

MEP1010: ENGINEERING

VISUALISATION

PROJECT 01:

COMPUTER AIDED DESIGN

(CAD)

Name → TUSHAR SHARMA

Roll Number → B21MT037

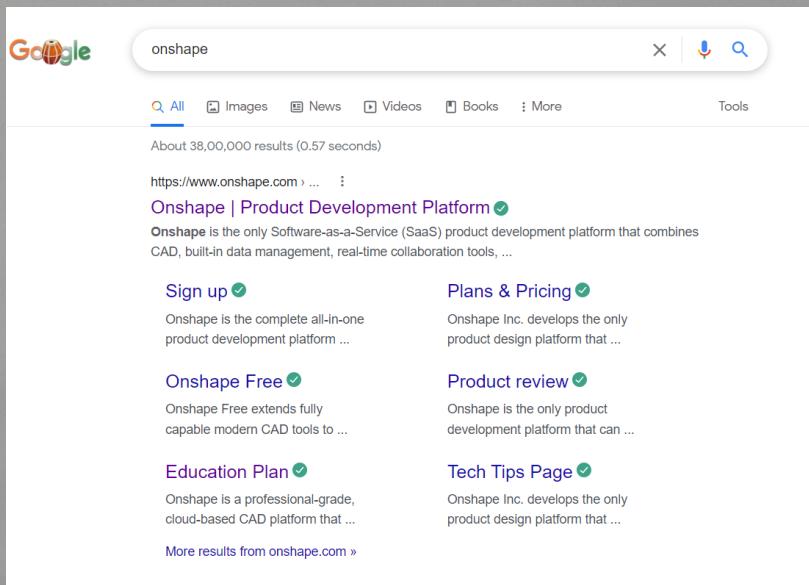
Task - 1 :

The drawing of a part is included in the next page. Using this drawing, you have to make the 3D part in the CAD software. Prepare a handwritten report on the steps you took to make this 3D part.

Include screenshots in the report for each step. Your report should be a step-by-step tutorial for a person who is not familiar with the CAD software. The reader should be able to successfully make the 3D part in the CAD software by reading your report. In your report please mention the version of the CAD software that you used.

- I have used Onshape for this project.
- Version : 1.141
- Make account and sign in.

(i) Search 'onshape'



(ii) Sign up

I signed in as student. Select your role and fill the details.

Sign up for an Onshape Education Account

Millions of students and educators worldwide use Onshape's online CAD platform to learn engineering design in the classroom

Onshape for education brings CAD out of the computer lab and into the modern era.

Fill out the form to get started!

Sign up for Onshape for Students and Educators

First Name *

Last Name *

Email *

Are you a student or educator? *

School level *

→ Activate Your Account.
This Window appears.

[Tushar Sharma]
B21 MT037

The screenshot shows the Onshape web interface. At the top left is the 'onshape' logo. To its right is a search bar with the placeholder 'Search in My Onshape'. Further right are links for 'App Store', 'Learning Center', and a user profile for 'Tushar Sharma'. Below the header is a navigation bar with a 'Create' button (highlighted in blue), a 'My Onshape' dropdown, and several icons for sharing, deleting, and filtering. The main content area has a table with columns for 'Name', 'Modified', 'Modified by', and 'Owned by'. A light blue box overlays the table, containing the text 'Welcome to Onshape.' and 'You can get started by clicking the Create button, or follow the self-paced courses in the Learning Center.' At the bottom left of the main area, it says 'Subscription: Education'.

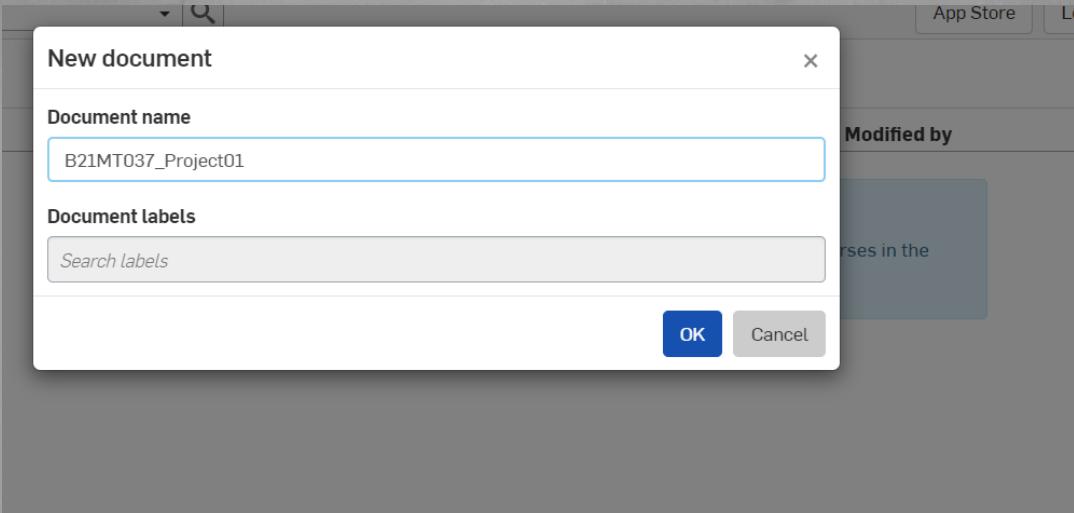
→ Click on 'Create' at Top-left corner.

This screenshot is a close-up of the Onshape interface. It shows the 'onshape' logo, a search bar, and the 'Create' button, which is highlighted with a blue rectangle. To the right of the 'Create' button is a 'My Onshape' section with filters for 'Recently opened', 'Created by me', and 'Shared with me'.

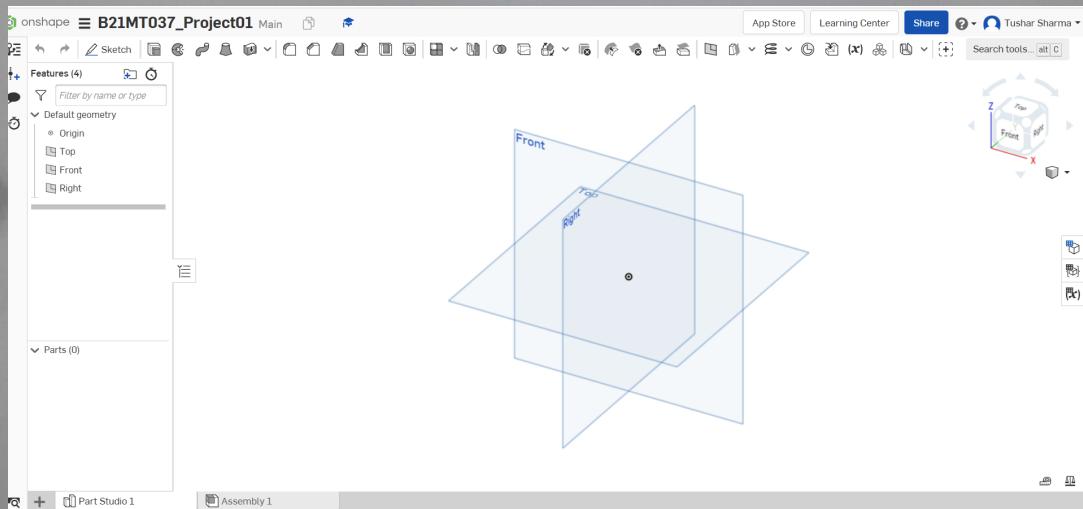
→ Name Your Document.

A modal dialog box titled 'New document' is shown. It has fields for 'Document name' (containing 'Untitled document') and 'Document labels' (containing 'Search labels'). At the bottom are 'OK' and 'Cancel' buttons.

