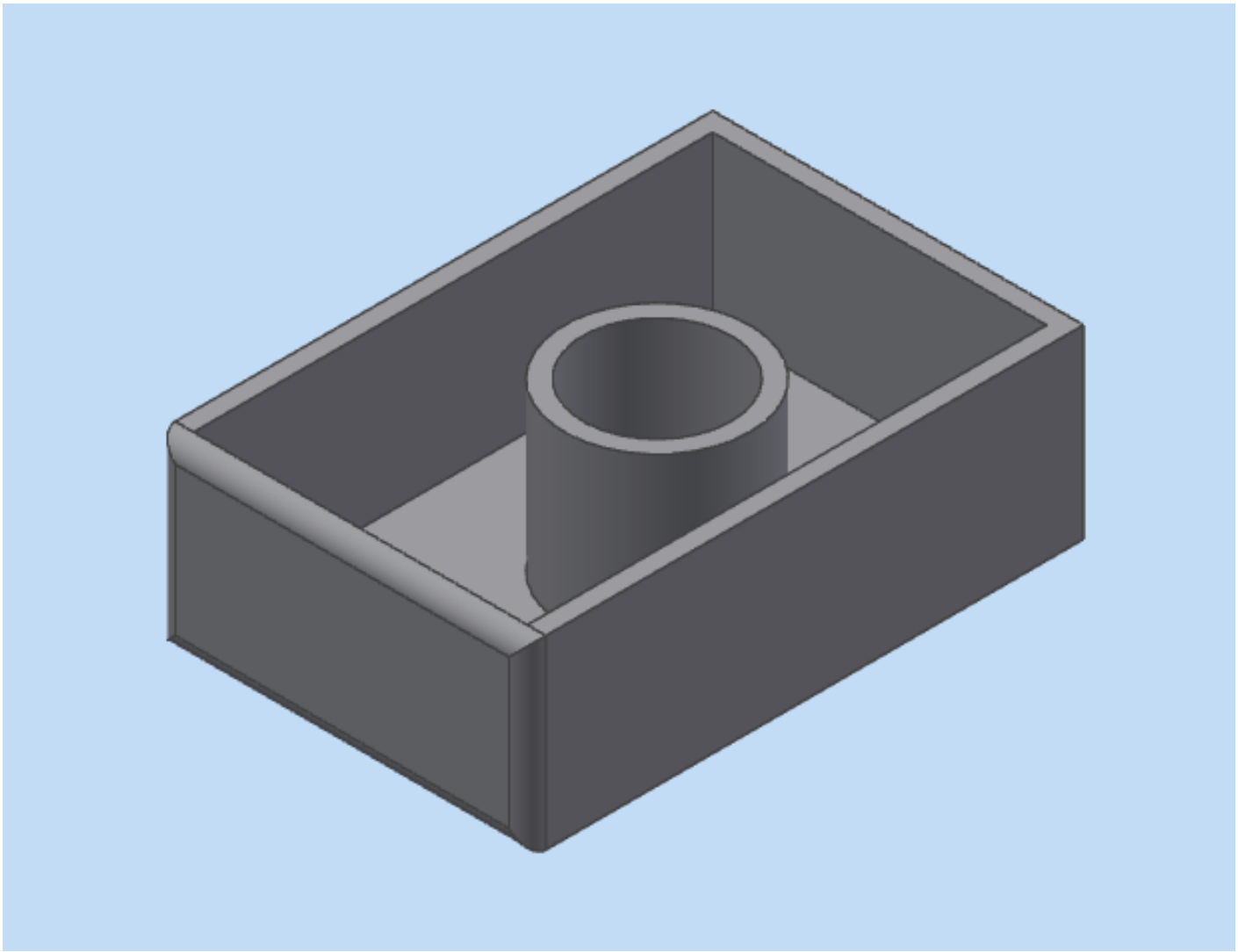
AutoDesk Inventor

Beginning Tutorial – the “Lego”

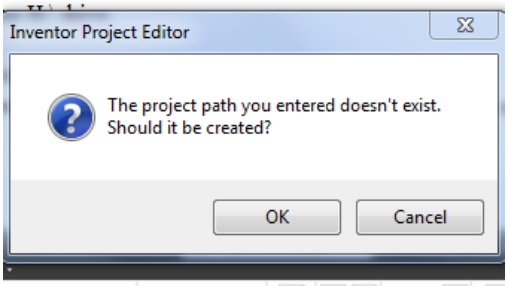
In this tutorial, you will construct a simple hollowed-out block with a hole in it (looks like a Lego). You will learn the basics of creating and modifying **sketches** and **features.**



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**.

