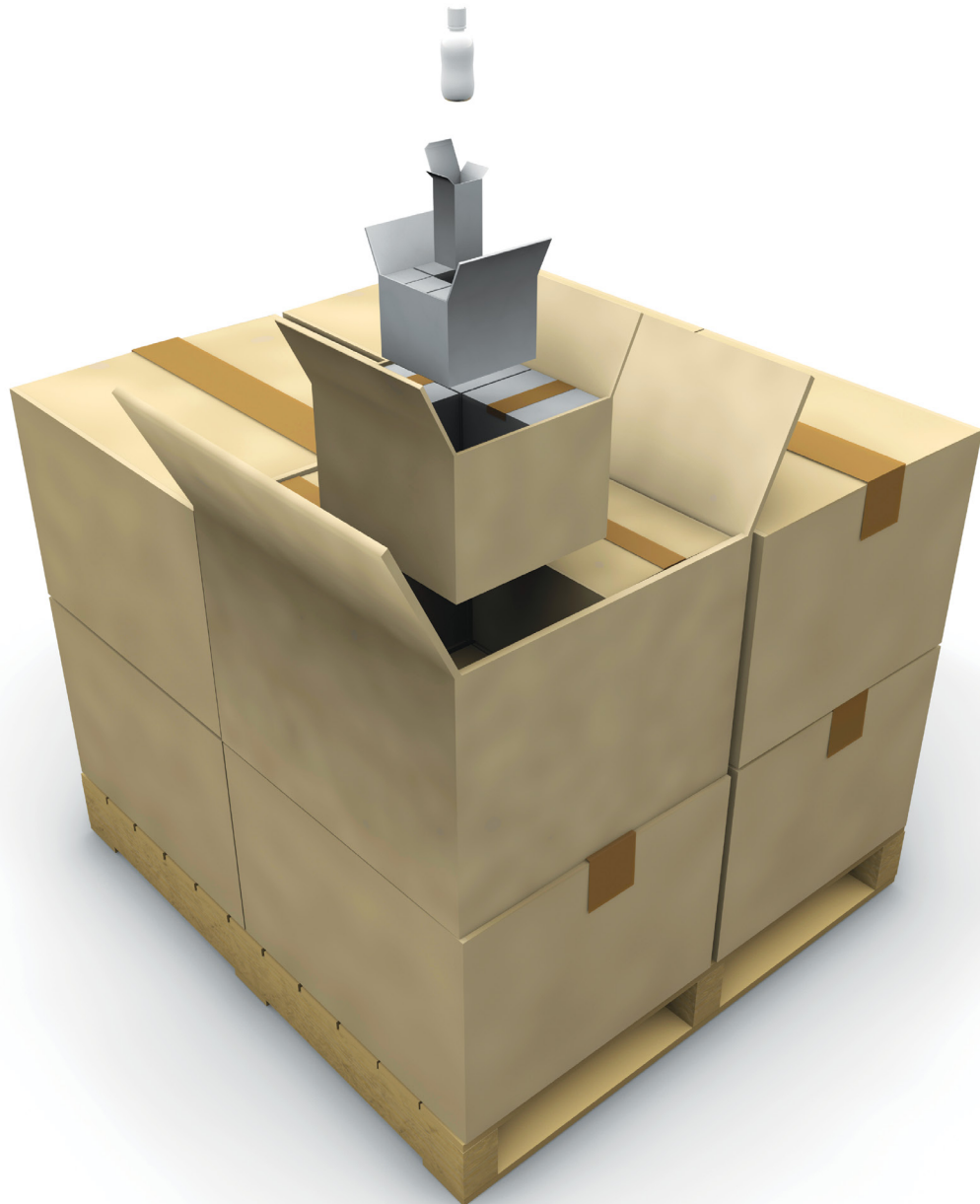


Package Development with SolidWorks® 2013



Changfeng Ge
Andrew Hurley

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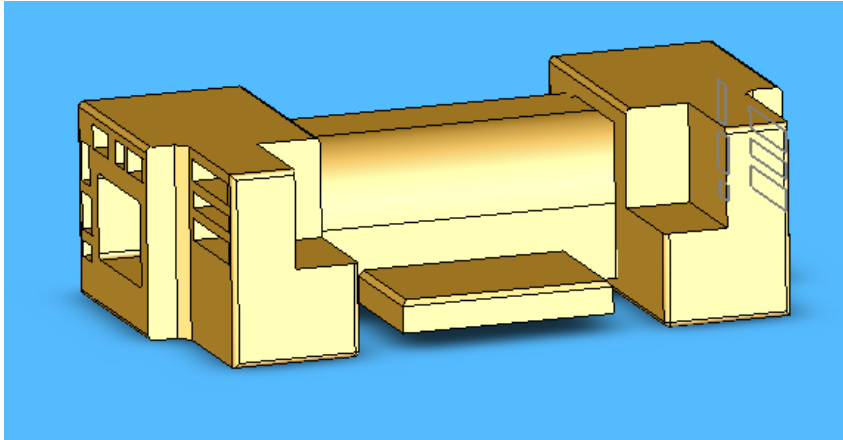
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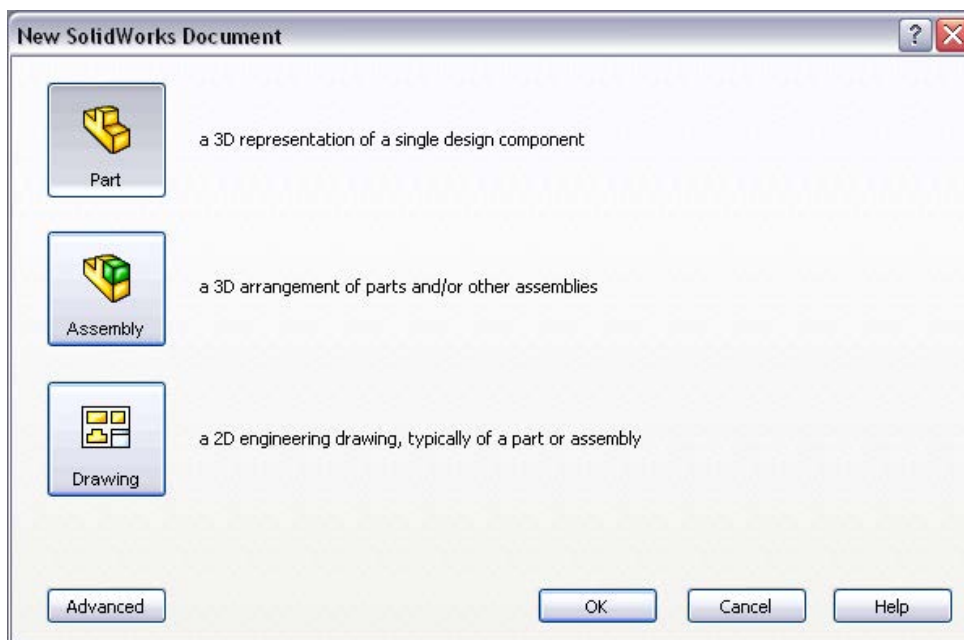
Chapter 2

Cushion Design for a Printer

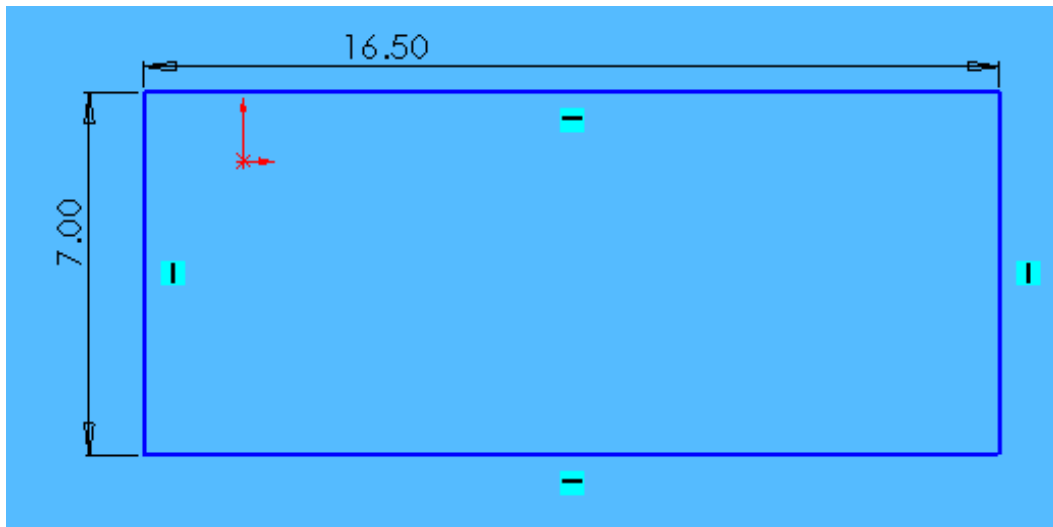


We start to draw a printer.

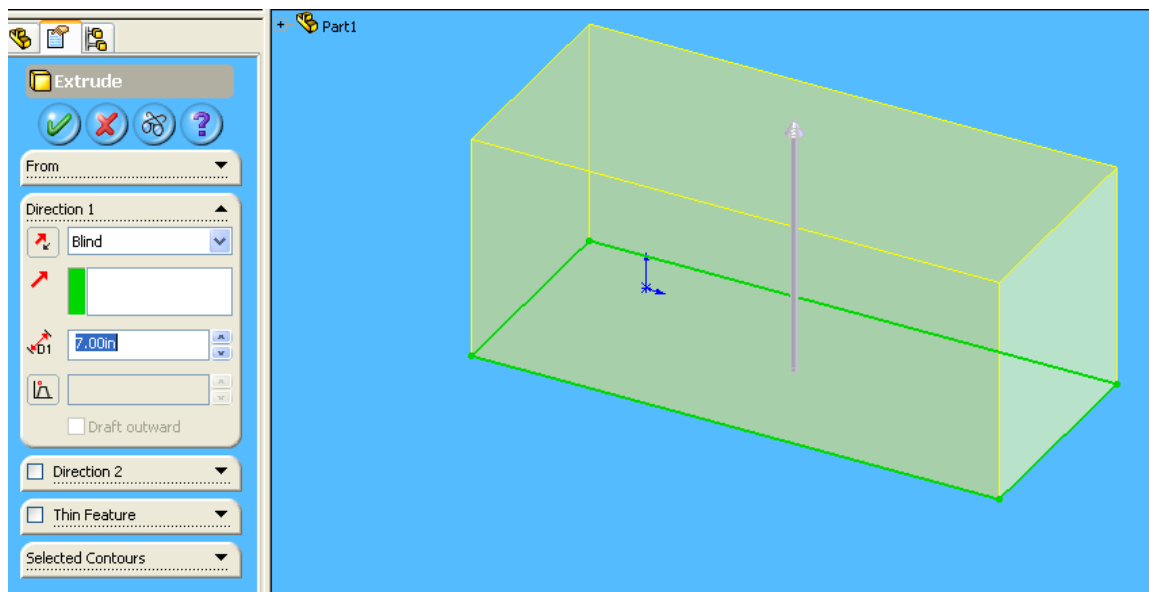
1. Open up a Part document.



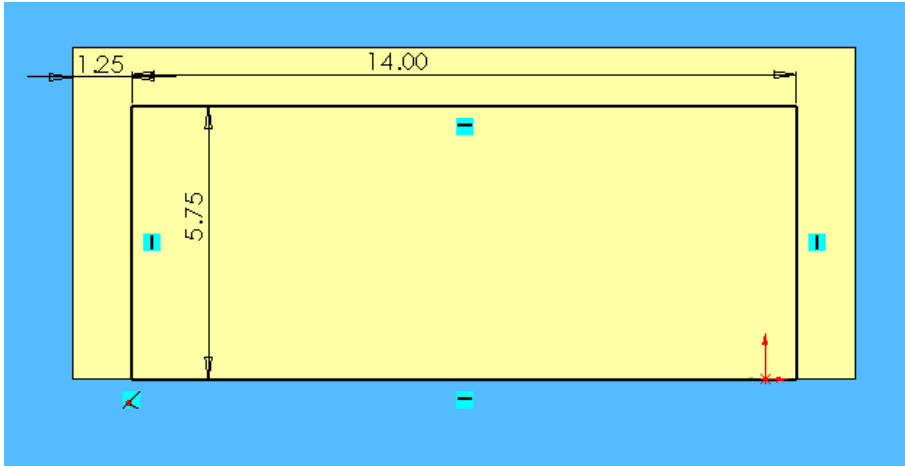
2. Choose the Top Plane; draw the following rectangle with the dimensions 16.50 in x 7.00 in:



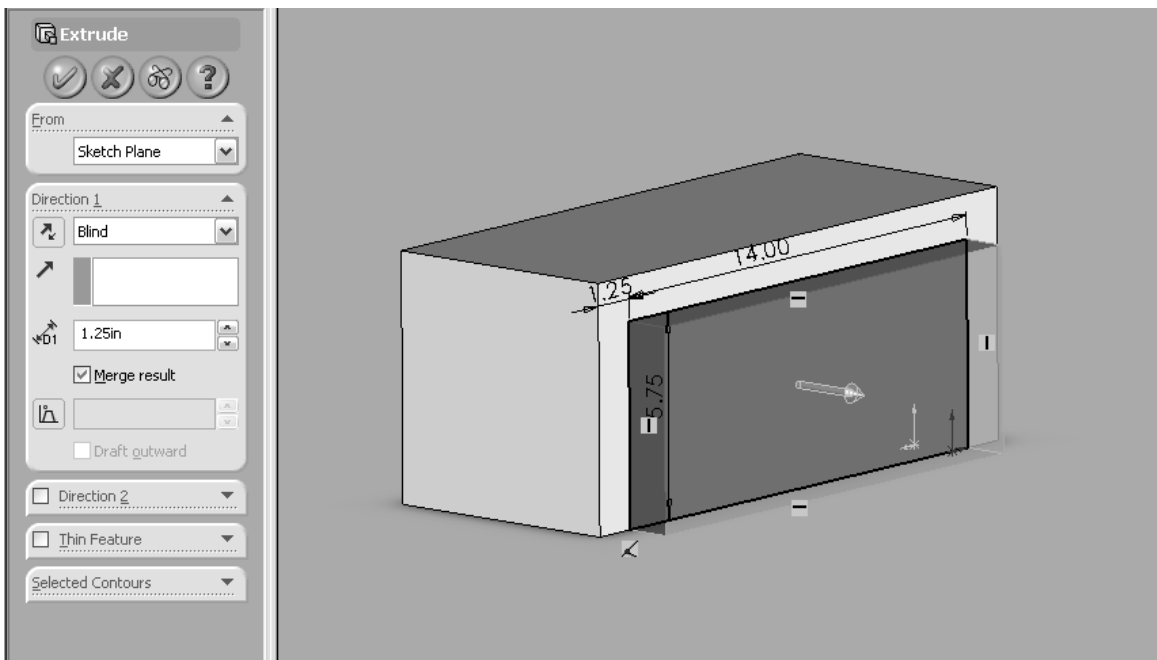
3. Exit the sketch and Extrude Boss/ Base this rectangle up 7in.



