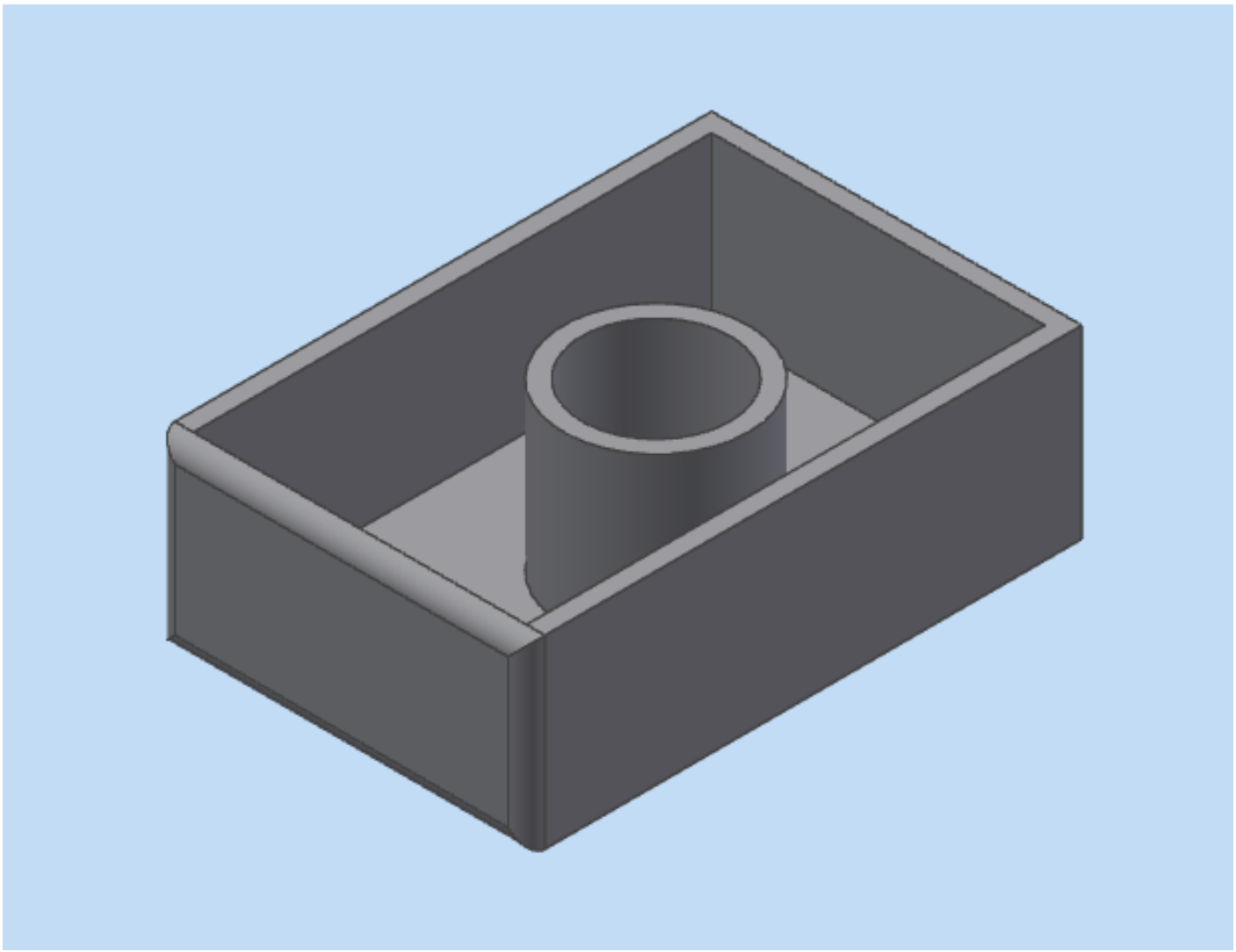
AutoDesk Inventor

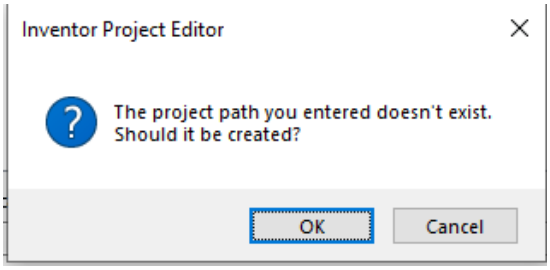
Beginning Tutorial – the “Lego”

In this tutorial, you will construct a simple hollowed-out block with a hole in it (looks like a Lego). You will learn the basics of creating and modifying **sketches** and **features.**



Getting Started

1. Open ***Inventor***. In the ***Get Started*** tab, click on **Projects > New > New Single User Project**. Click **Next**.
2. In the **Project Name** box, type ***Lego***. In the **Project (Workspace) Folder**, Be sure your ***H drive*** is selected. If not, click on the browser box  to select your **H Drive**.
3. Click **Finish.** The box below should appear. Click **OK > Done**.