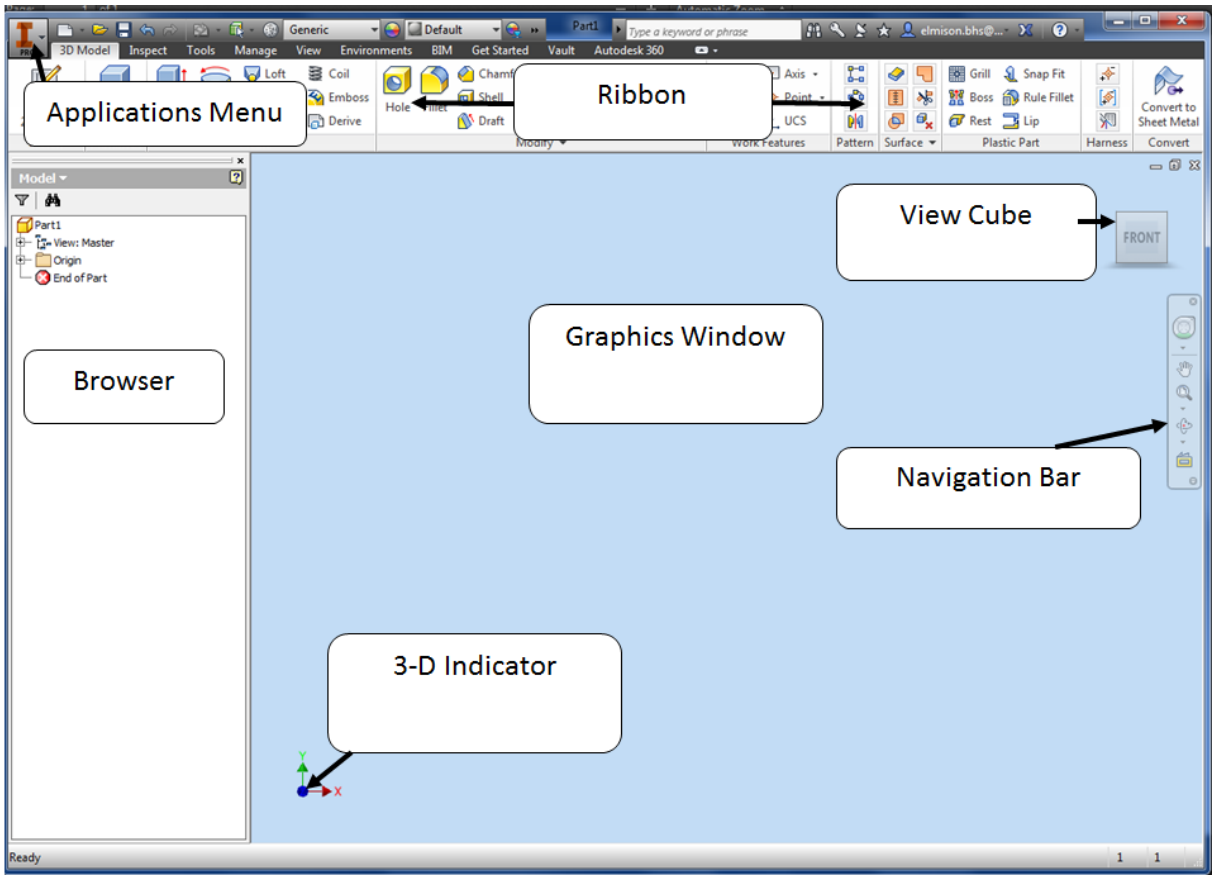


4. ***You will use this process whenever you start a new project.***

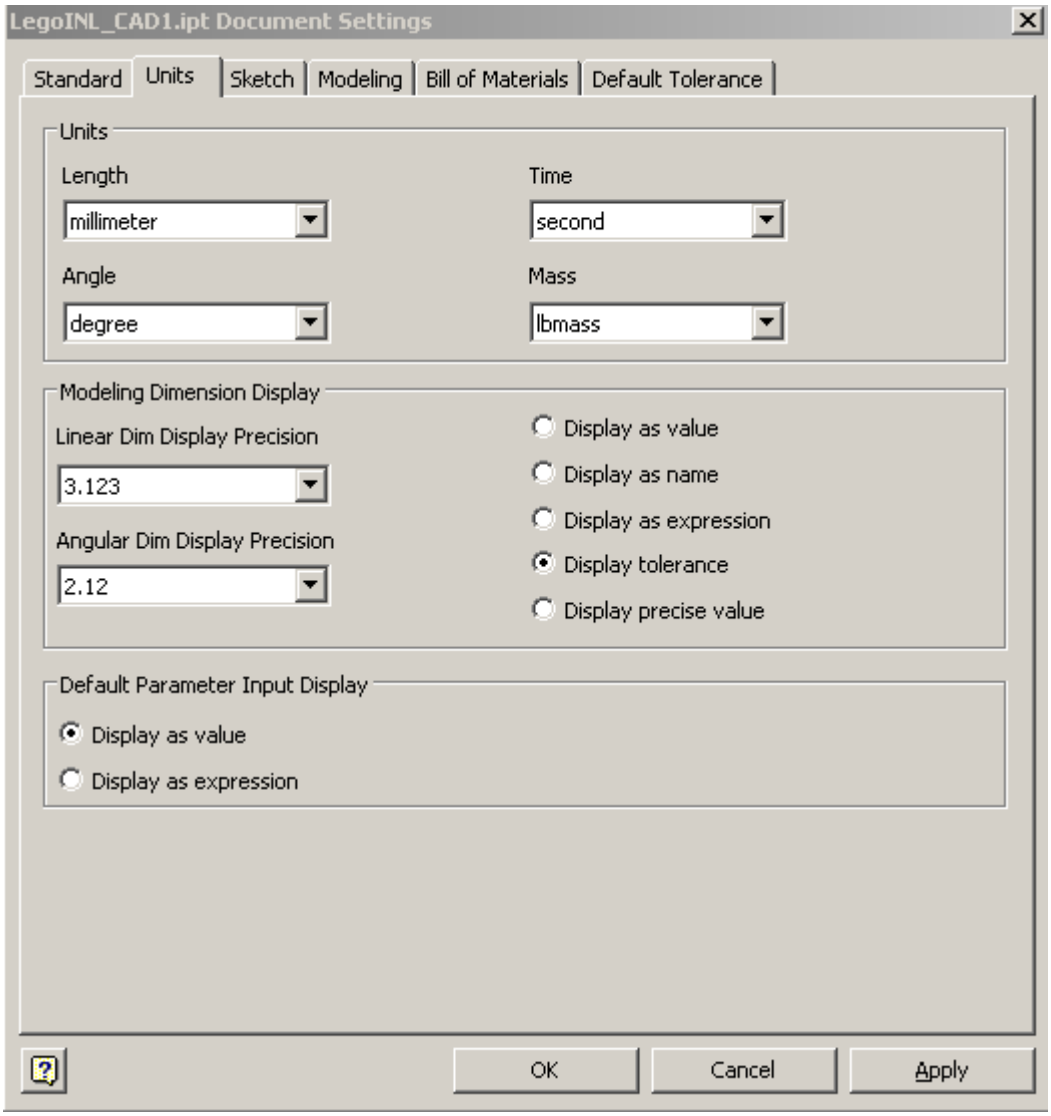
5. In the **Get Started** tab, click on **New**. Select **Metric > Part > Standard(mm).ipt > Create.**

Watch Video 1

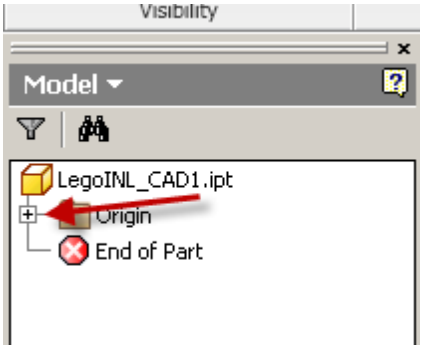
6. Fill in your ***Screen Shot Worksheet.***

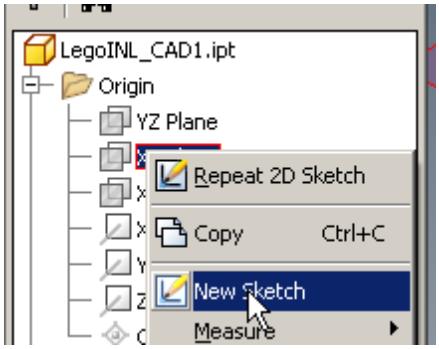


7. Click on the **Save** icon . Since you created a **Project Folder**, your Lego should automatically be saved in your Lego project folder. Be sure the file name is ***legoINL_CAD_1.***
8. Go to **Tools > Document Settings > Units.** Be sure ***Millimeters*** is selected from the ***Length*** dropdown menu. Click **Apply > Close**. See Below: **Watch Video 2**

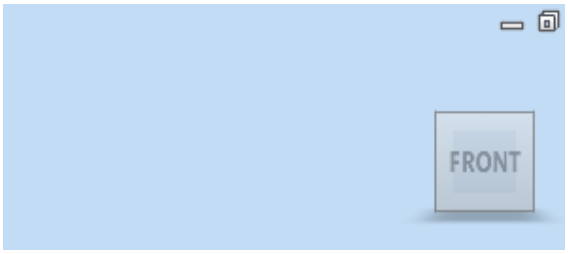


9. Click the **"+"** sign next to the ***Origin folder*** in the ***Browser Window***. Right Click on the **XZ Plane > New Sketch.**

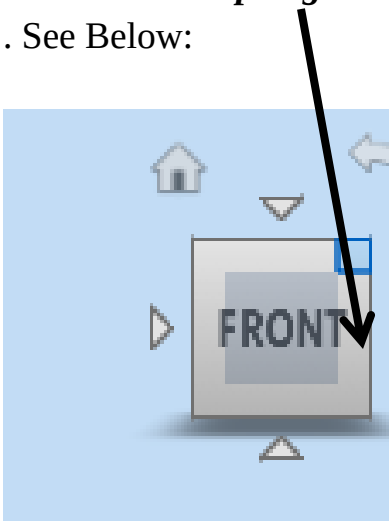




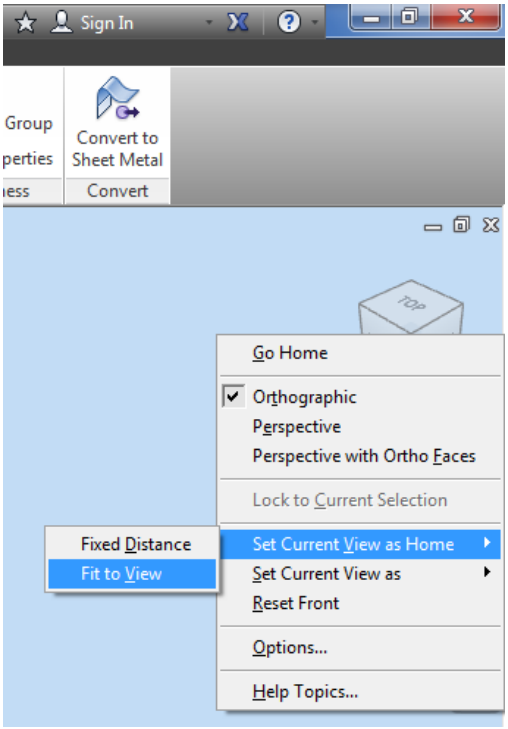
10. Manipulate the view cube so that “Front” is facing you: See Below.

