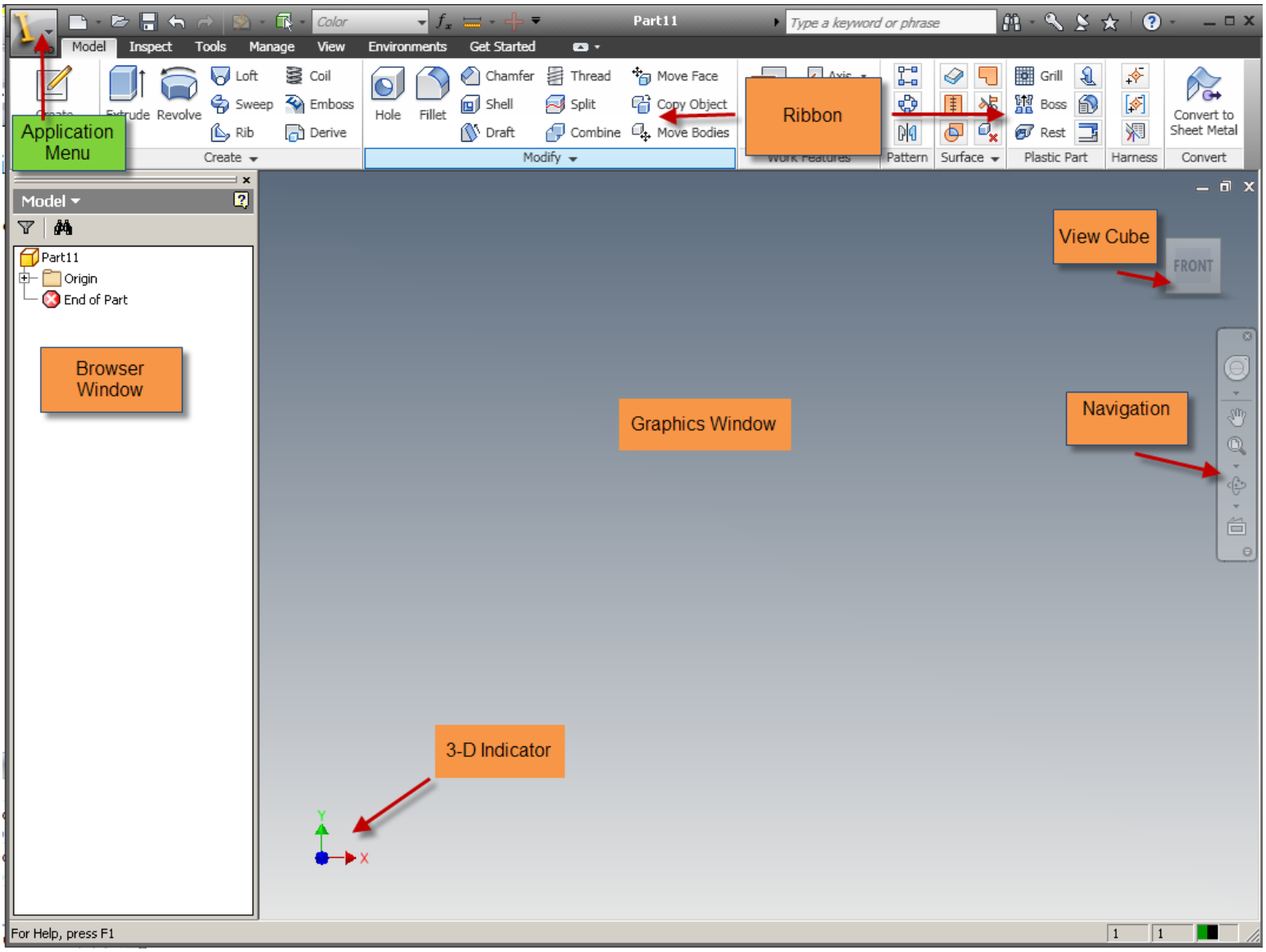
Beginning Tutorial – the "Lego"

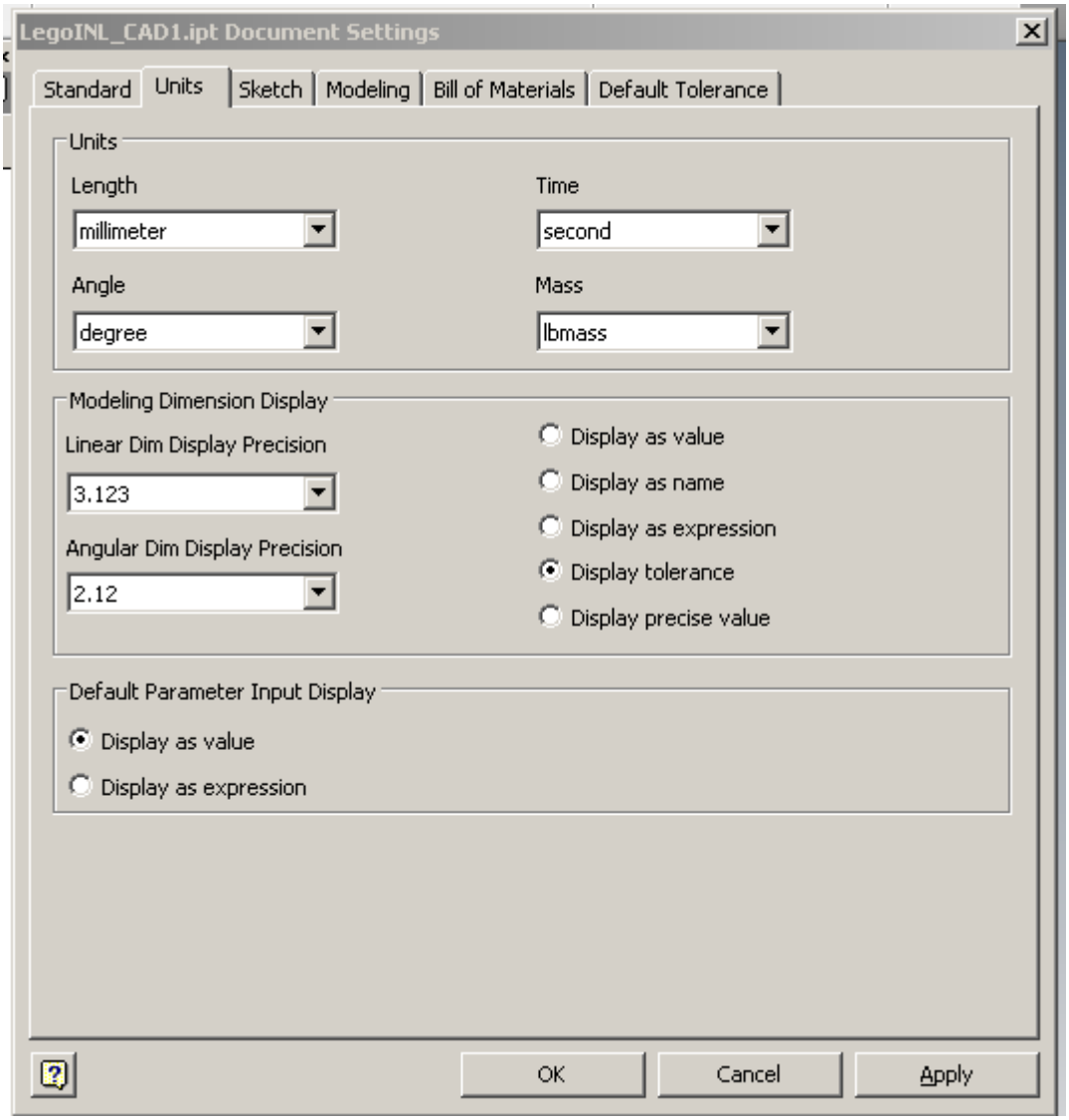
In this tutorial, you will construct a simple hollowed-out block with a hole in it (looks like a Lego). You will learn the basics of creating and modifying **sketches** and **features.**