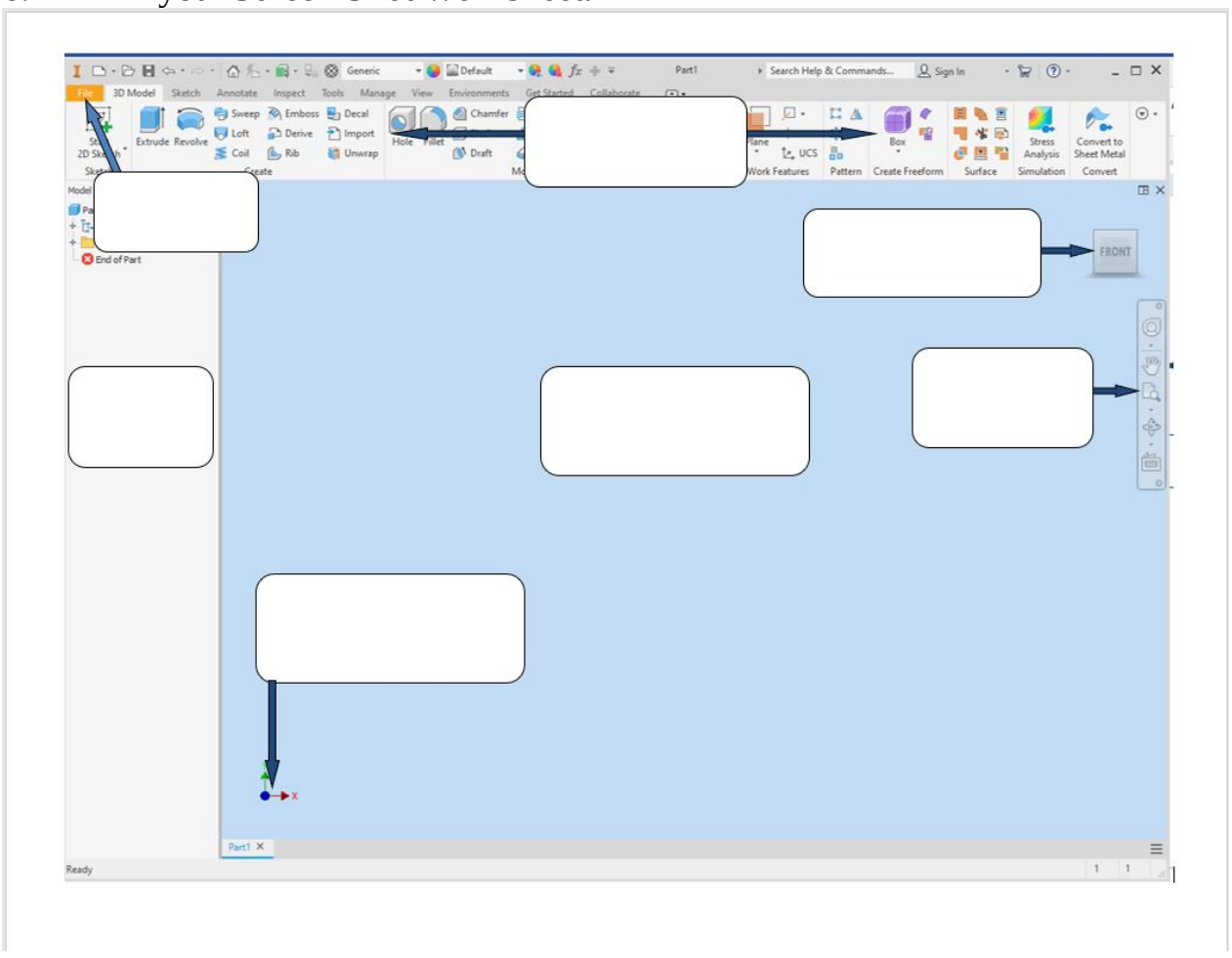


4. ***You will use this process whenever you start a new project.***

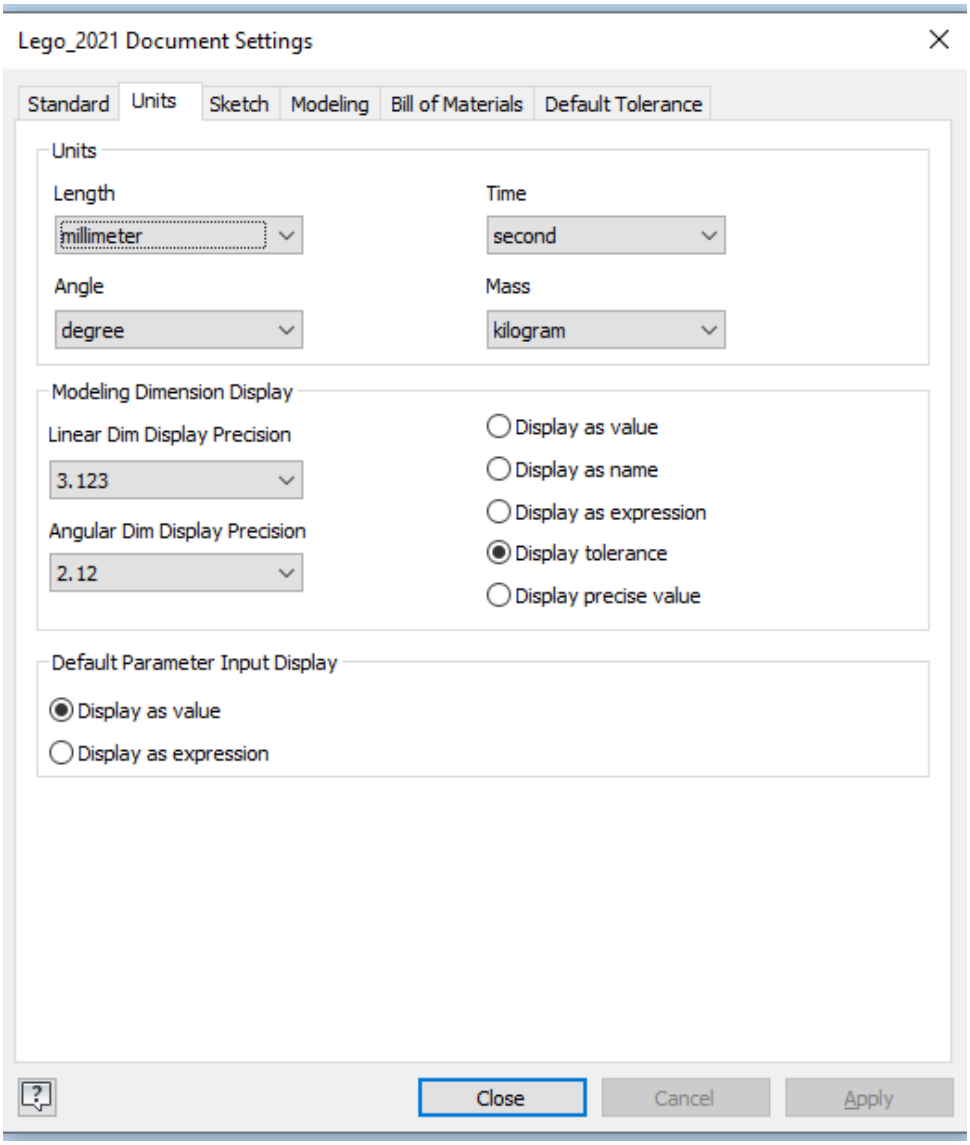
5. In the **Get Started** tab, click on **New**. Select **Metric > Part > Standard(mm).ipt > Create.**

Watch Video 1

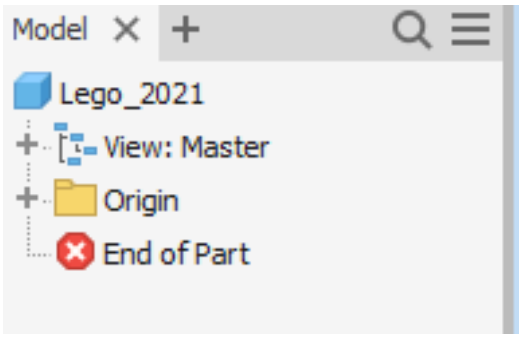
6. Fill in your ***Screen Shot Worksheet.***

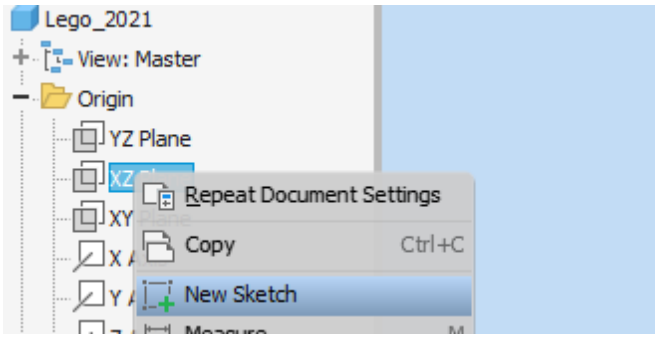


7. Click on the **Save** icon  . Since you created a **Project Folder**, your Lego should automatically be saved in your Lego project folder. Be sure the file name is ***legoINL_CAD_1.***
8. Go to **Tools > Document Settings > Units.** Be sure ***Millimeters*** is selected from the ***Length*** dropdown menu. If ***Millimeters*** is NOT selected, start again. If all looks good, click **Close**.
9. See Below:

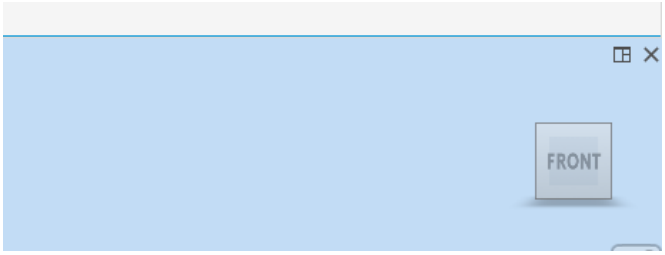


10. Click the **"+"** sign next to the ***Origin folder*** in the ***Model Window***. Right Click on the **XZ Plane > New Sketch.**

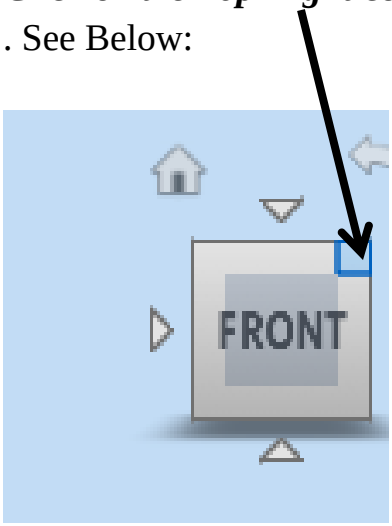




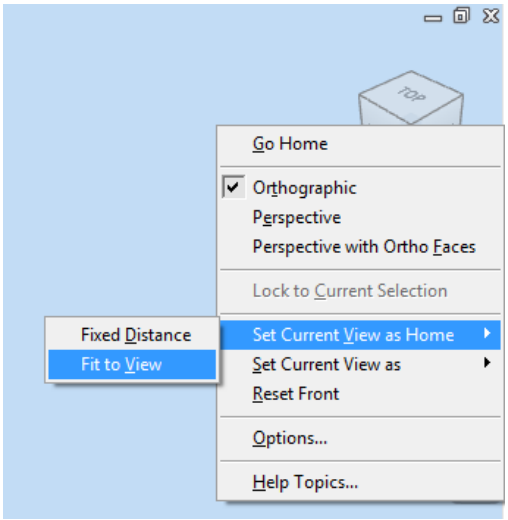
11. Manipulate the view cube so that "***Front***" is facing you: See Below.