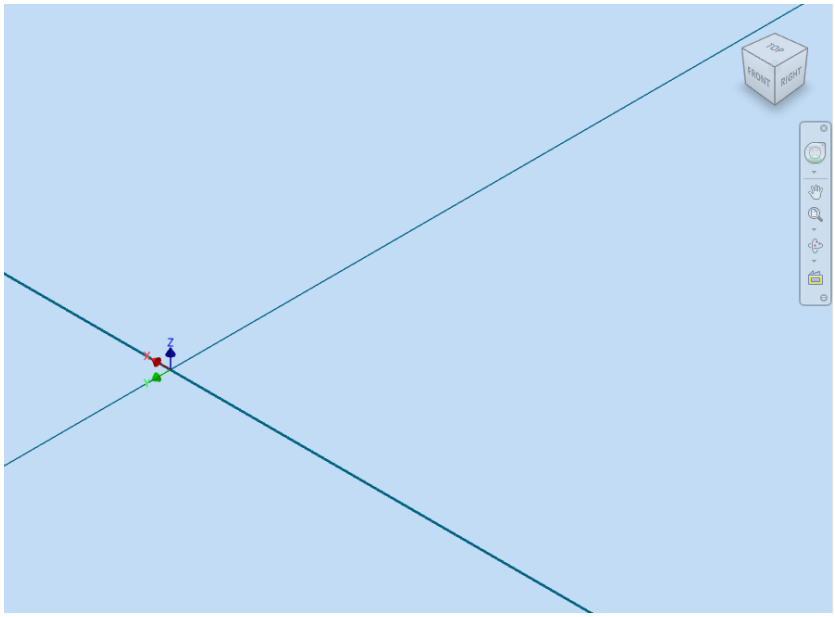


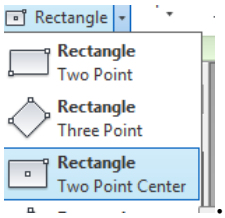
11. Click on the ***Top-Right*** corner of the View Cube.
    . See Below:

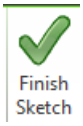


12. ***Right Click > Set Current View to Home > Fit to View***. This will set the Isometric View correctly for our project.



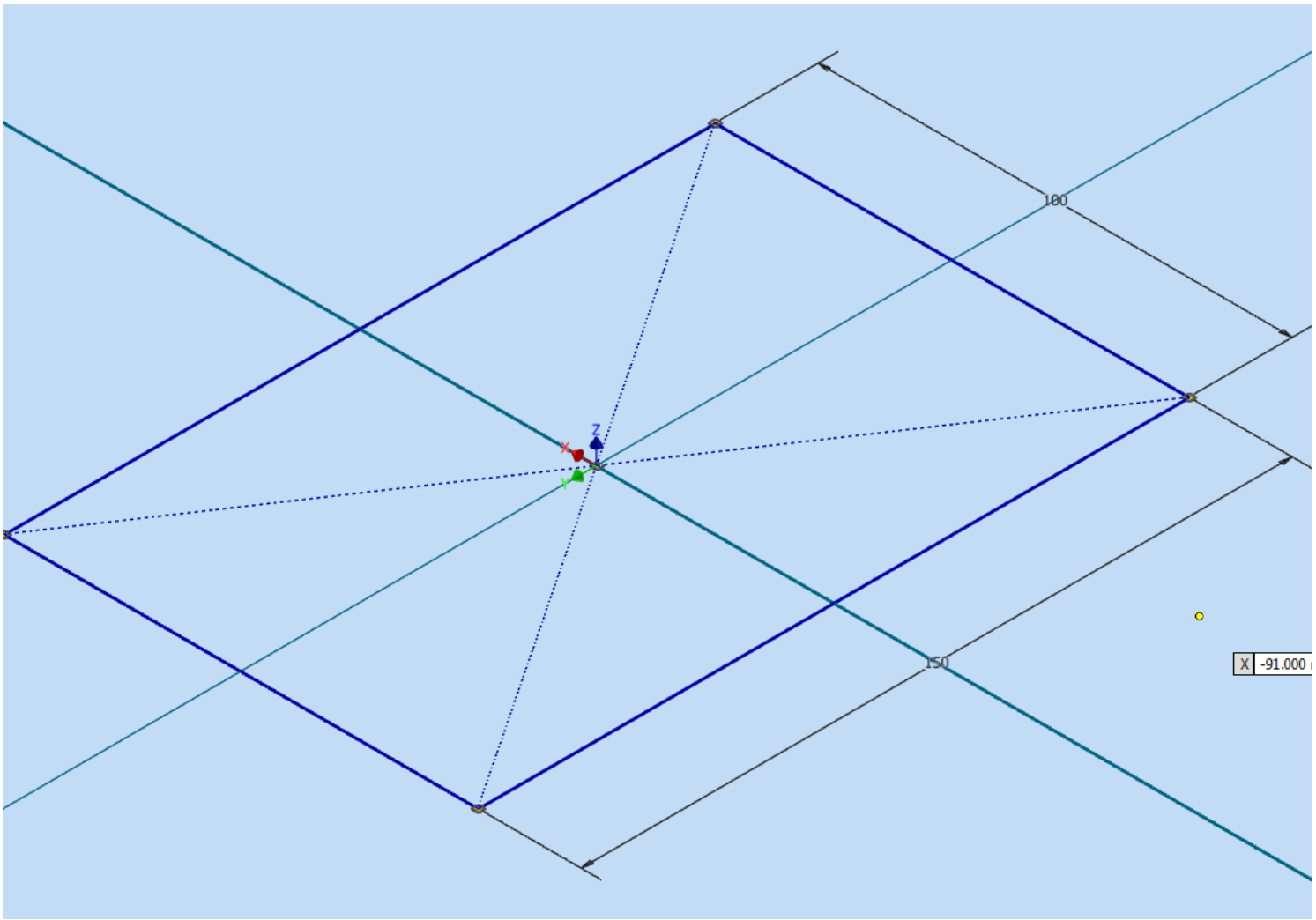


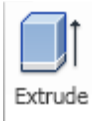


13. In the ***Draw*** tab,` select the ***Rectangle > Two Point Center*** tool . Staring at the ***Origin***, drag out a rectangle of **150mm x 100mm**. Use the TAB key to cycle through the dimensions. Click on the green check at the top right 

