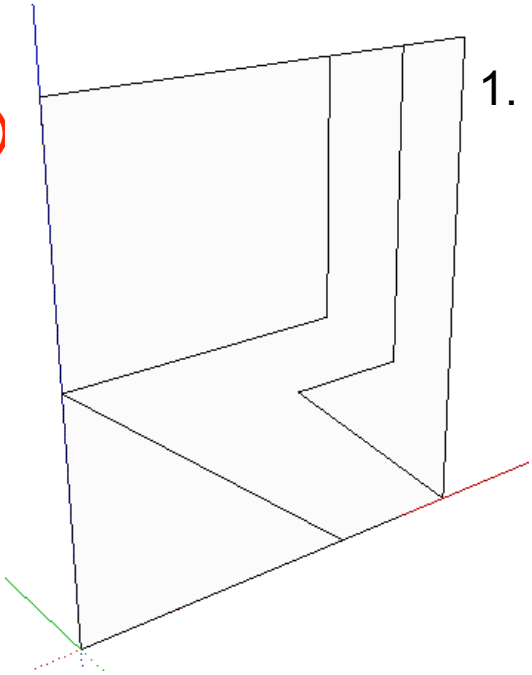


3a Select **View**

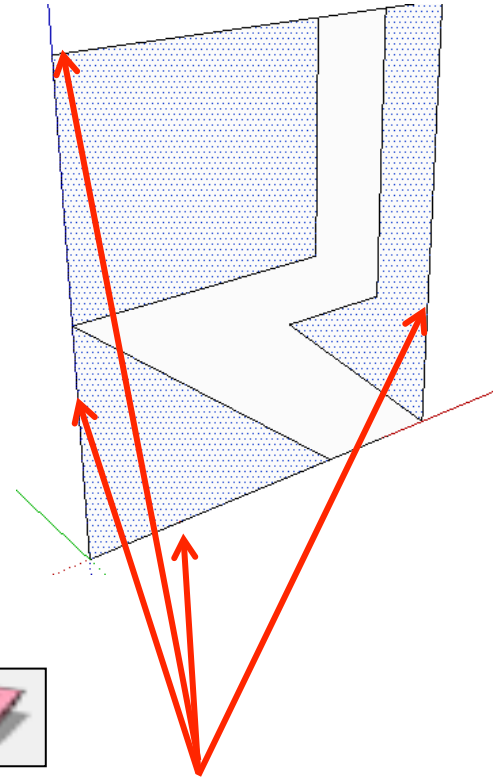
3b Tick Getting Started

3c Tick Large Tool Set

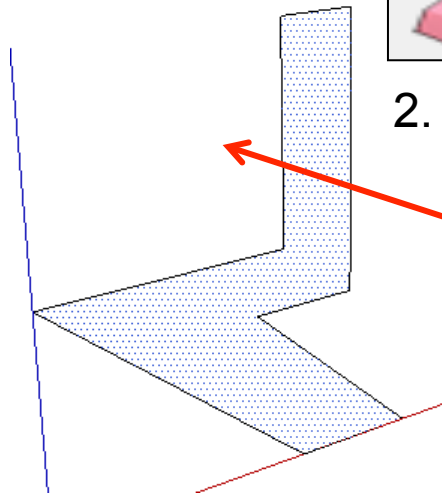
Note: this will place a tool bar across the top (**getting started**) and the side (**Large Tool Set**)

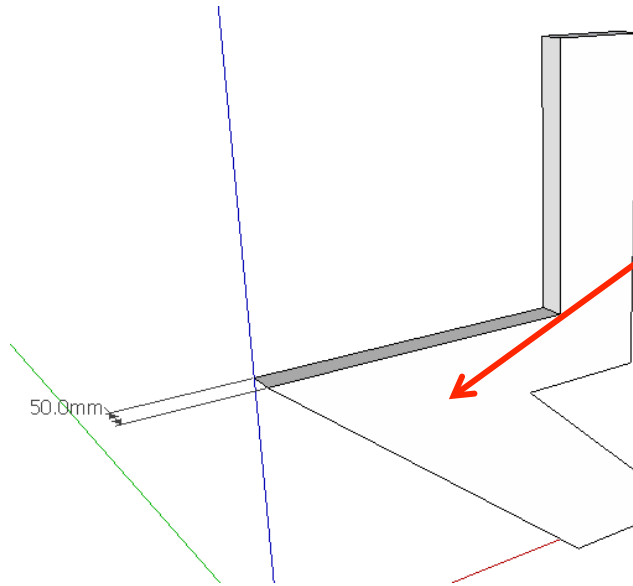


1. Open the drawing found in the following link/
Library / Designoutthebox / CAD Skills / Lesson 13 Components



2. Use the ***rubber tool*** to erase the area shown above so you are left with the shape opposite

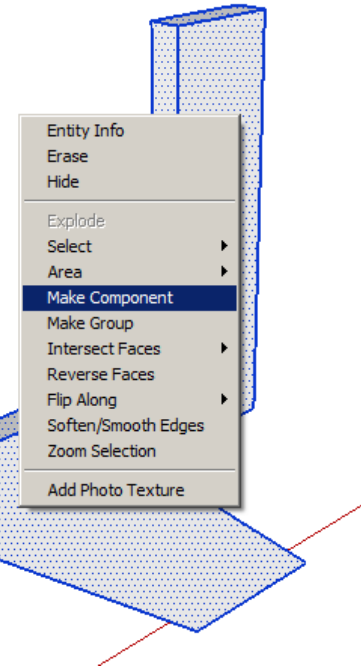
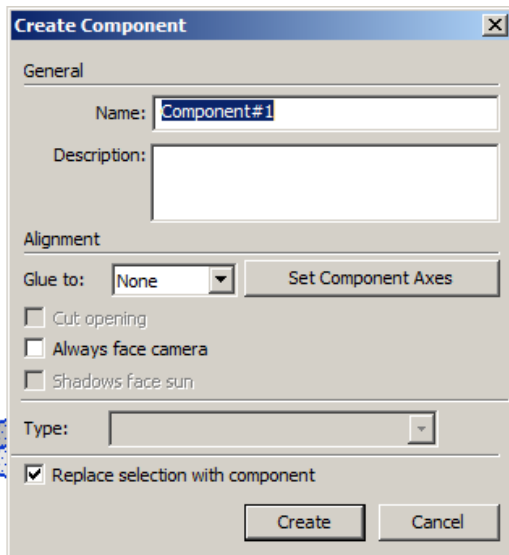




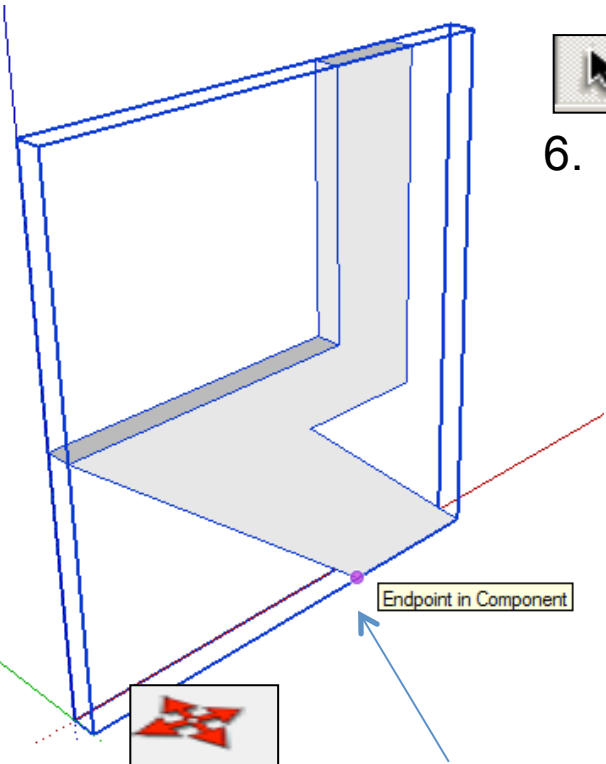
3. Use the **push pull tool** to raise the shape up. Type in **50** and **press enter**.