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**, Click on the browser box  to select your H:\ drive.
3. In the **Browse for Folder** box, navigate to your **Intro to CAD** folder. Click on **Make New Folder**, and name the new folder **Lego**. Click **OK** > **Finish > Apply > Done.**
4. ***You will use this process whenever you start a new project.***
5. In the **Get Started** tab, click on **New**. In the **New File** box, click **"standard.ipt",** then OK. This will open a new, standard part file in Inventor. **Watch Video 1**
6. Fill in your ***Screen Shot Worksheet.***

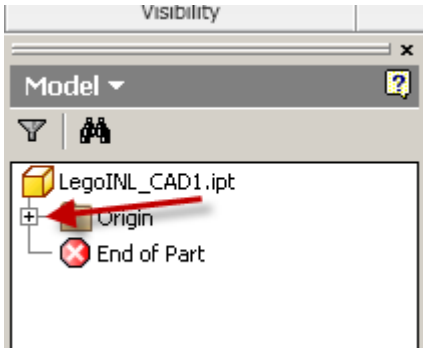


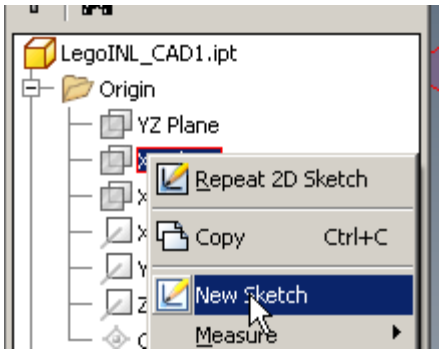
7. Click on the **Save** icon  . Since you created a **Project Folder**, your Lego should automatically be saved in your **Lego** project folder. Be sure the file name is ***legoINL_CAD_1.***

8. Go to **Tools > Document Settings > Units.** Select ***Millimeters*** from the dropdown menu. Click **Apply > Close**.