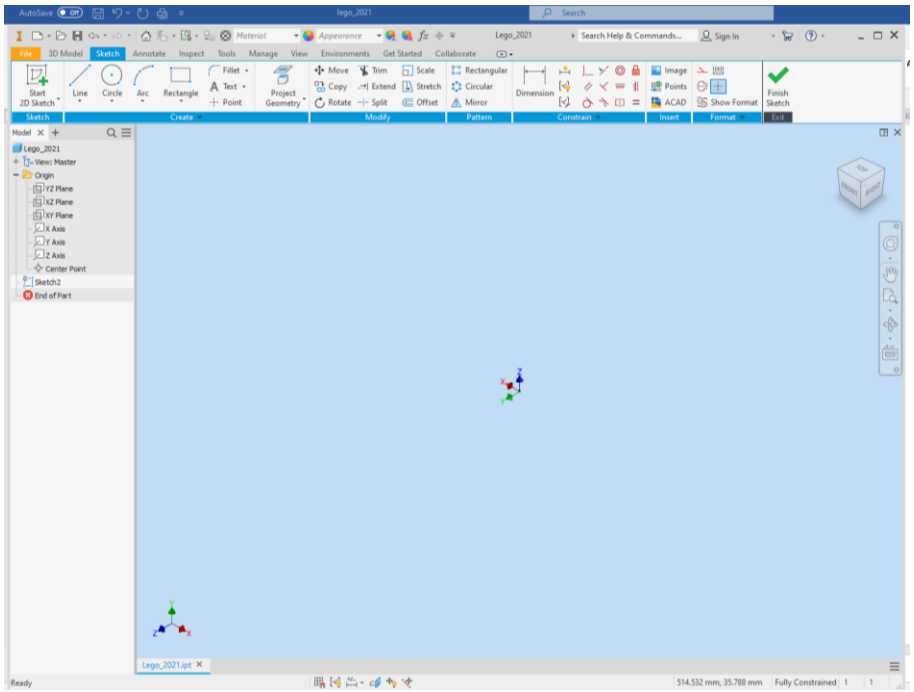


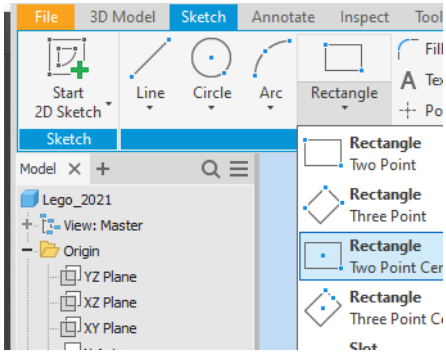
12. Click on the ***Top-Right*** corner of the **View Cube**.
    . See Below:

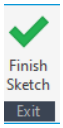


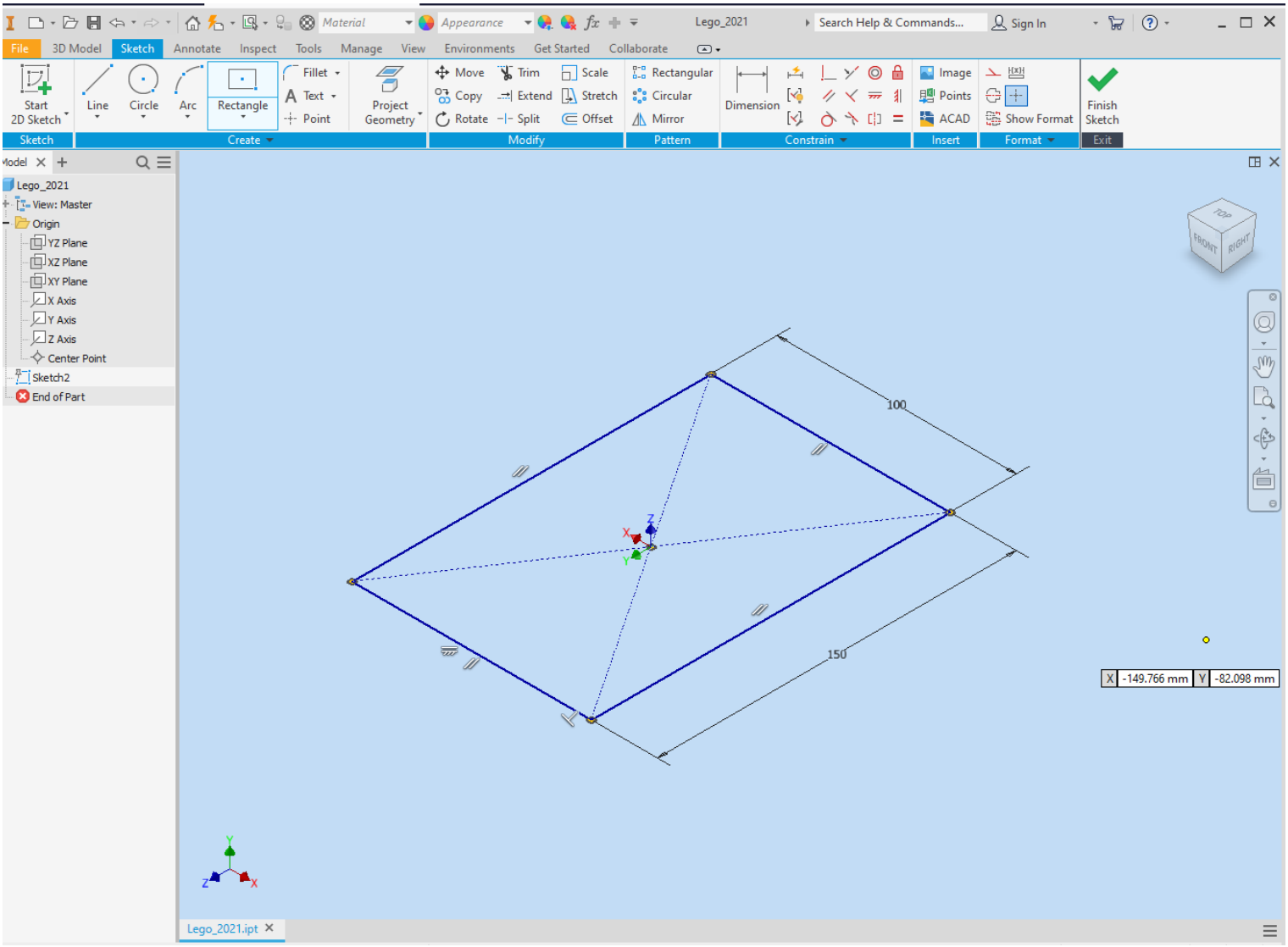
13. ***Right Click > Set Current View to Home > Fit to View***. This will set the Isometric View correctly for our project.