4. Use the **select tool** and click on the middle shape. Then **click on it three times** to select the entire object.

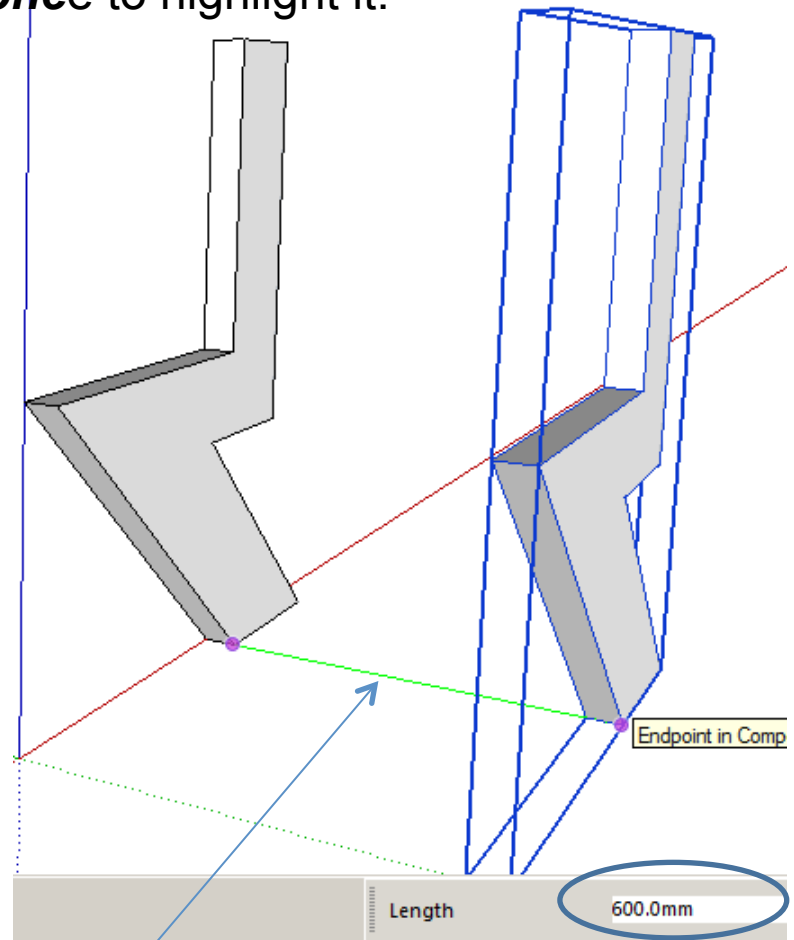


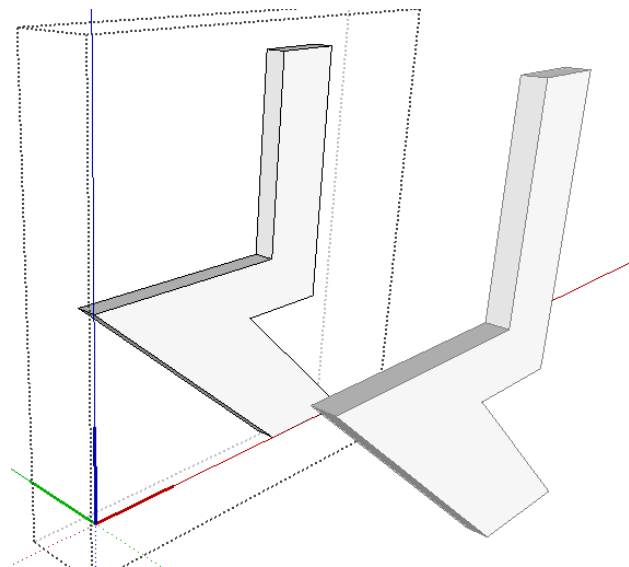
5. On the mouse **right click** and then select **make component**. **Press Create**



6. Use the ***select tool*** and click on the shape ***once*** to highlight it.

7. Click on the ***move tool*** and click on the corner of the shape.
8. Hold the ***Control button down*** and then ***press C*** (***copy***).
9. Hold the ***Control button down*** and then ***press V*** (***paste***).
10. Move the piece to the right of the original along the ***green axis*** so it lines up. ***Type in 600*** and ***press enter***.



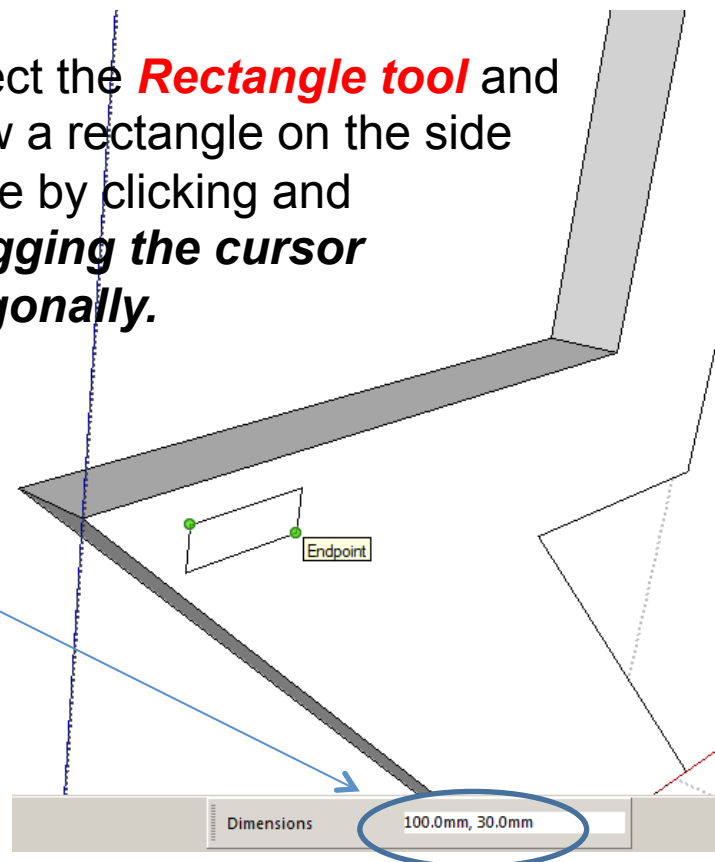


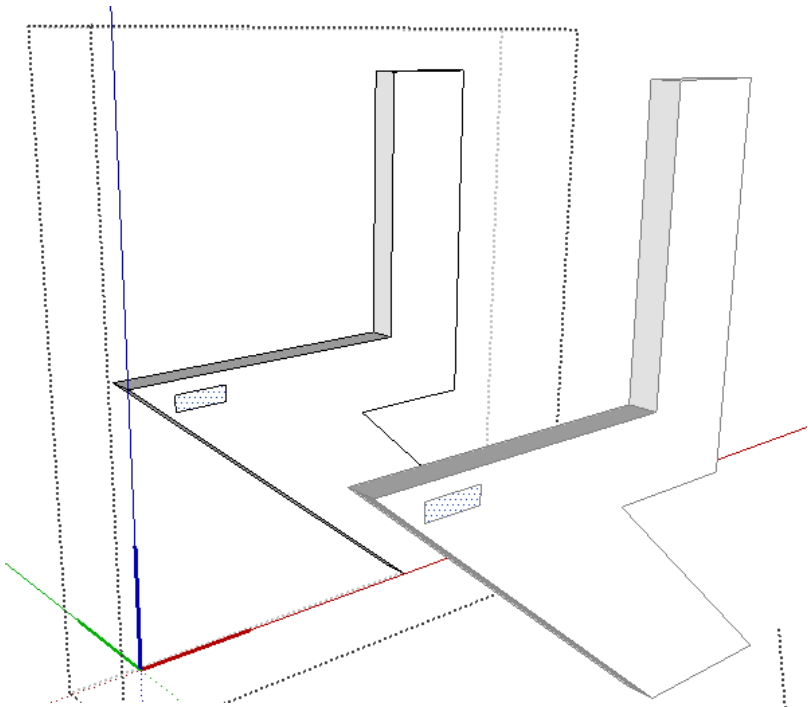
11. Use the **select tool** and click on the middle shape. Then **click on it twice** to edit the object.



11. Select the **Rectangle tool** and draw a rectangle on the side piece by clicking and **dragging the cursor diagonally**.

