

Click this link [OnShape](https://learn.onshape.com/catalog?labels=%5B%22Learning%20Pathways%22%5D&values=%5B%22All%22%5D)

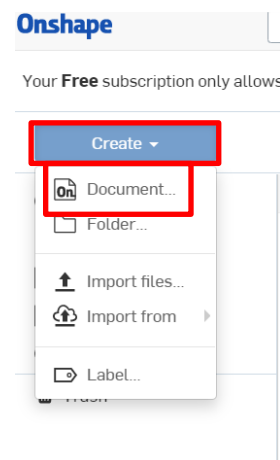
This will take you to the OnShape Student Sign up. Create a user to sign up for a free student OnShape account.

This is a simple introduction to OnShape, but is not as detailed as the videos and lessons created by OnShape. If you don't understand something in this document using OnShape's self-paced courses may help. Once logged into OnShape if you would like to learn more before on your own before starting the lesson you can go to the Self-Paced Learning section for how to use OnShape with the link below.

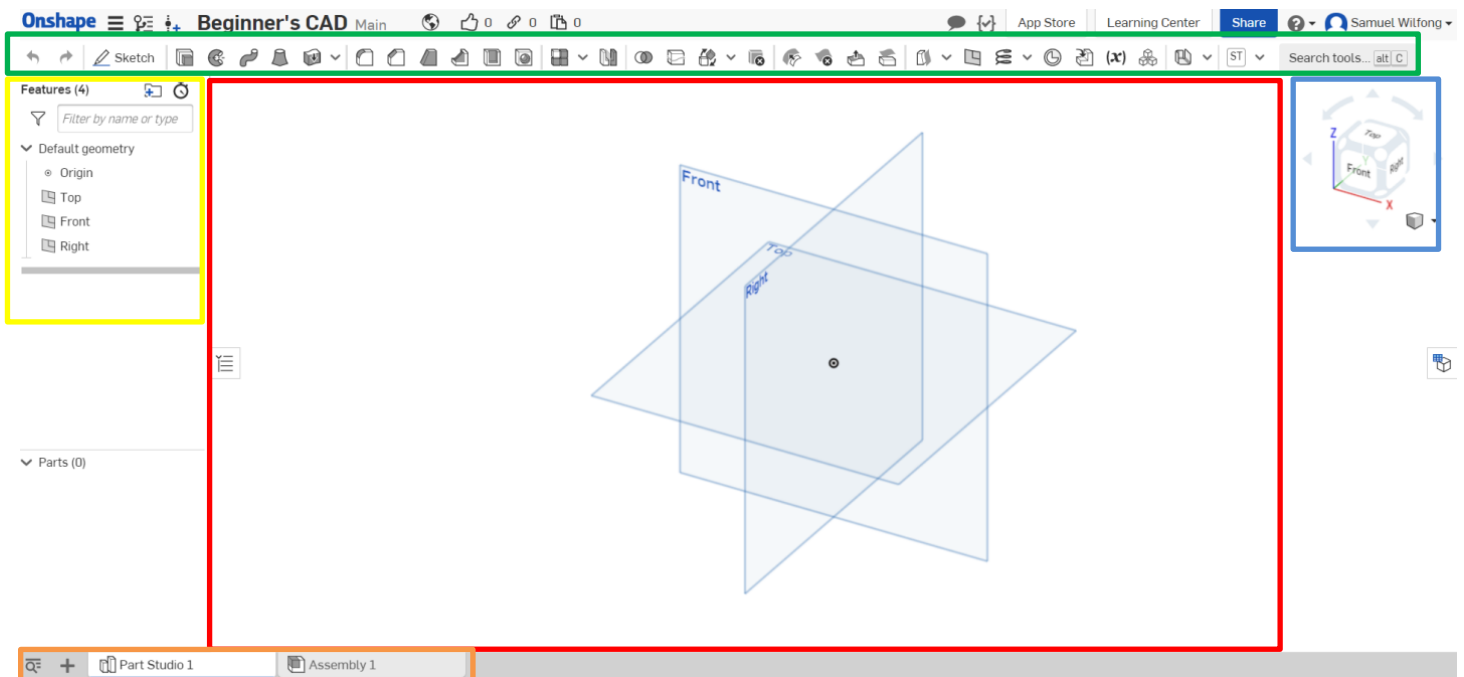
<https://learn.onshape.com/catalog?labels=%5B%22Learning%20Pathways%22%5D&values=%5B%22All%22%5D>

Once you're into your OnShape account click Create and then Document.

It'll pop up and ask for a name. You can name it whatever you'd like.



Below is your OnShape window you will see when creating a new document.



GREEN is your tools. The tools will change depending on what you are currently doing with OnShape.

RED is your graphics area. This is where your object will be created using Sketches and different tools to make your objects 3D.