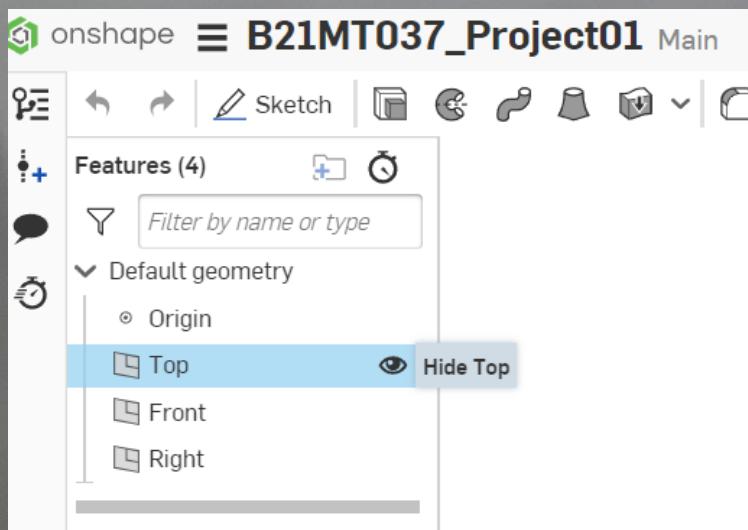
→ I named it 'MyRollNum - Project 01' (Tushar Sharma B21MT037)



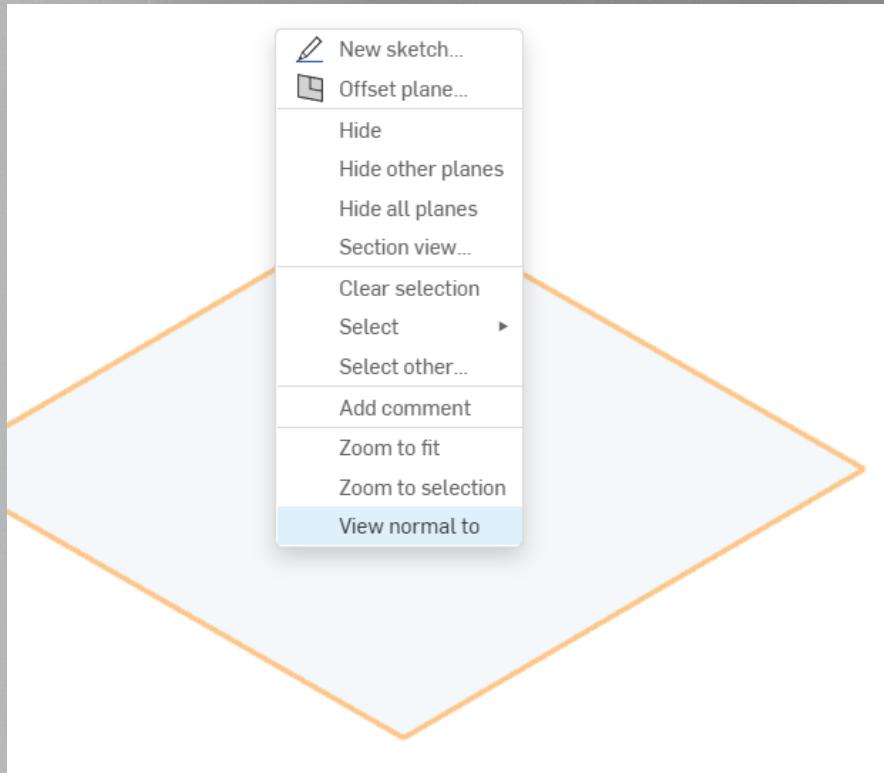
→ This preview comes. You will see 'Top', 'Front' and 'Right' planes.



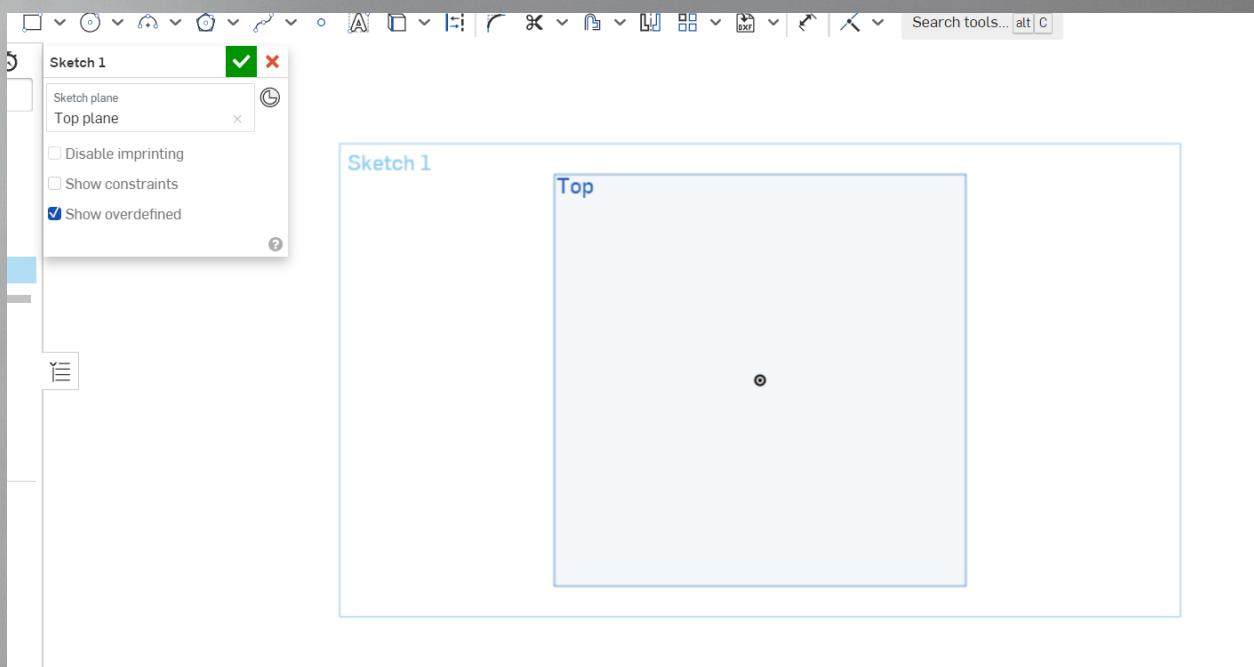
→ You can hide any of those through this feature box for simplicity.



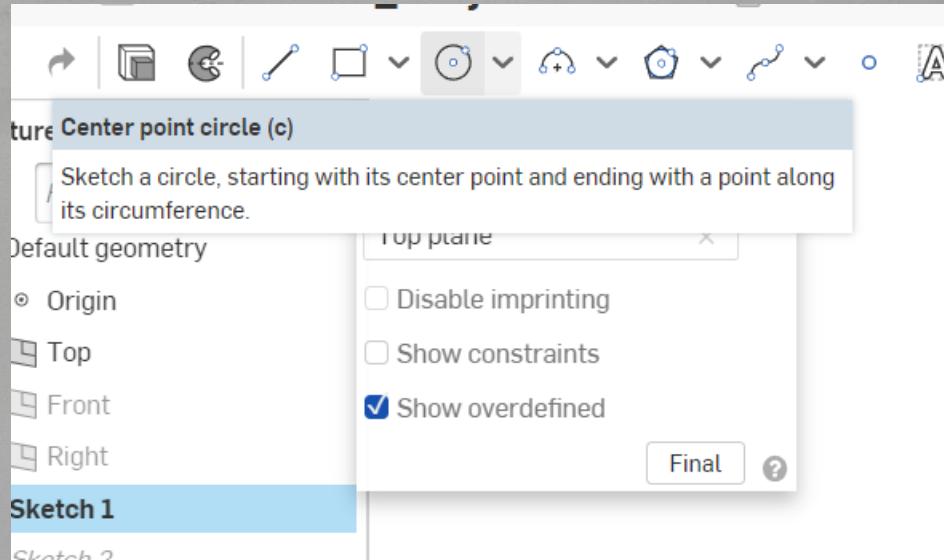
→ click on plane → Select 'View Normal to' This makes your view simple. (Jushal Sharma B21MT037)