12. Once you have drawn the rectangle, enter '**100, 30**' and then press **Enter**.





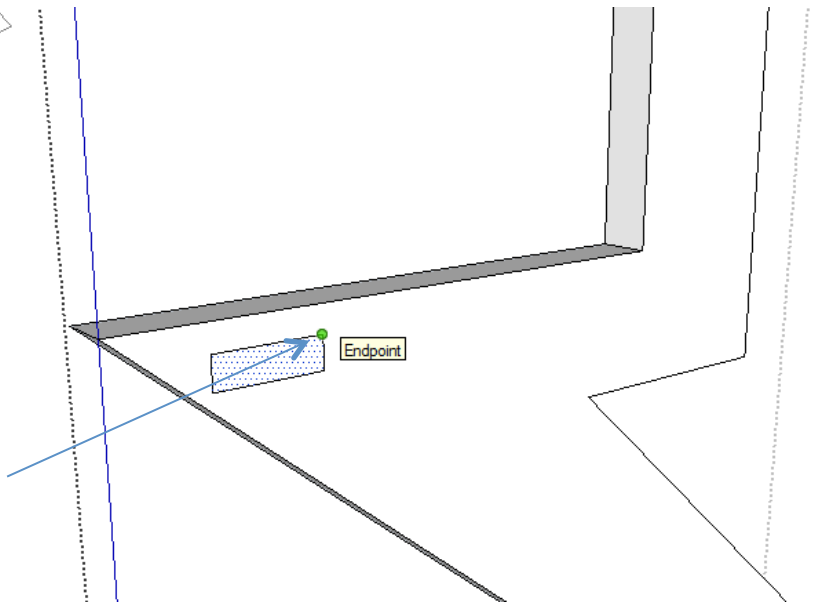
12. You will notice once you have drawn the rectangle, it will do the same on the opposite piece. This is the difference between a **component** and **group**.

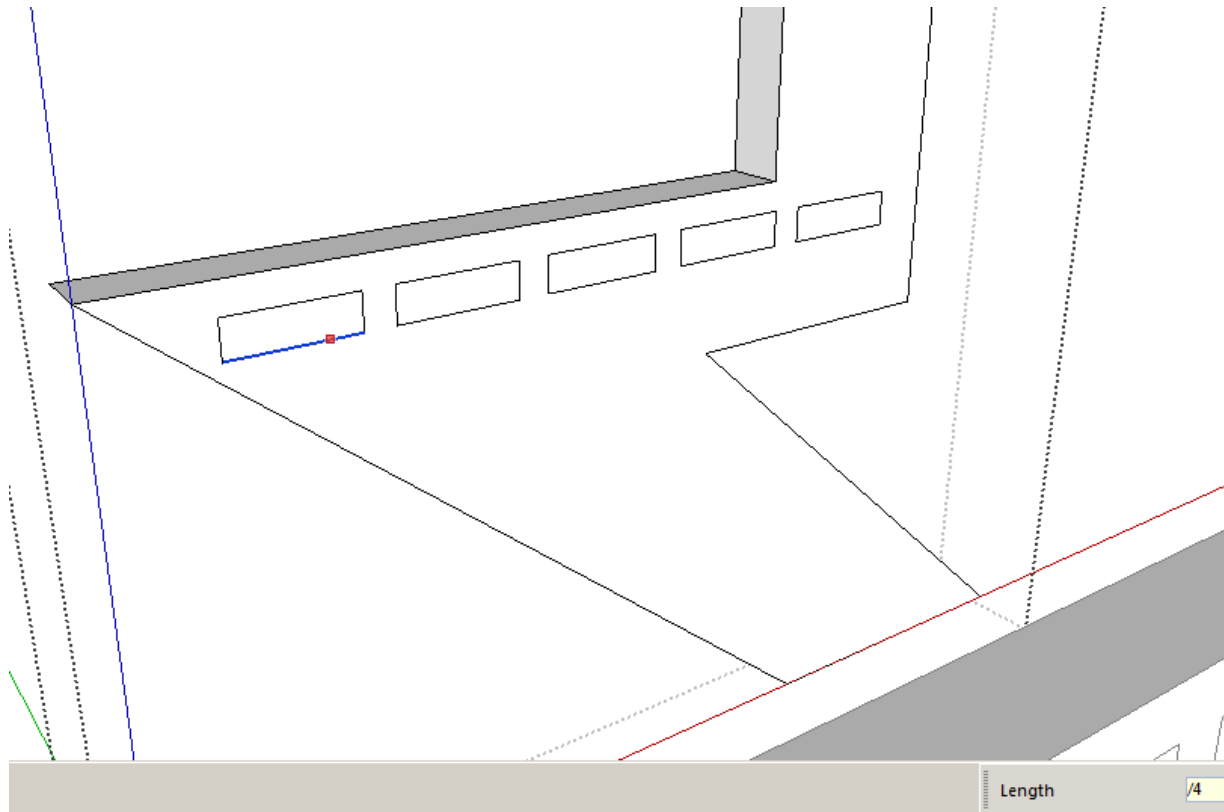


13. Use the **select tool** and click on the shape **once** to highlight it.



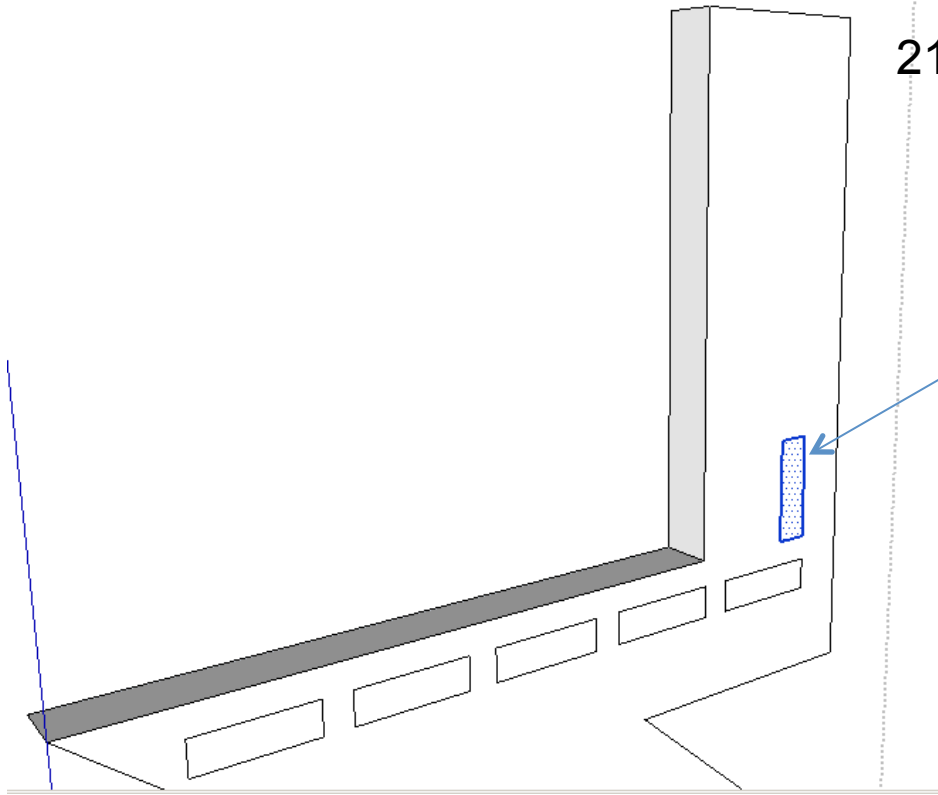
14. Click on the **move tool** and click on the corner of the shape shown





17. Straight away type in **/4** and **press enter**

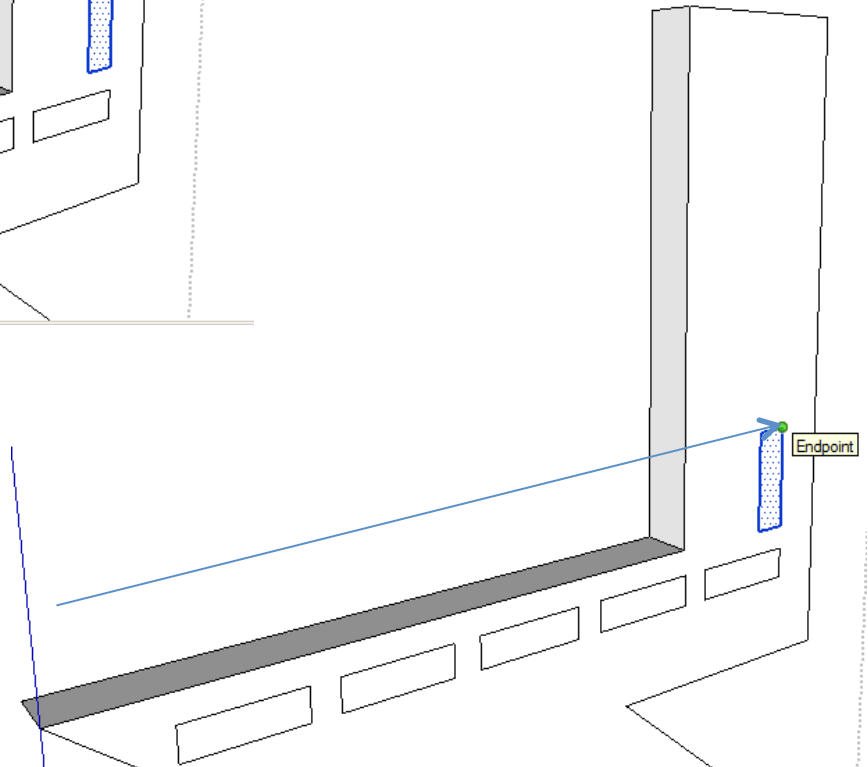
18. It should then infill **4 squares** in front of the last one **equally spaced out**