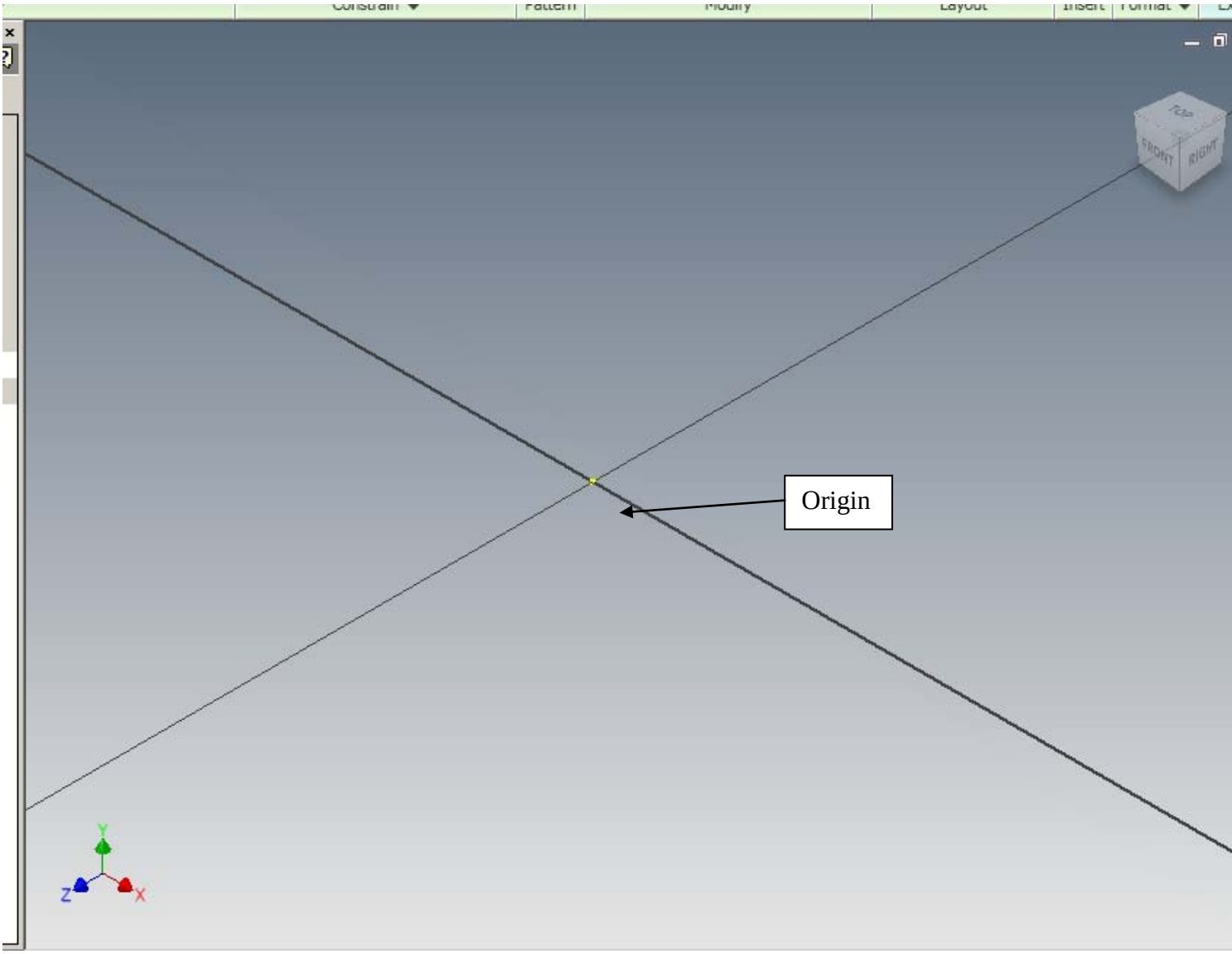


9. Click the **"+"** sign next to the **Origin** folder in the **Browser Window**. Right Click on the **XZ Plane > New Sketch.**