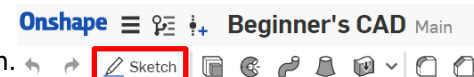
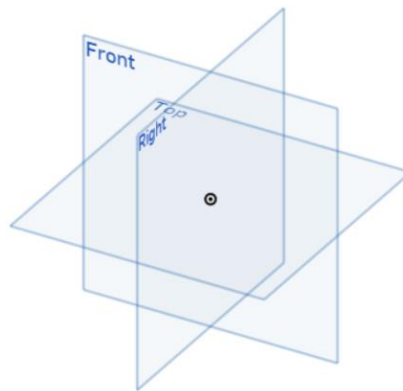
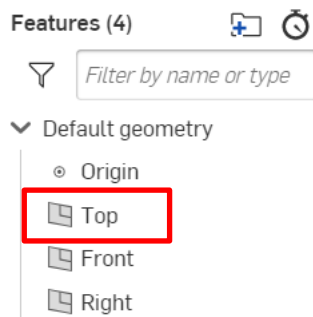
BLUE is your view area. It shows the current position of your project and all 3 axes X, Y and Z. It also has a drop down list of preset views of your object.

YELLOW is your feature list. It always starts with 3 planes to draw on FRONT, TOP and RIGHT. Anything you create will pop up in the feature list in the order it is created.

ORANGE is your tabs area. This is where you can have multiple parts under one document and multiple Assemblies which are multiple parts put together. You can make multiple parts under one document by click the + symbol.

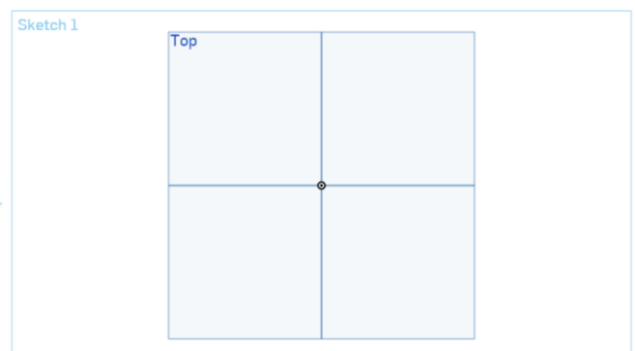
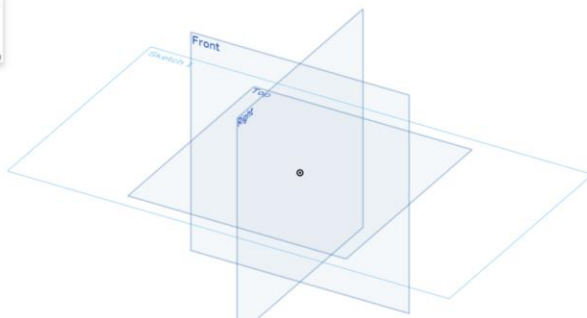
You can always click the ? at the top to get hints and a list of keyboard shortcuts for the program.

We'll start this lesson by doing a simple sketch of a shape. You have to tell the program where you would like to sketch our only options to start out are TOP, FRONT and RIGHT. You can select one by clicking on it in the features list or by click on one of the squares on the screen. The squares represent where you would draw depending on which plane you choose TOP, FRONT or RIGHT. Choose TOP.

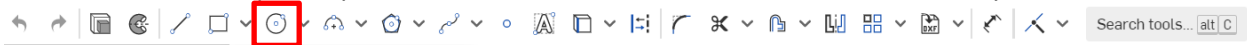


Once you click on the word TOP and it is highlighted then click the word Sketch.

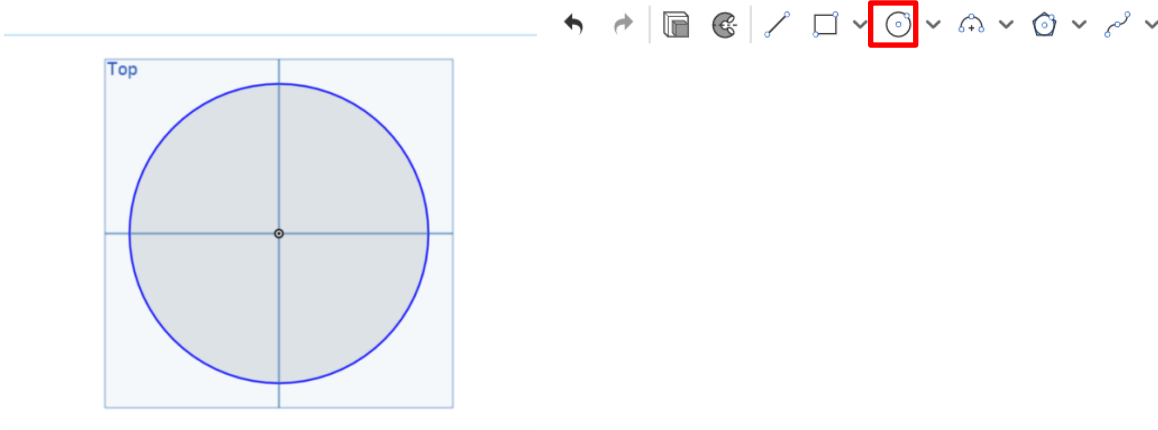
The screen won't change other than a pop-up like the left image below. Press the N key on the keyboard and it will then look like the right image below. This is called sketch view.