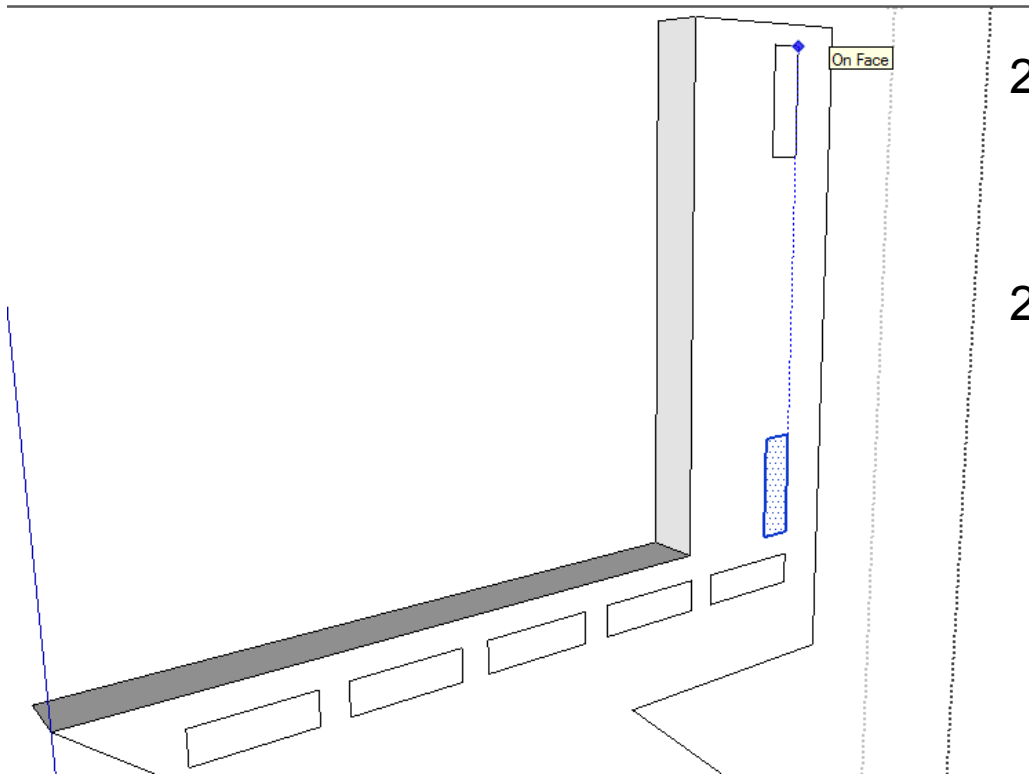


21. Once you have drawn the rectangle, enter '**30,100**' and then press **Enter**.



22. Click on the **move tool** and click on the corner of the shape shown



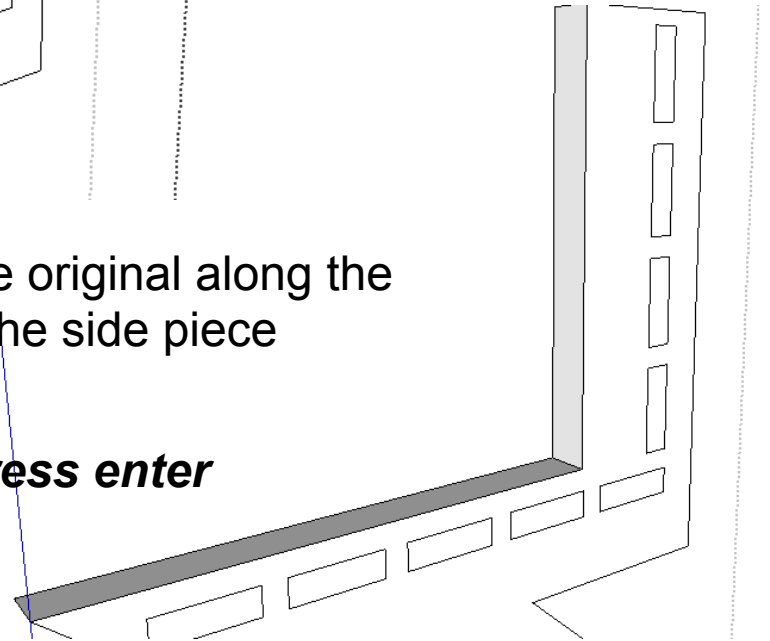


23. Hold the **Control button down** and then **press C (copy)**

24. Hold the **Control button down** and then **press V (paste)**

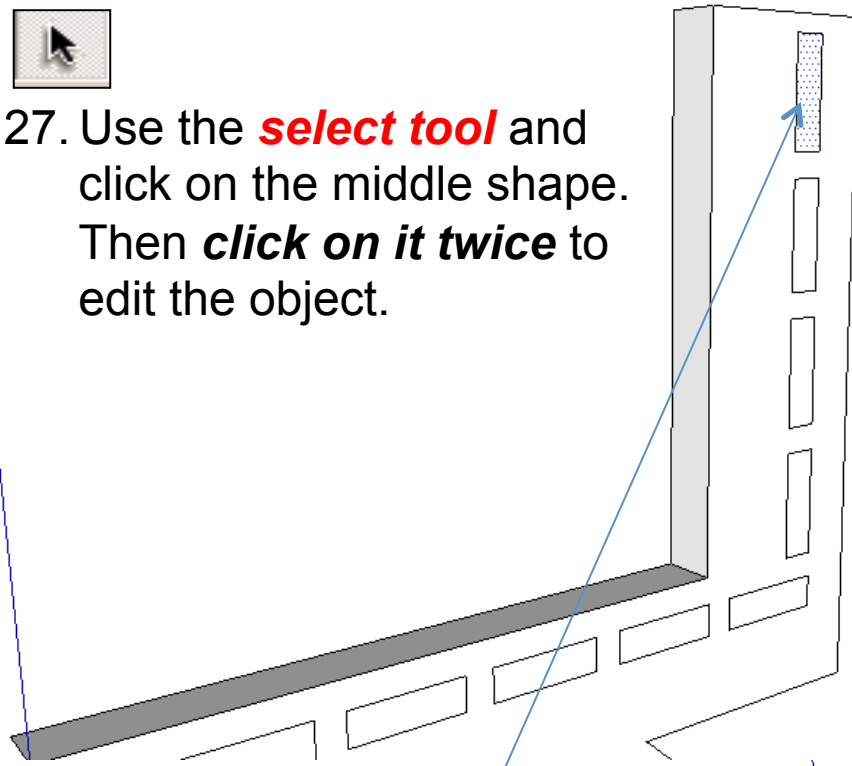
25. Move the piece to the right of the original along the **red axis** so it is near the top of the side piece shown