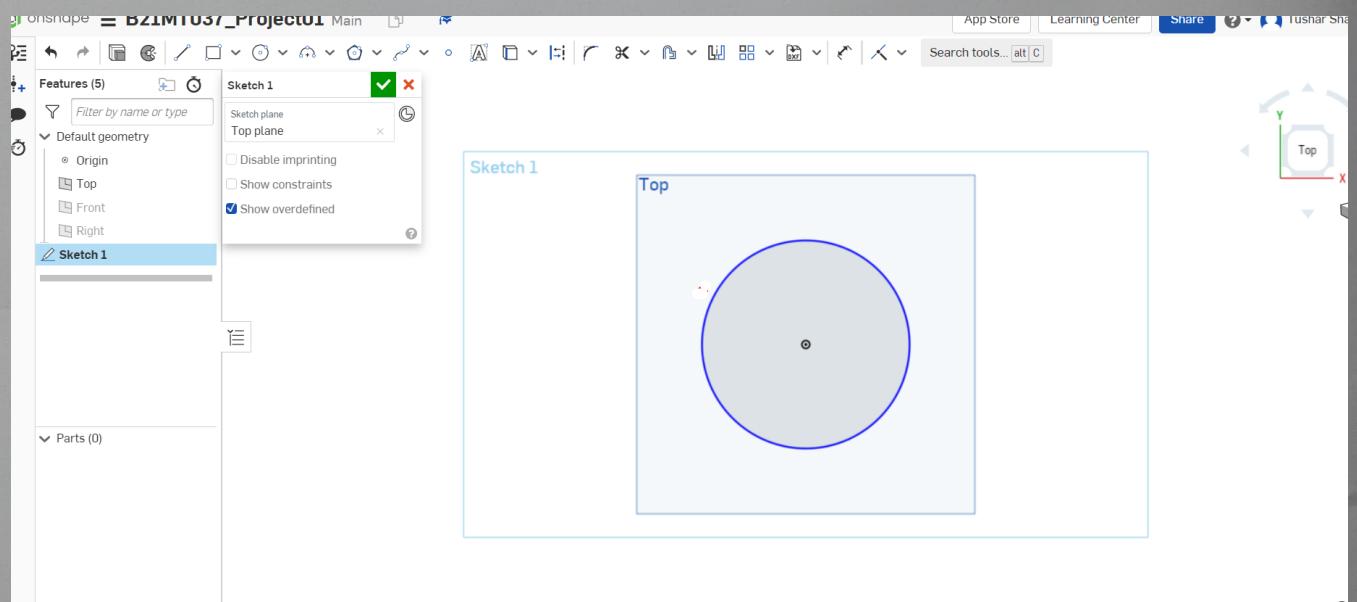
→ Select 'sketch' from left corner and then click on the plane. You are ready to sketch.



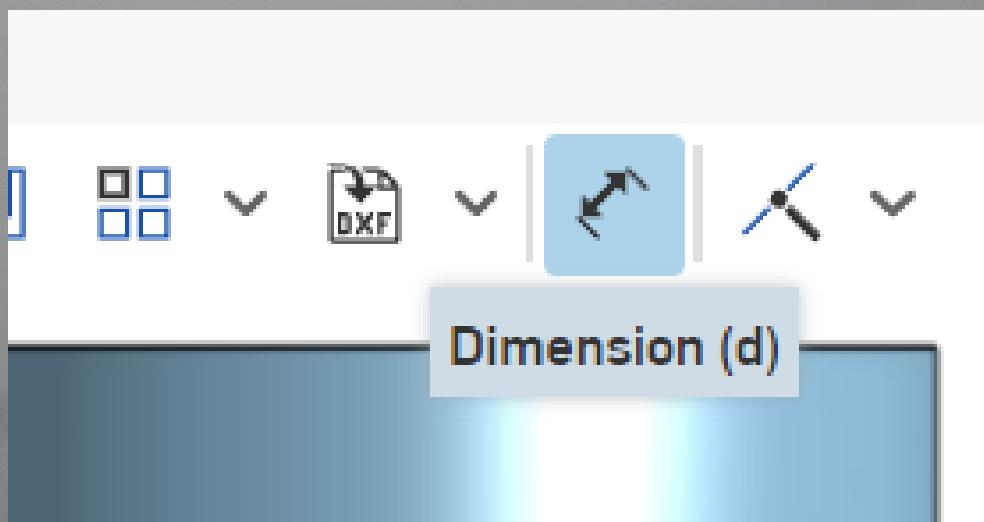
→ Select 'Center point circle' from top bar.
(Tushar Sharma
B21MT037)



→ Draw the circle. ↴

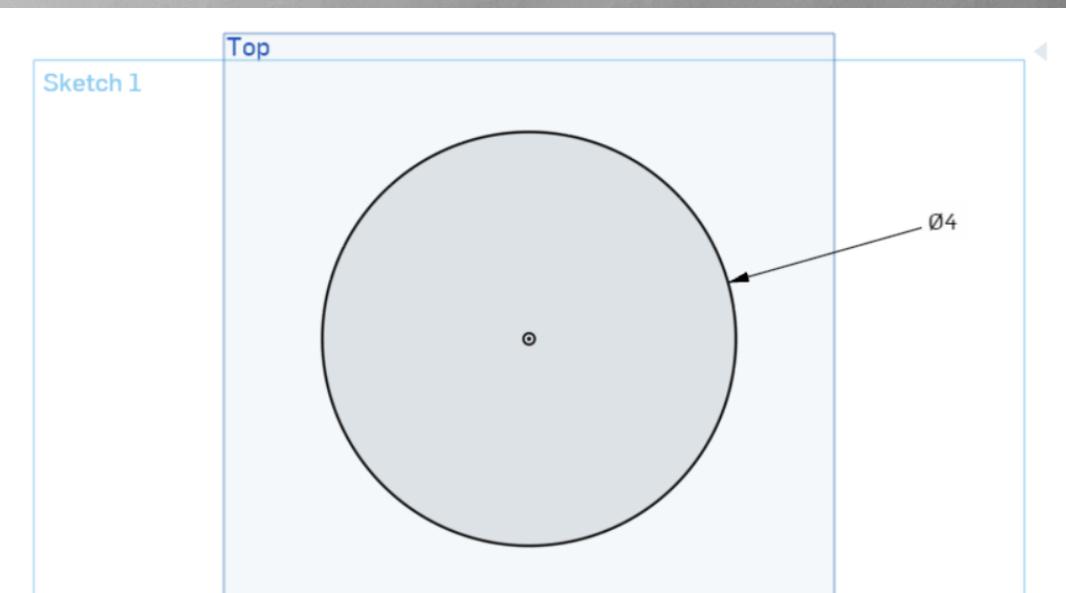


→ Select 'Dimensions' from the top bar.

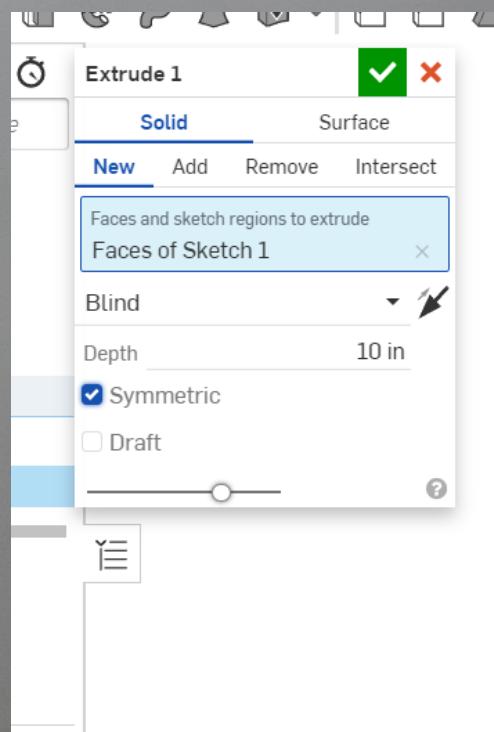


→ Click on the circle outline to dimension it. Write the dimension asked in question. ($\phi 4$)

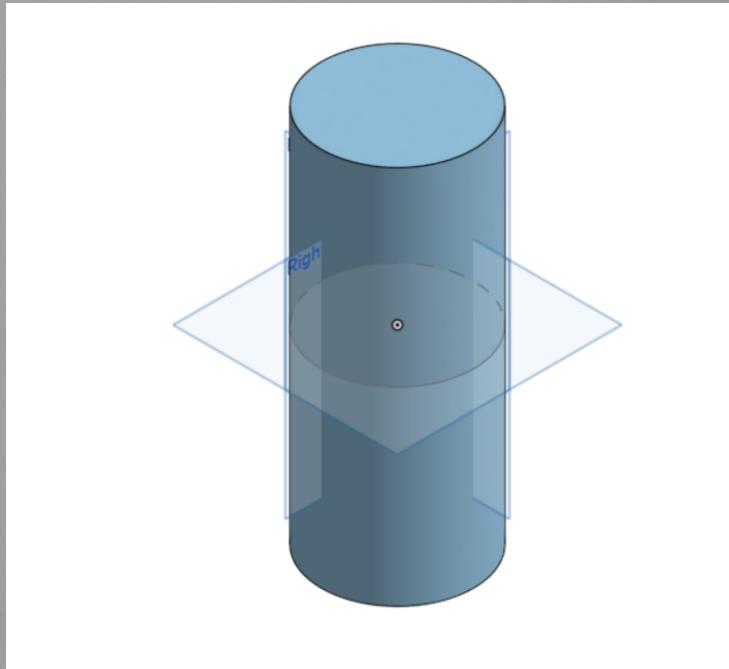
(Jushar
Sharma
B21MT03)