We'll start with a simple shape. Click on the circle tool. The shortcut is C on the keyboard



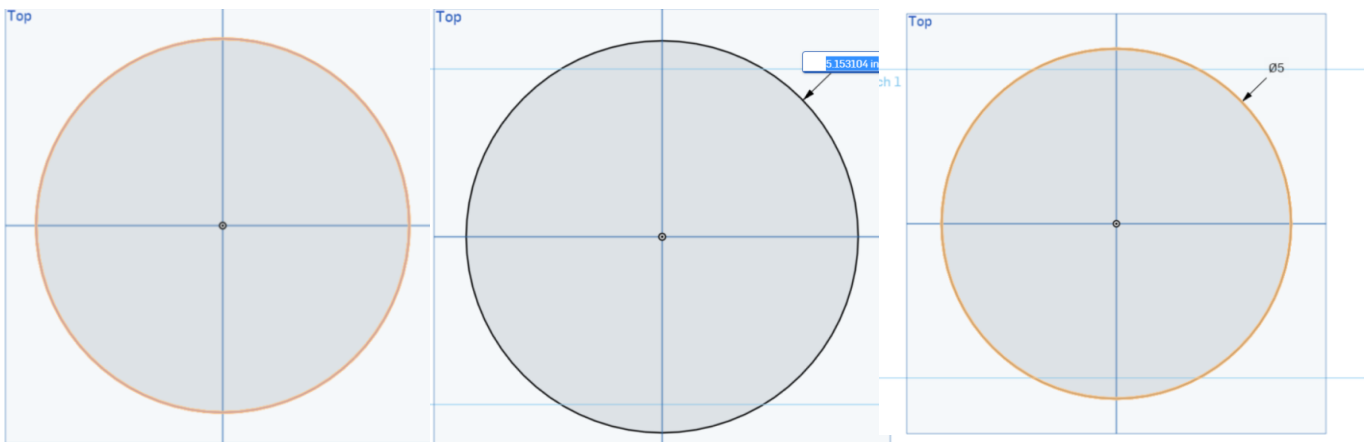
To start the circle you will click ONCE in the center then move the mouse around and the circle will follow. Then click ONCE more to set the circle size. You must go back and CLICK THE CIRCLE TOOL again to deselect it or press C on the keyboard the shortcut again.



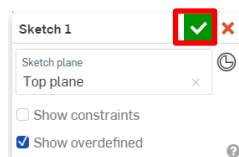
To change size of any dimension on something you draw you must use the dimension tool. Click on the dimension tool or use the keyboard shortcut D on the keyboard.



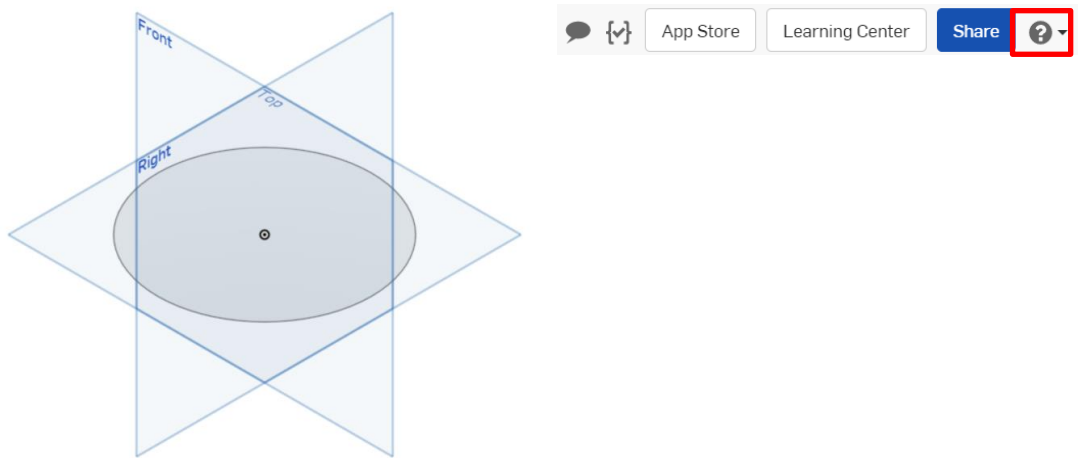
Once you have the dimension tool selected go onto the graphics area and click on the circle ONCE. Once the number pops up you can move the number where you'd like to set it. Depending on what shape you are measuring it could change what it is measuring but for a circle it always defaults to diameter. Click ONCE to set the number down like the middle image below. Change the number to 5 and press ENTER.



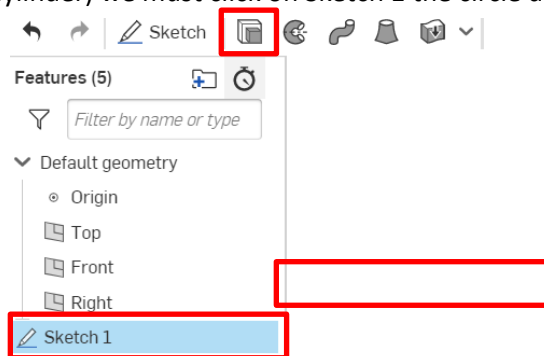
If it looks like the final picture above then click the Green check in the pop-up window.