26. Straight away type in **/3** and **press enter**

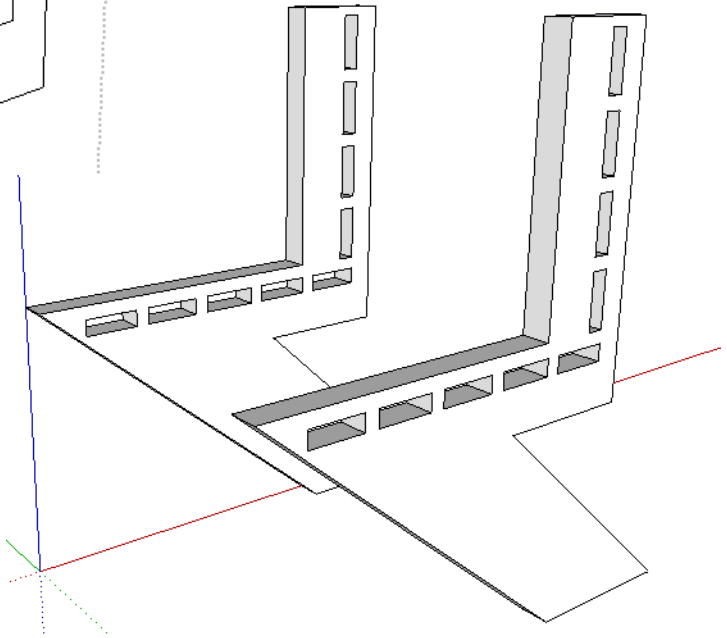


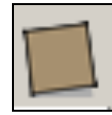
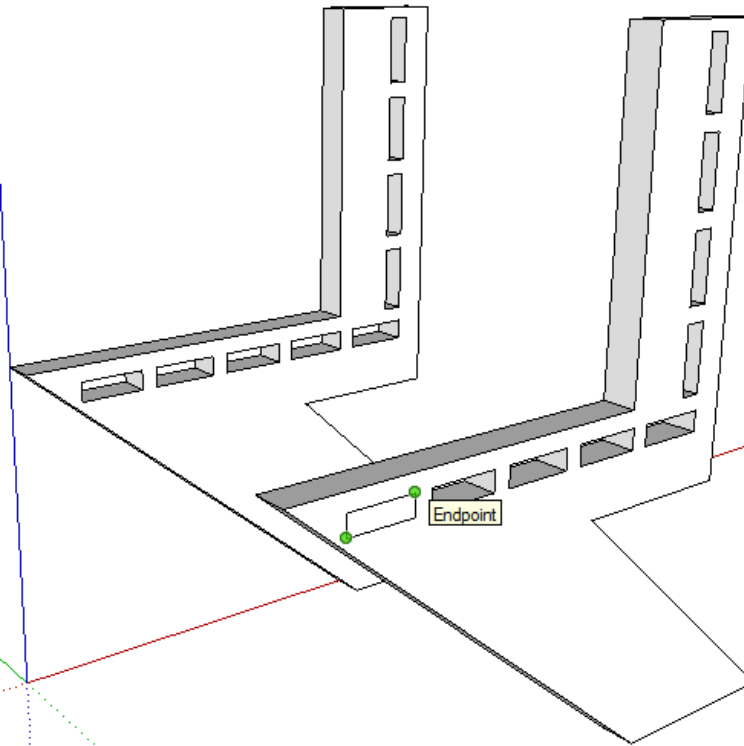


27. Use the ***select tool*** and click on the middle shape. Then ***click on it twice*** to edit the object.



28. Use the ***push pull tool*** to push the squares in. Type in ***50*** and press enter. Repeat on all the squares you have drawn. It will repeat it on both sides

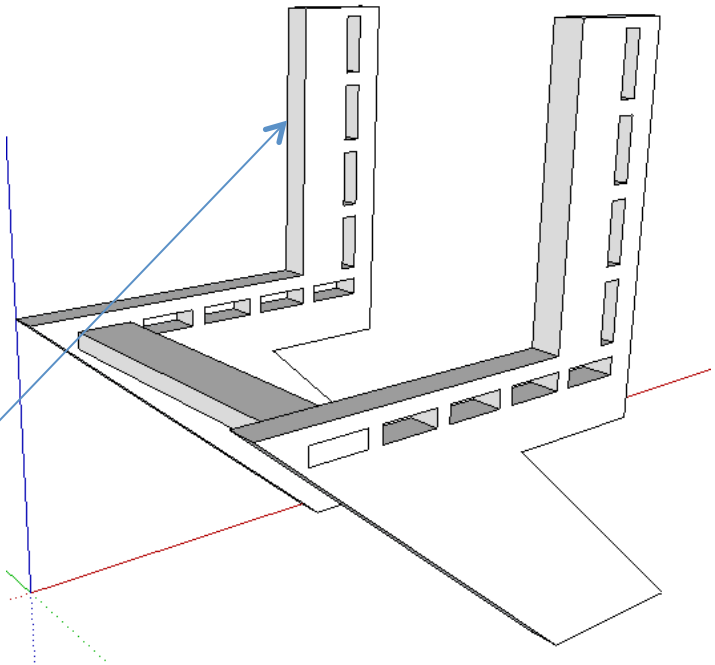


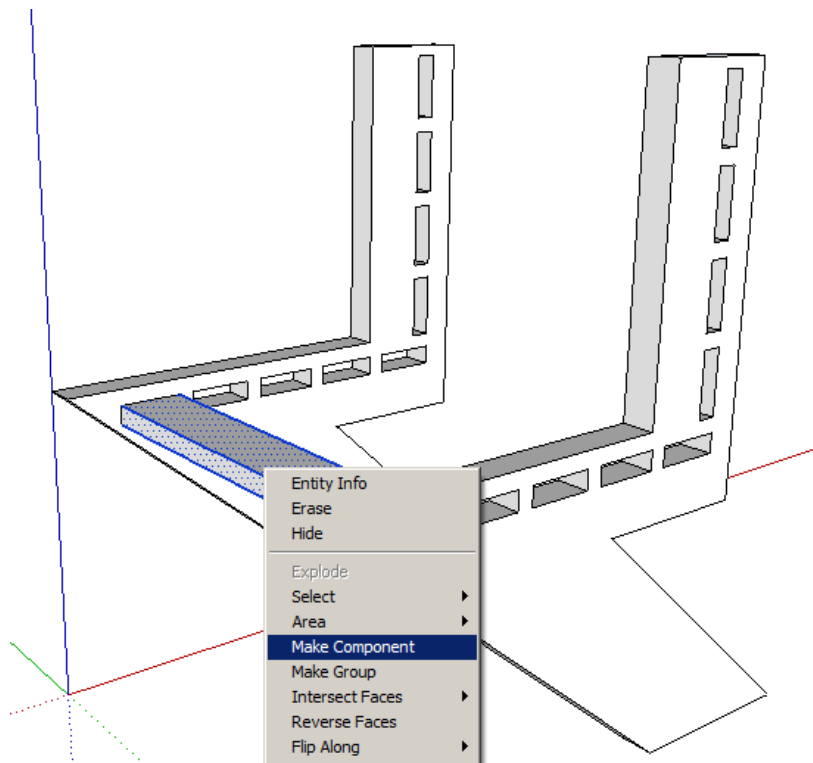


29. Select the **Rectangle tool** and draw a rectangle on the side piece by clicking and **dragging the cursor diagonally as shown from one point to another.**



30. Use the **push pull tool** to push the shape across. Move your mouse to the outside edge as shown to ensure the correct depth, or type **603** and **press enter.**