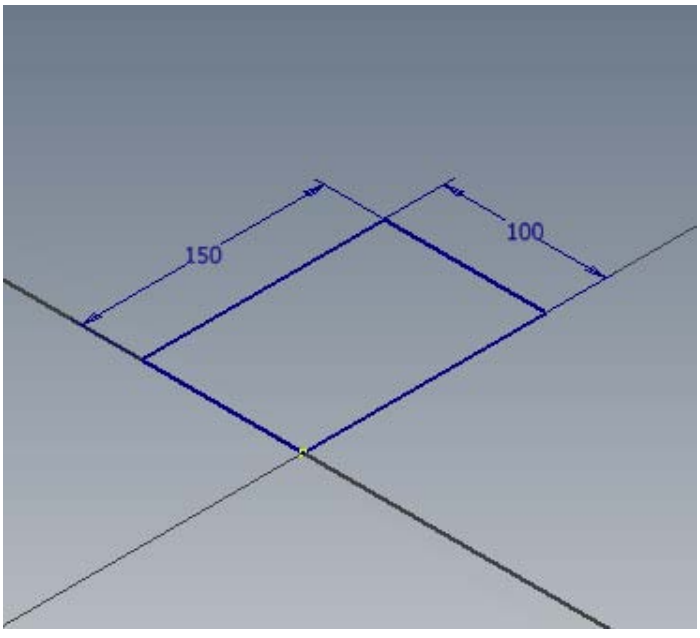




10. Hover your mouse over the View Cube area and click on the house icon . This will set the screen view to isometric.

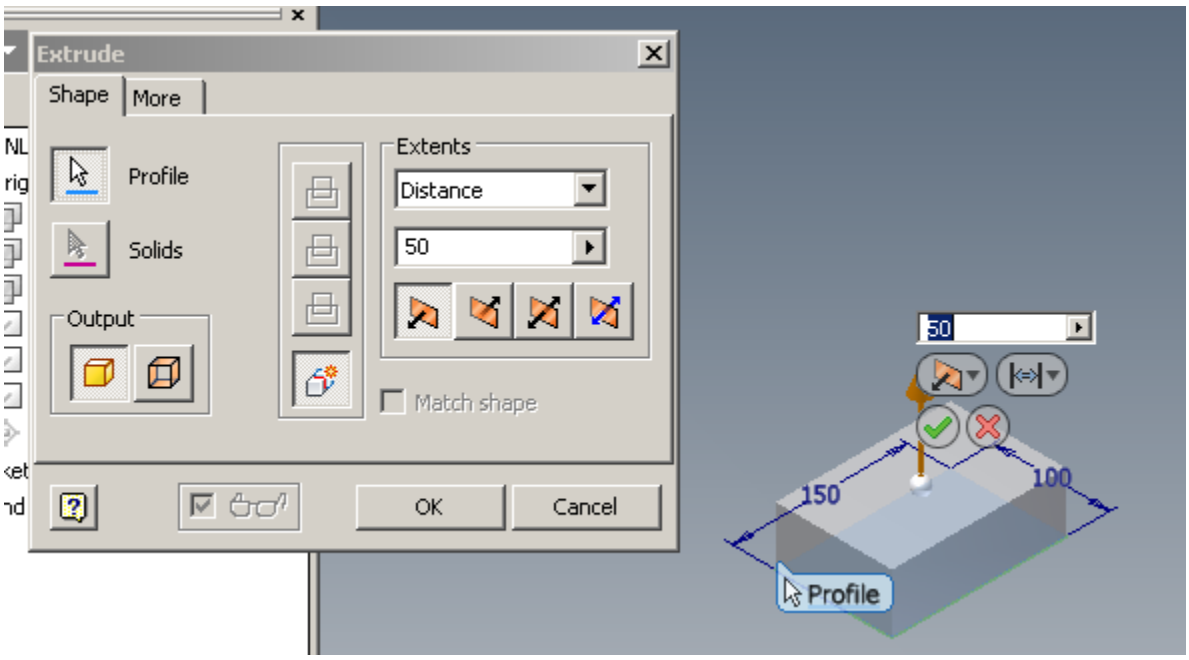


11. Staring at the Origin, drag out a rectangle of 150mm x 100mm. Click on Finish Sketch. **Watch Video 2**

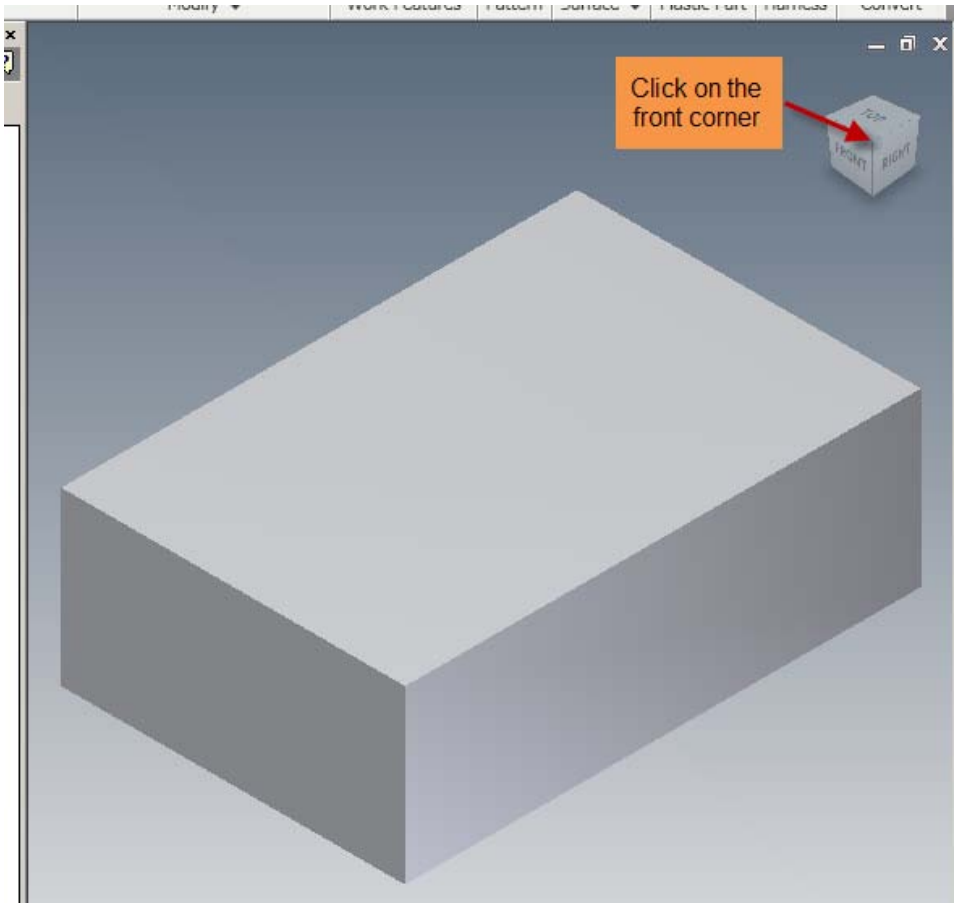


12. Click on the Extrude tool 

from the **Model** tab of the **ribbon**. Select the rectangle for the profile, and set the distance to 50 mm. ***SAVE YOUR WORK NOW!!***