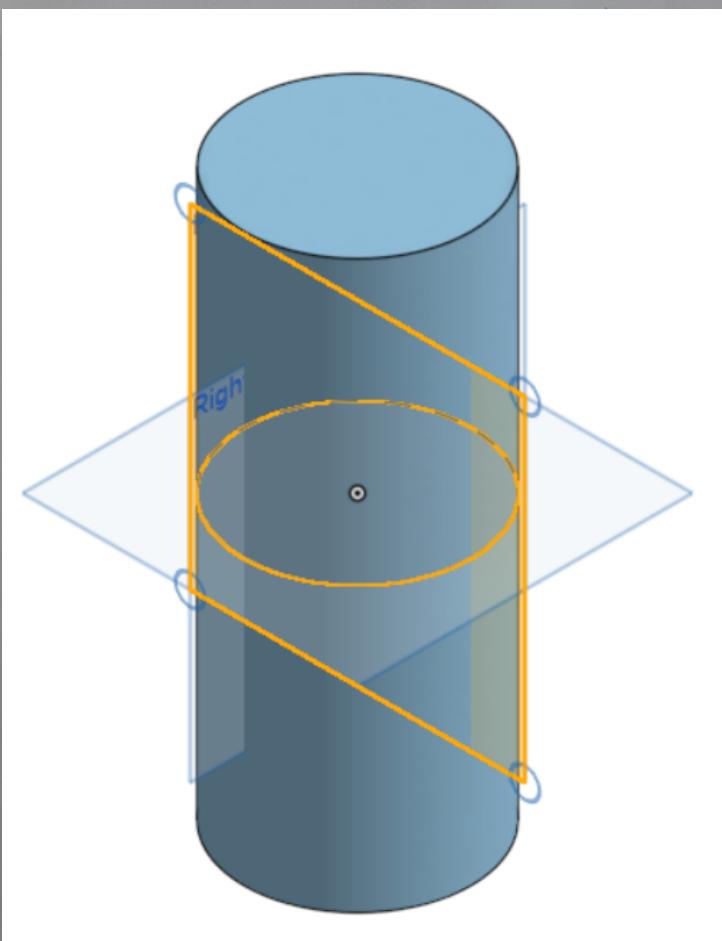
→ Click on extrude from Top bar.
Select - 'Faces of Sketch 1' from the options in the left dialog box.
Finally, click on Tick Mark (green color)
Make sure to make depth 10 in and
'symmetric' is selected.



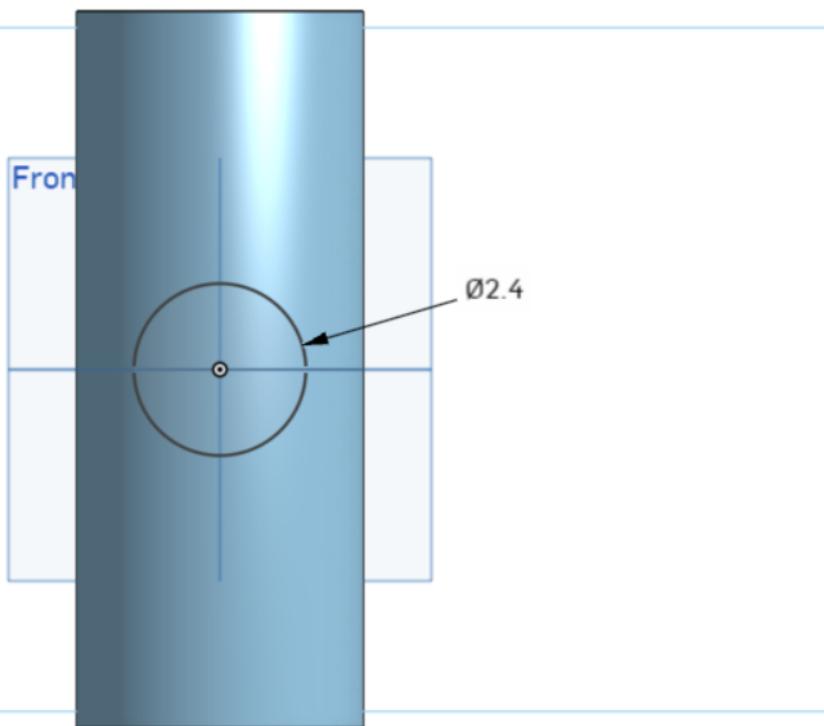
- click on the screen. Select Isometric View. This will appear.



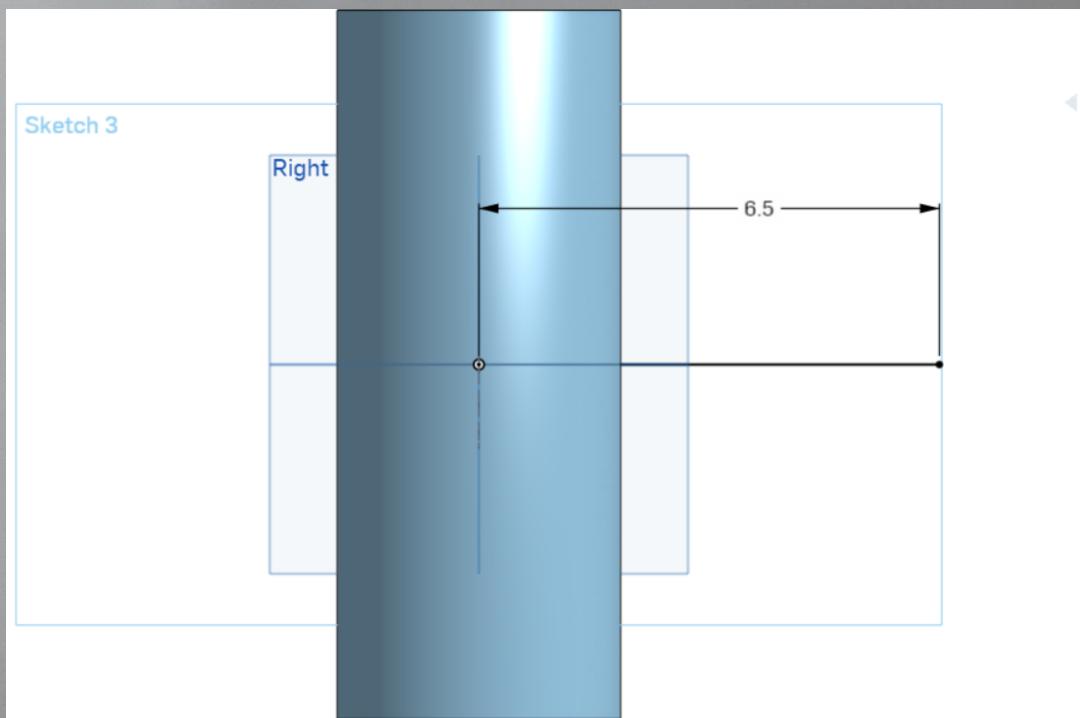
- Similarly, select the sketch option. This time select the 'Front Plane'.



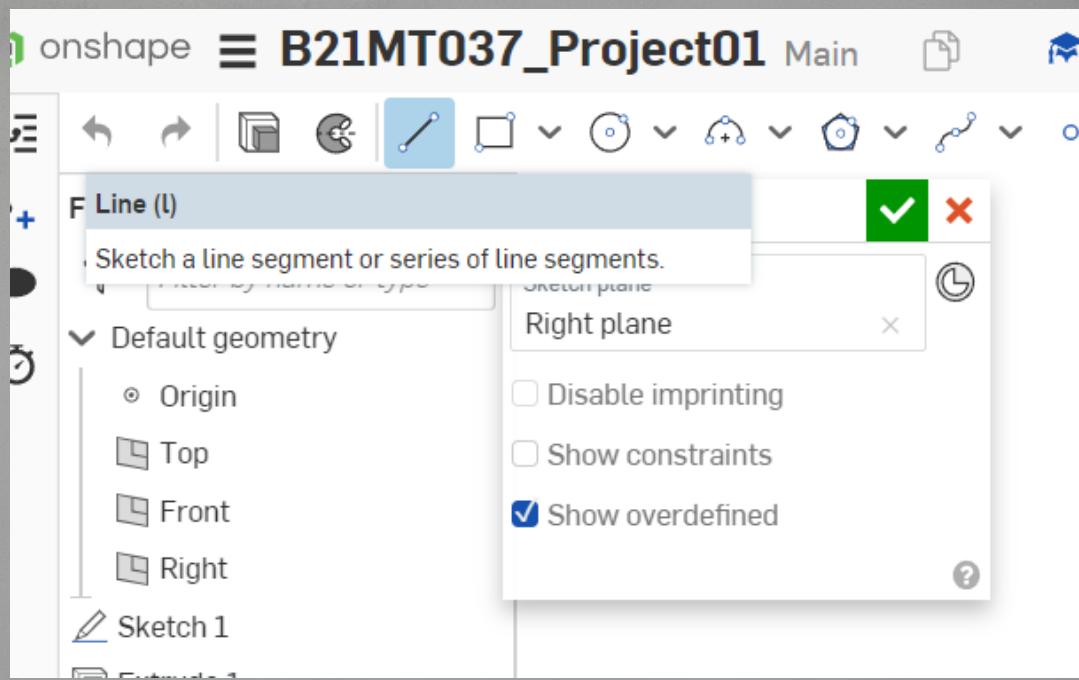
→ Draw the circle as instructed below and dimension it as given in question, ($\phi 2.4$)
(Jushar Sharma B2MT037)