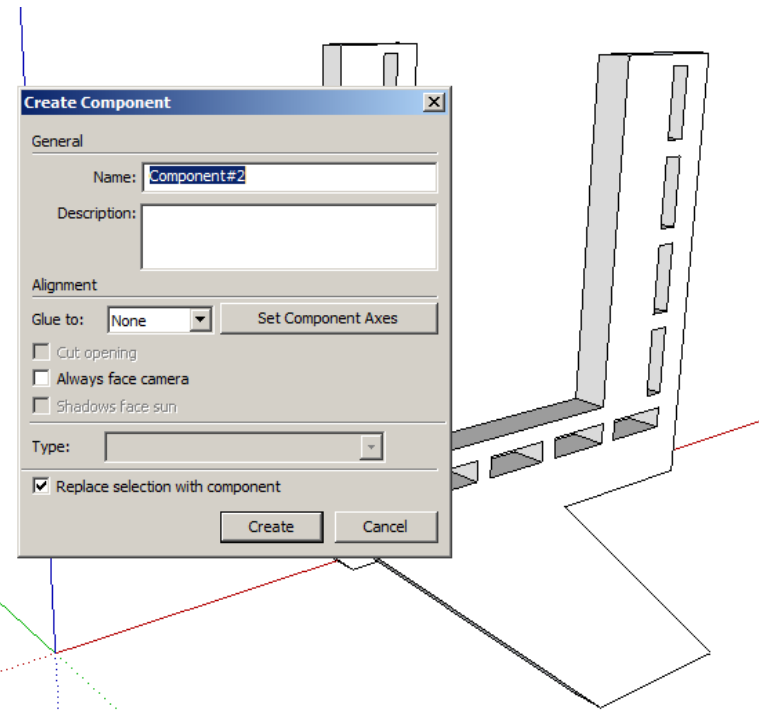


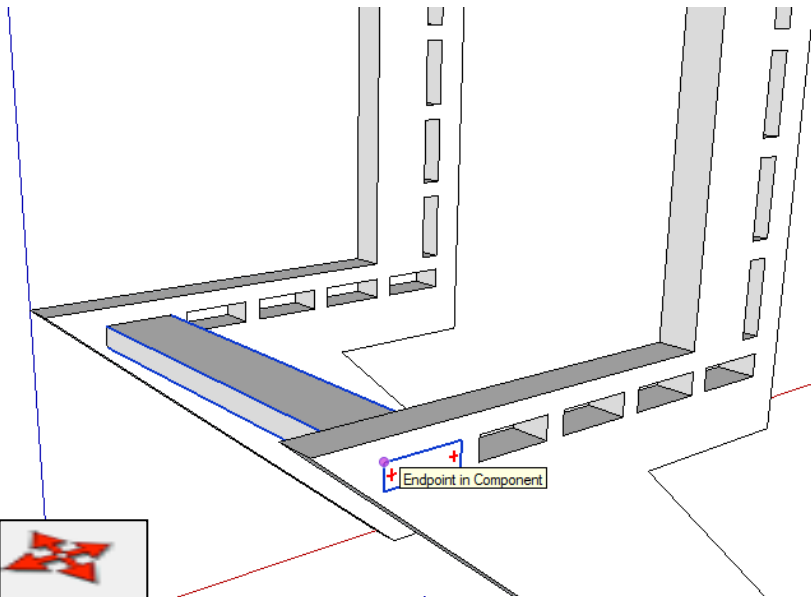


32. On the mouse **right click** and then select **make component**.
Press Create



31. Use the **select tool** and click on the middle shape. Then **click on it three times** to select the entire object.





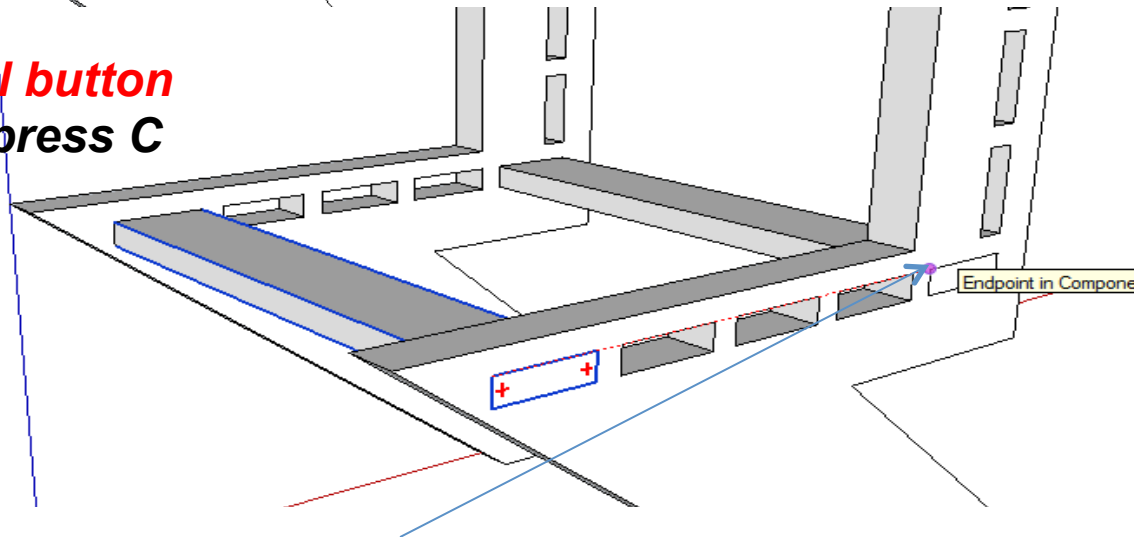
33. Use the **select tool** and click on the shape **once** to highlight it.

34. Click on the **move tool** and click on the corner of the shape

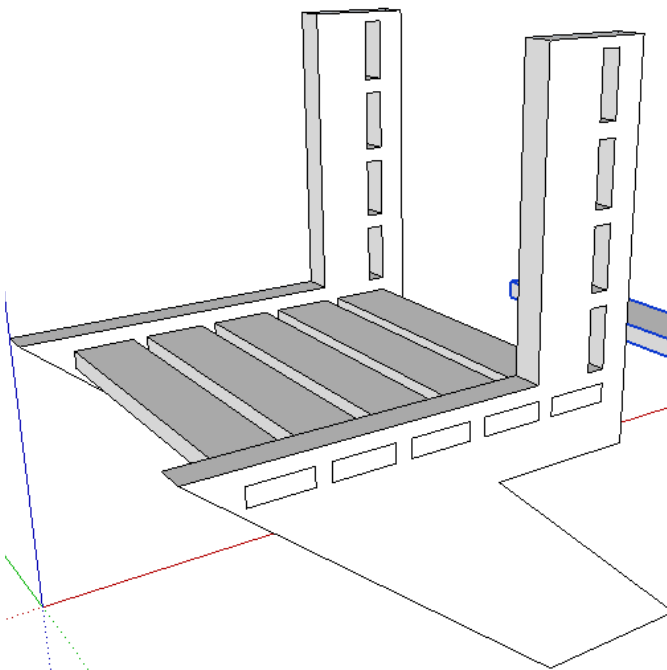


35. Hold the **Control button down** and then **press C (copy)**

36. Hold the **Control button down** and then **press V (paste)**



37. Move the piece to the right of the original along the rectangles until it snaps to the last one and the **endpoint shown**.



44. Use the **select tool** and click on the shape **once** to highlight it.

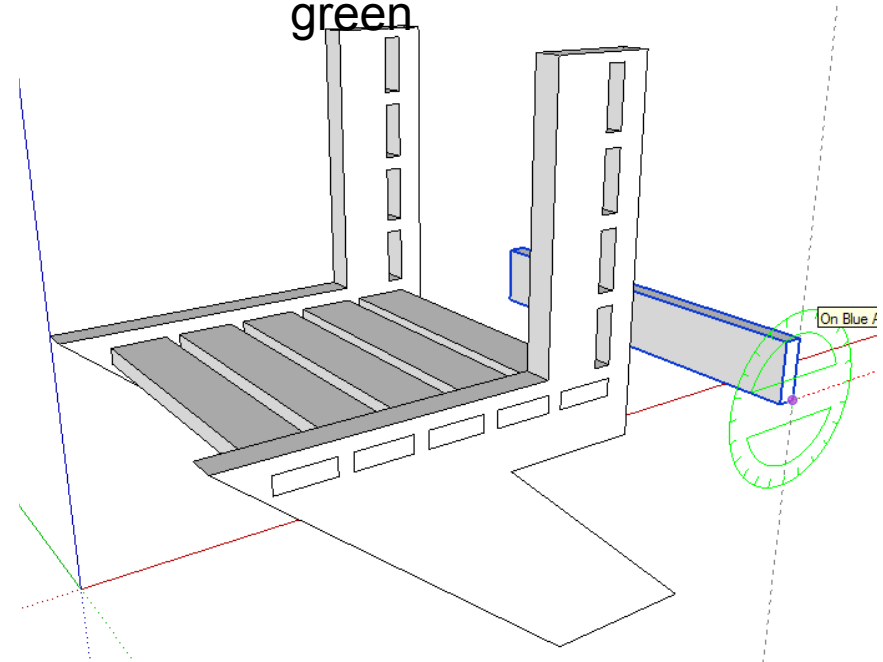


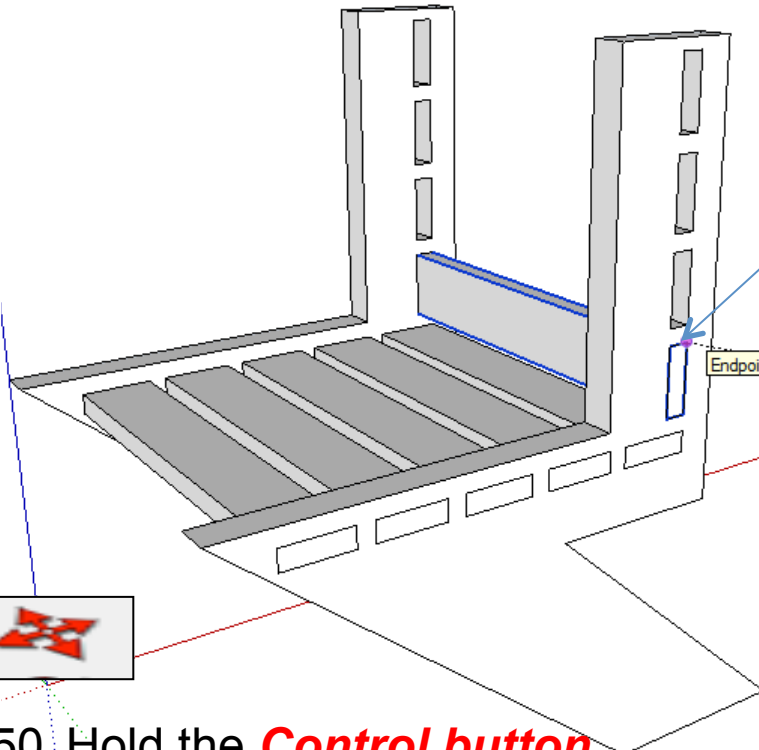
On Red Axis 500.0mm

45. Use the **rotate tool** and **click once** on the corner of the shape shown, ensure the rotate tool remains green

46. **Pull the line out** along the **red axis** and click a second time to start rotating

47. **Rotate until** its is 90 degrees and click a third time to set or alternatively type in **90 and press enter**.