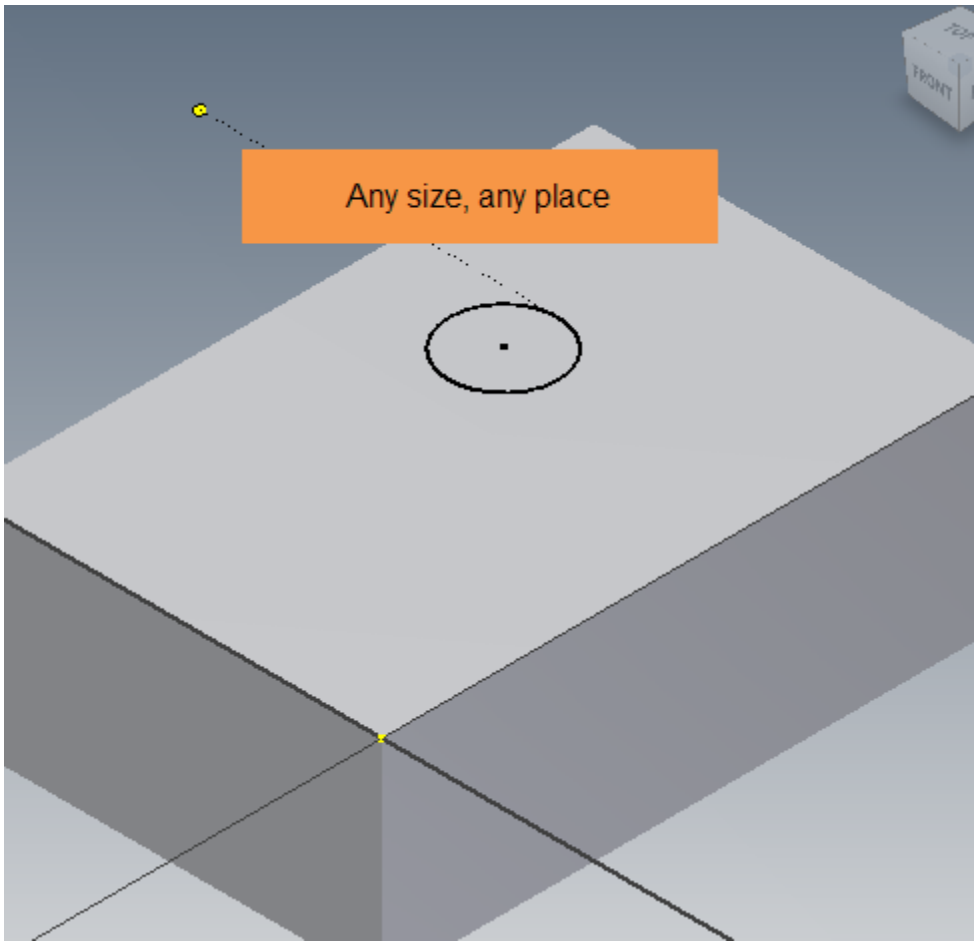


13. Click on the ***front corner*** of the **View Cube** to scale the view to the screen. **Watch Video 3**

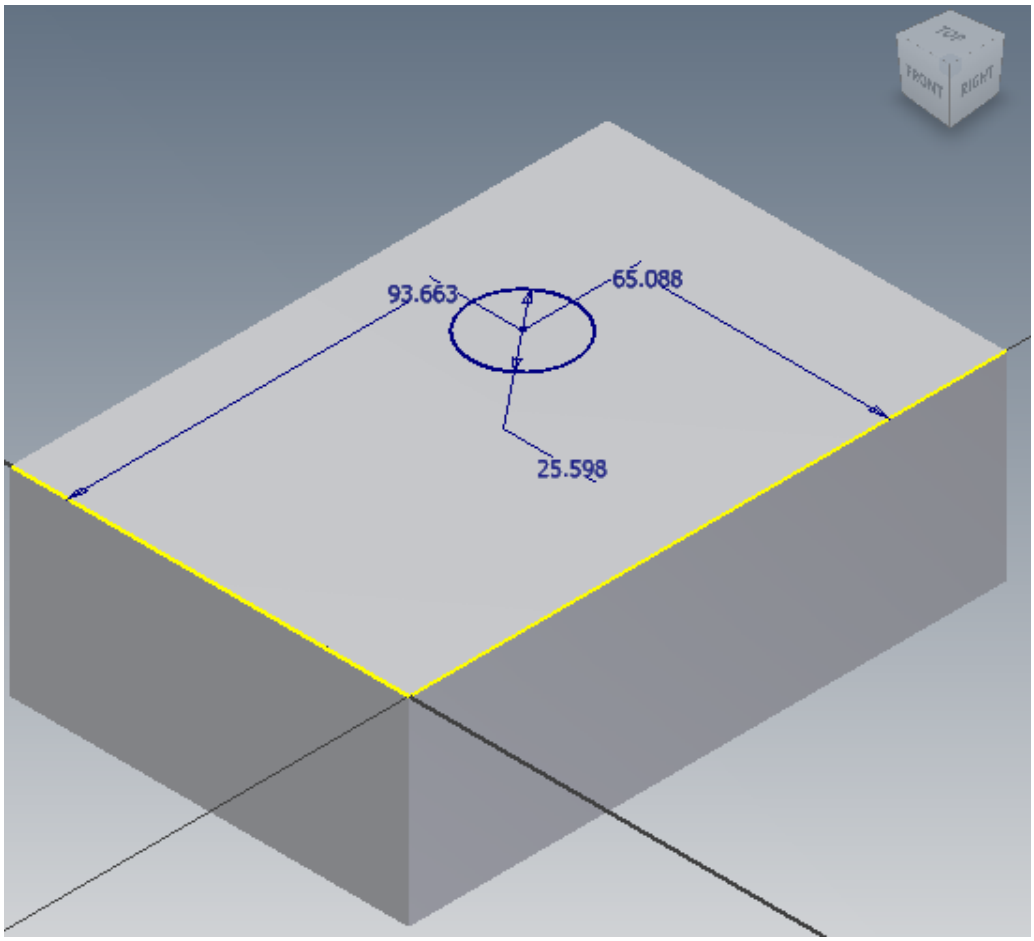


14. It is very important to keep track of the ***sketches*** and ***features*** of a part in Inventor. We do this by assigning names to sketches and features which are **descriptive**. Click ONCE on **Sketch 2**, pause, then click once again. This will allow you to rename the sketch. Change the name of **Sketch 2** to **Block.**
15. Using the same technique, change the name of **Extrusion 1** to **ExtBlock.** ***SAVE YOUR WORK!!***

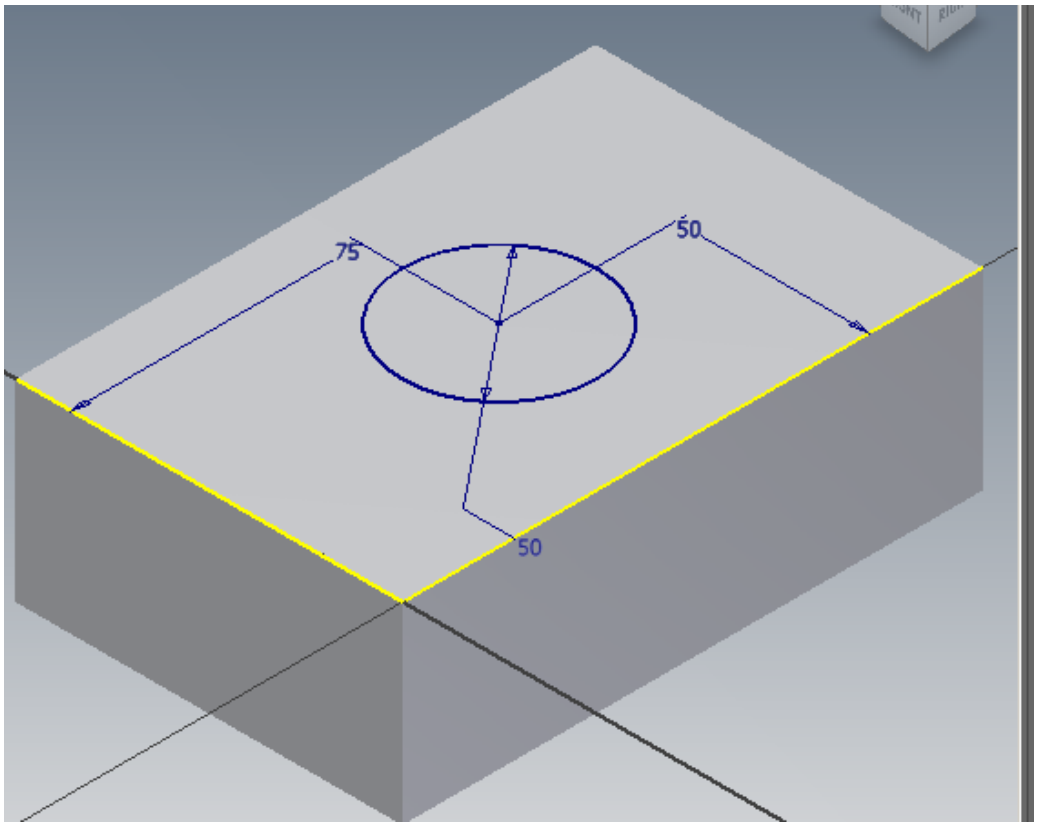
16. Next, we are going to place a circle on the top face of the block, then extrude the circle as a hole – here's how.
17. Click on the ***top face***, then **Right Click > New Sketch**.
18. Select the **Circle** tool, and draw a circle on the top face – any size, any place on the face.