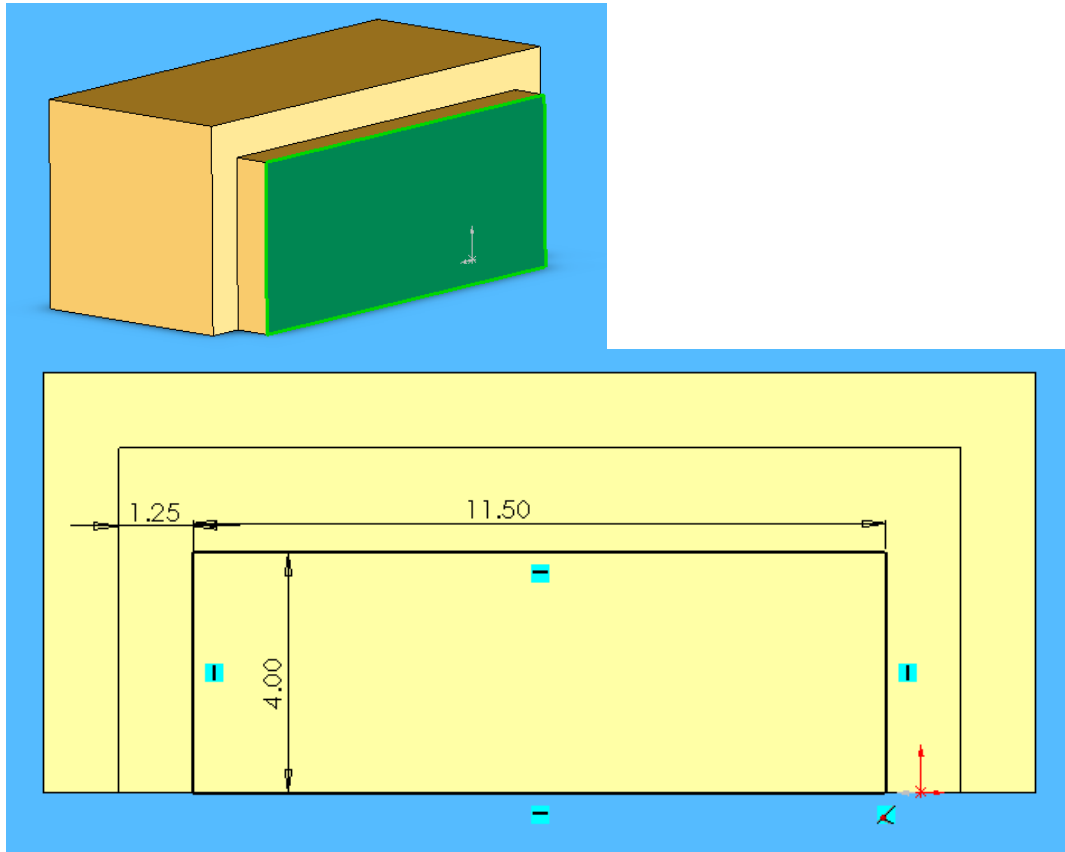
4. Rotate the object using the Back rotating button. Select the Back Face. Draw the following:



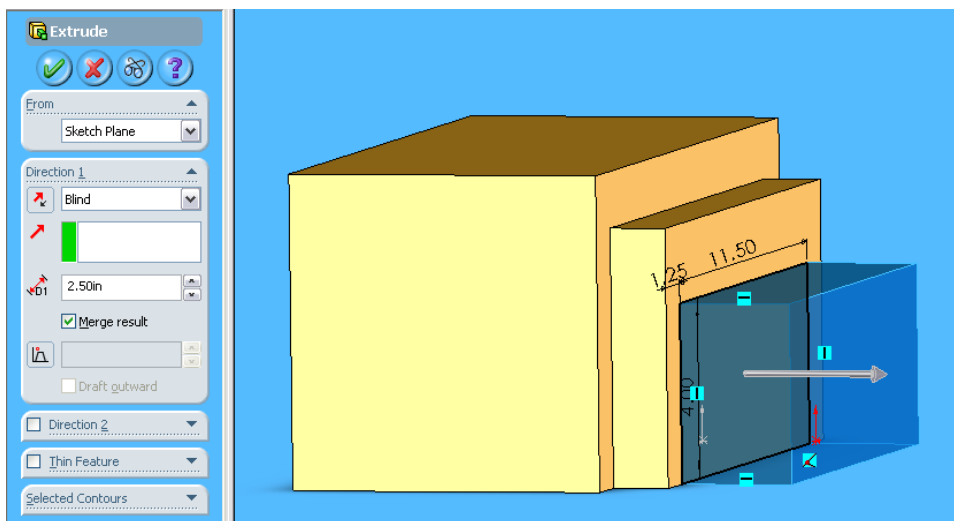
5. Extrude Boss/ Base this sketch out 1.25in.



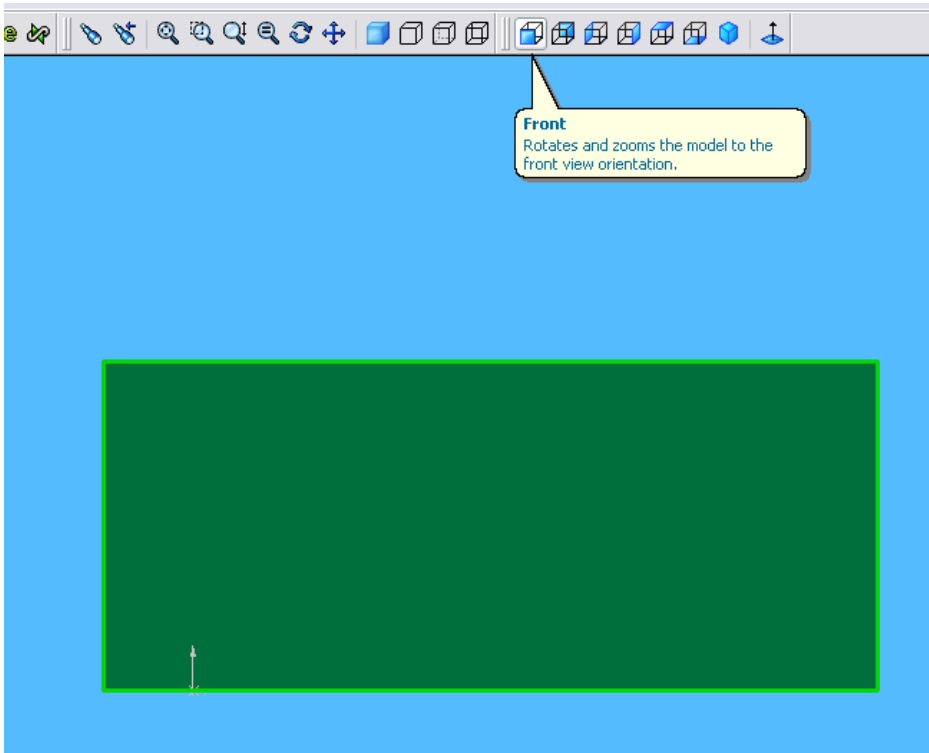
6. Select the Back face and Draw the following rectangle:



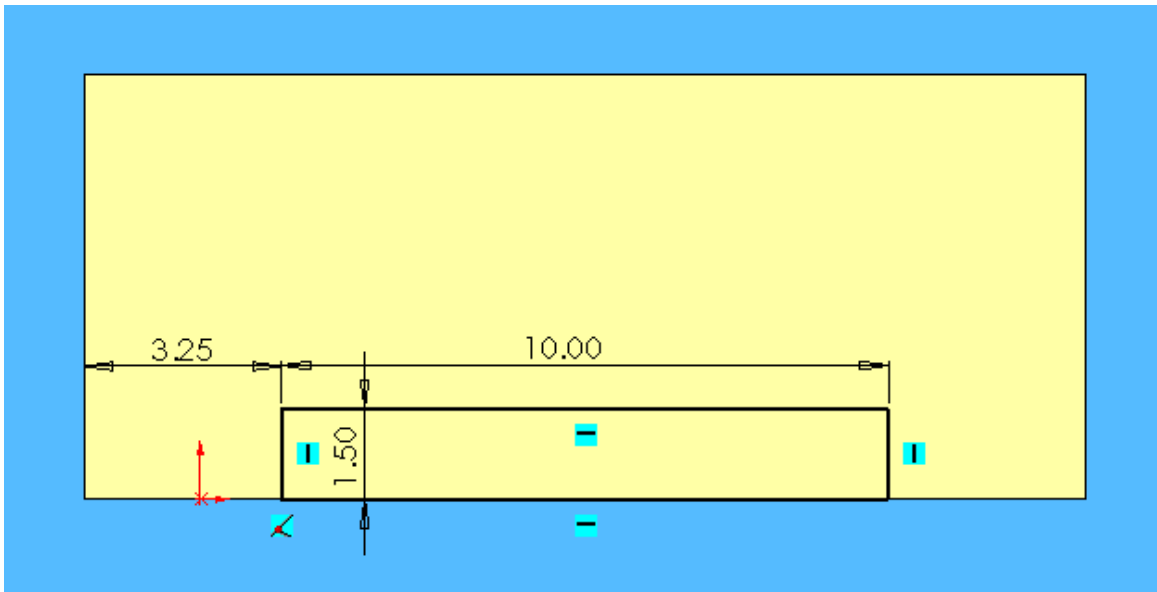
7. Extrude Boss/ Base this sketch out 2.5in.



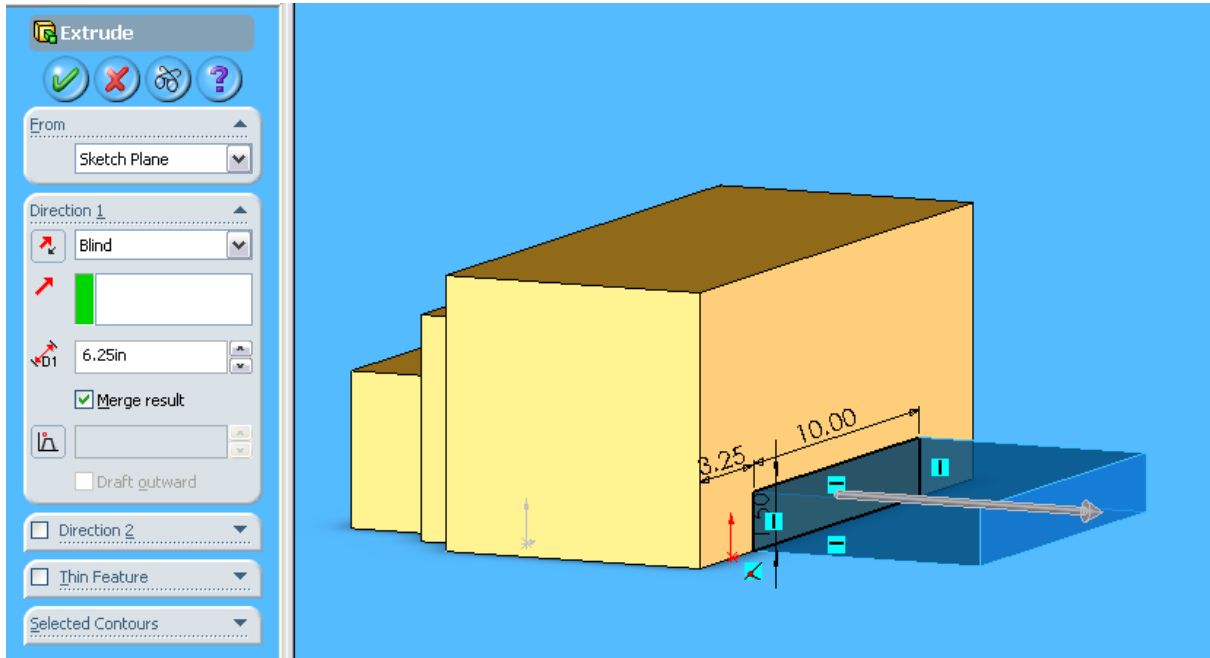
8. Rotate to the Front of the object and select the Front Face.