48. Click on the **move tool** and move the piece on to the endpoint of the chair shown.



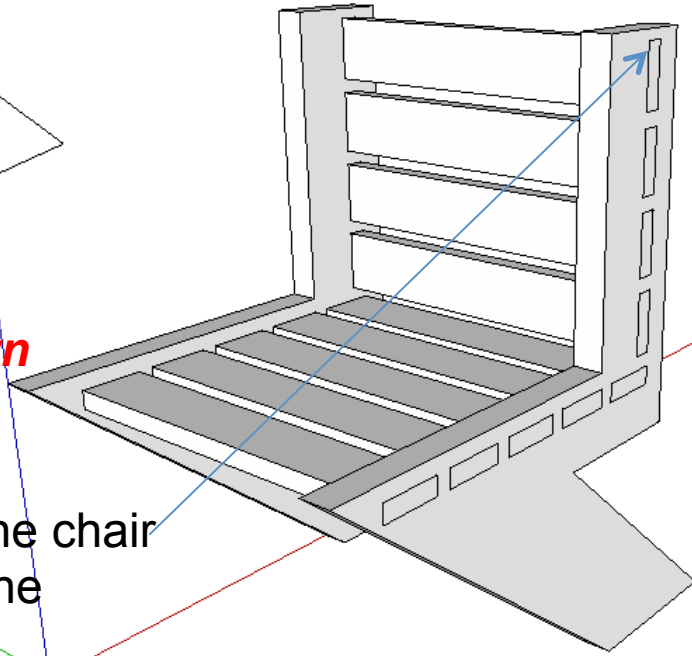
49. Click on the **move tool** and click on the corner of the shape.

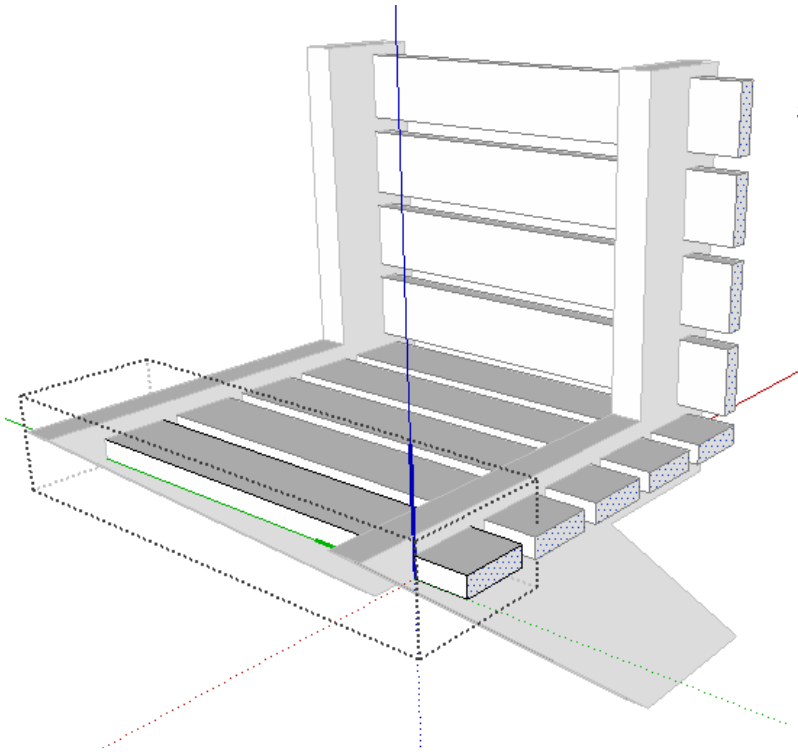


50. Hold the **Control button down** and then **press C (copy)**

51. Hold the **Control button down** and then **press V (paste)**

52. Move the piece to the top of the chair and type in /3 to **copy array** the missing pieces.

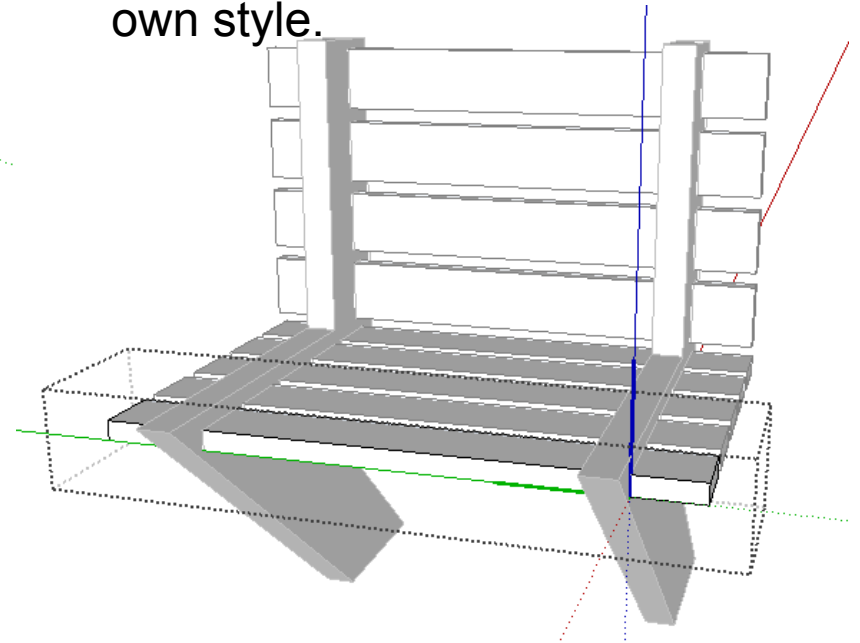


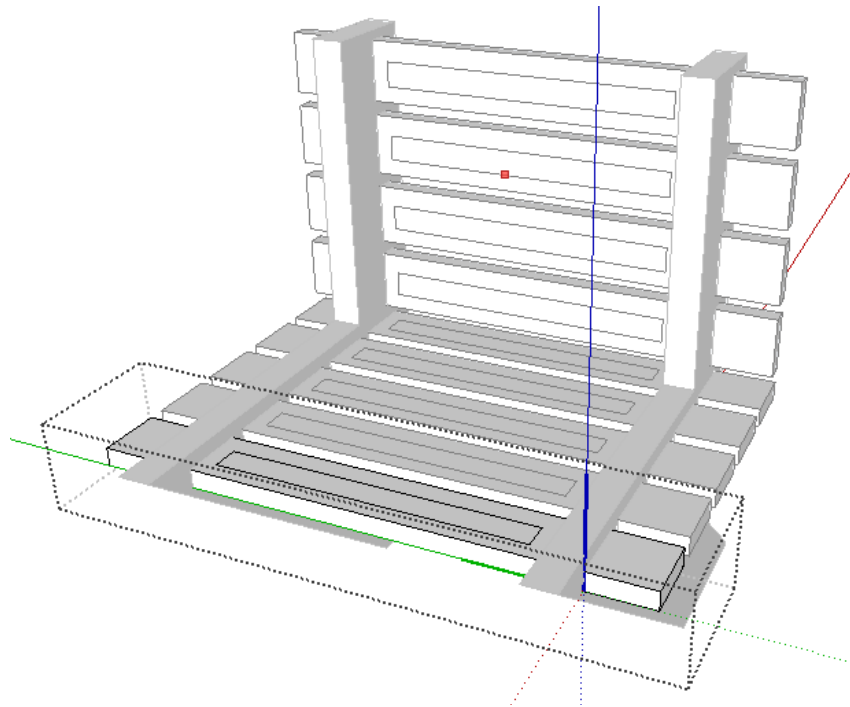


53. Use the ***select tool*** and click on the shape ***twice*** to edit it.

Task:

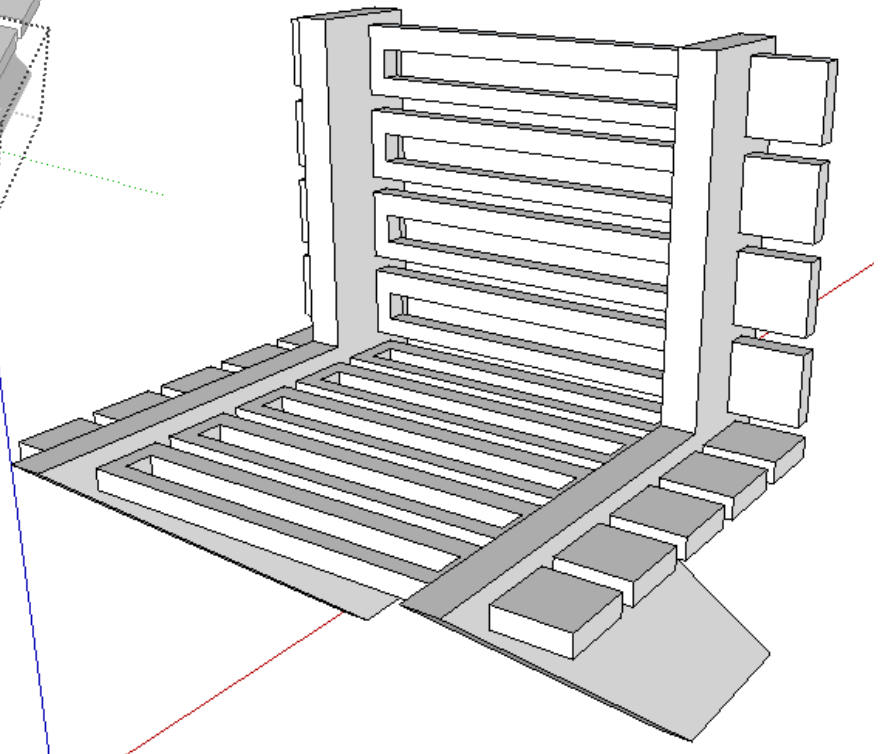
Have a go at changing the shape of the wooden slats and the sides of the chair to your own style.

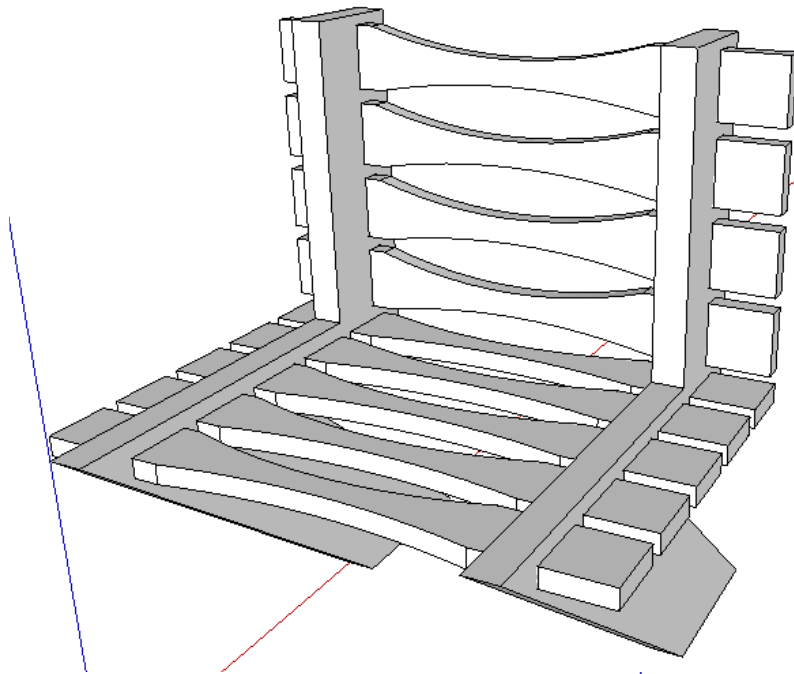




Task:

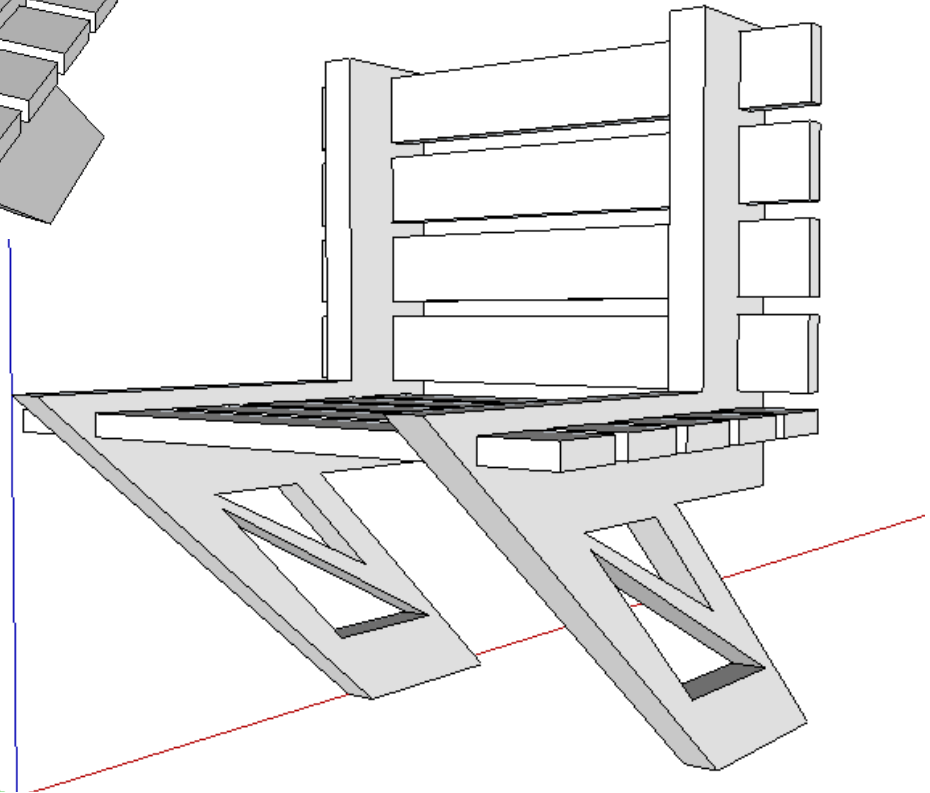
Have a go at changing the shape of the wooden slats and the sides of the chair to your own style.

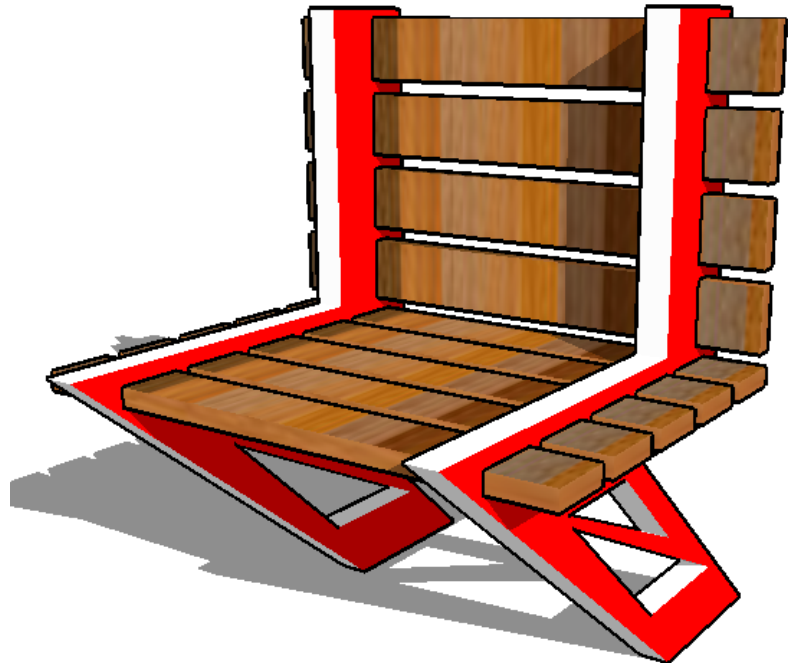




Task:

Have a go at changing the shape of the wooden slats and the sides of the chair to your own style.





Task:

Have a go at changing the shape of the wooden slats and the sides of the chair to your own style.