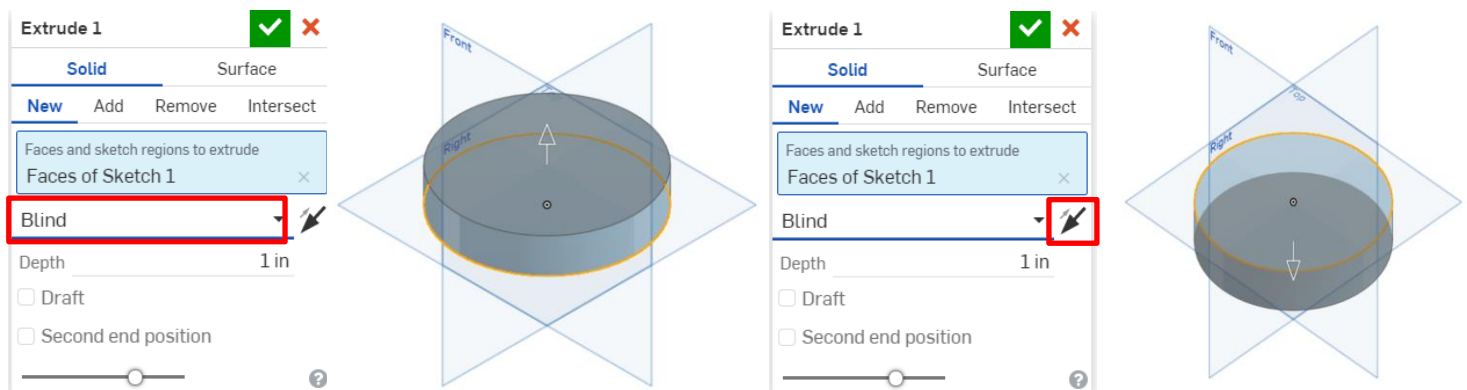
To return to what they call Isometric view you'll need to hold the SHIFT key and while holding SHIFT press the number 7 on the keyboard. It should then look like below. To find any of these shortcuts you can click on the ? drop down and click the keyboard shortcuts.



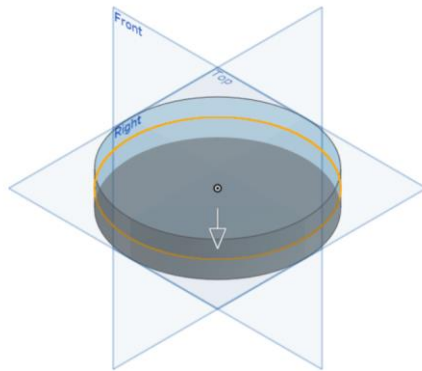
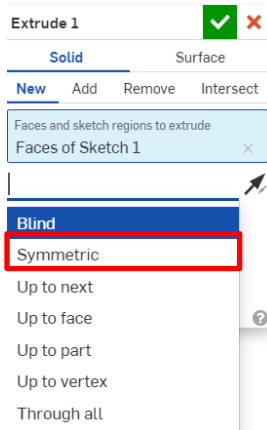
To make this circle into a 3D shape (cylinder) we must click on Sketch 1 the circle drawing and then click the Extrude button on the toolbar.



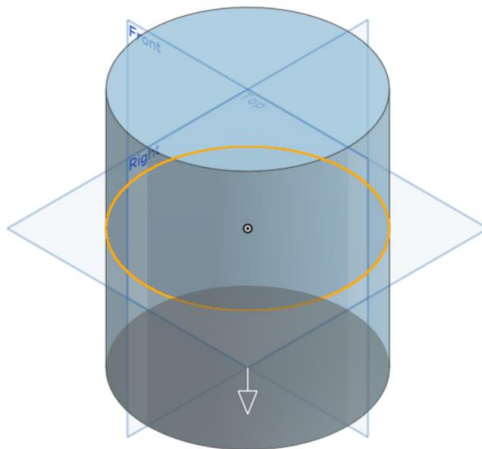
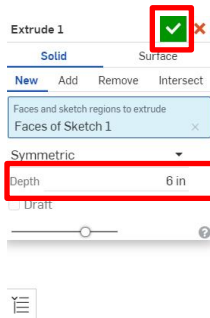
It will pop up and start to go 3D. There are multiple options we can change in the pop-up window to change how this cylinder is made. We'll start with where it says Blind, if you click there you get multiple options. Blind extrudes the entire shape up from you circle. It can also extrude entirely down by click the Arrow next to blind it will flip it. See pictures below. This continued on next page.



You can change it to Symmetrical as well which is what we will do. This makes the circle you drew perfectly in the center, evenly extruding above and below at the same distance.



Now change the depth to 6 inches like below and press ENTER. If it looks like below hit the green check.