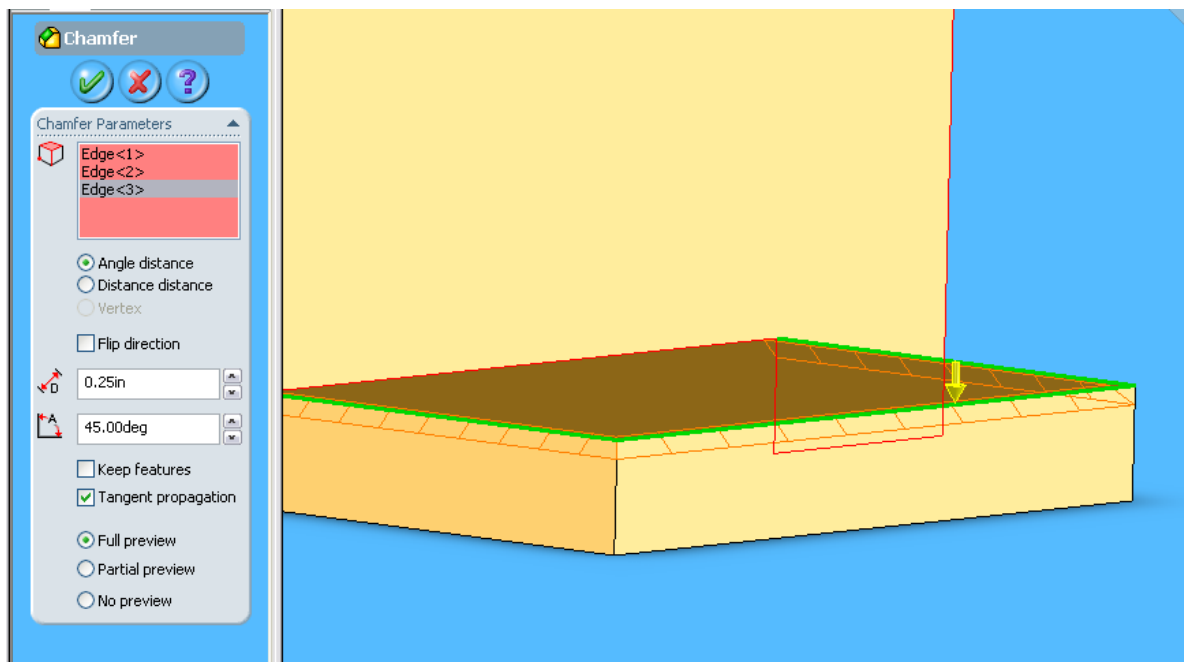
9. Draw the following rectangle:



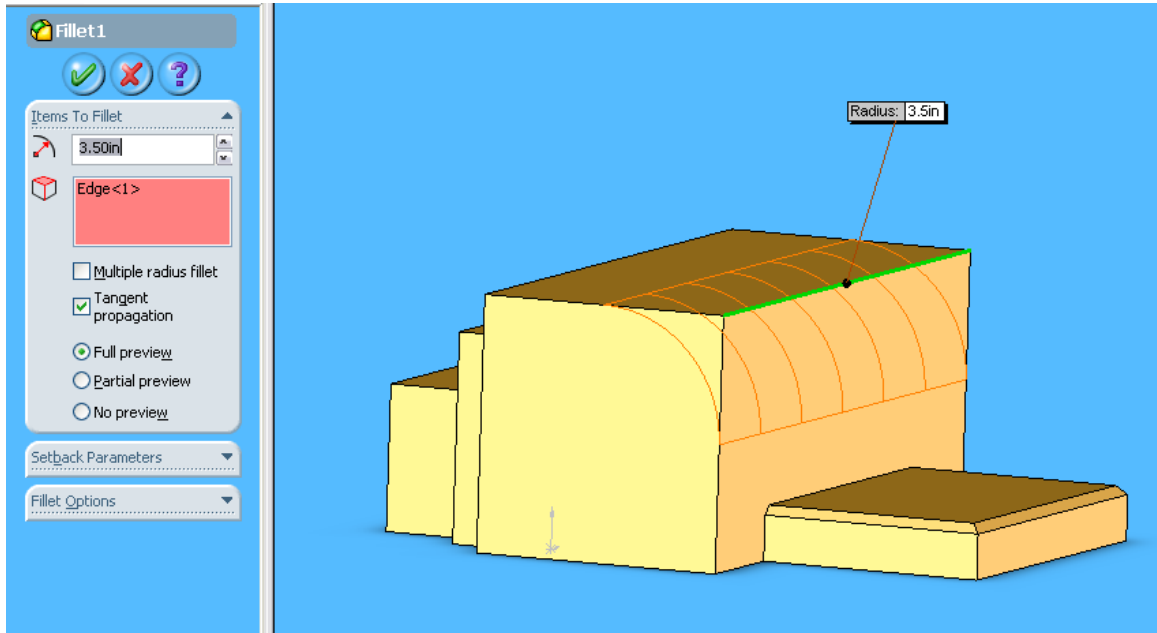
10. Extrude Boss/ Bass this sketch out 6.25in.



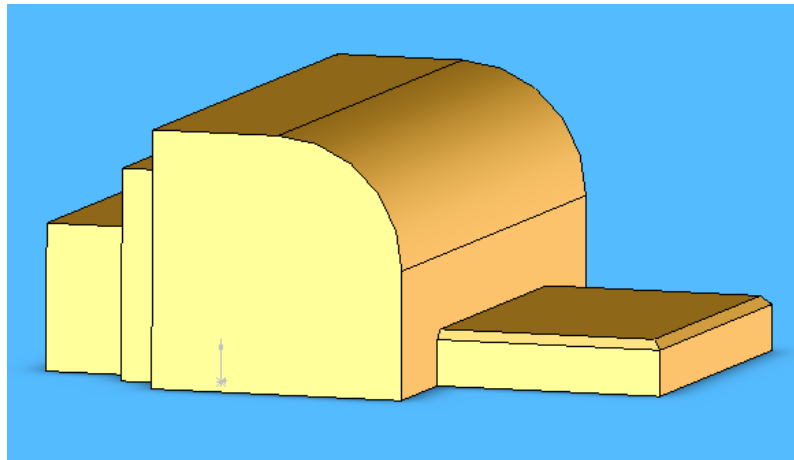
11. Select the Chamfer tool. Click on the top Edges of the paper tray. Change the Distance to 0.25 in.



12. Select the Fillet tool and the top front edge of the printer. Change the radius to 3.5in.

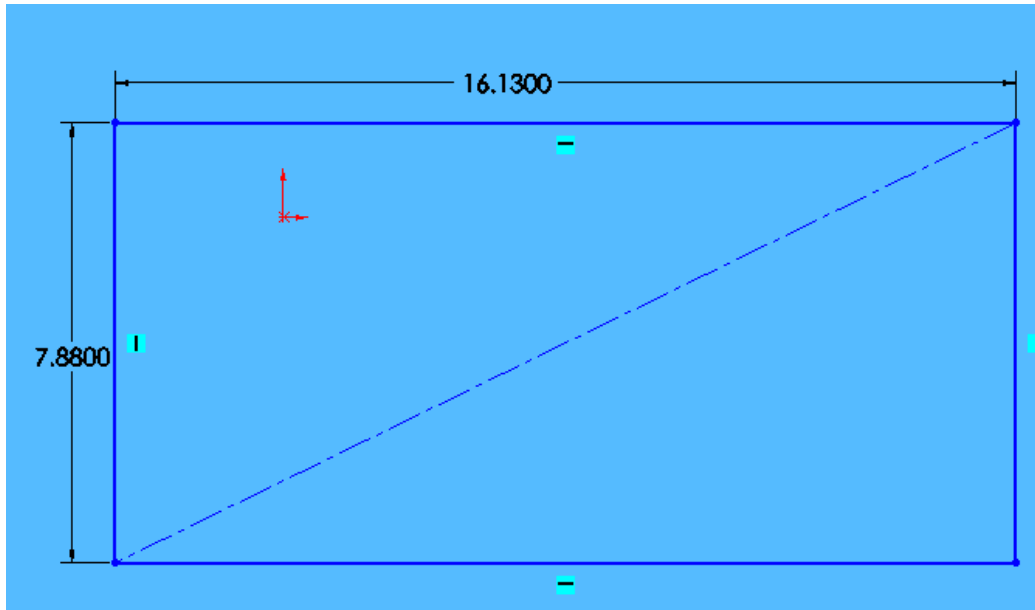


13. The Printer is now complete!

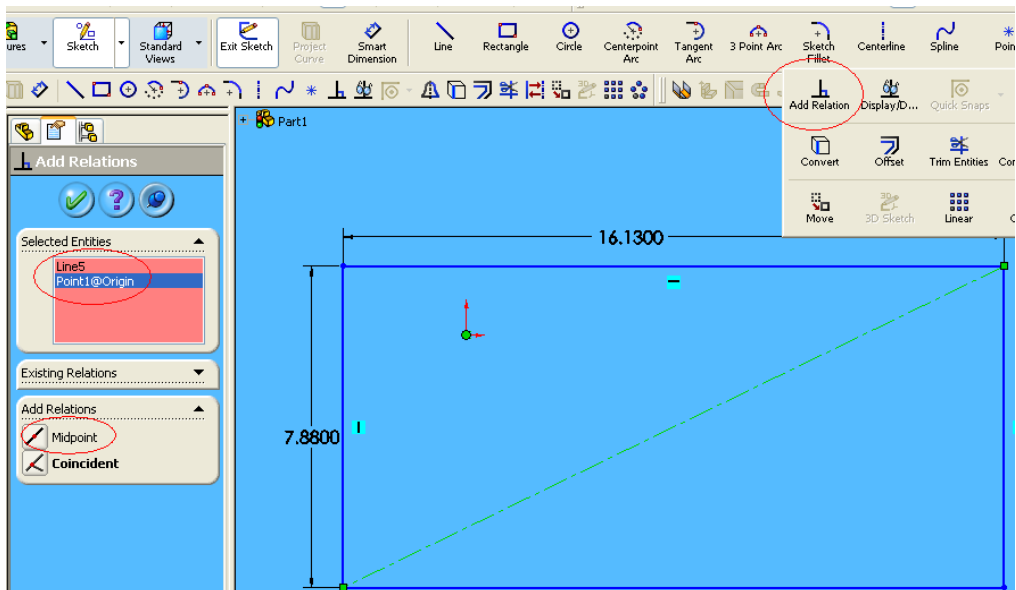


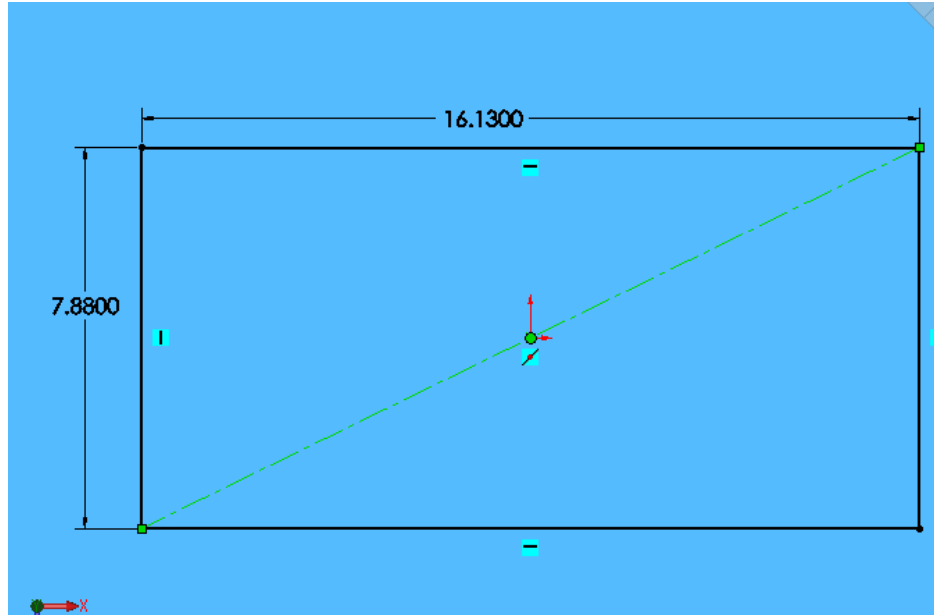
We will start off by building the EPS cushioning. Start off with a new Part document in SolidWorks.

14. Choose the Top Plane to draw on. Draw a Rectangle with the dimensions of 16.13in x 7.88in. Then draw a centre line on the diagonal.

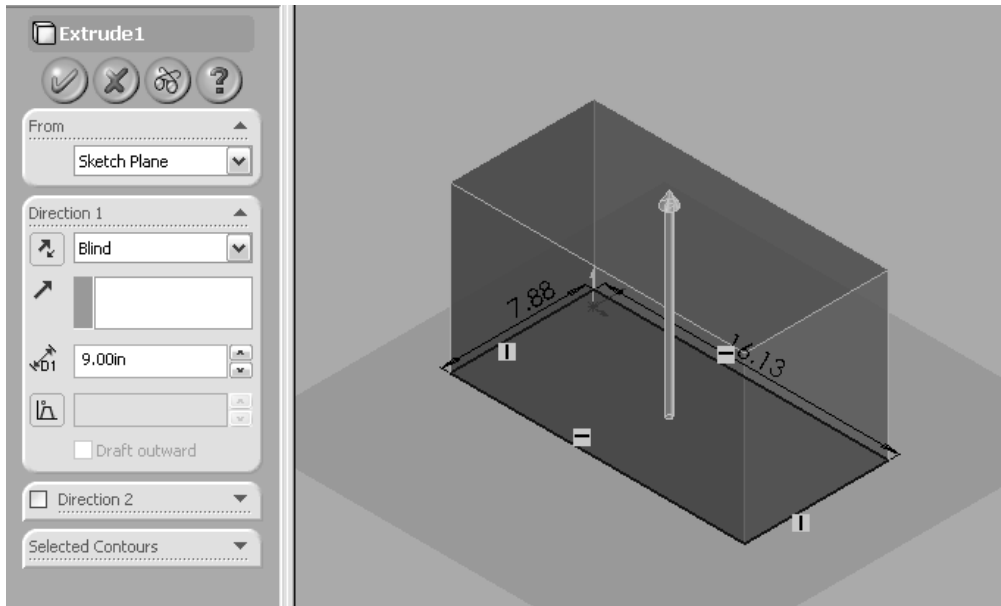


15. Choose 'ADD RELATION'. Select the Point@origin and the diagonal centre line, Add their relation to midpoint. The Point@origin is in the middle of the centre line