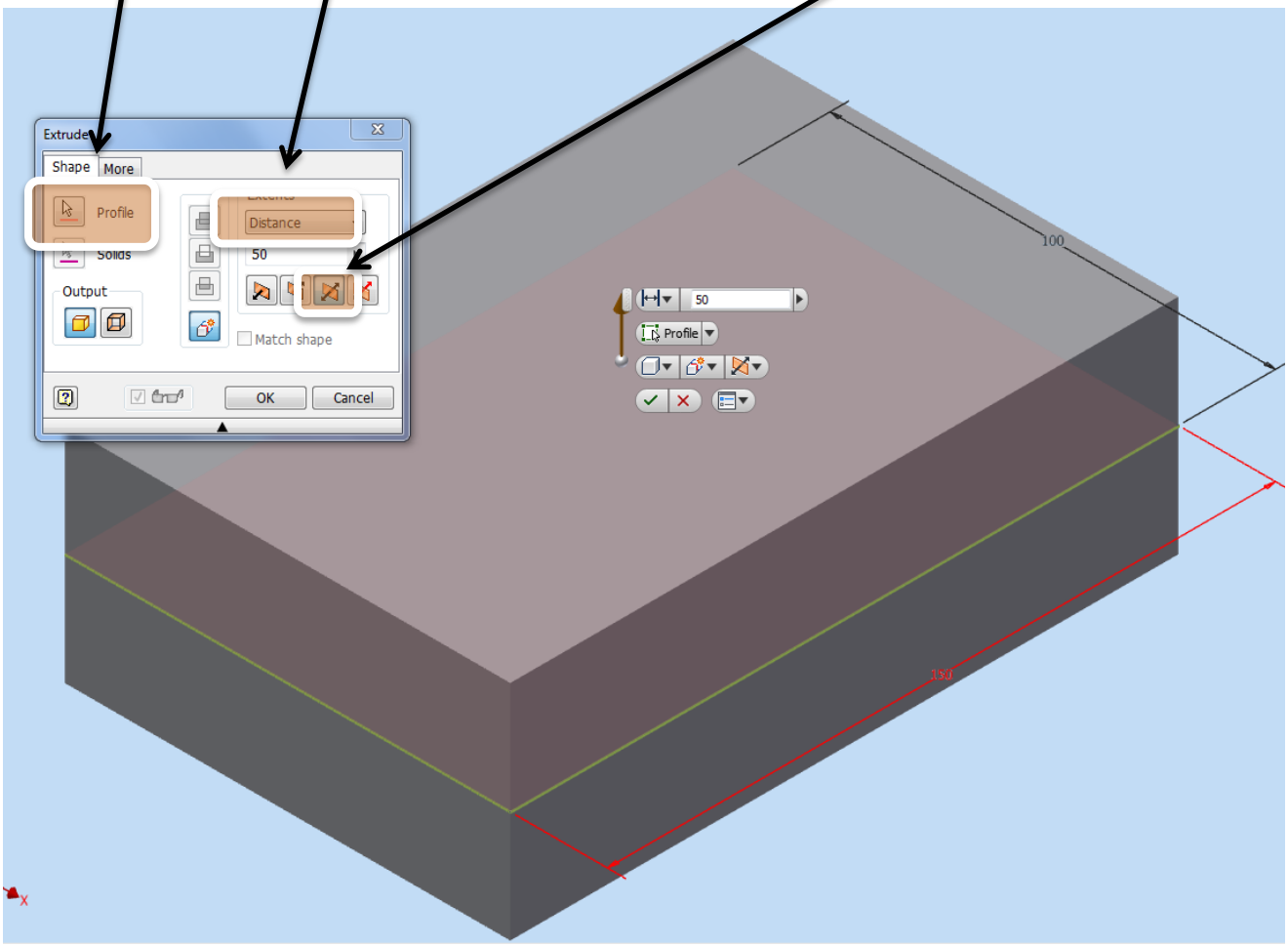
and ***Finish Sketch*** .

Watch Video 3

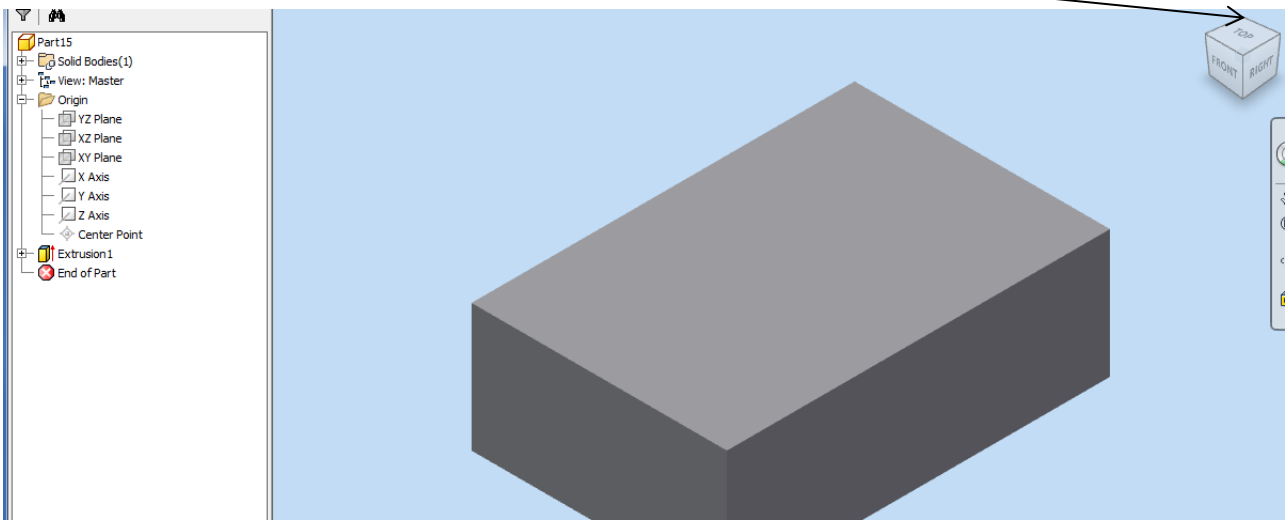


14. Click on the ***Extrude*** tool 

from the **Model** tab of the ribbon. Select the rectangle for the ***profile***, set the ***distance*** to 50 mm, set the direction to ***symmetrical***. Click OK.



15. Click on the ***front corner*** of the ***View Cube*** to scale the view to the screen. **Watch Video 4**



16. 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**.