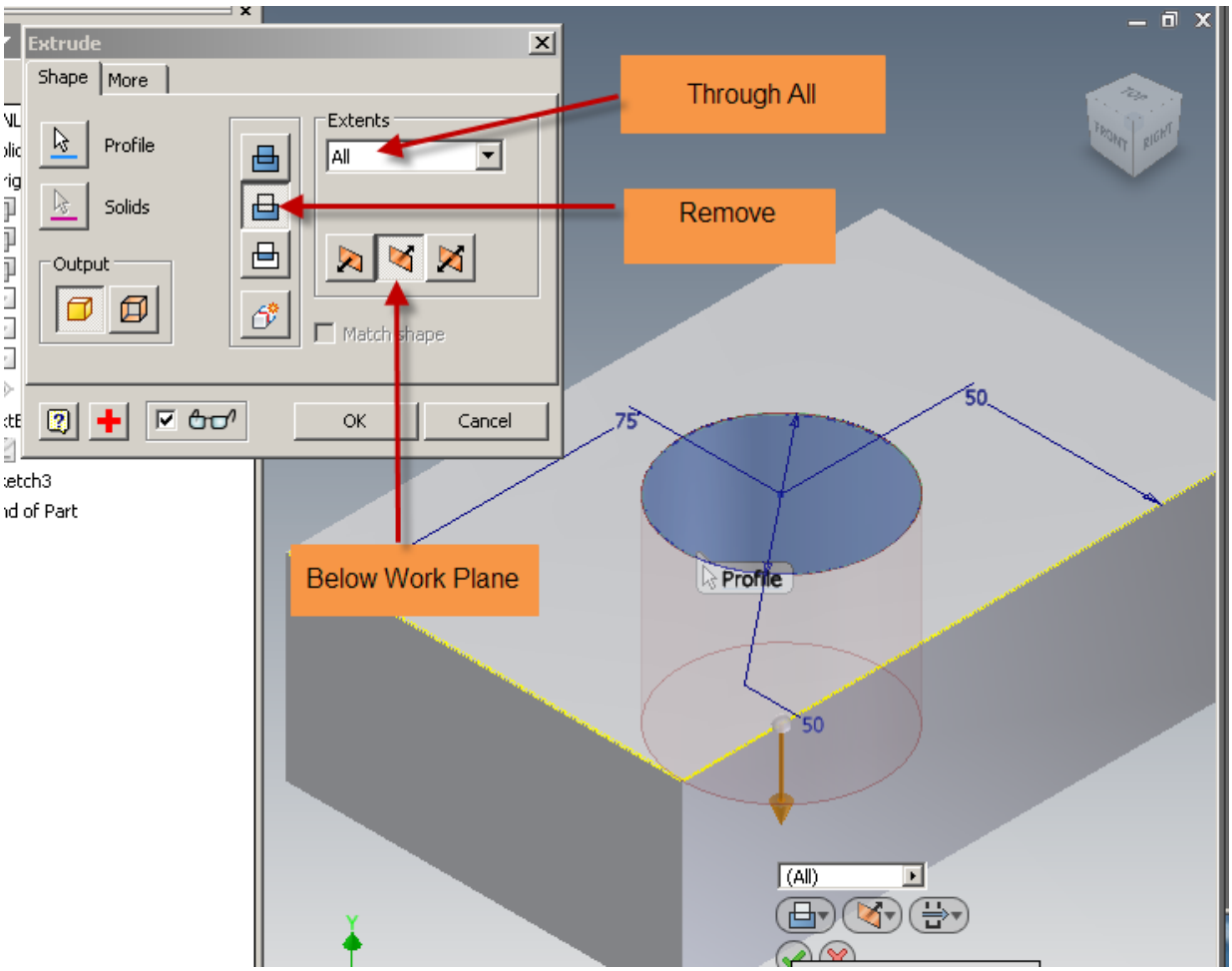
19. Dimension the **circle** in ***three ways***: (a) from the ***"Z" plane line*** to the ***center of the circle***, (b) from the ***"X" plane line*** to the ***center of the circle*** and (c) the ***diameter of the circle***. See Below – note that the below values are ***random*** – yours will be different. **Watch Video 4**