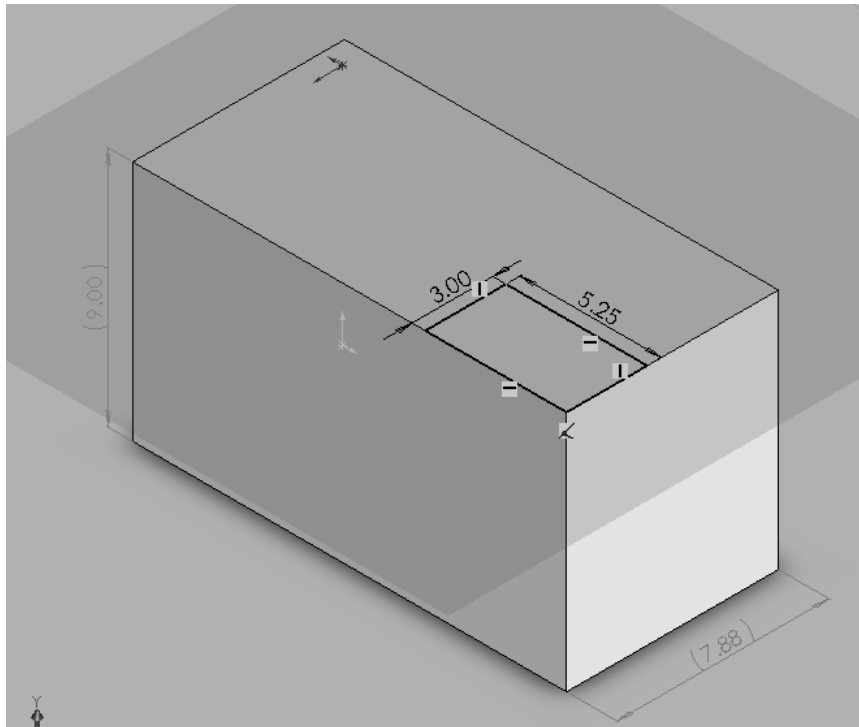




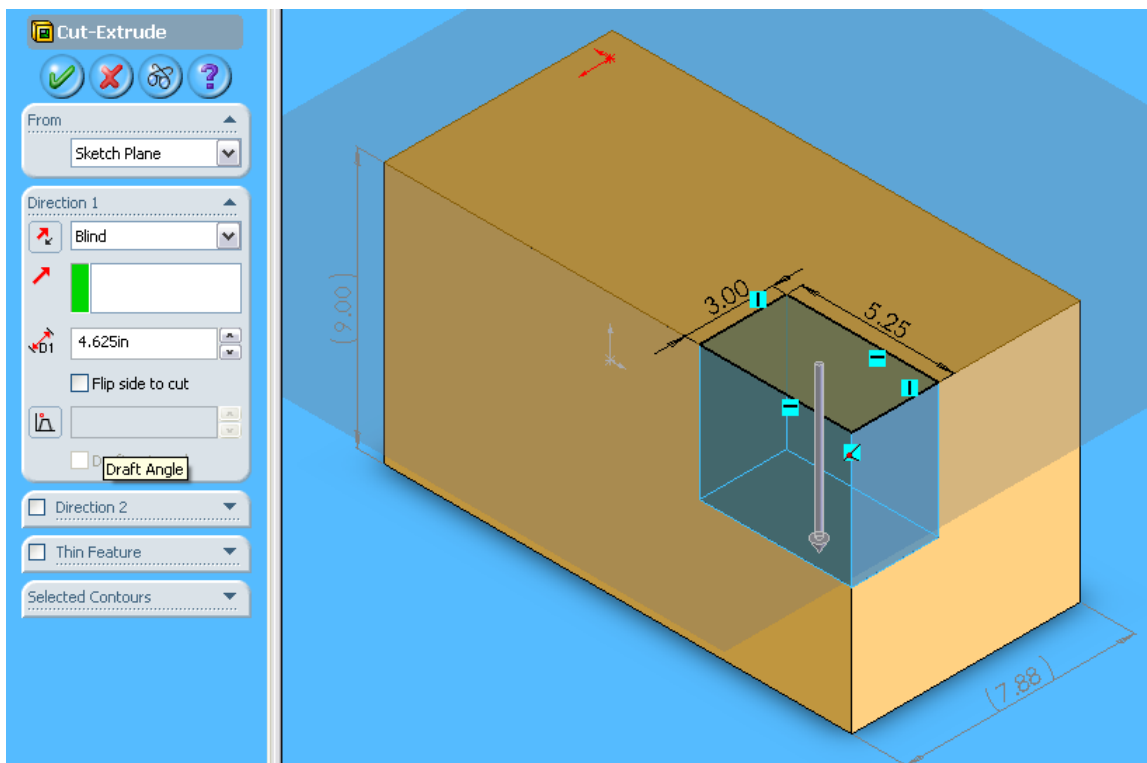
16. Extrude the rectangle up 9in.



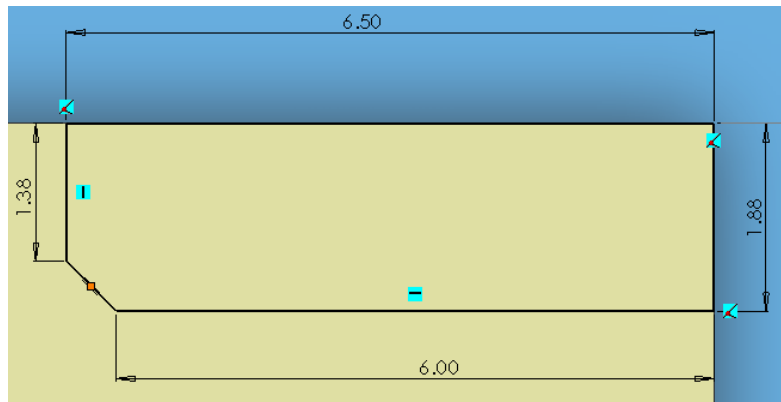
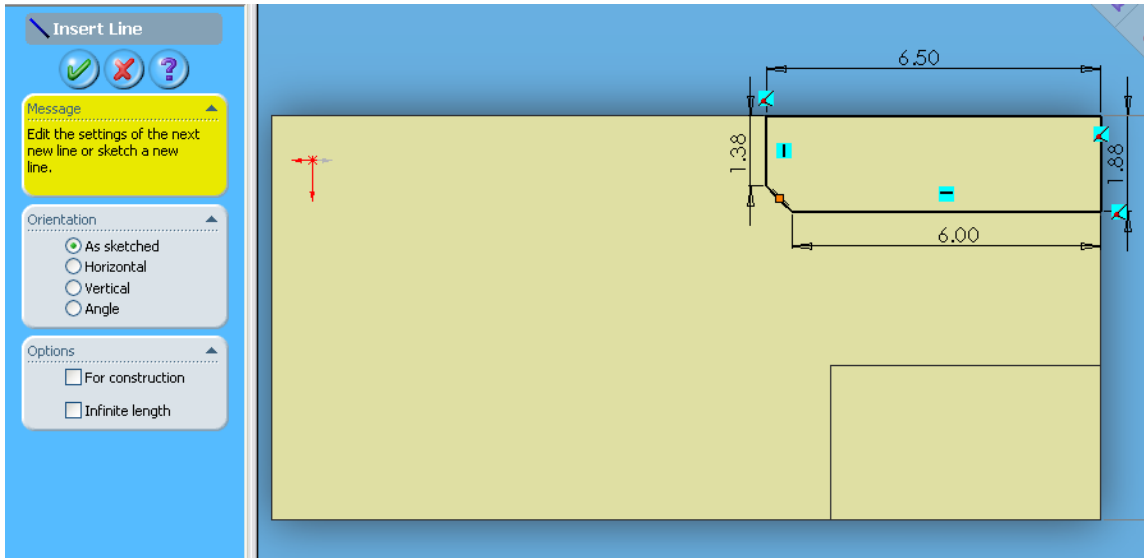
17. Select the top surface. Draw a rectangle, starting with a corner, with the dimensions of 5.25in x 3in.



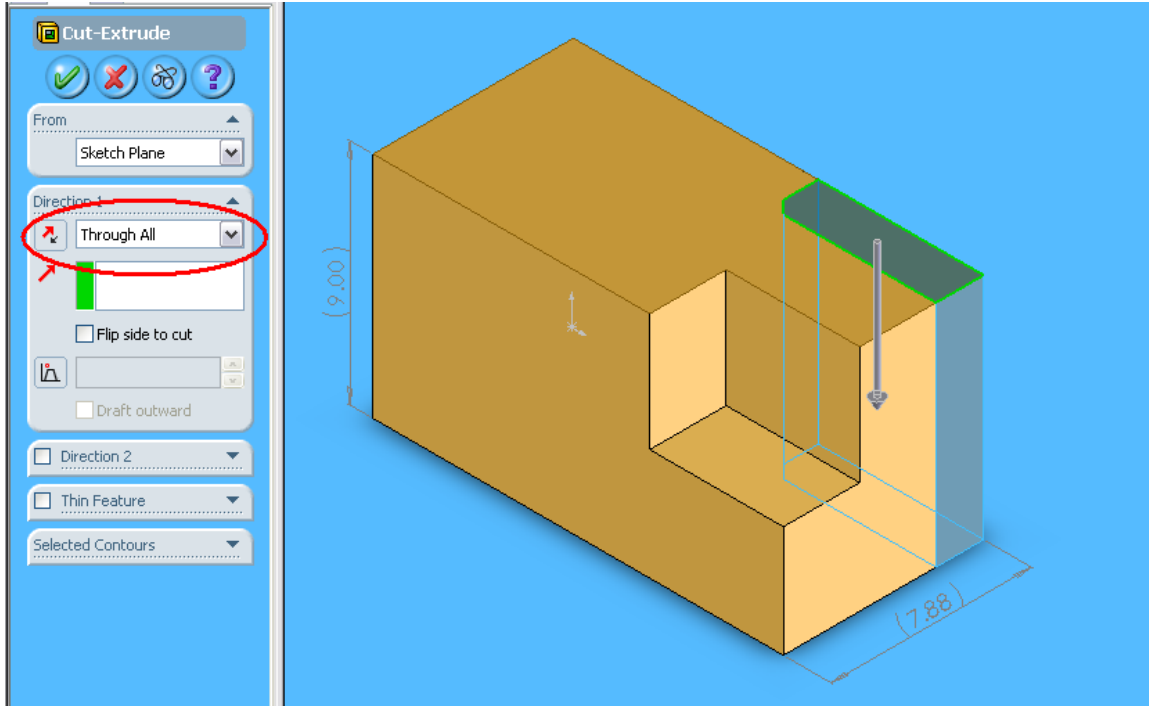
18. From the Rectangle, make an Extruded Cut 4.625in into the block.



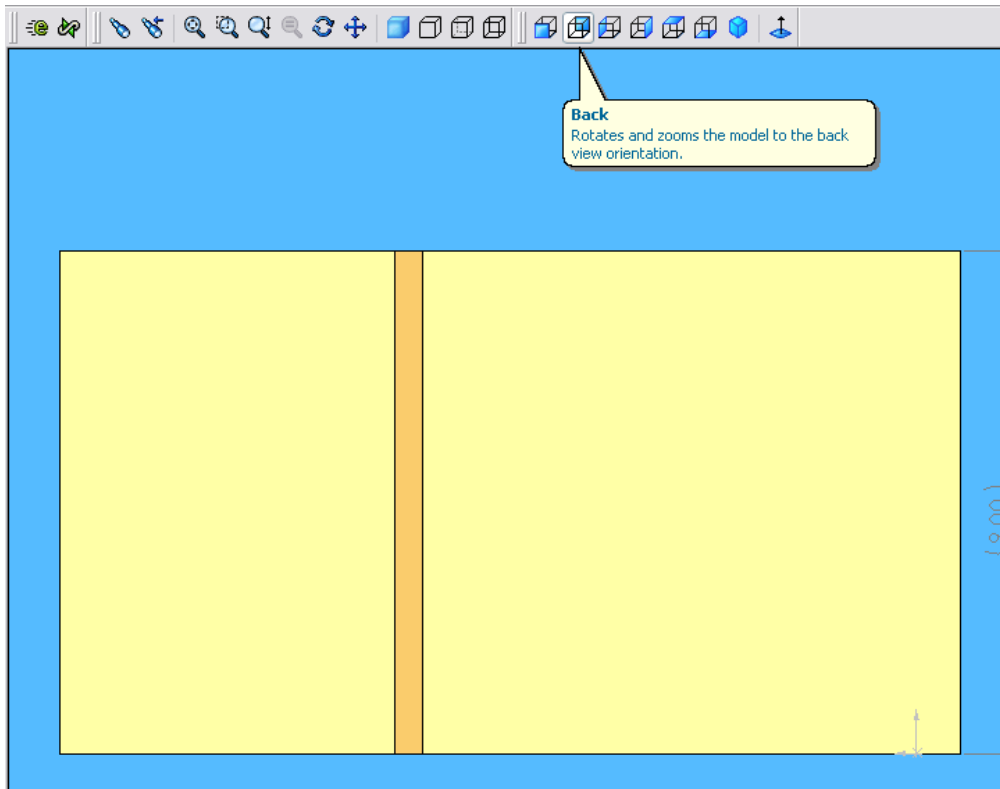
19. Select the top surface again. Draw the shape pictured below.



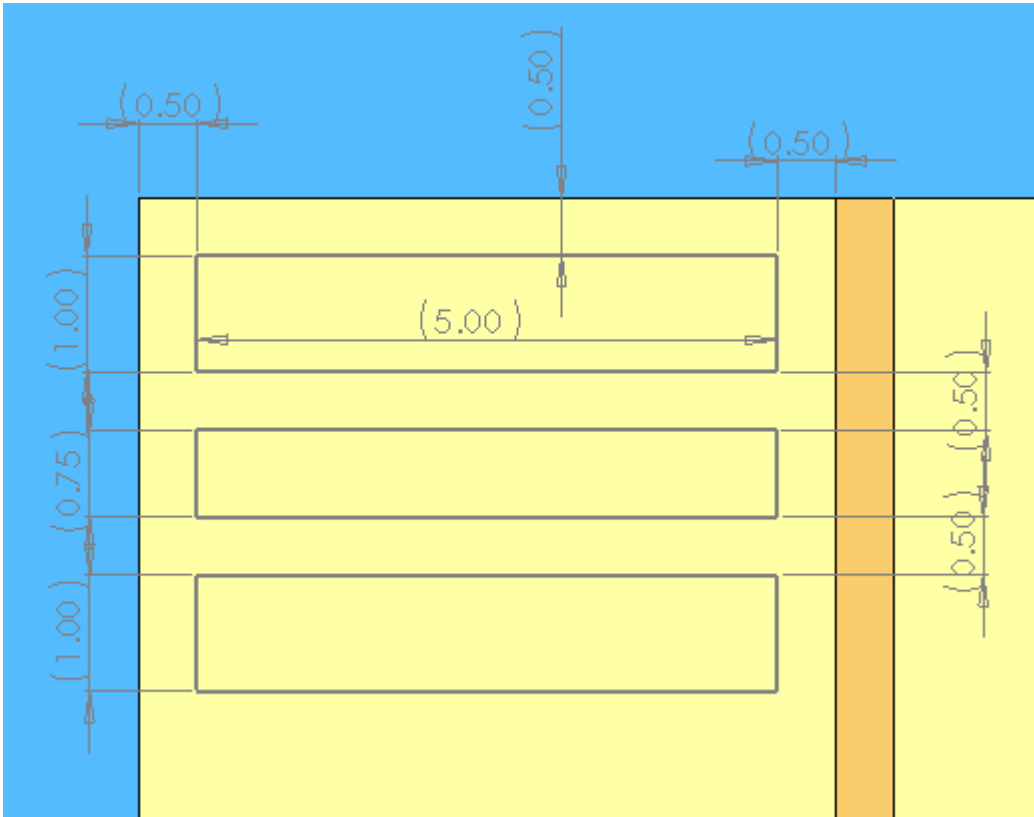
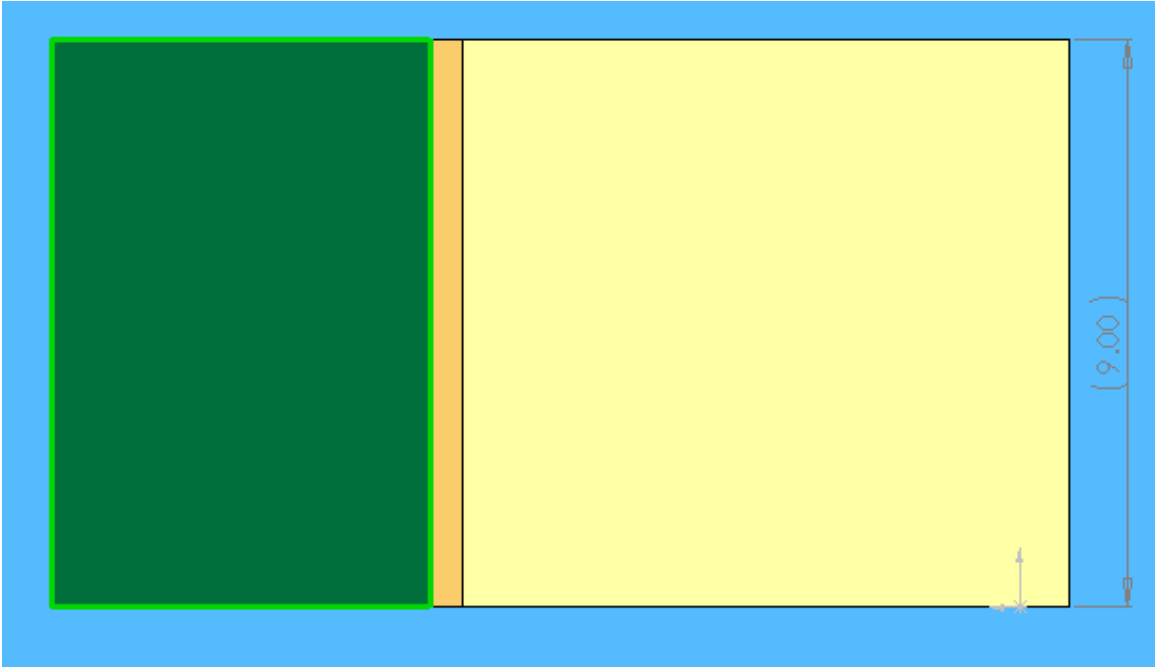
20. From this drawing, make another Extruded Cut. This time make the cut all the way through the block.