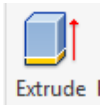


14. In the ***Create panel***, select the ***Rectangle > Two Point Center*** 
 tool.

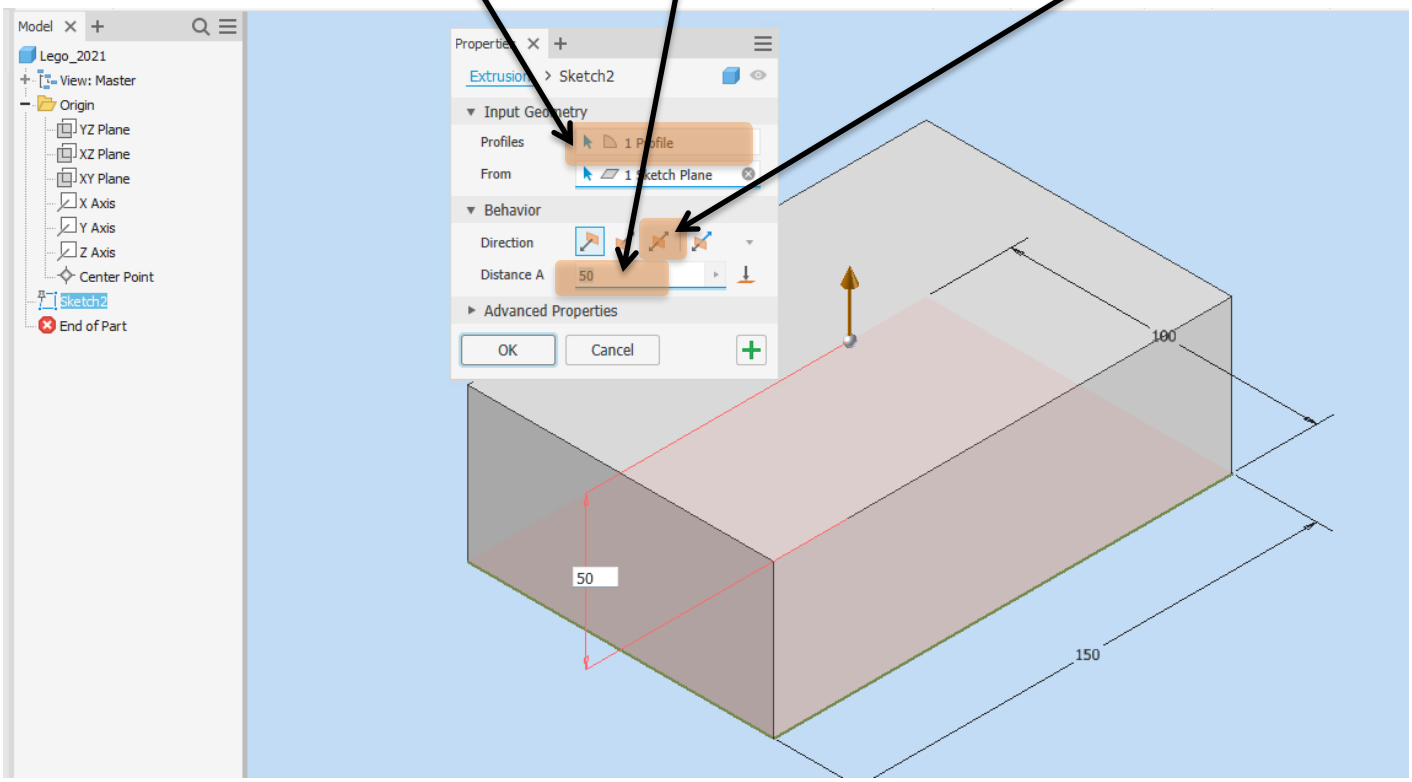
15. Staring at the ***Origin***, drag out a rectangle of **150mm x 100mm**. Use the **TAB** key to cycle through the dimensions. Click on the green check at 
 the top right and ***Finish Sketch*** .



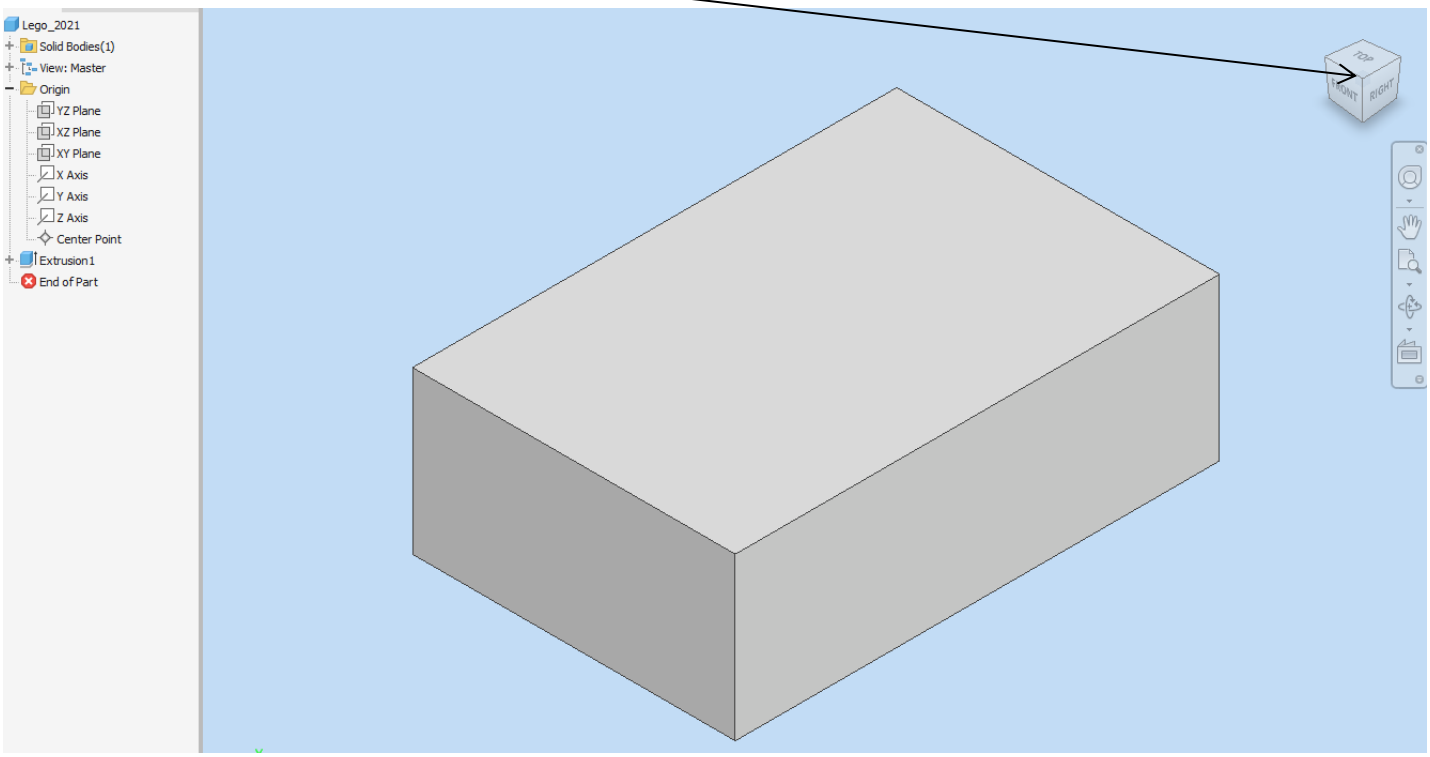
Watch Video 2

16. Click on the ***Extrude*** tool 

from the **3-D Model tab > Create Panel** of the ribbon. Select the rectangle for the ***profile***, set the ***distance*** to 50 mm, set the direction to ***symmetrical***. Click OK.



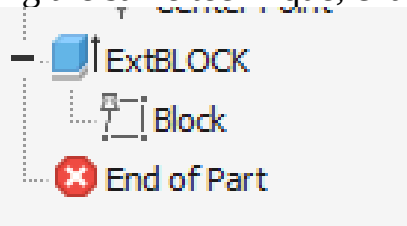
17. Click on the ***front corner*** of the ***View Cube*** to scale the view to the screen. **Watch Video 3**



18. It is very important to keep track of the ***sketches*** and ***features*** of a part in **Inventor**. We do this by assigning names to sketches and features which are **descriptive**.