17. Click the "+" next to ***Extrusion1*** in the **Browser**. 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.**

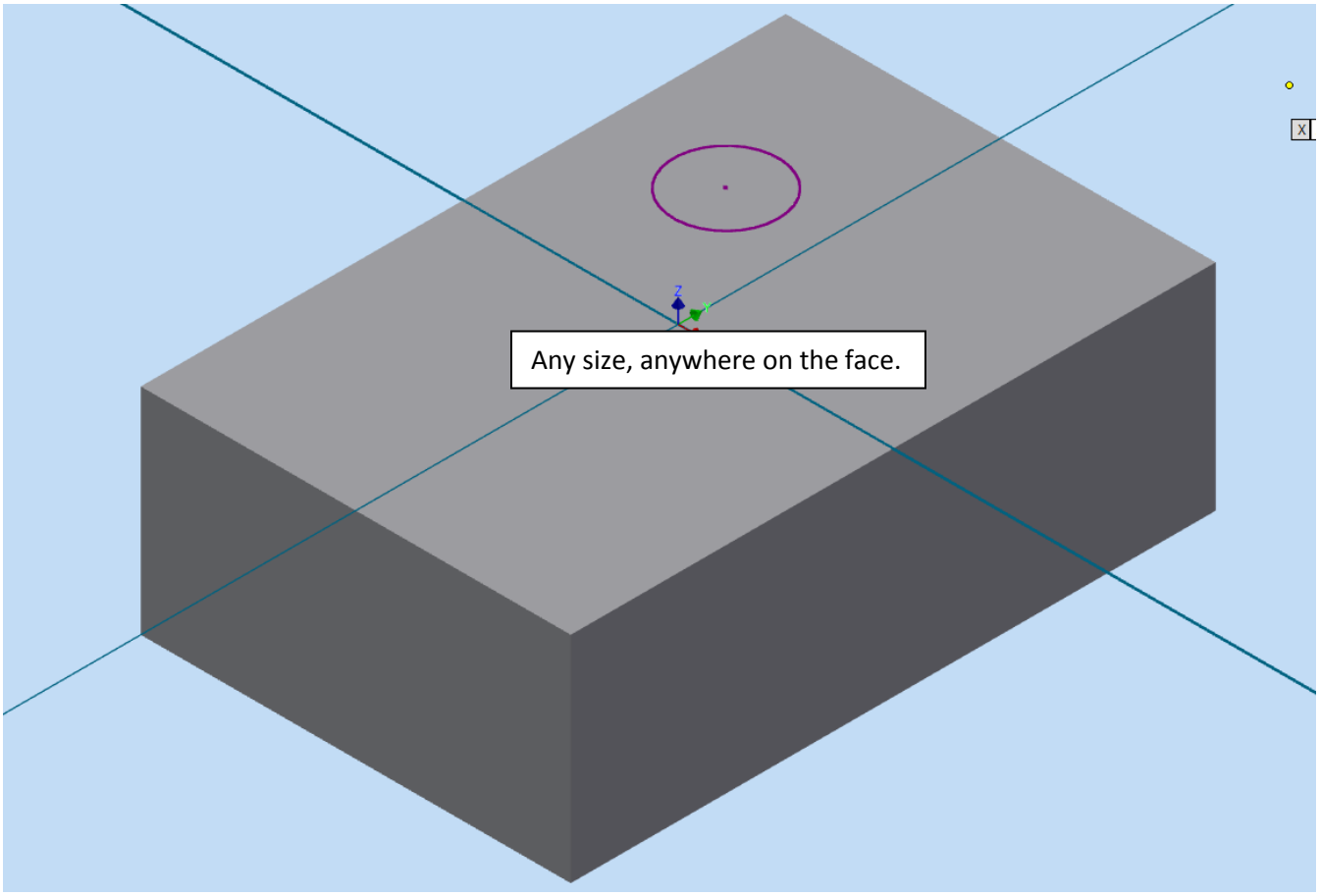
18. Using the same technique, change the name of the ***extrusion*** **to ExtBlock.**

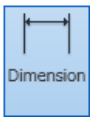
SAVE YOUR WORK!!

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***.

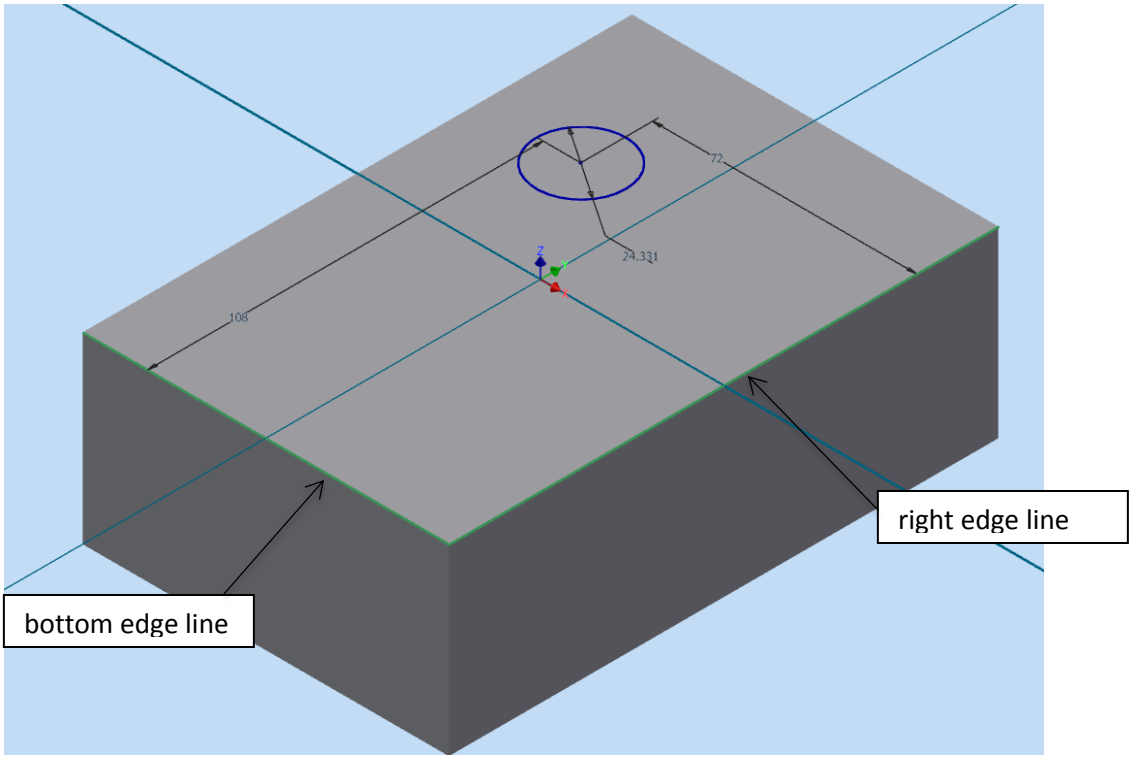
20. Click on the ***top face***, then **Right Click > New Sketch**.

21. Select the ***Circle*** tool from the ***Draw*** tab, and draw a circle on the top face – ***any size, anywhere on the face.***