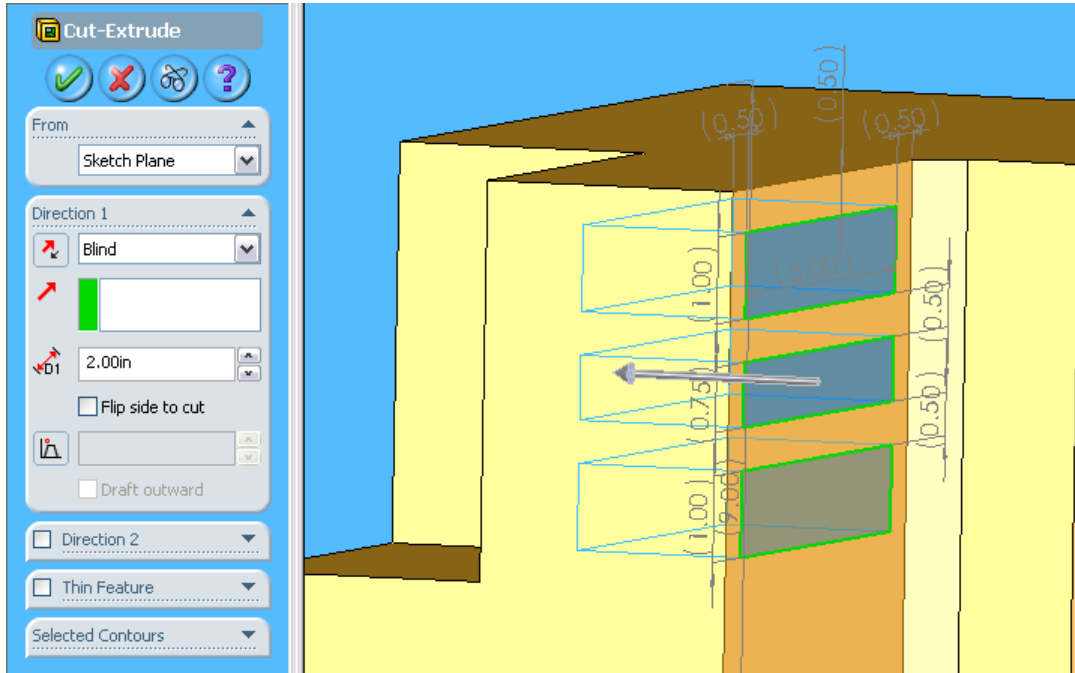
21. Rotate the block to its Back.



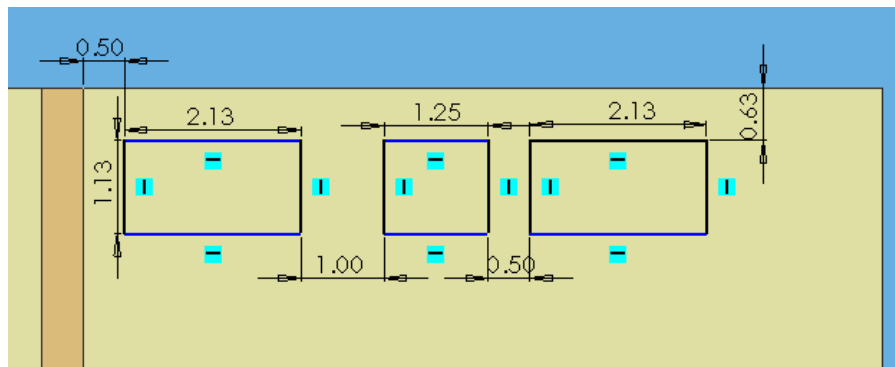
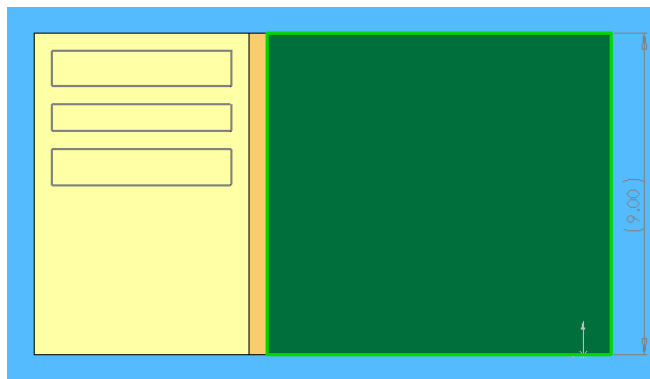
22. On the surface indicated, draw the following three rectangles:



23. Using the Extruded Cut tool, cut into the block 2in.

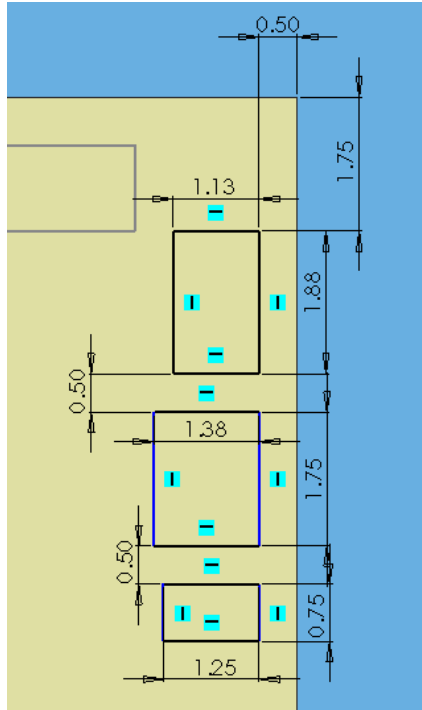


24. On the surface indicated, draw the following three rectangles:

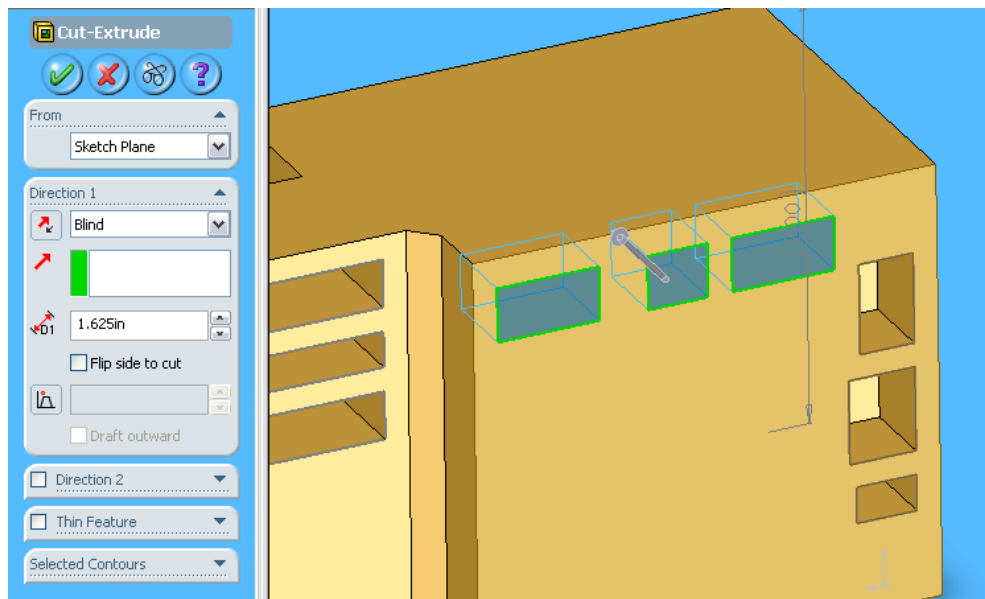


Exit the sketch.

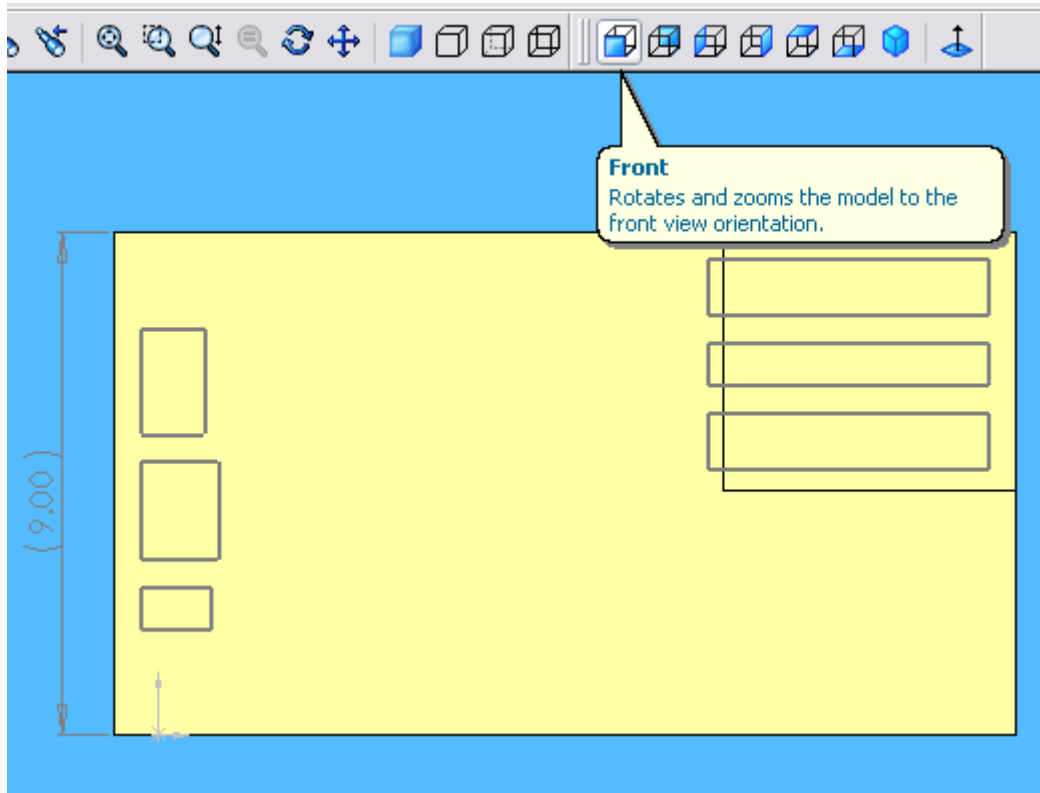
25. On the same surface, start a new sketch and draw another three rectangles as follows:



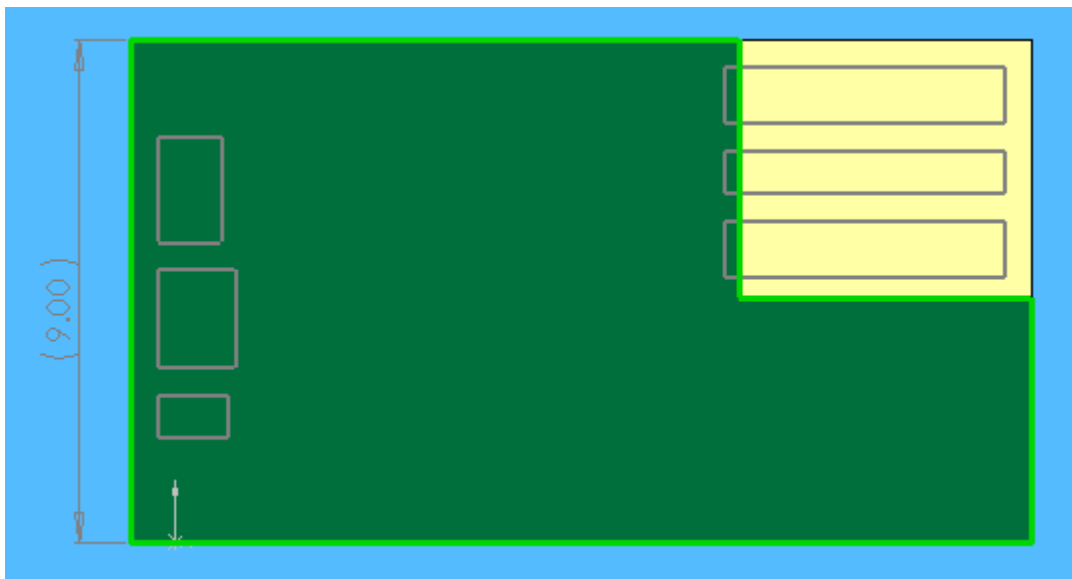
26. Select the two sketches of the six rectangles. Using the Extruded Cut tool, cut into the block 1.625in.