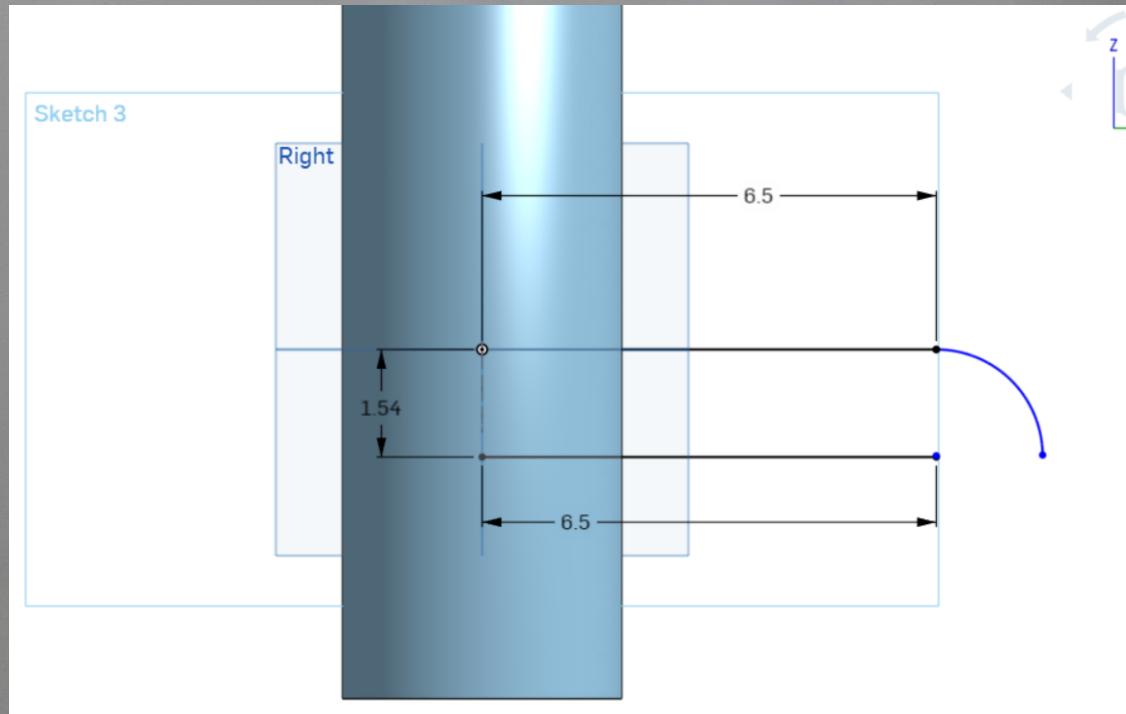
- Now, select sketch 3. This time choose 'Right Plane' for sketch.
- Select 'Line' from top bar.



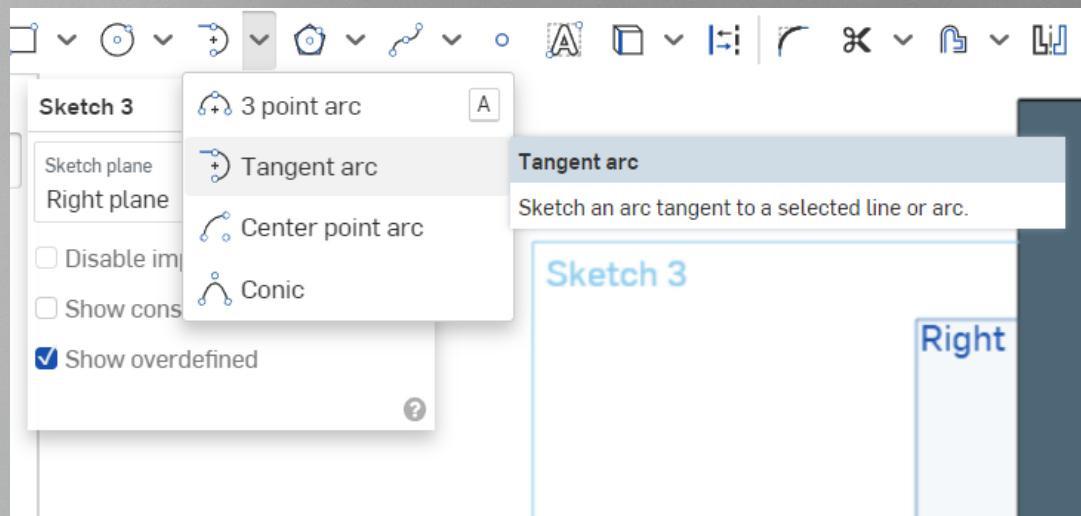
→ Draw the line as shown and dimension it.



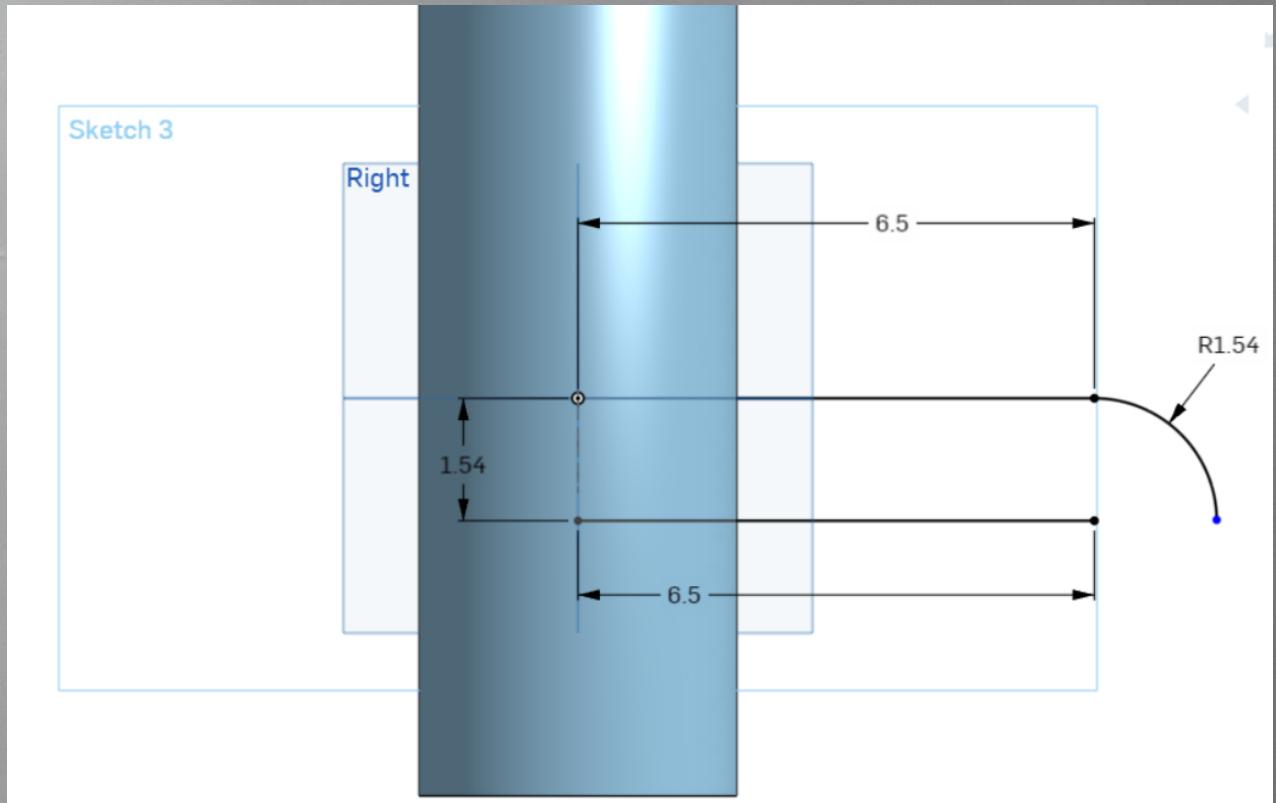
→ Make further lines as shown here below.