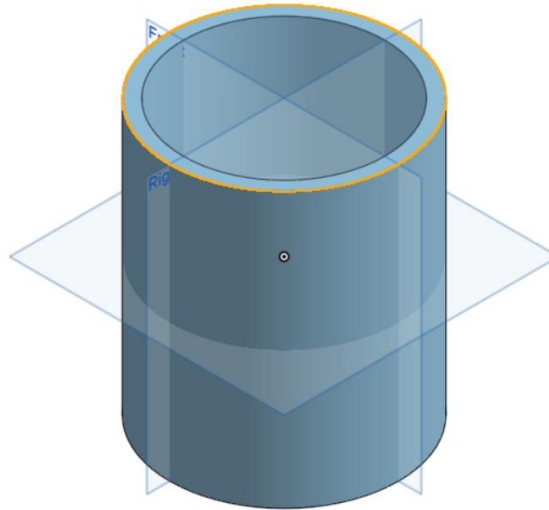
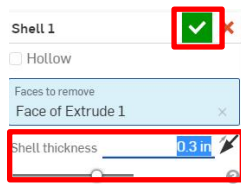


We can use the Shell tool to hollow out 3D objects we create. We can hollow and remove a surface to make this cylinder like a cup.

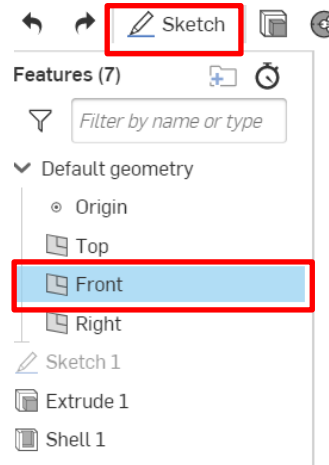
Select the Shell tool.



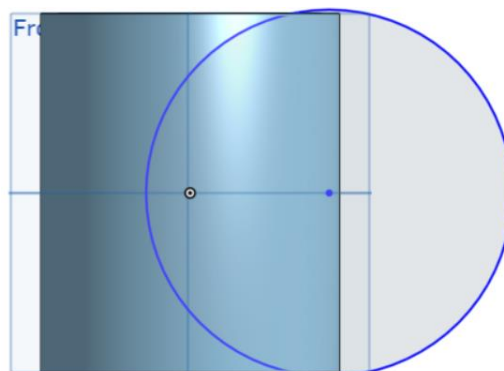
Now you must remove a surface by clicking on the top flat surface of the cylinder to remove it. It should then look similar to below. Now change the thickness number to 0.3 and press ENTER. Green check if it looks like below.



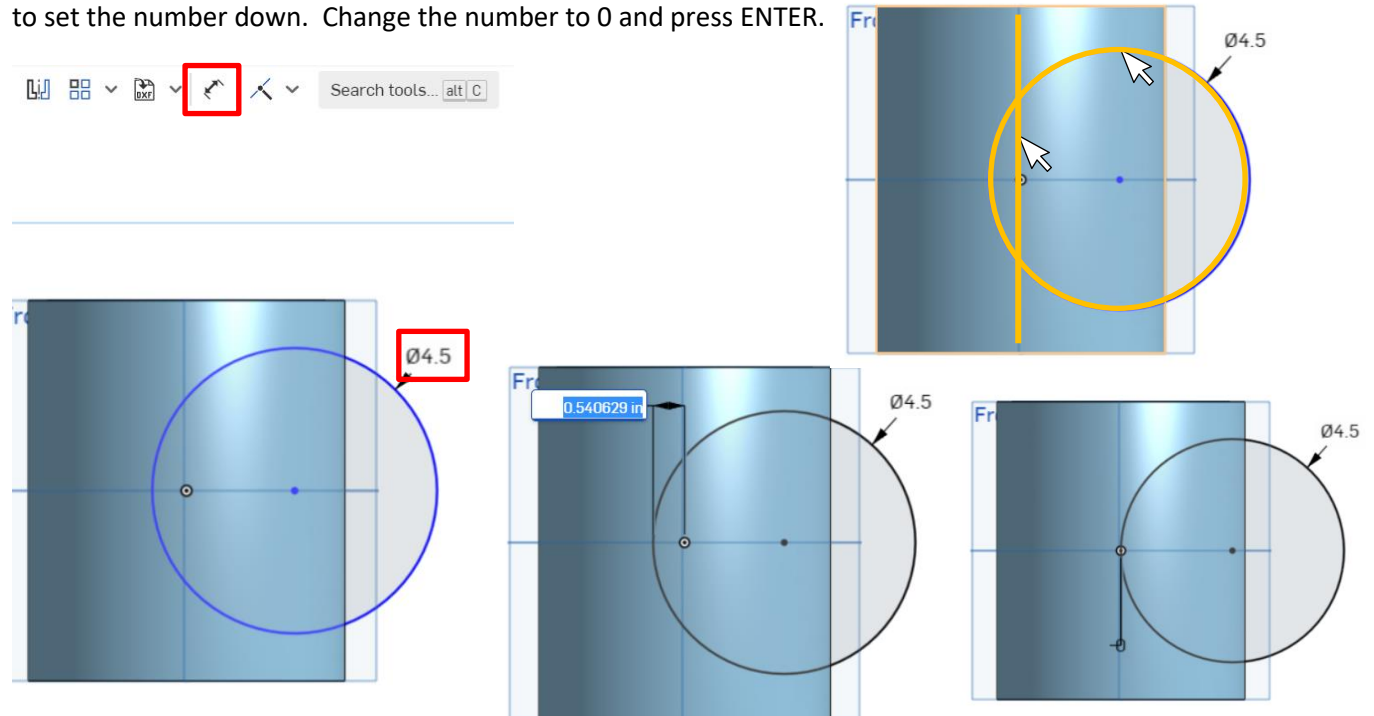
Now we could make a handle for a cup to be more like a mug. We start by clicking on the word FRONT in the feature list then clicking the Sketch tool.