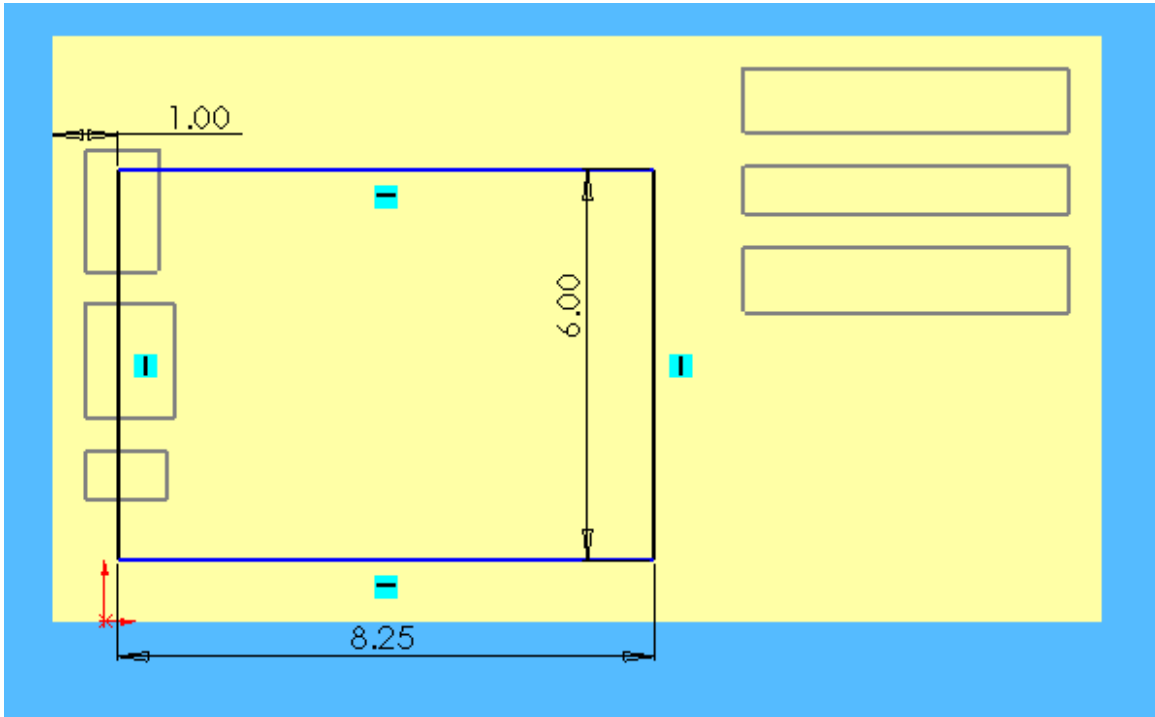
27. Rotate the block by clicking on the Front rotate button.



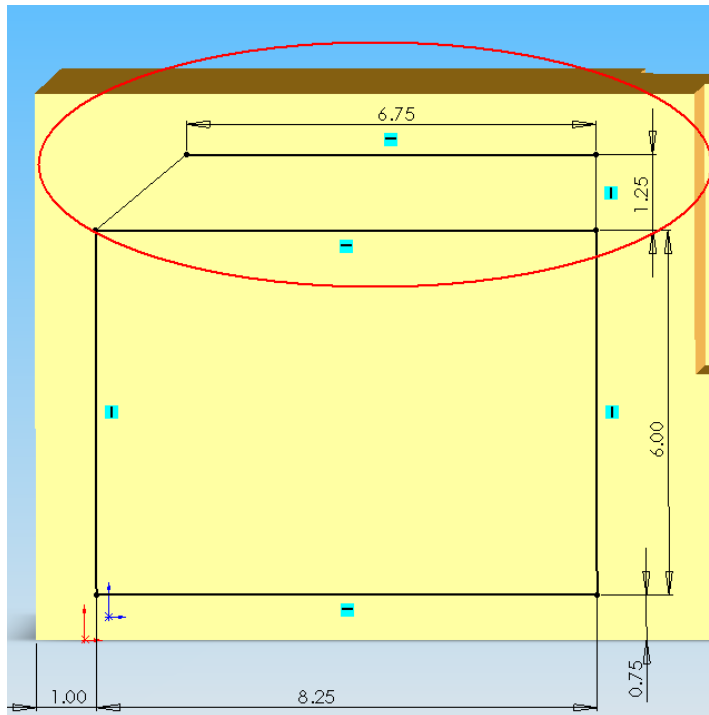
28. Select the following surface:



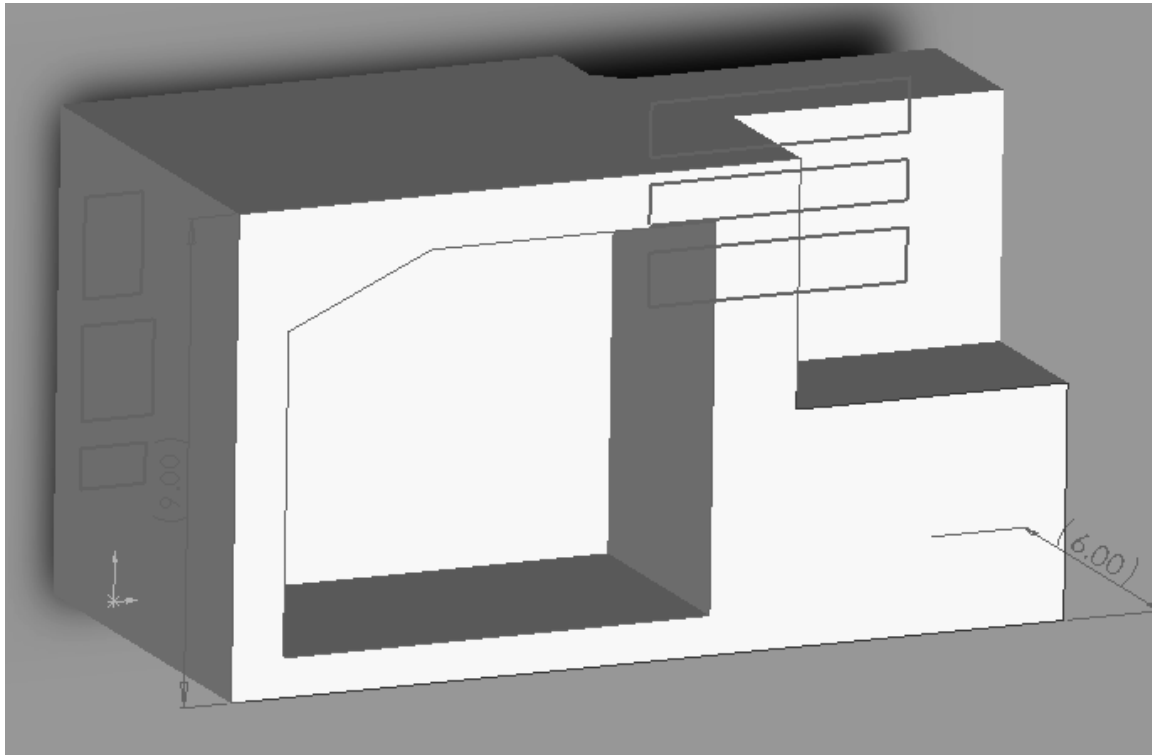
Draw the following rectangle:



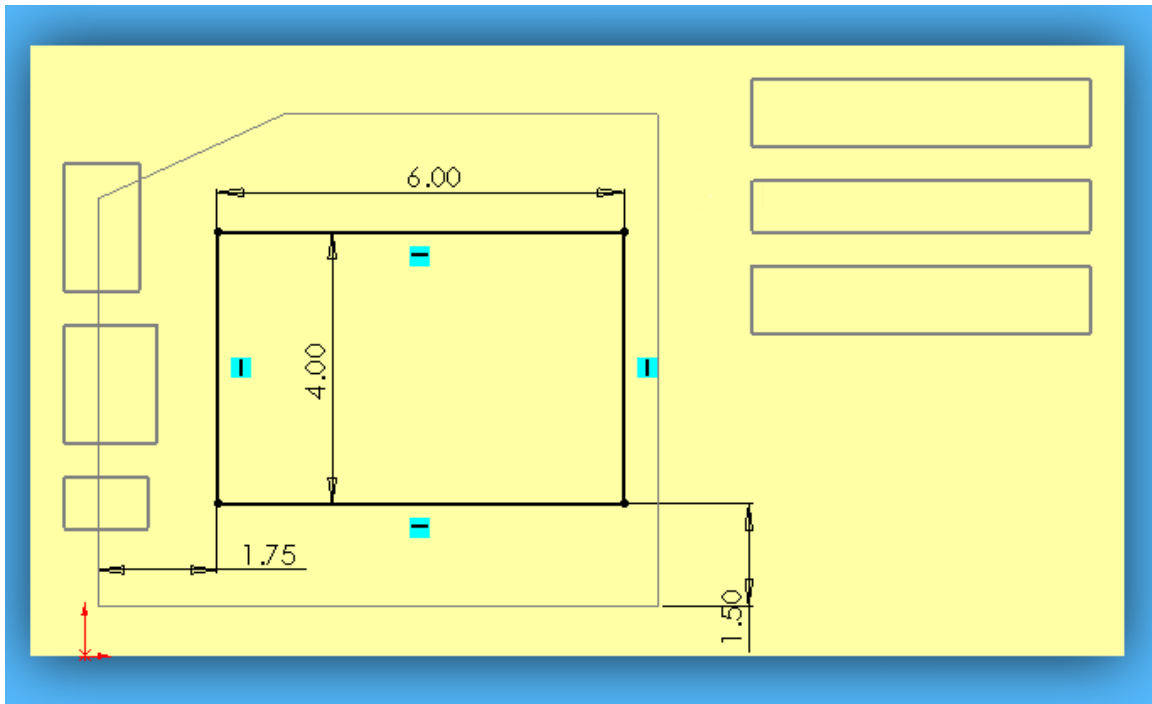
29. Add the following shape in the same sketch:



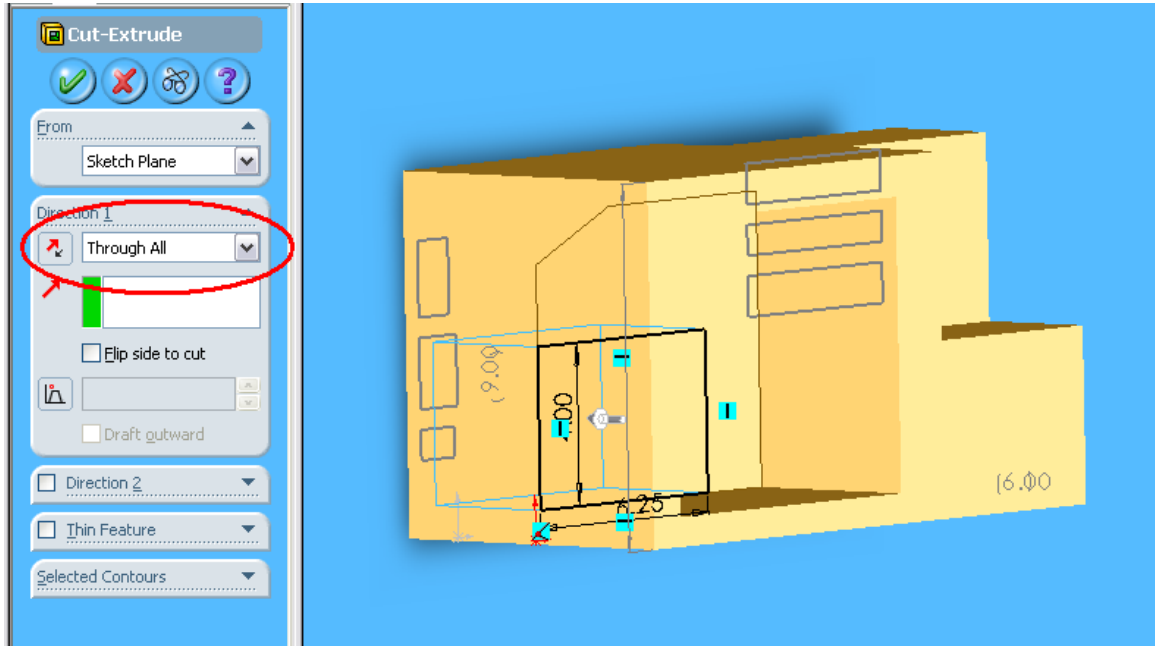
30. Extrude cut these shapes in by 4.5in.