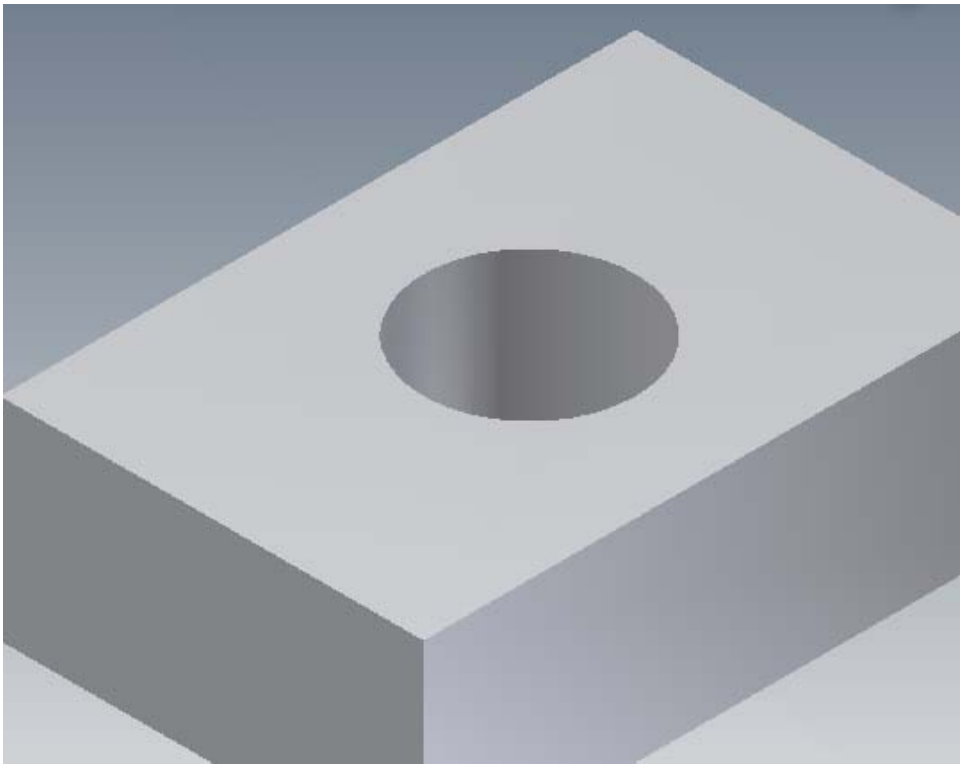


20. Change the values to the ones below and click ***Finish Sketch***:

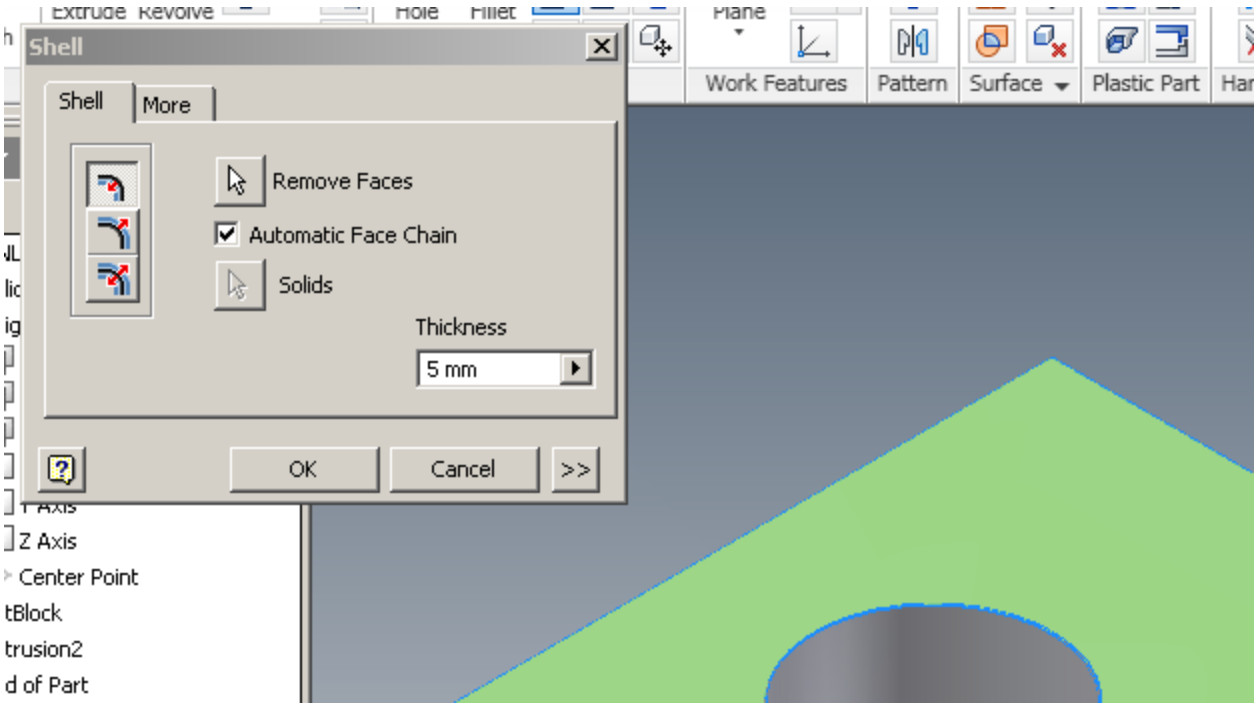


21. Extrude the circle ***below*** the work plane, ***remove*** material, through ***All.*** Click **OK.** **Watch Video 5**

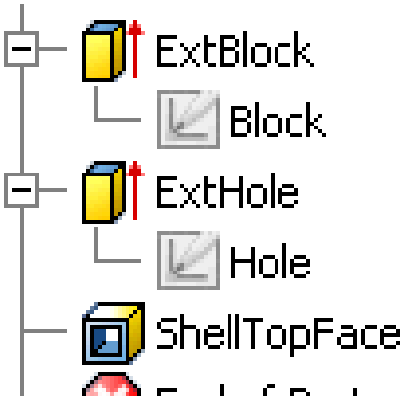




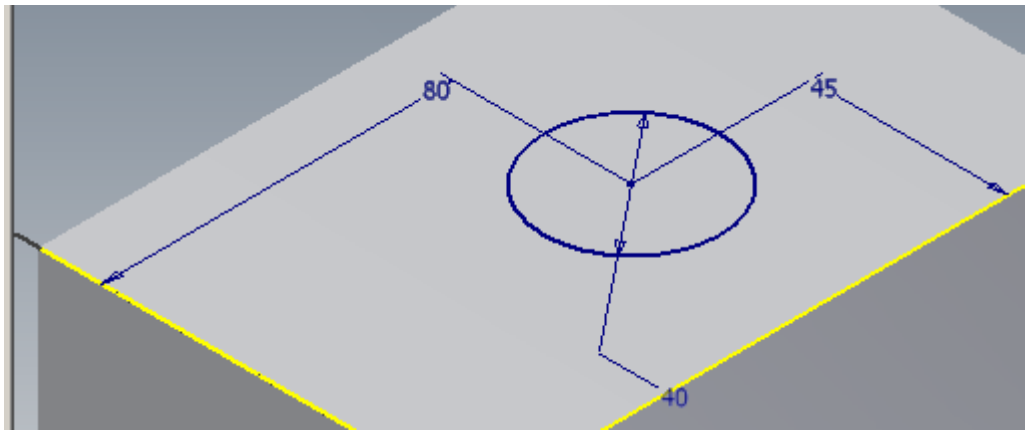
14. Select the ***Shell*** tool from the ***Modify*** ribbon  . Select the top face and set the thickness at **5 mm**. Click **OK.** ***SAVE YOUR WORK!!***