Press the N key to go to sketch view. Now click the circle tool to draw a circle. This time we will draw the circle to the RIGHT of the center point like below. Remember click ONCE to start the circle and ONCE to set the size then go back and click the CIRCLE tool again to deselect.



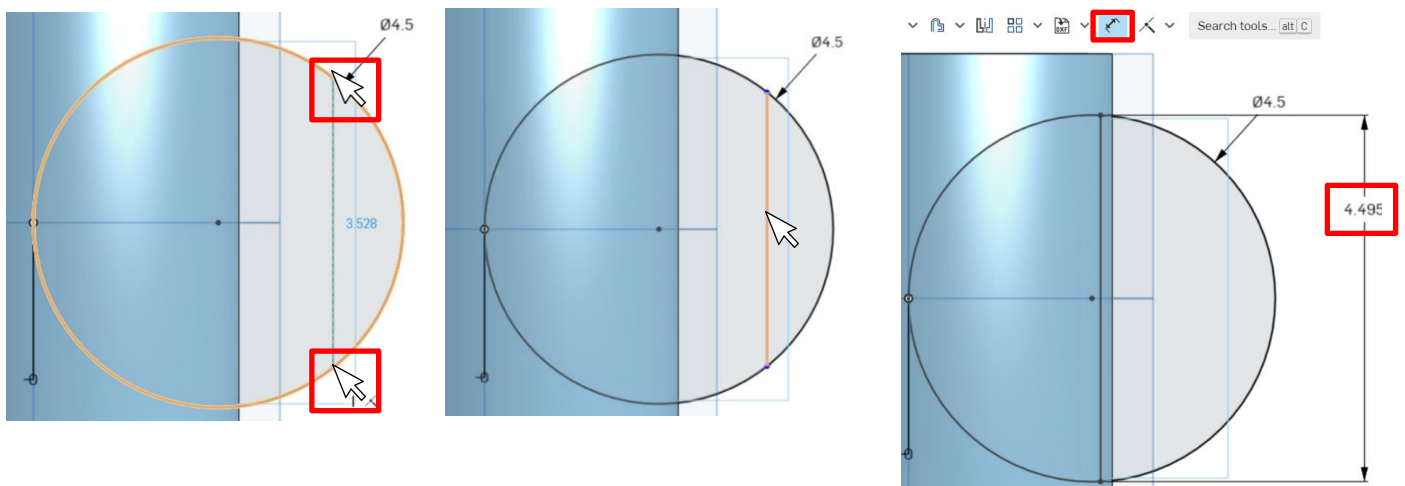
Now to change the size of the circle. We also will be changing where the circle is positioned. Click on the dimension tool then click on the circle to change the diameter. Click ONCE to set the number down and change the diameter to 4.5 and press ENTER. Now with the dimension tool still select we change the position. Click ONCE on the circle then click ONCE on the center vertical line then CLICK ONCE away to set the number down. Change the number to 0 and press ENTER.



Now we need to draw a line to the right of the center of the circle. Select the line tool



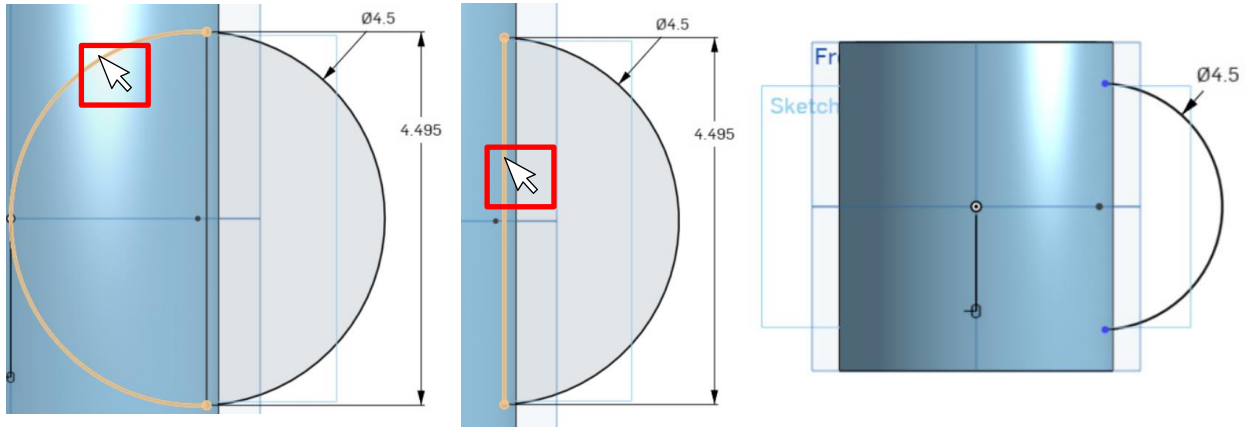
Click ONCE on the top part of the circle right of the center then go straight down and click ONCE on the bottom of the circle like the image below. Click the dimension tool and click on the line we just drew. Click ONCE away to change the number to 4.495 and press ENTER.