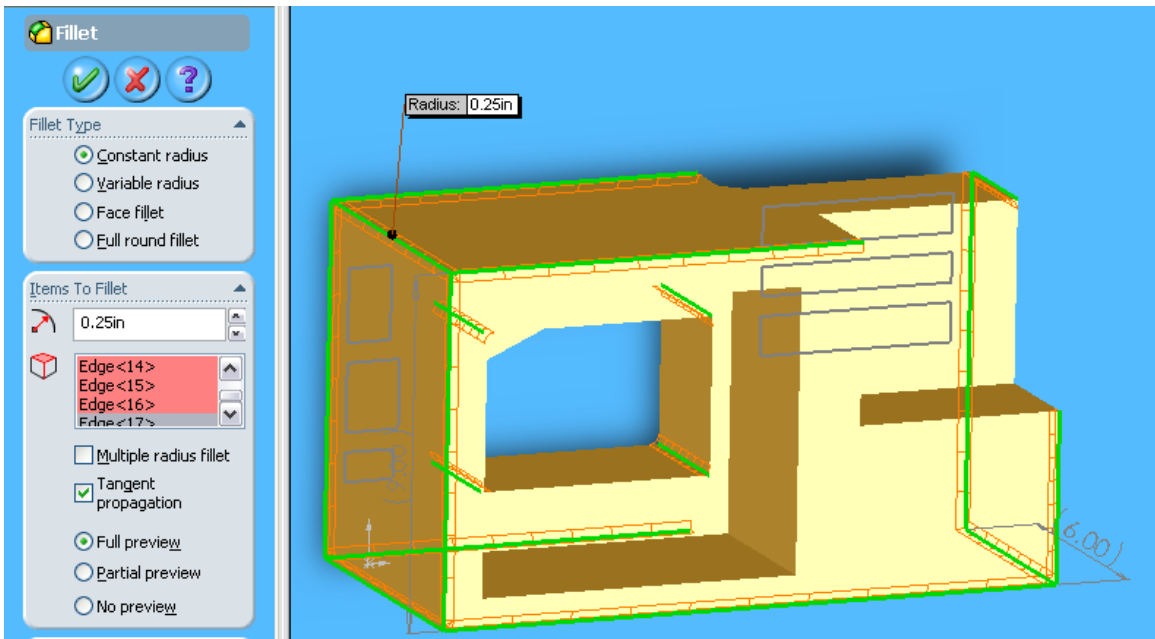
31. Rotate the block back to the Front view.
Sketch the following:



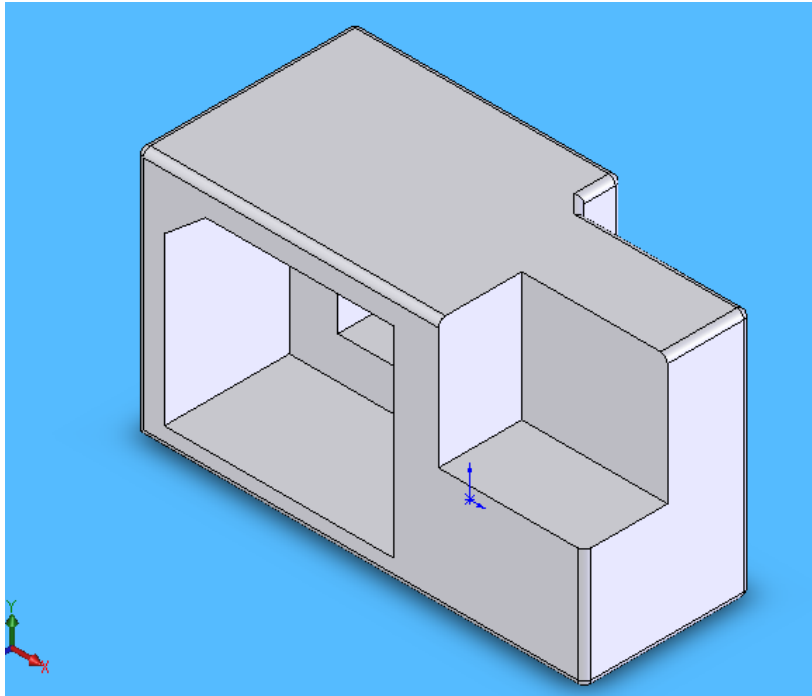
32. Extrude Cut this rectangle all the way through.



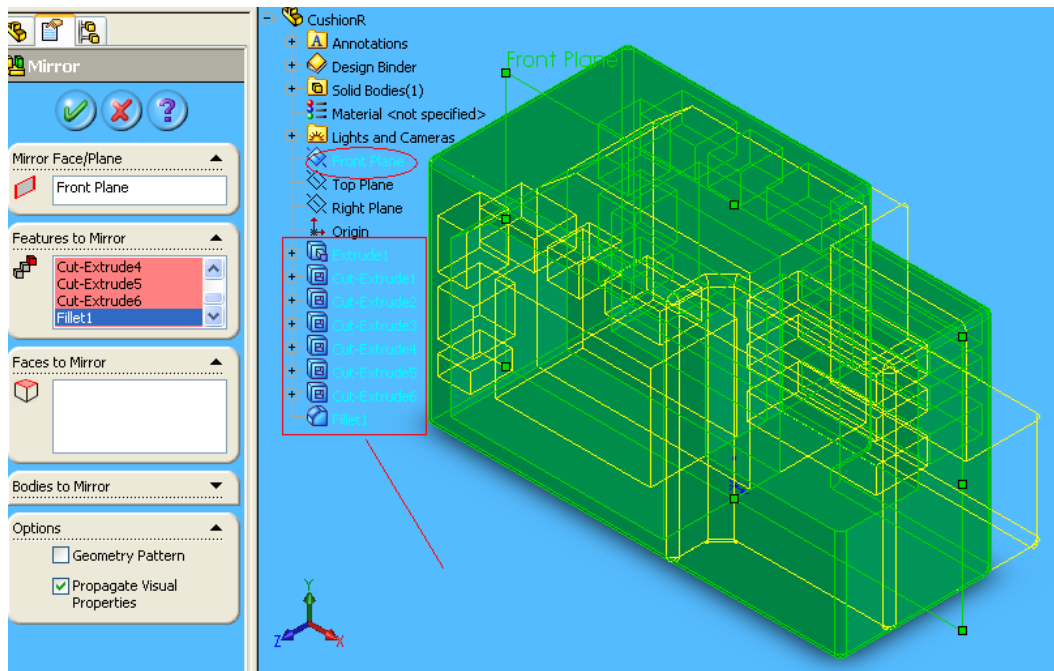
33. Round all of the edges by using the Fillet tool with a 0.25in radius.



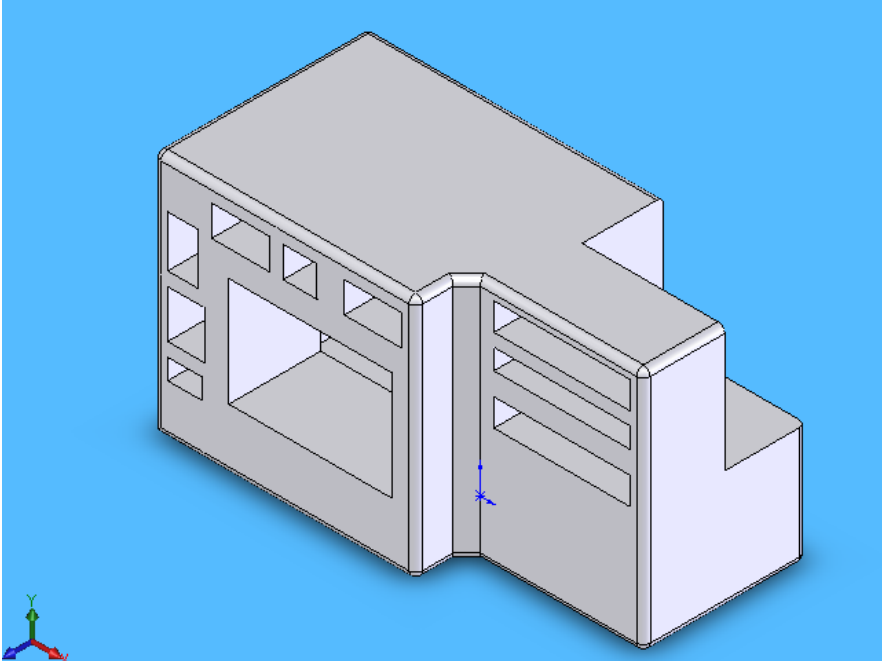
34. The Cushion is now complete. Save it as CushionRight. Now we use this cushion to develop another opposite cushion.



35. To make the opposite cushion, using Mirror command, Select Front Plane as the mirror plane and select all components of the cushion in the tree as features to mirror.

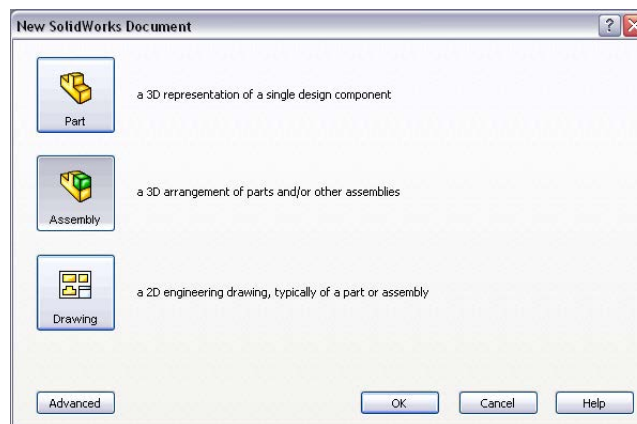


36. Click 'check', the opposite cushion is formed. Save the drawing as CushionLeft.

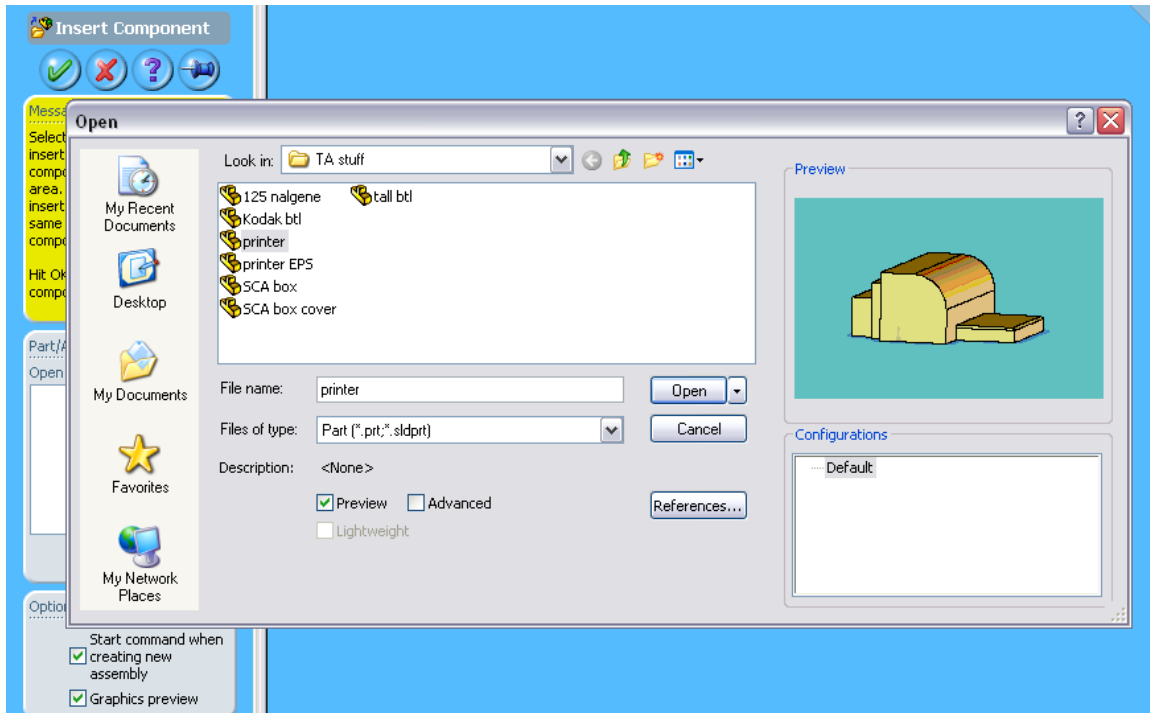


Note: This method using mirror to produce a symmetric part is only workable when the origin is centered in the middle as stated in step 15.

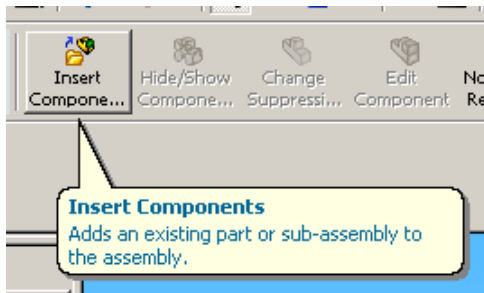
37. Open a new Assembly document.

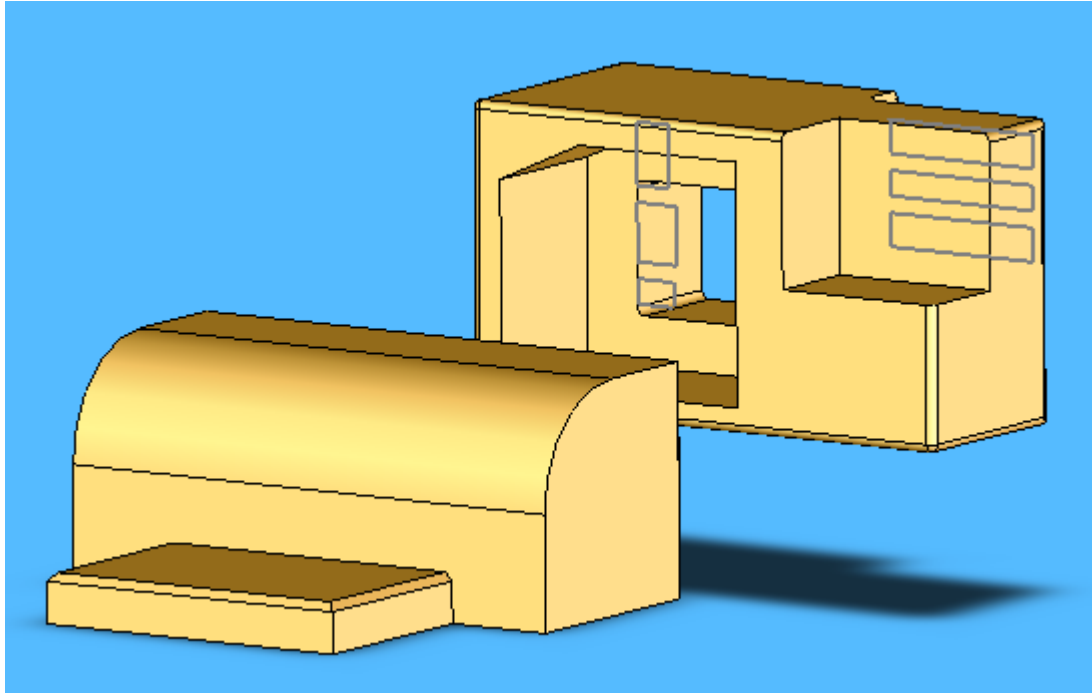


38. To Insert a Component, either click on the Open Documents list or click on the Browse button. Choose the Printer drawing first. Place the Printer somewhere on the screen.