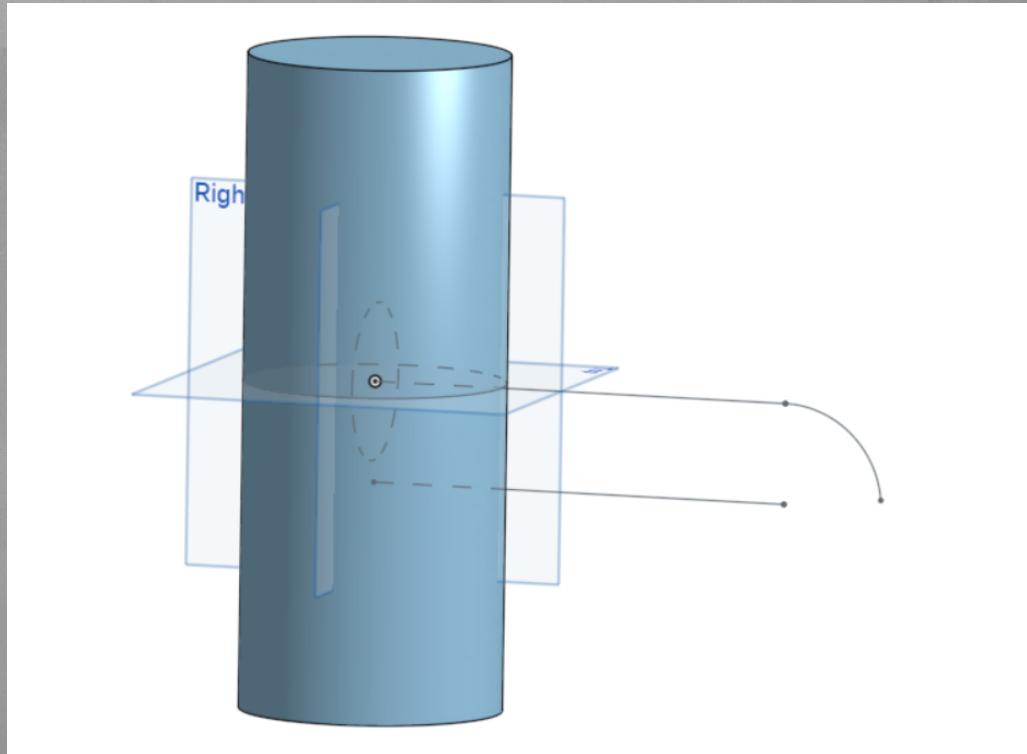
This arc is made by selecting Tangent option from the top bar. (Jushar Sharma B21MKT037)



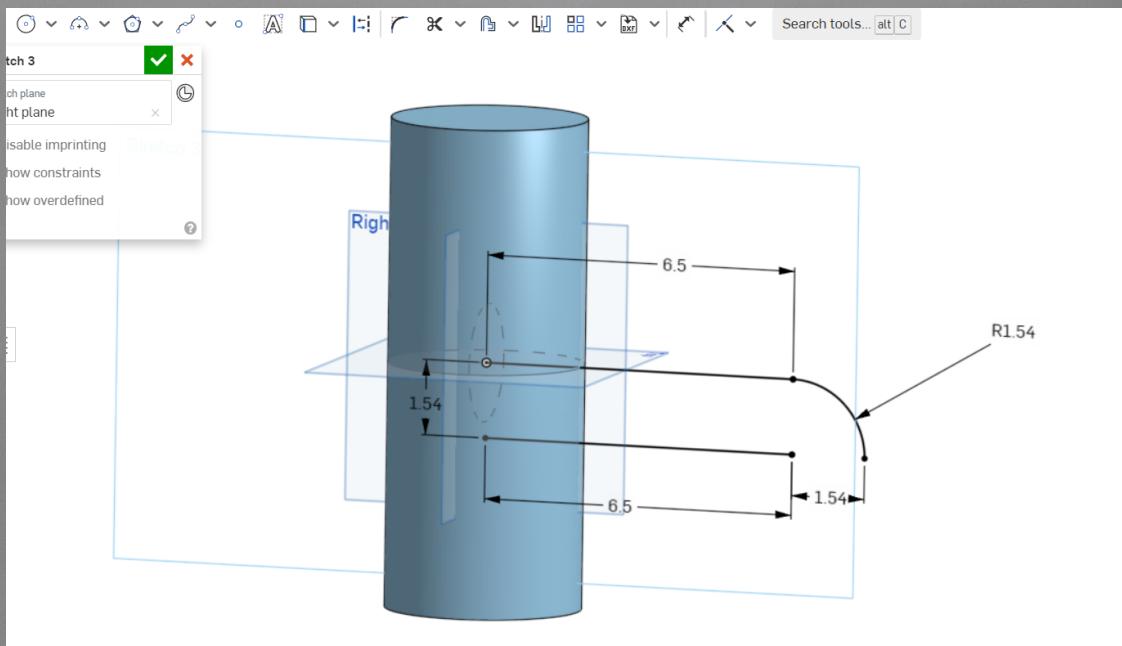
→ Dimension the arc. (R 1.54)



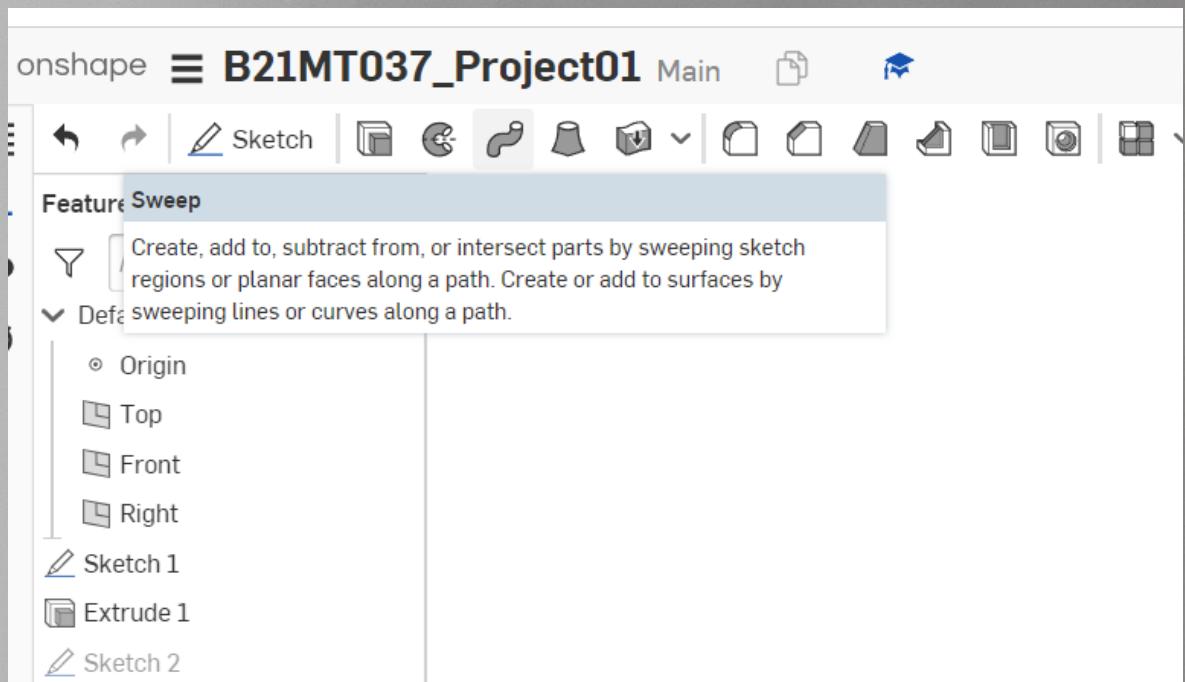
→ This is the isometric view. (Jushar Sharma
B21MT037)



→ Align the dimensions further, so that all the measurements are as per question given.