19. Click the "+" next to ***Extrusion1*** in the **Model Window**. ***Click ONCE*** on your ***sketch***, pause, then click once again. This will allow you to rename the sketch. Change the name of the sketch to **Block.**

20. Using the same technique, change the name of the ***extrusion*** **to ExtBLOCK.**

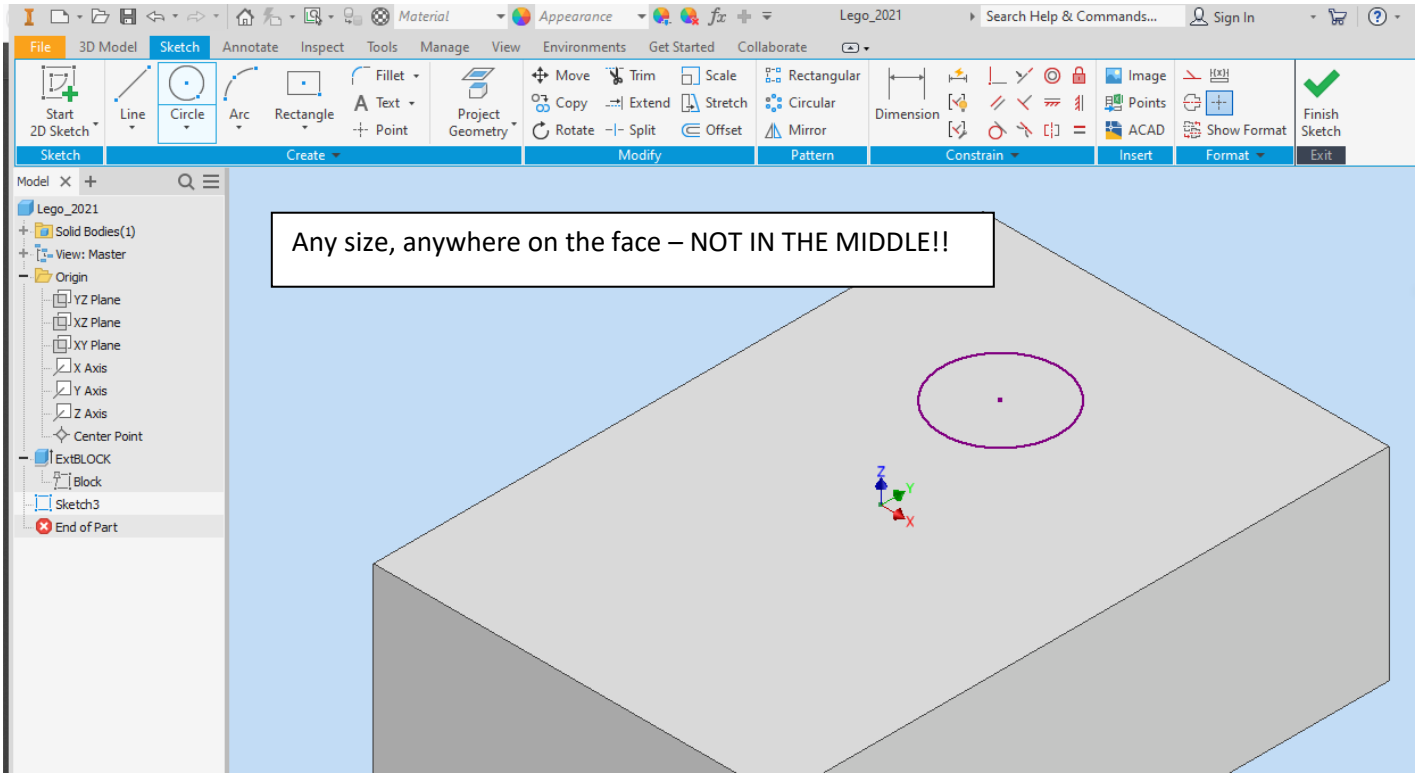


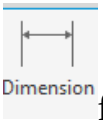
SAVE YOUR WORK!!

19. Next, we are going to place a circle on the top face of the block, then extrude the circle as a hole – ***here's how***.

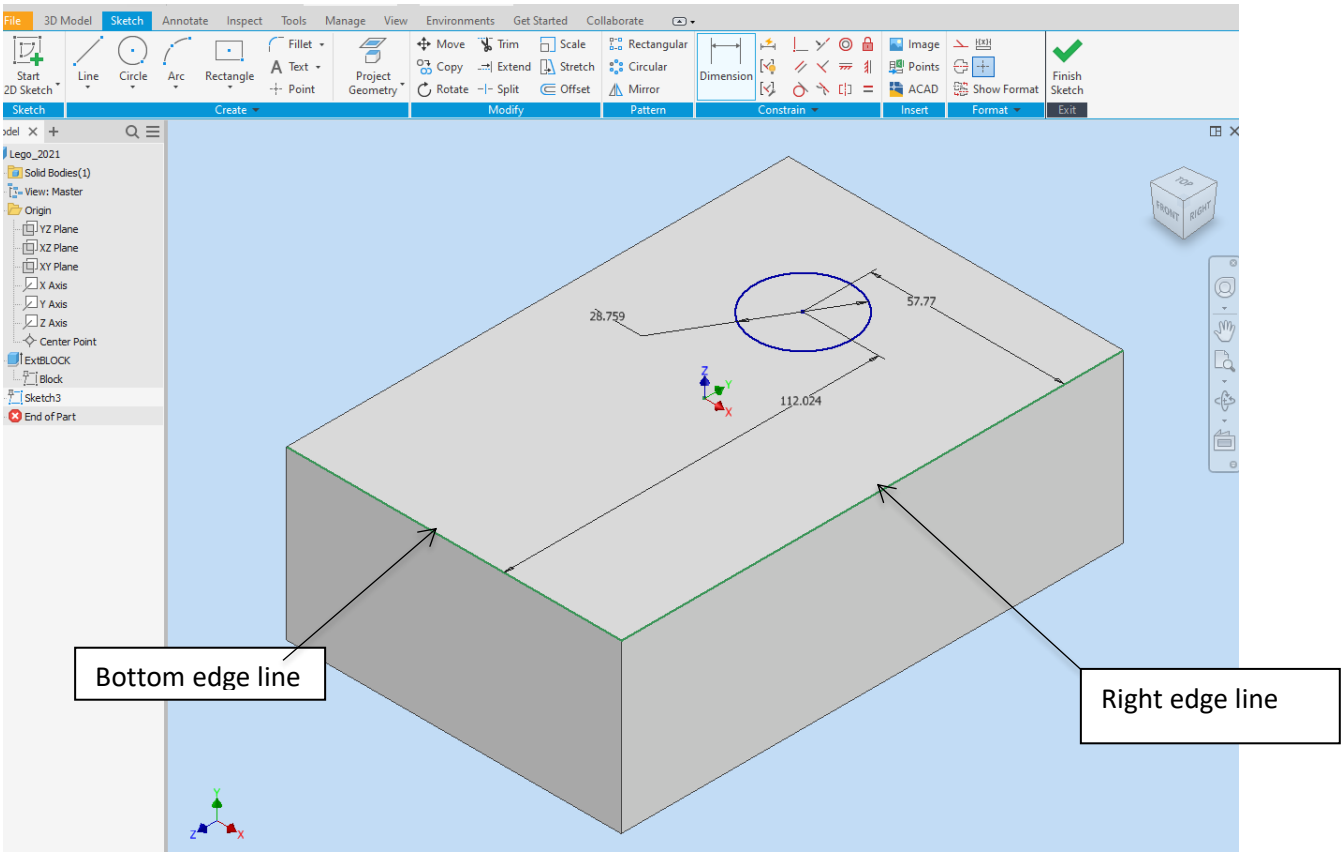
20. Click on the ***top face***, then **Right Click > New Sketch**. Click on the **"House"**  to bring you to the ***Home View.***

21. Select the ***Circle*** (Center Point) tool from the ***Create*** panel and draw a circle on the top face – ***any size, anywhere on the face – BUT NOT IN THE MIDDLE!!***