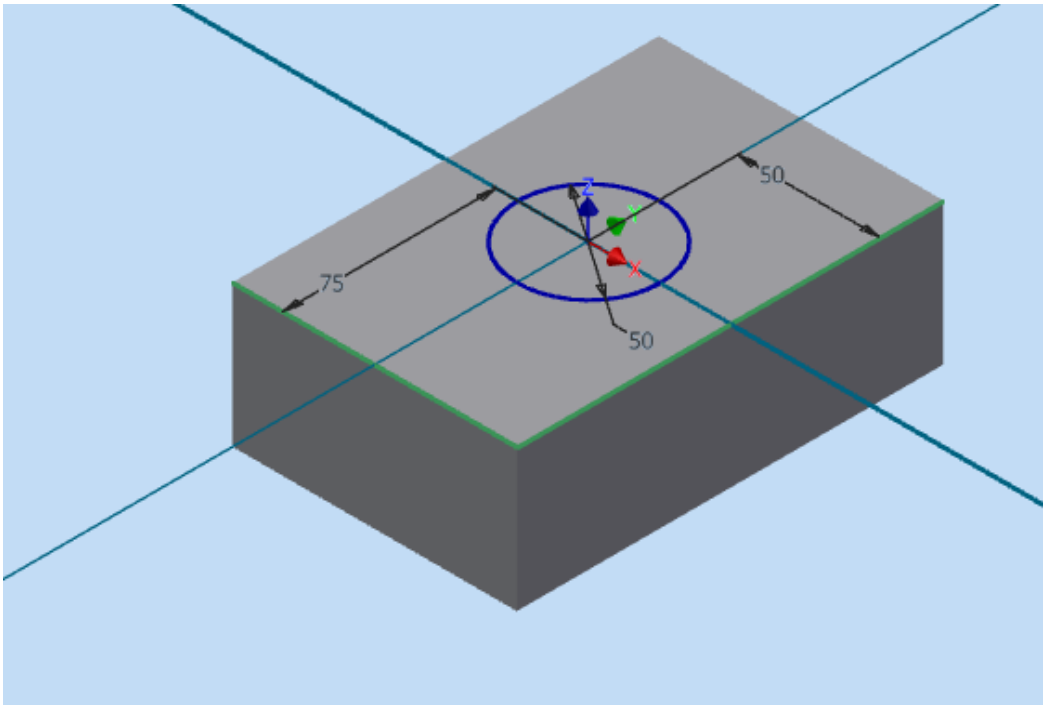


22. Select the ***Dimension*** tool 

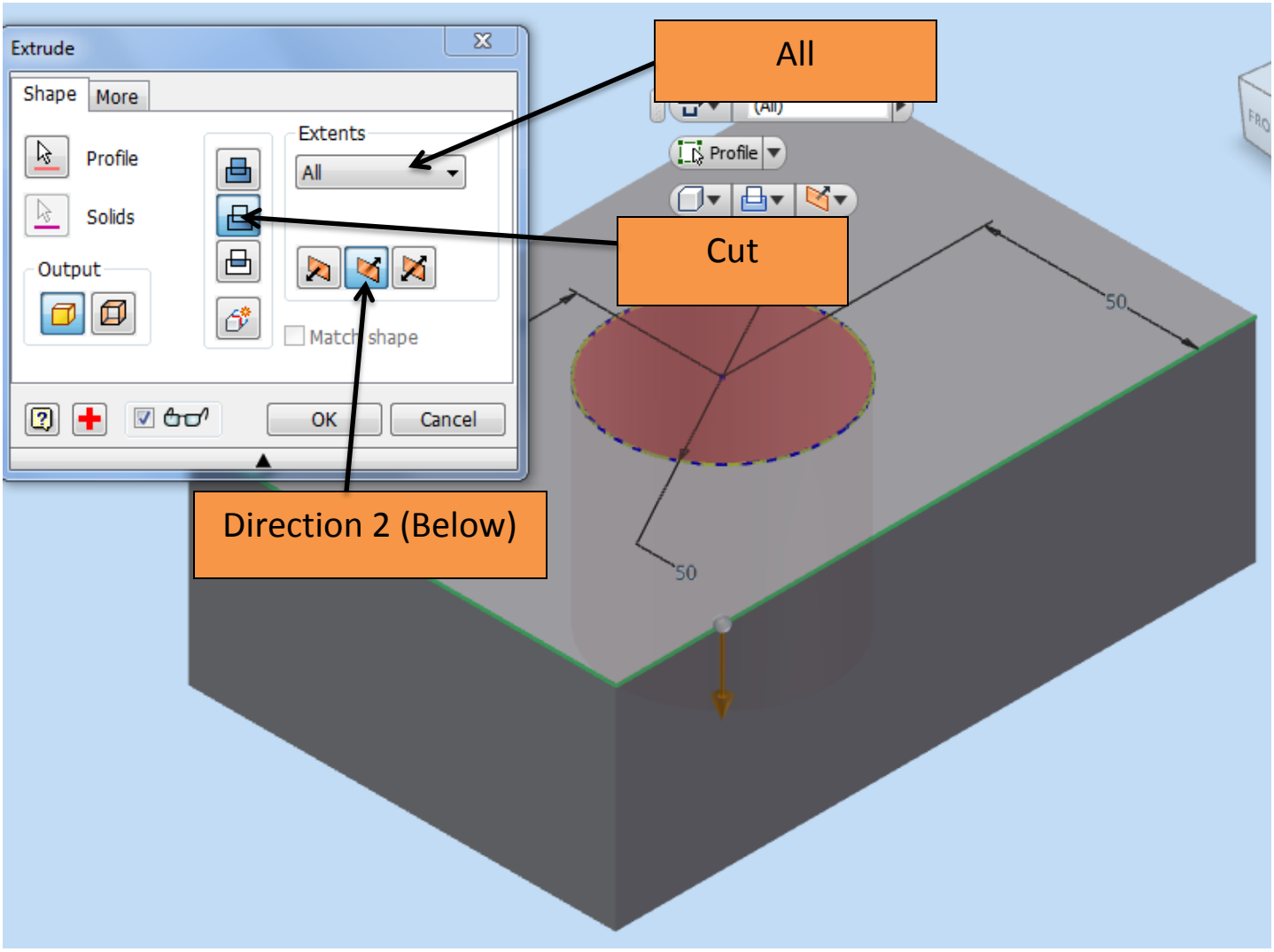
from the ***Constraints*** tab. Dimension the circle in three ways: (a) from the ***right edge*** line to the ***center*** of the circle, (b) from the ***bottom edge*** line to the ***center*** of the circle and (c) the diameter of the circle (select the circle). See Below – note that the below values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



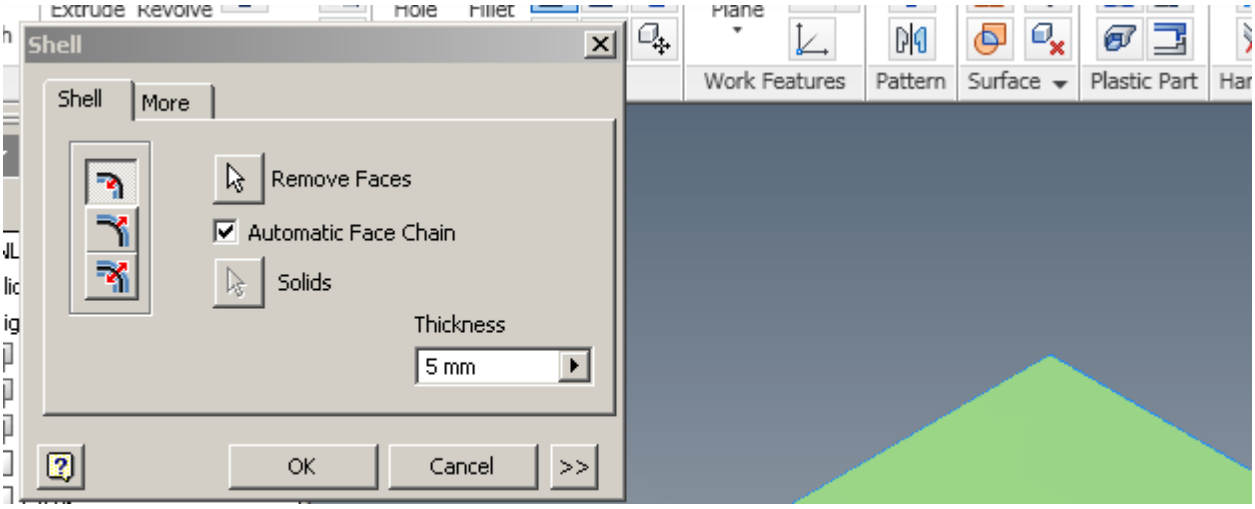
20. Click on the values and change them to the ones below, and click ***Finish Sketch***: **Watch Video** 5