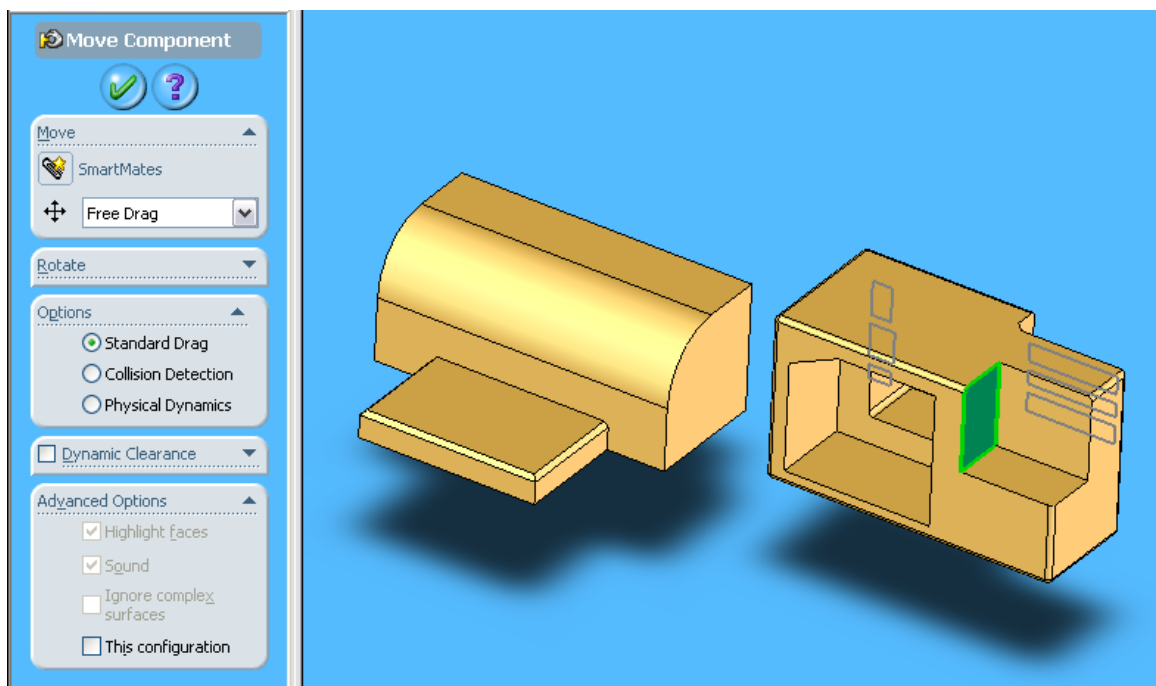


39. Insert one cushion and place it somewhere near the printer.

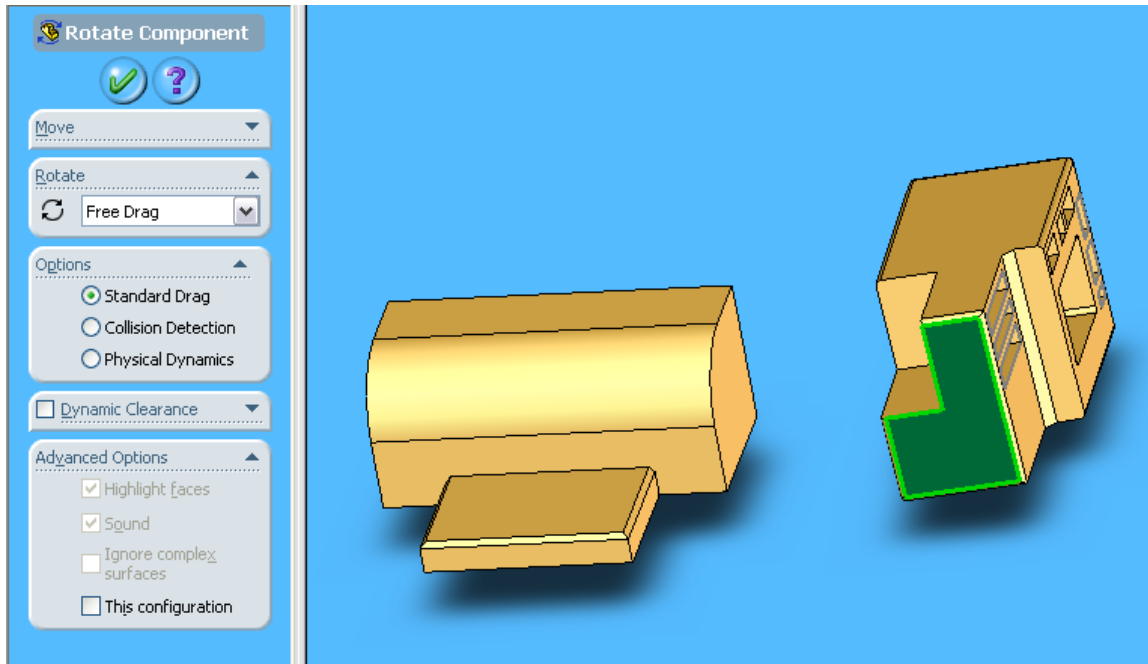




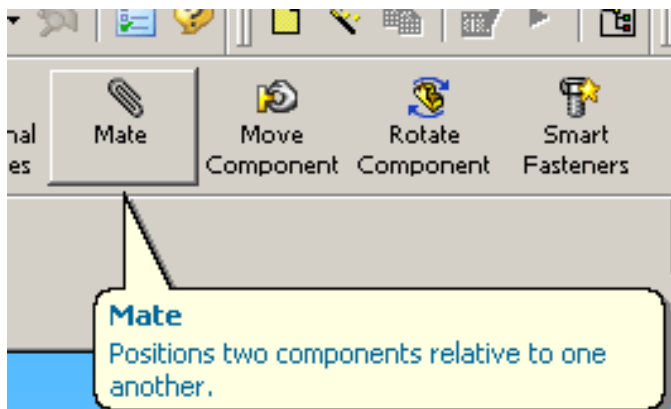
40. Arrange the cushion to about where it fits around the printer.
Use the Rotate Component and the Move Component tools to do this.

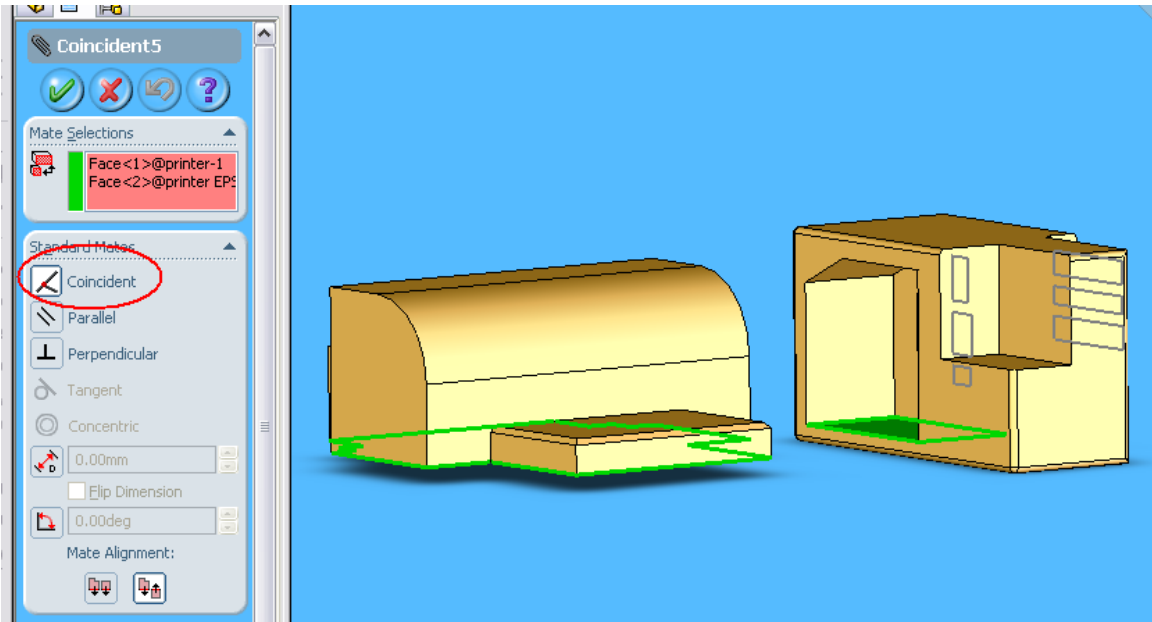


It's okay if it's not perfect. Just get it as close as you can.

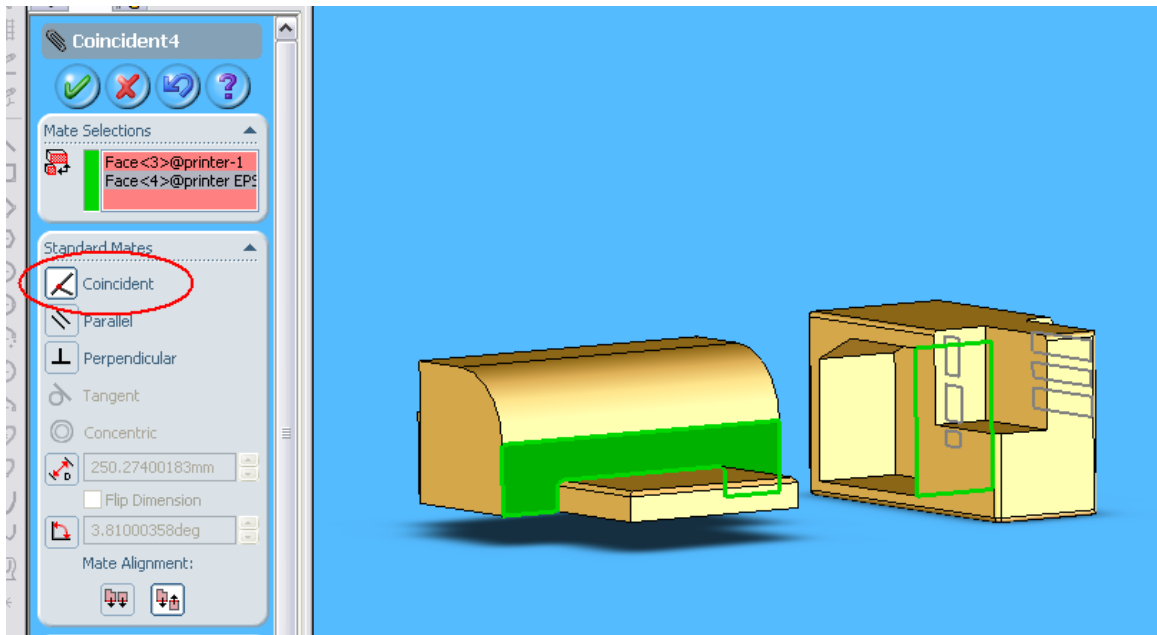


41. Create a Mate with the bottom of the Printer and the bottom face of the opening in the Cushion. Make sure the Coincident button is selected to align these two faces.



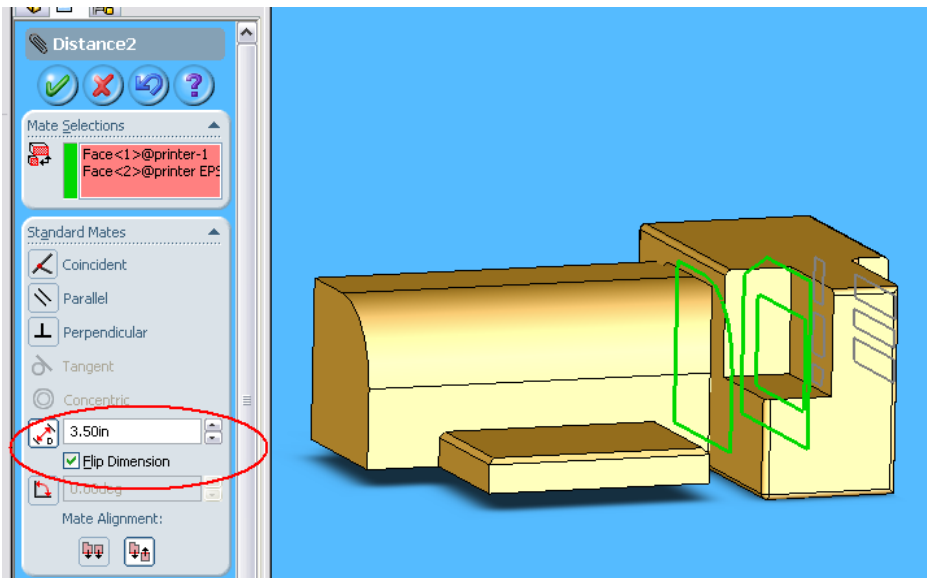


42. Create another Mate with the Front face of the Printer and the Right side face in the Cushion. Make sure the Coincident button is selected.

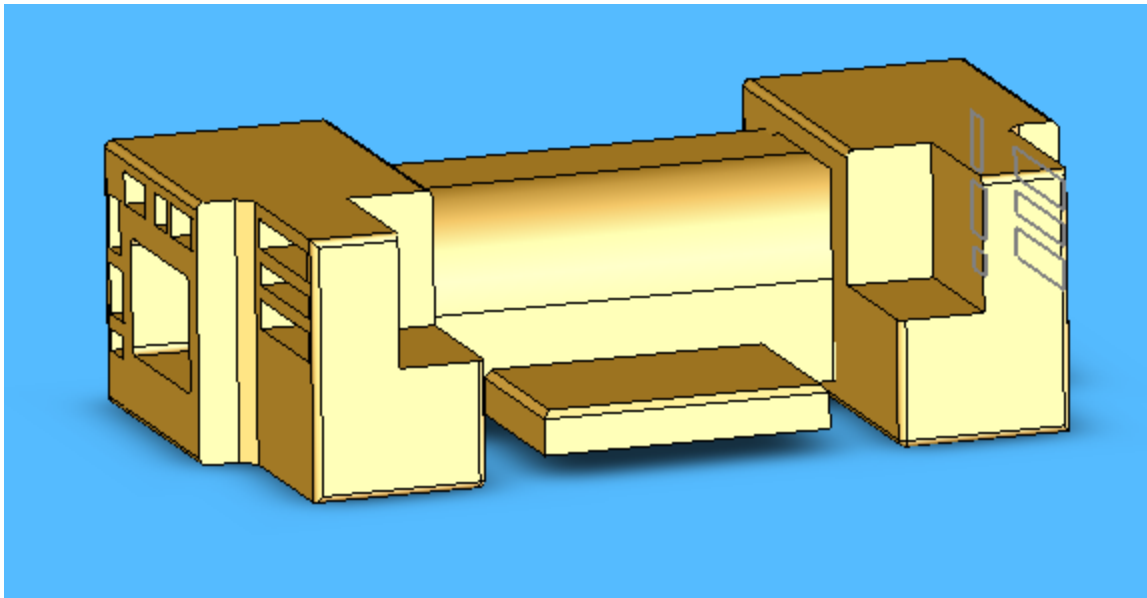


Now the cushion can easily slide onto the printer.

43. Create a Mate between the side face of the printer and the inside face of the cushion. Create a distance of 3.5in in between each face.



44. Now that one side is finished, just do the same for the other side. This Assembly is now complete!



Stretch your thinking:

When you mirror the opposite cushion in step 35, can you choose 'Right Plane' to mirror? Explain why.