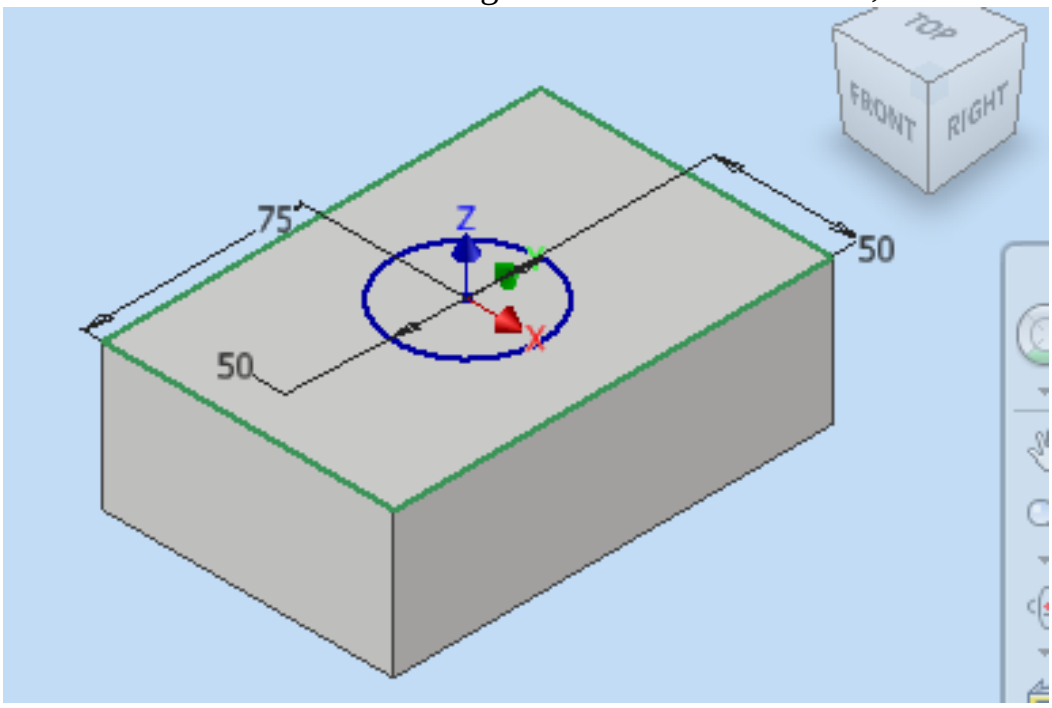


22. Select the ***Dimension*** tool 

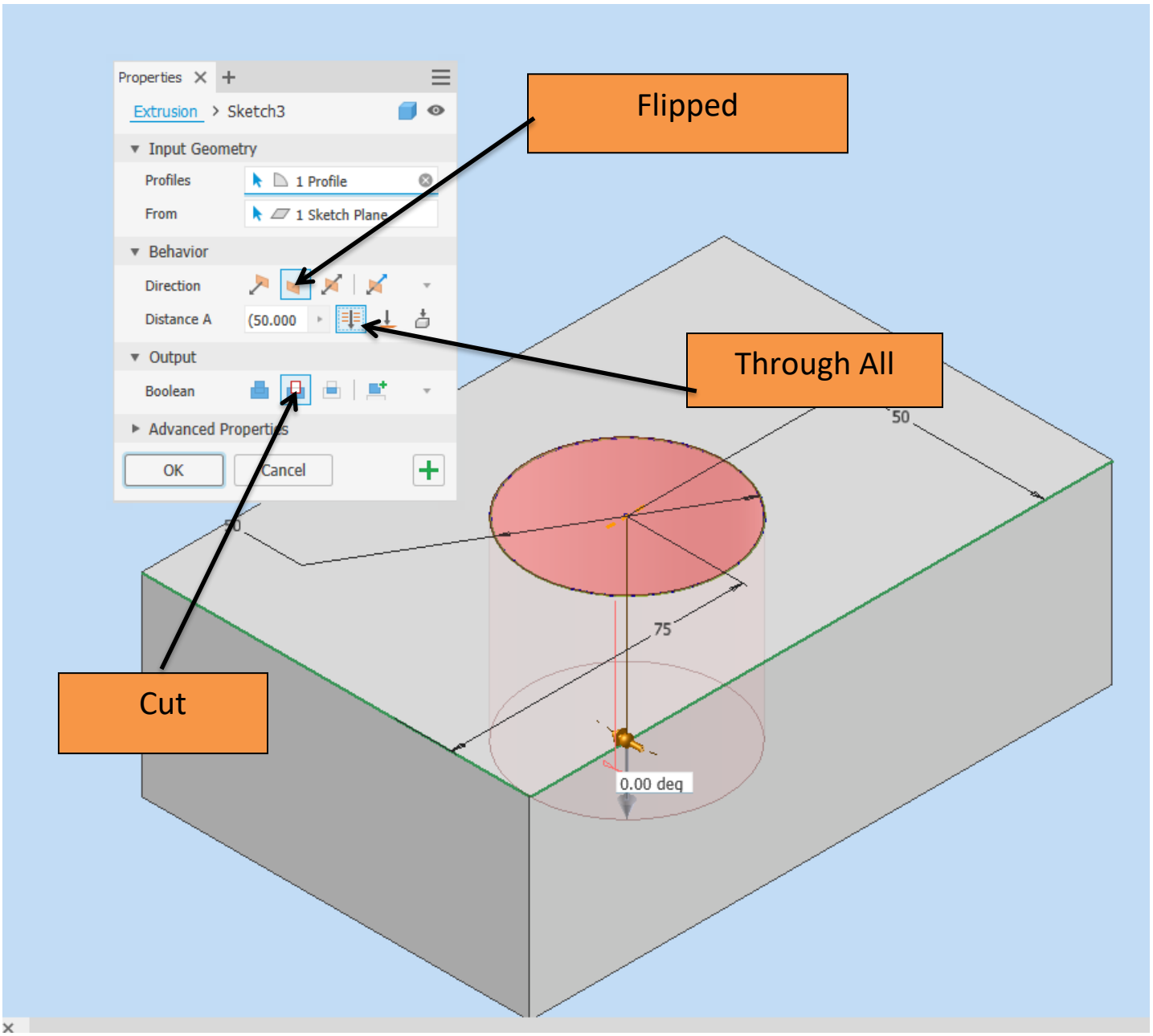
from the ***Constraints*** panel. Dimension the circle in three ways: (a) from the ***right edge*** line to the ***center*** of the circle, (b) from the ***bottom edge*** line to the ***center*** of the circle and (c) the diameter of the circle (select the circle). See Below – note that the below values are ***random*** – yours will be ***different***. Hit ***Escape*** when done.