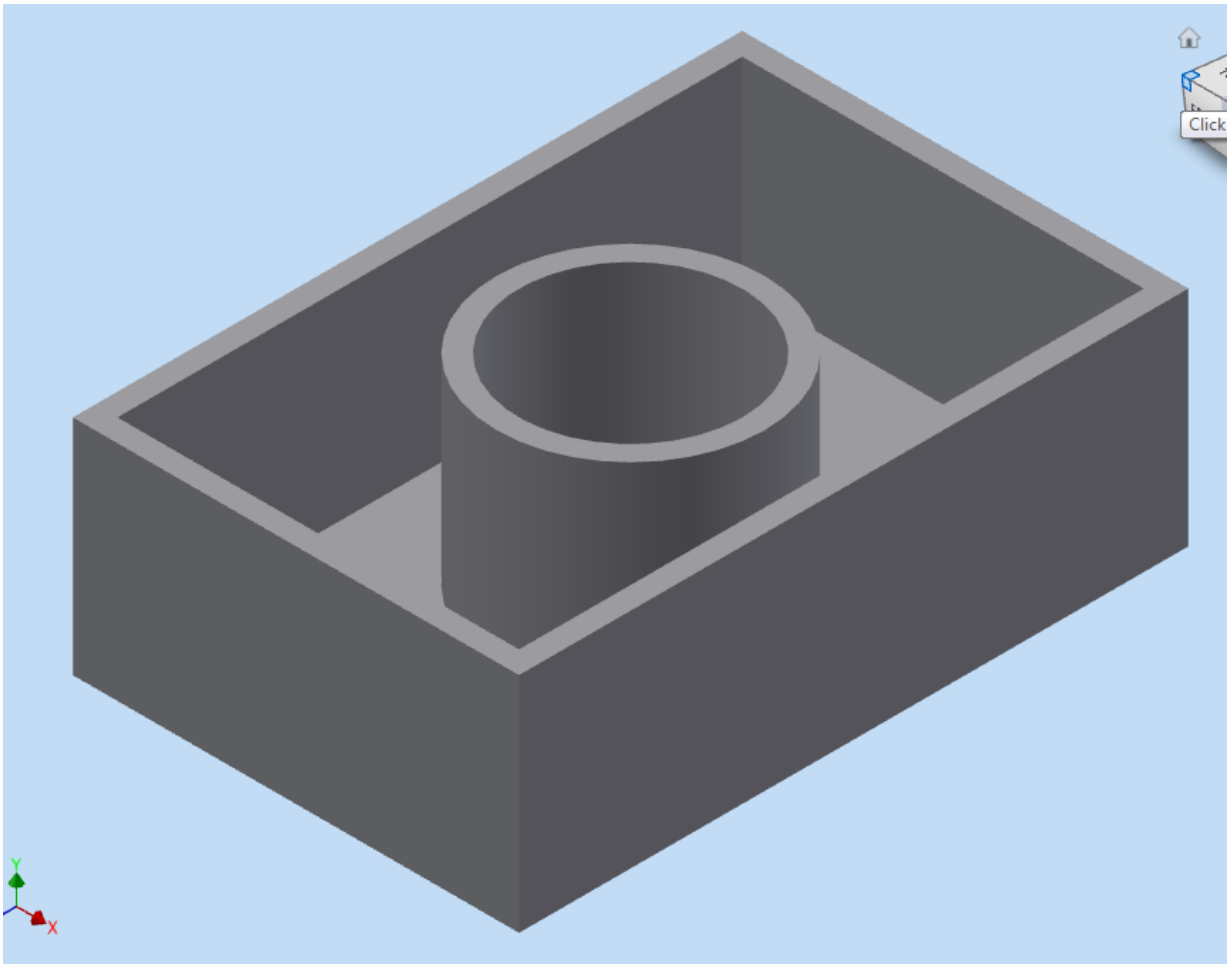


21. **Extrude** the circle ***below*** the work plane (Direction 2), ***Cut*** material, through ***All.*** Click **OK.**
Watch Video 6

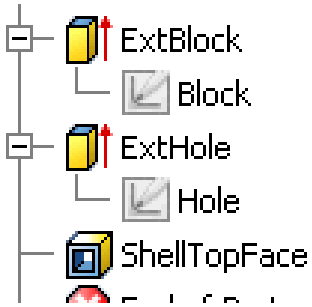


22. Select the ***Shell*** tool  from the ***Modify*** ribbon. Select the top face and set the thickness at **5 mm**. Click **OK.** ***SAVE YOUR WORK!!***