Now we have to delete some lines in order to have just the arc for our handle. Click on the Trim tool or keyboard shortcut press the letter M to activate the trim tool.



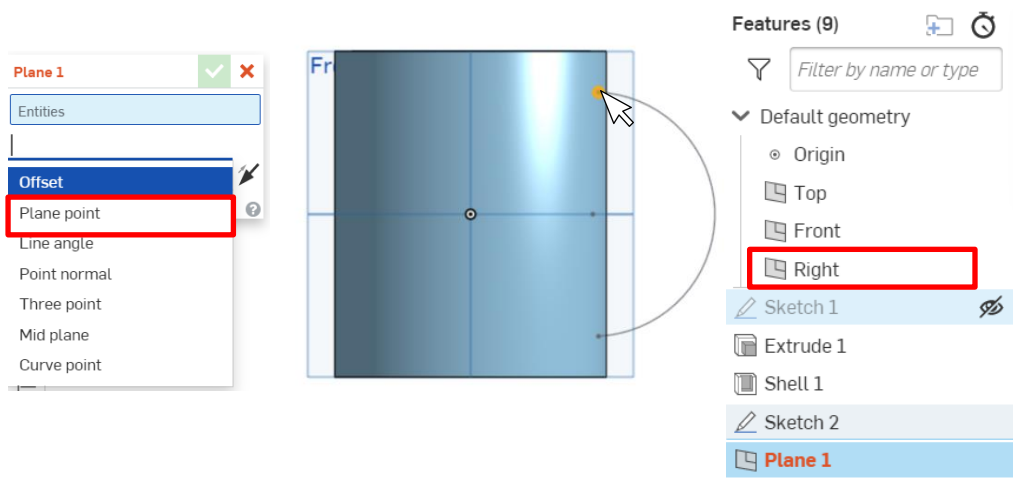
Click on the left part of the circle to delete that to start like below. If it looks like the middle image below then click on the vertical line like highlighted in that same image. If the final image looks like the right image below then click the green check. **Sketch 2**



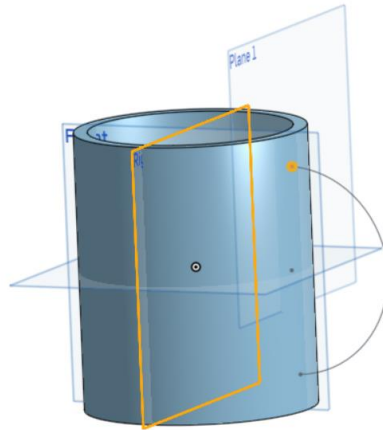
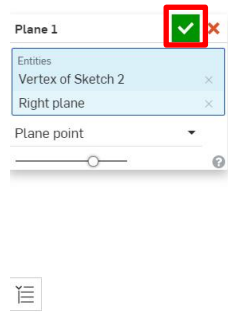
We now need to create a new plane/surface to draw on. Select the Plane tool from the toolbar it is over towards the far right.



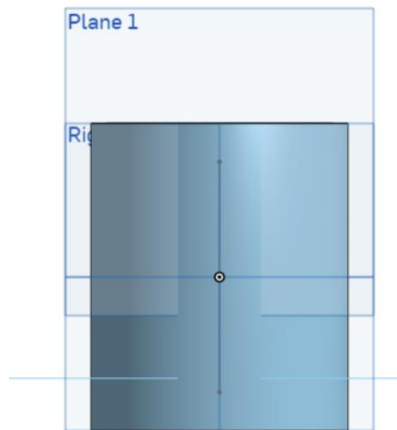
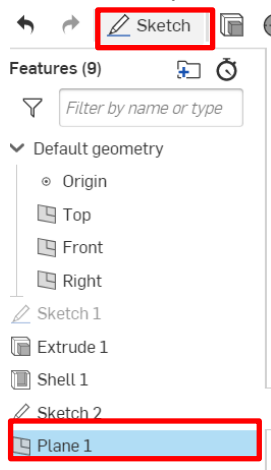
In the pop-up window we are going to change the Offset drop down option to Plane point like the image. Now click on the top point of our curve/arc like the image below. After that point is highlighted now click on the word RIGHT in the feature list like the next image.