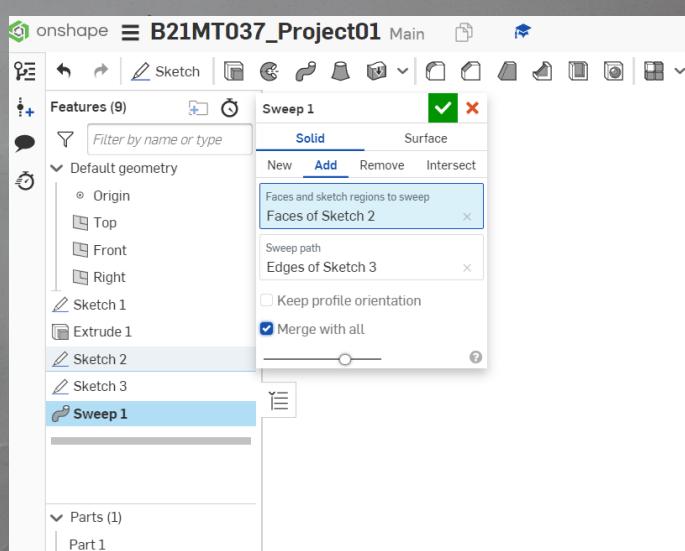
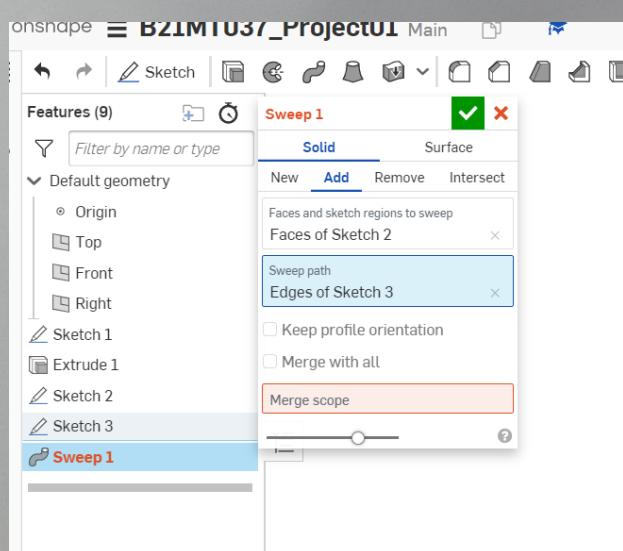
→ New, select 'Sweep' option from Tab bar.
(Jushan Sharma B21MT037)



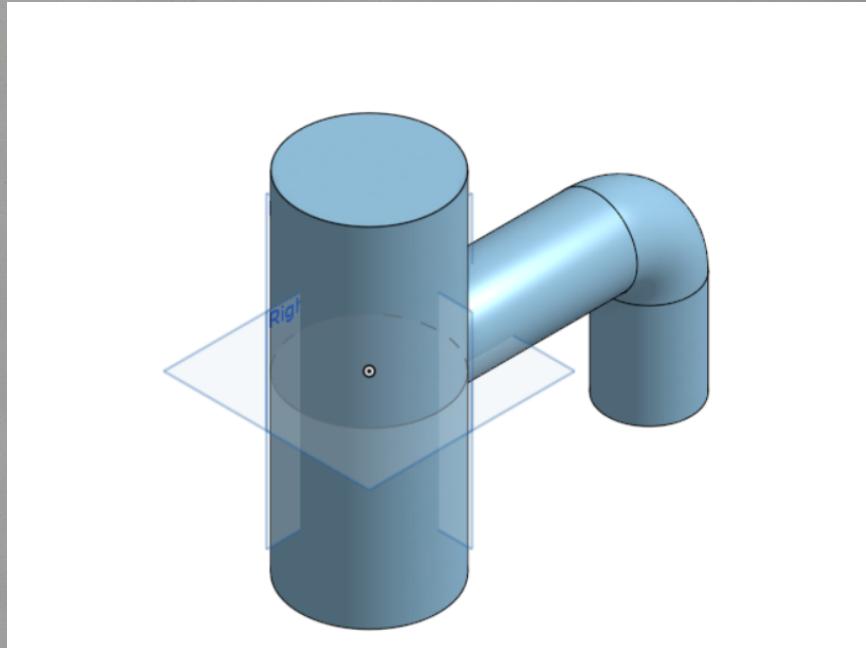
→ Select 'Solid' → Add
↓
Faces of Sketch 2
Edges of Sketch 3

Merge Scope → Merge with all.

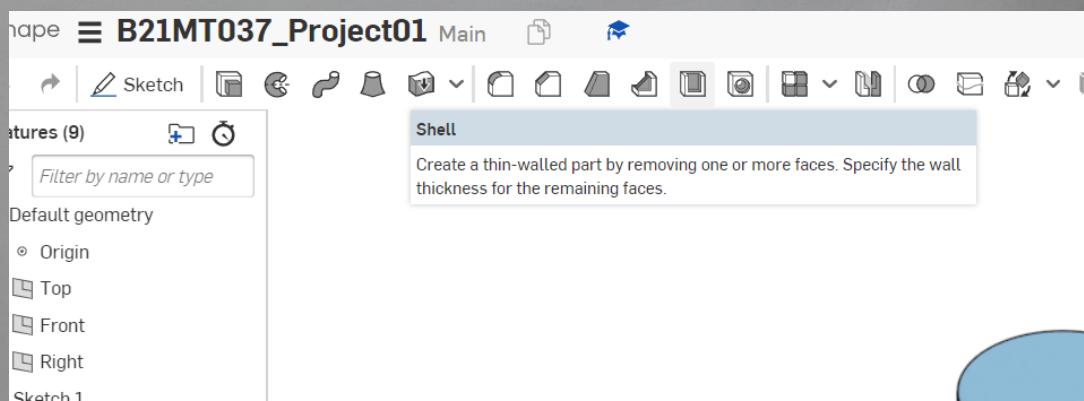
Click on green box with Tick.



→ This kind of view will appear. (Jushar Sharm
B21MT037)



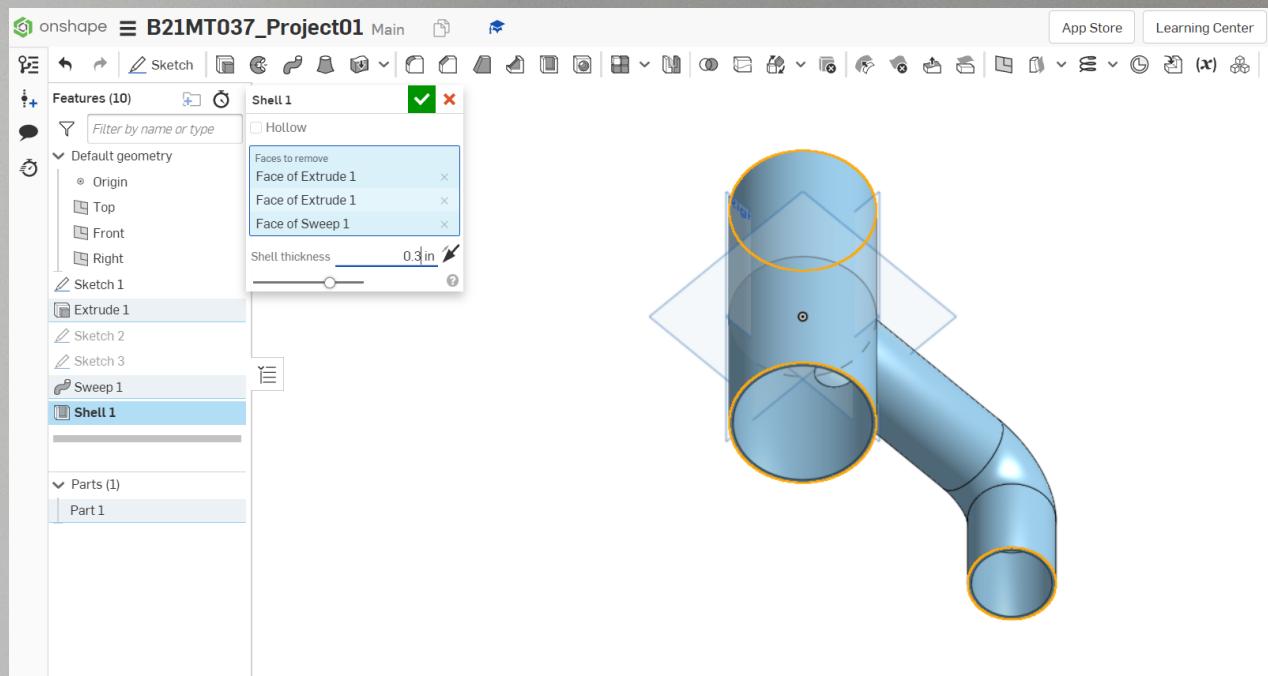
→ Select Shell from the top bar.