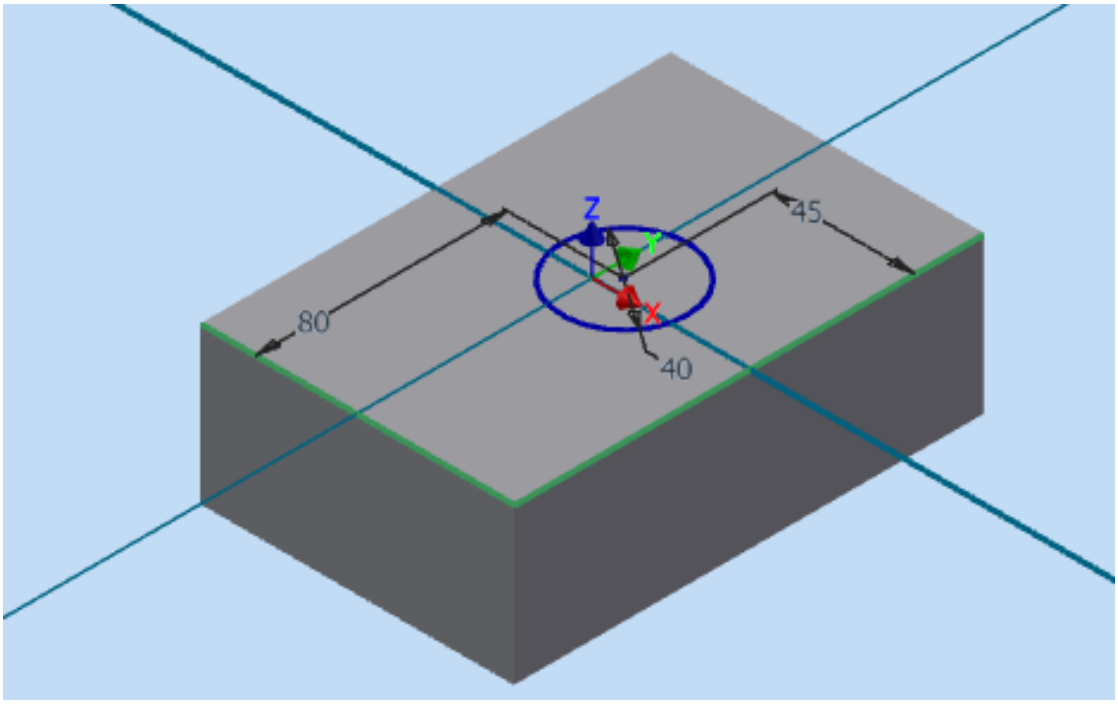




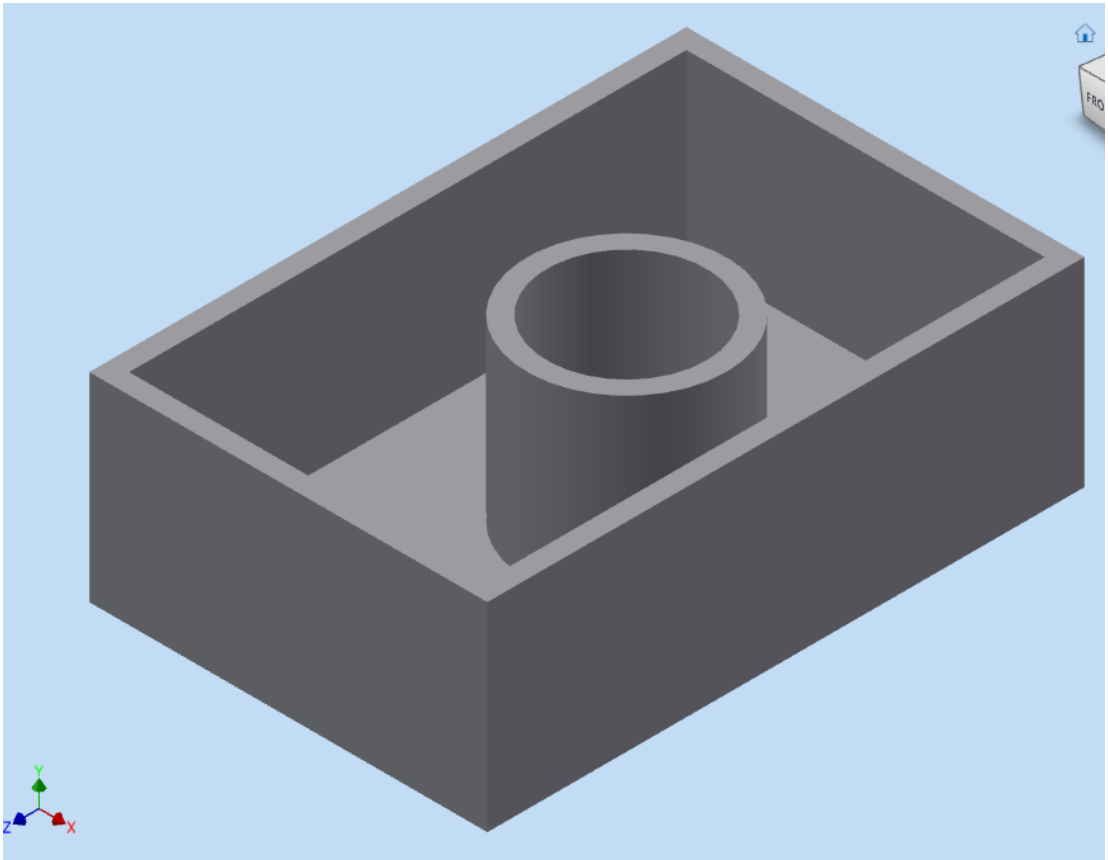
23. Rename the hole extrusion to **ExtHole**, the sketch to **Hole** and the shell to **TopOfFace.**



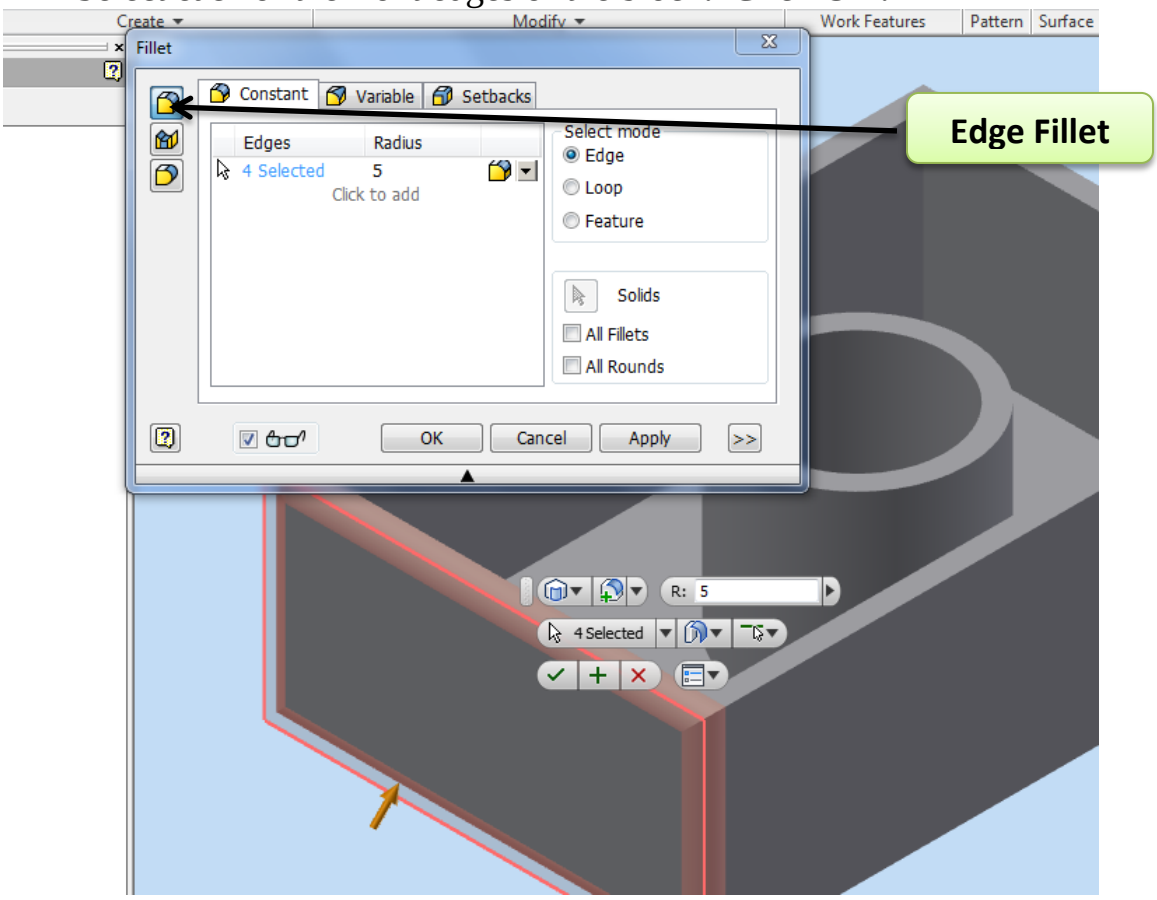
24. **Double-Click** on the ***Hole*** sketch. Change the numbers to the ones below. ***Finish Sketch***. You have just ***parametrically*** changed the location of the hole, as well as the feature geometry – the **ExtHole** extrusion.

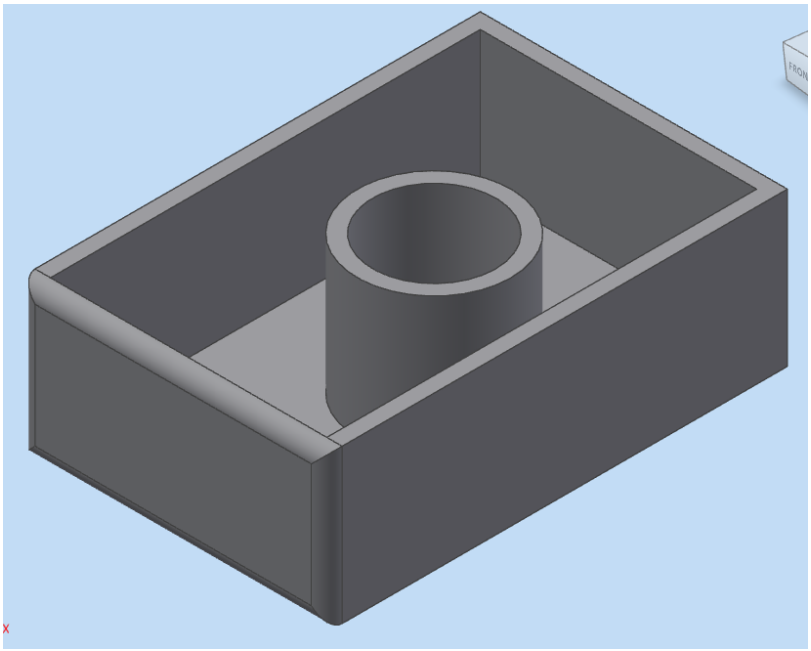


25. The hole is now slightly offset from the center. ***SAVE YOUR WORK!!***



26. Click on the **Fillet** tool  from the ***Modify*** tab. 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 **FilletFrontEdge**. ***SAVE YOUR WORK!!.*** **Watch Video** 7

Grading Rubric

	Criteria	
1	Filename = ***legoINL_CAD_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 = **ShellTopFace**, Fillet = **FilletFrontEdge** **6 pts**	
5	Hole Diameter = 40 **1 pt**	
6	Dimension = 80 **1 pt**	
7	Dimension = 45 **1 pt**	
	Total Possible – 12 points	