If you move it slightly holding down the right mouse button and moving the mouse you should see a new Plane appear like the image below. If it looks similar hit the green check.



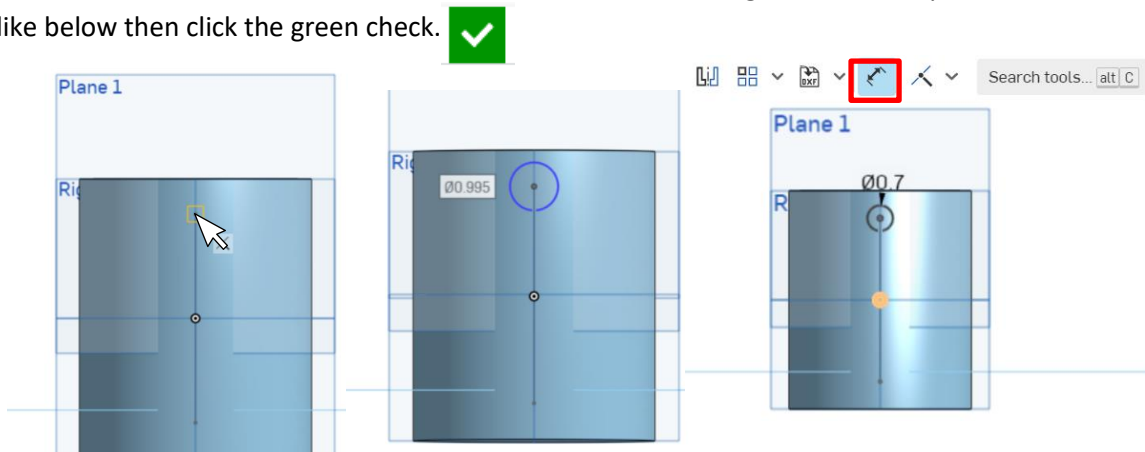
Now we must Sketch on our new Plane. Select Plane 1 in the feature list then click the Sketch tool. Press the N key on the keyboard to go to sketch view like below as well.



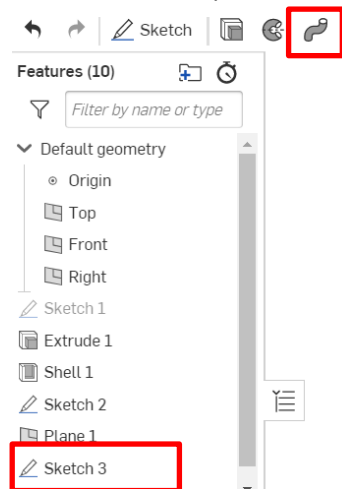
Time to draw a circle attached to that top point of our arc. Select the circle tool.



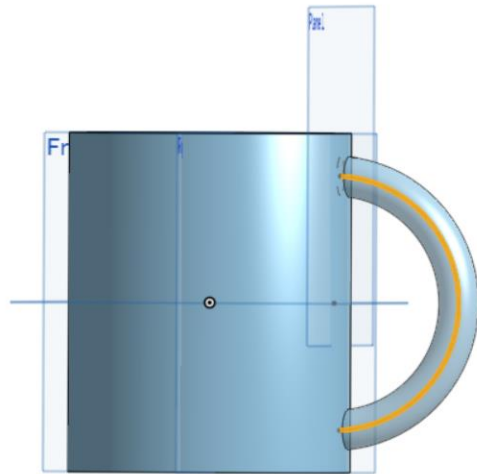
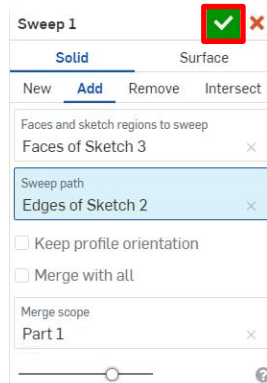
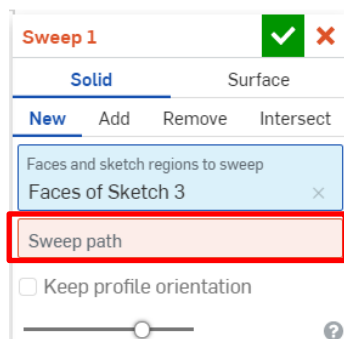
Click on the point shown below ONCE to start the circle. Then move the mouse slightly and click ONCE more to set the circle. Then click the dimension tool to change the circle size. Click ONCE on the circle then move the number and click ONCE to set it down and change it to 0.7 and press ENTER. If it looks like below then click the green check.



Now we need to make what is called a Sweep of this line. Click on Sketch 3 in the feature list window then click the Sweep tool.



Now in the pop-up window click on the red highlighted area where it says Sweep path. Then click on Sketch 2 in the feature list window. I moved the object to show a different angle below. It should look similar to that image then click the green check.



Press SHIFT + 7 on the keyboard it should look like below you have completed this lesson!!!