21. Click on the values and change them to the ones below, and click ***Finish Sketch***:

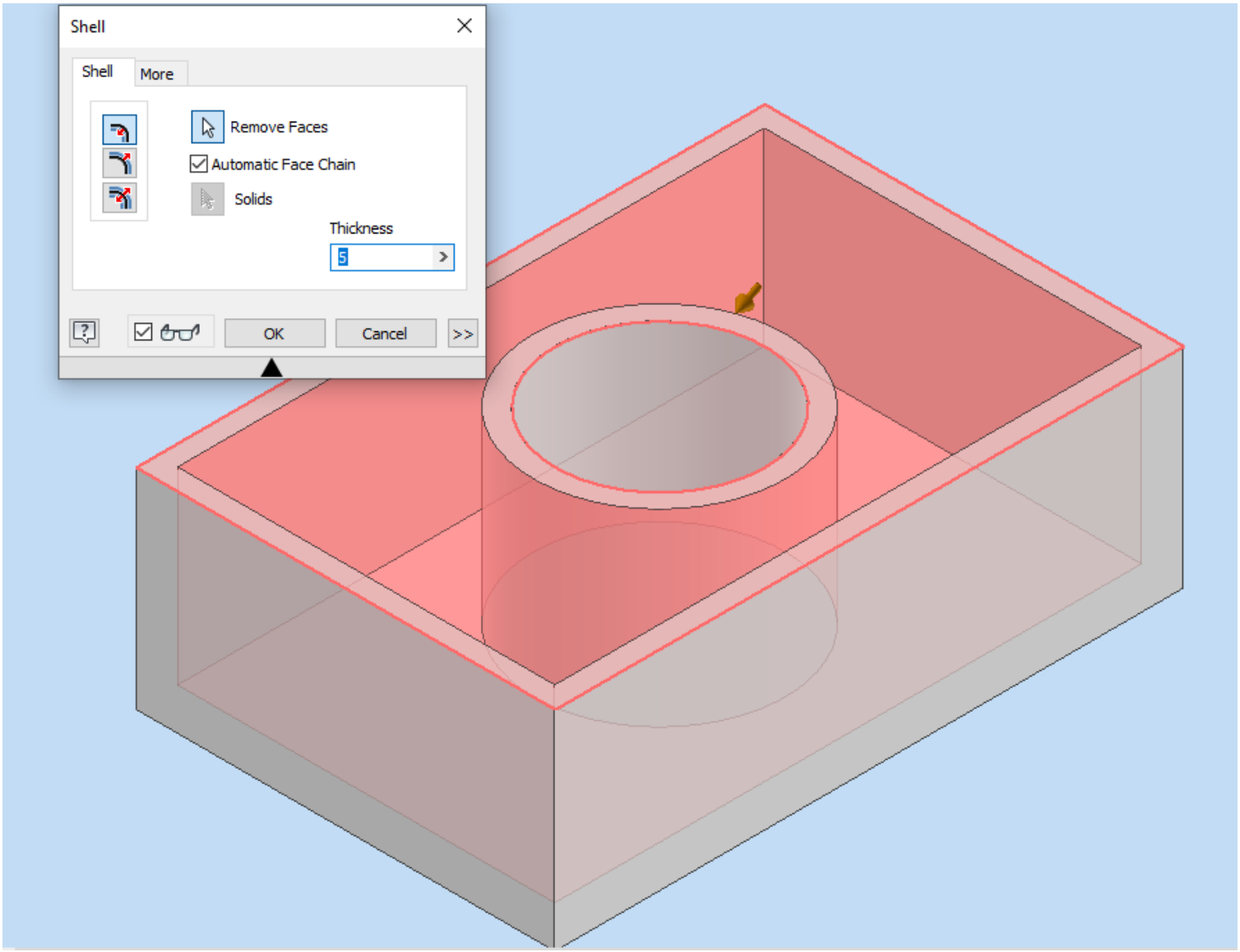


21. **Extrude** the circle ***Flipped, Cut*** material, ***Through All.*** Click **OK.**

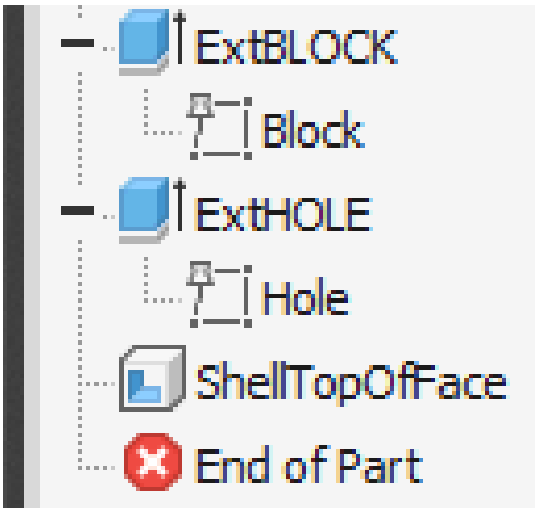


Watch Video 4

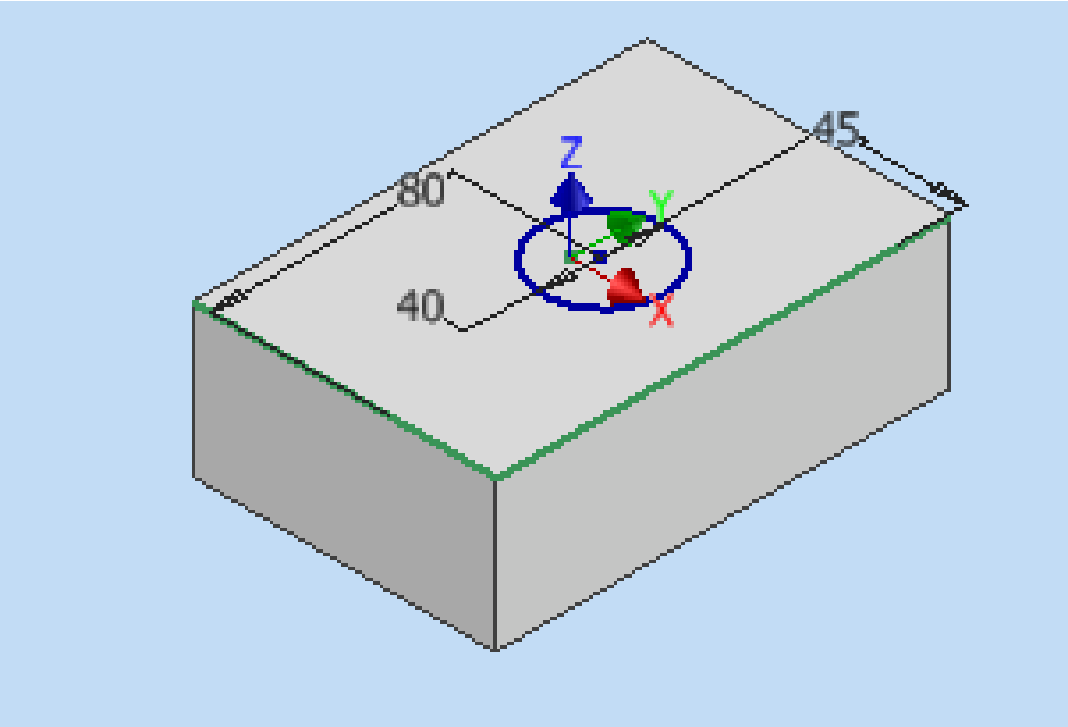
22. Select the ***Shell*** tool from the ***Modify*** panel. Click on **Remove Faces**, > Select the **top face** and set the thickness at **5 mm**. Click **OK.** ***SAVE YOUR WORK!!***



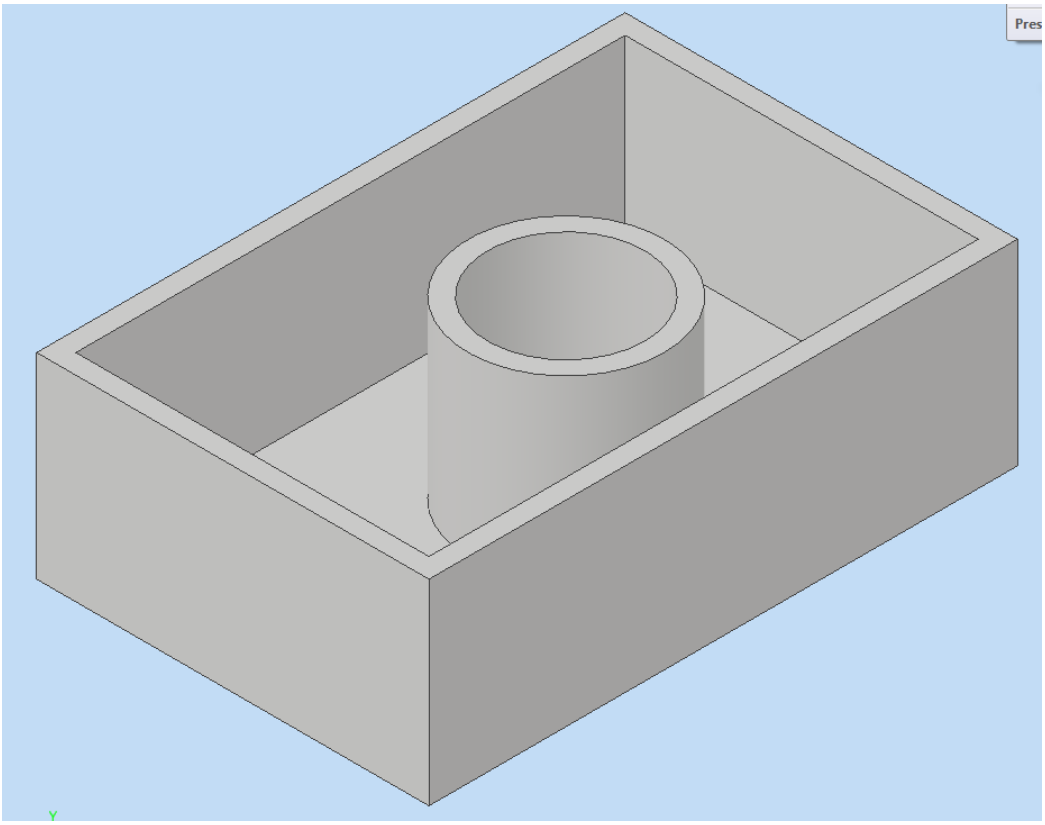
23. Rename the hole extrusion to **ExtHOLE**, the sketch to **Hole** and the shell to **ShellTopOfFace.**



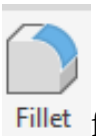
24. **Double-Click** on the ***Hole*** sketch. ***Change the numbers*** to the ones below. ***Finish Sketch***. You have just ***parametrically*** changed the location of the hole, as well as the feature geometry – the **ExtHOLE** extrusion.