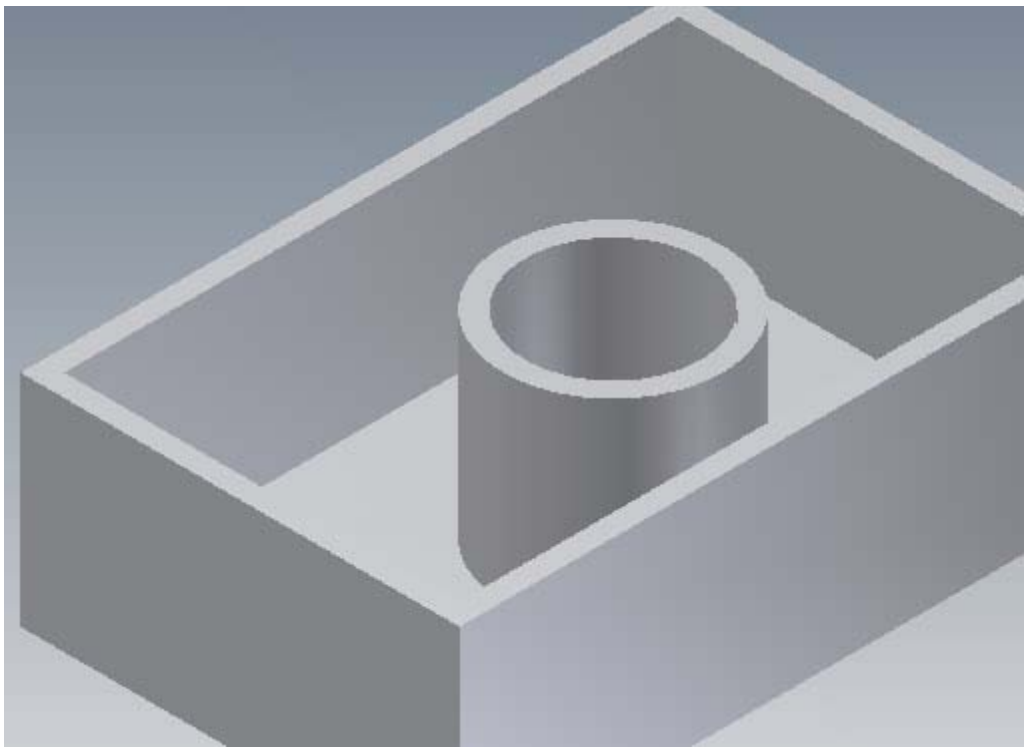
15. Rename **Extrusion2** to **ExtHole**, **Sketch3** to **Hole** and **Shell1** to **ShellTopFace.**



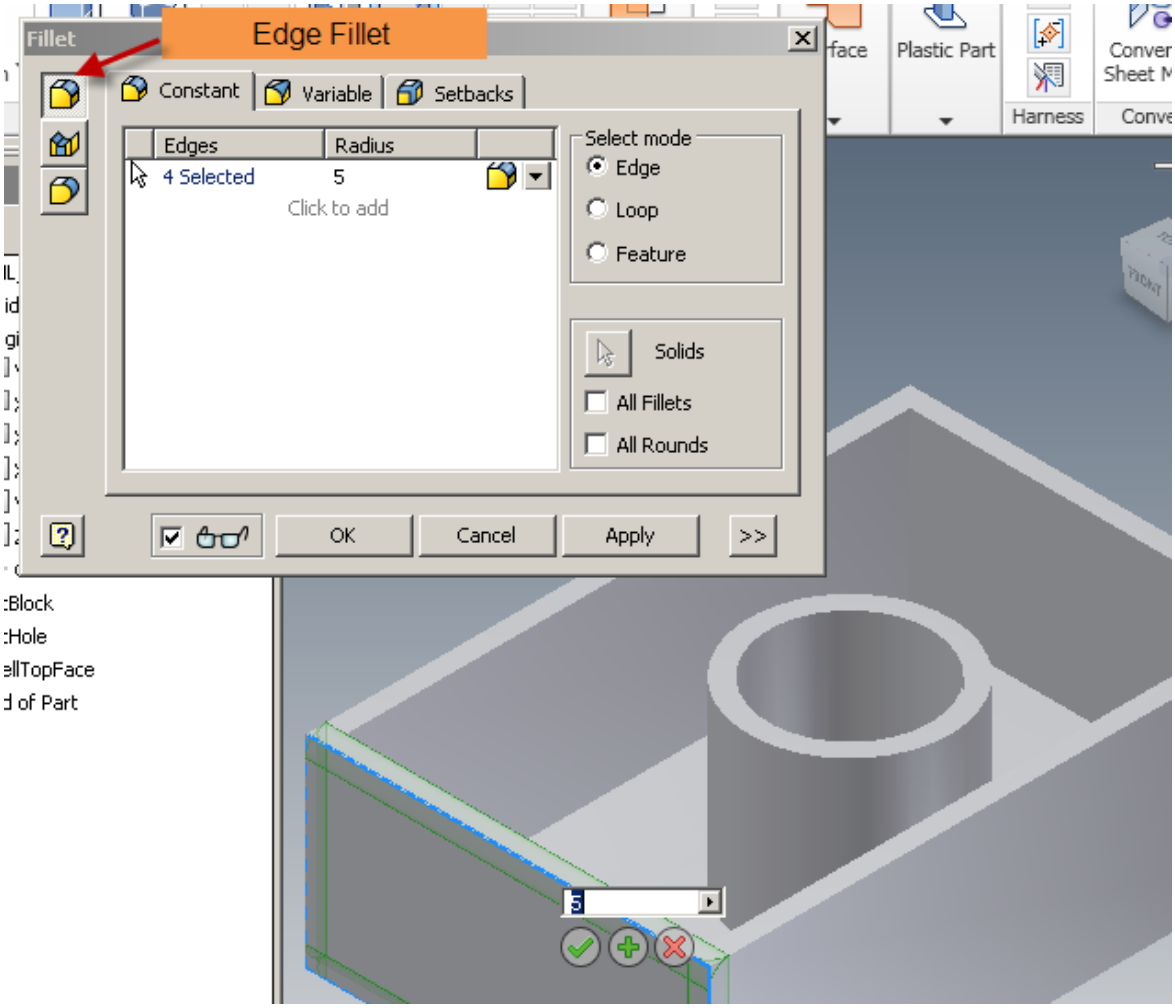
16. **Double-Click** on the ***Hole*** sketch. Change the numbers to the ones below. Finish Sketch. You have just ***parametrically*** changed the location of the hole, as well as the feature geometry – the ExtHole extrusion.



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



18. Click on the **Fillet** tool . Select the **Edge Fillet** with a radius of **5.** Click **OK.**



19. Rename **Fillet1** to **FilletFrontEdge**. ***SAVE YOUR WORK!!.*** Review the rubric, then submit your finished file to **Moodle** for evaluation. **Watch Video 6**

Grading Rubric

	Criteria	
1	Filename = ***legoINL_CAD_1 (Be sure to use YOUR initials and YOUR period number)*** **1 pt**	
2	**Block** – dimensioned at 100 mm x 150 mm **1 pt**	
3	Sketch = **Block**, Extrusion = **ExtBlock,** Sketch = **Hole,** Extrusion = **ExtHole**, Shell = **ShellTopFace**, Fillet = **FilletFrontEdge** **6 pts**	
4	Hole Diameter = 40 **1 pt**	
5	Dimension = 80 **1 pt**	
6	Dimension = 45 **1 pt**	
	Total Possible – 11 points	