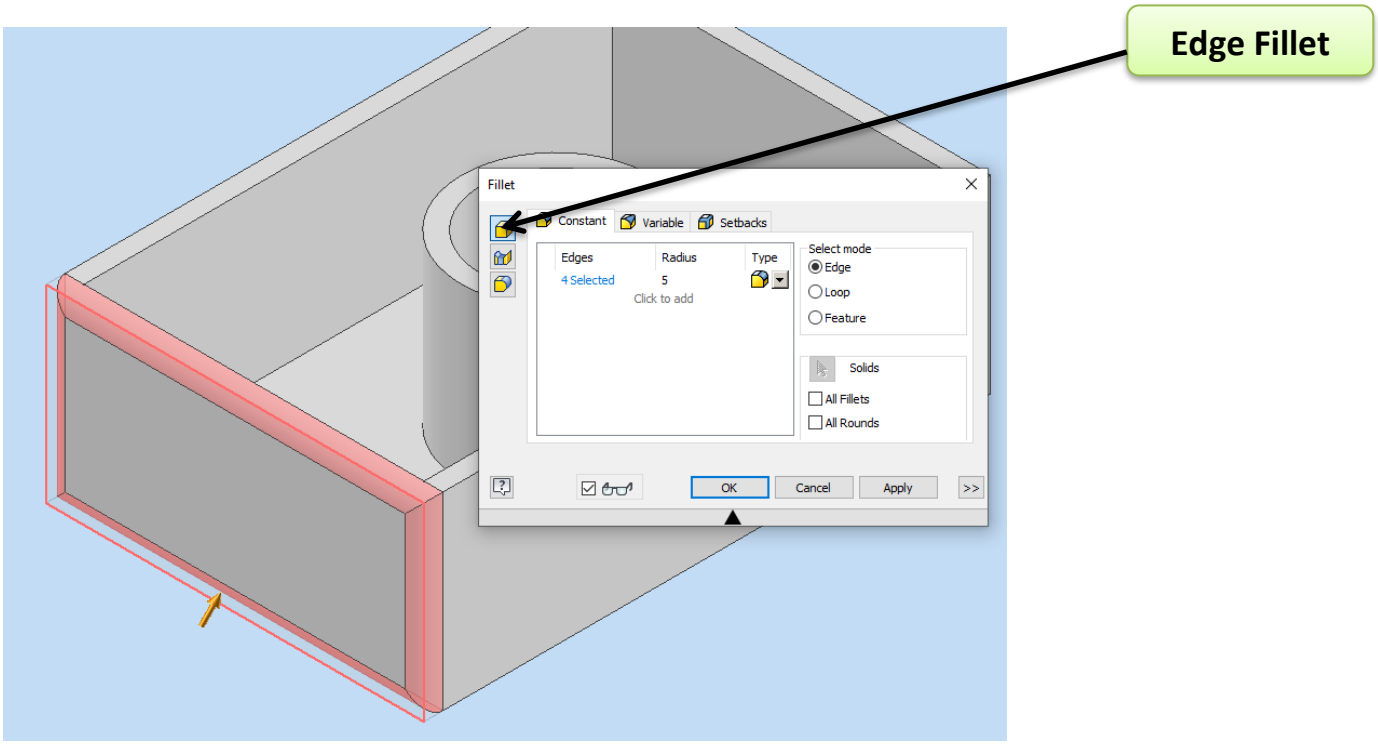
25. The hole is now slightly offset from the center. ***SAVE YOUR WORK!!***

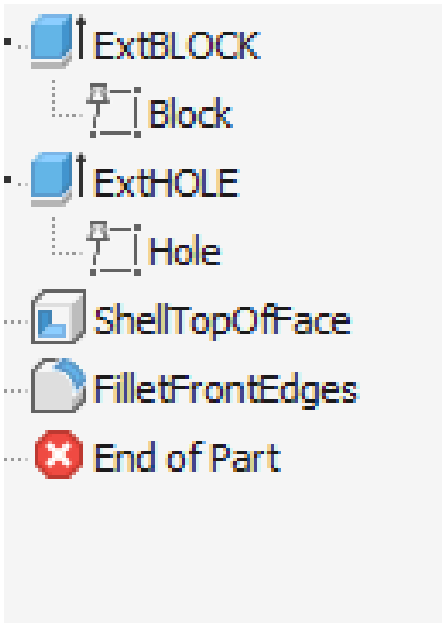


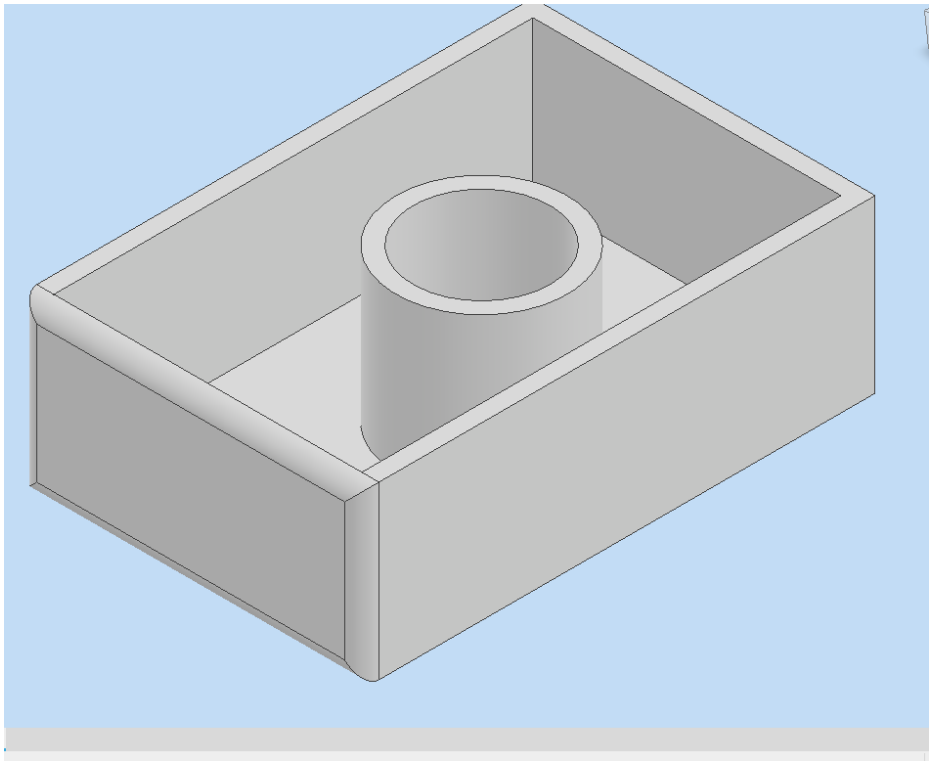
Watch Video 5

26. Click on the **Fillet** tool 

from the ***Modify*** panel. Select the **Edge Fillet** with a radius of **5 mm**. Select each of the front edges of the block**.** Click **OK.**







27. Rename **Fillet1** to **FilletFrontEdges**. ***SAVE YOUR WORK!!*** **Watch Video 6**

Grading Rubric

	Criteria	
1	Filename = ***legoINL_3D_1 (Be sure to use YOUR initials and YOUR period number)*** **1 pt**	
2	**Block Sketch** – dimensioned at 100 mm x 150 mm **1 pt**	
3	**Block Extrusion –** Joined at 50 mm	
4	Sketch = **Block**, Extrusion = **ExtBLOCK,** Sketch = **Hole,** Extrusion = **ExtHOLE**, Shell = **ShellTopOfFace**, Fillet = **FilletFrontEdges** **6 pts**	
5	Hole Diameter = 40 **1 pt**	
6	Dimension = 80 **1 pt**	
7	Dimension = 45 **1 pt**	
	Total Possible – 12 points	