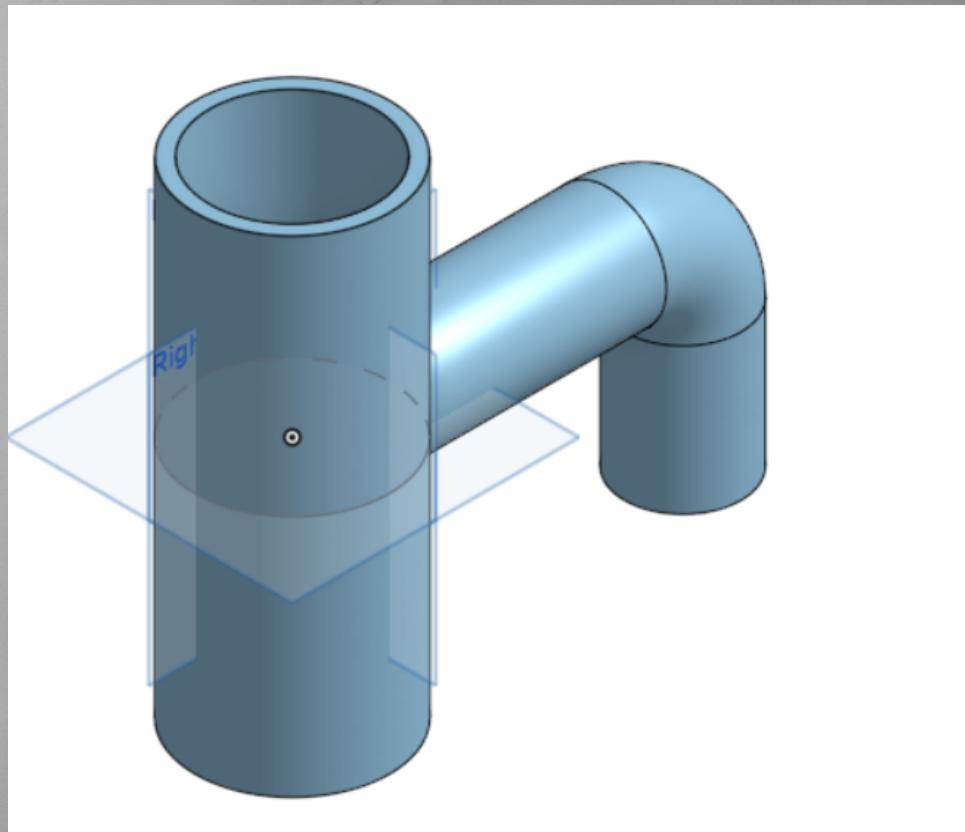
→ Select → Faces to Remove
↳ Face of Extrude1 (both sides)
↳ Face of Sweep 1

Select shell thickness 0.3 in.

This kind of view comes.



→ This is the Isometric View.



So, Your 3D part is Ready.

Task -2

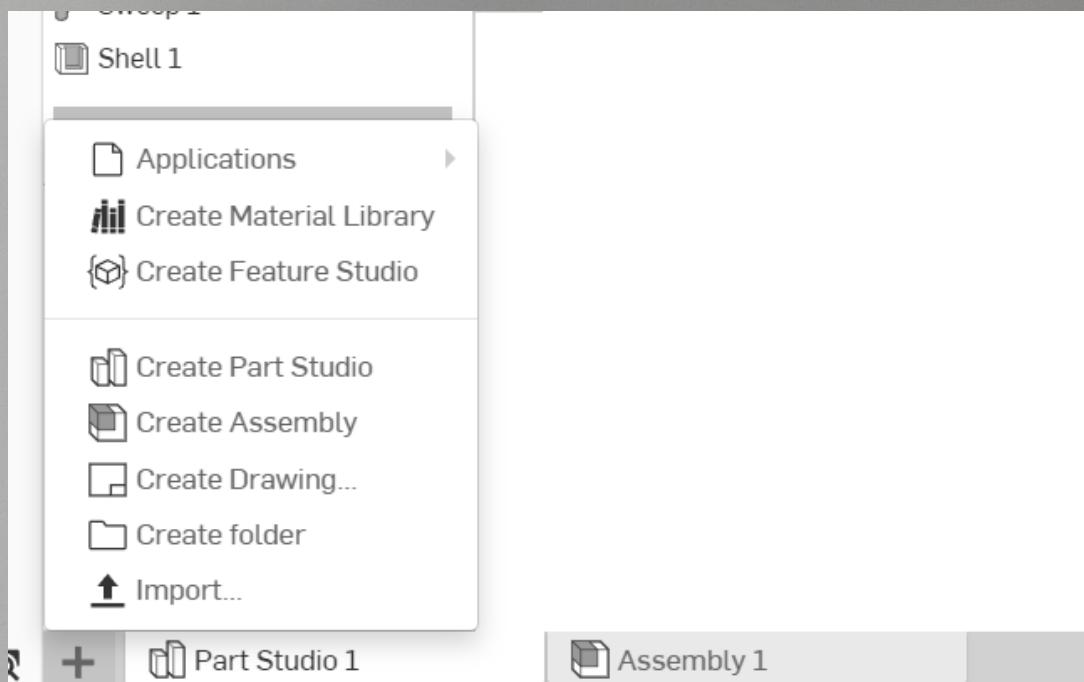
(Jushar Sharma
B21MT037)

Using this 3D part that you made in Task 1 , make a drawing in the first angle projection on A1 sheet. This drawing has to be prepared using the same CAD software that you used to make the part in Task 1 .

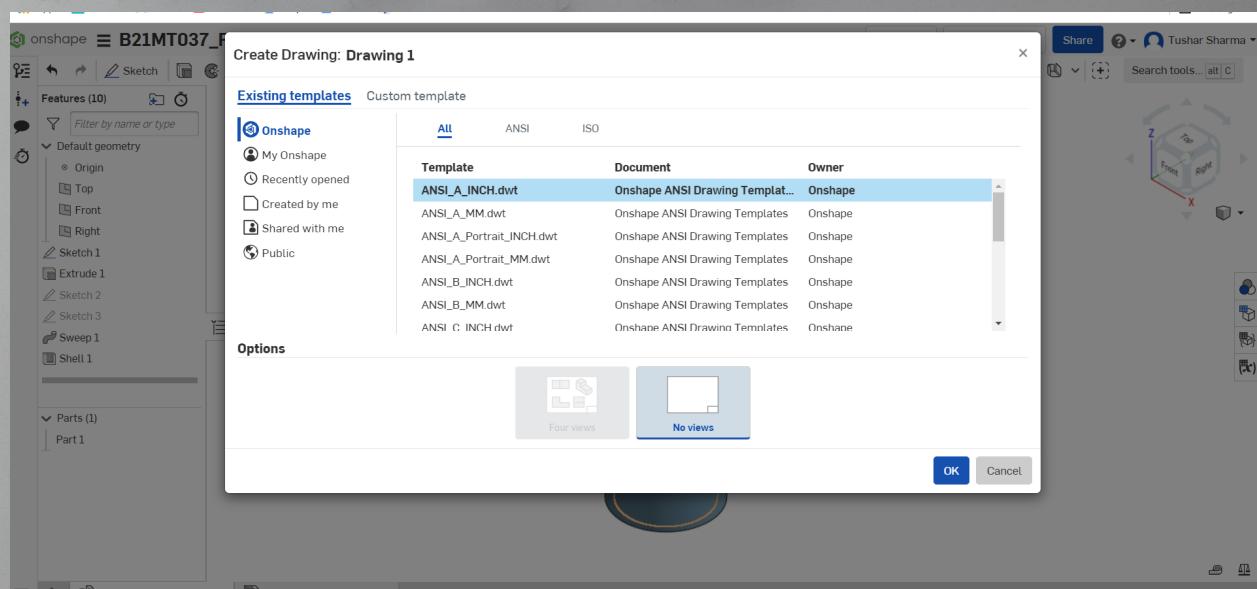
The title box should be similar to the title box that was shown in the class and you were supposed to draw in the previous assignments. Prepare a hand written report on the steps you took to prepare this drawing.

- Include appropriate Screenshots. A reader not trained in the software should be able to reproduce the drawing by reading your report.

→ Click on the '+' mark, present at the bottom left of your screen. (Tushar Sharma B21MT037)
Select 'Create drawing'.

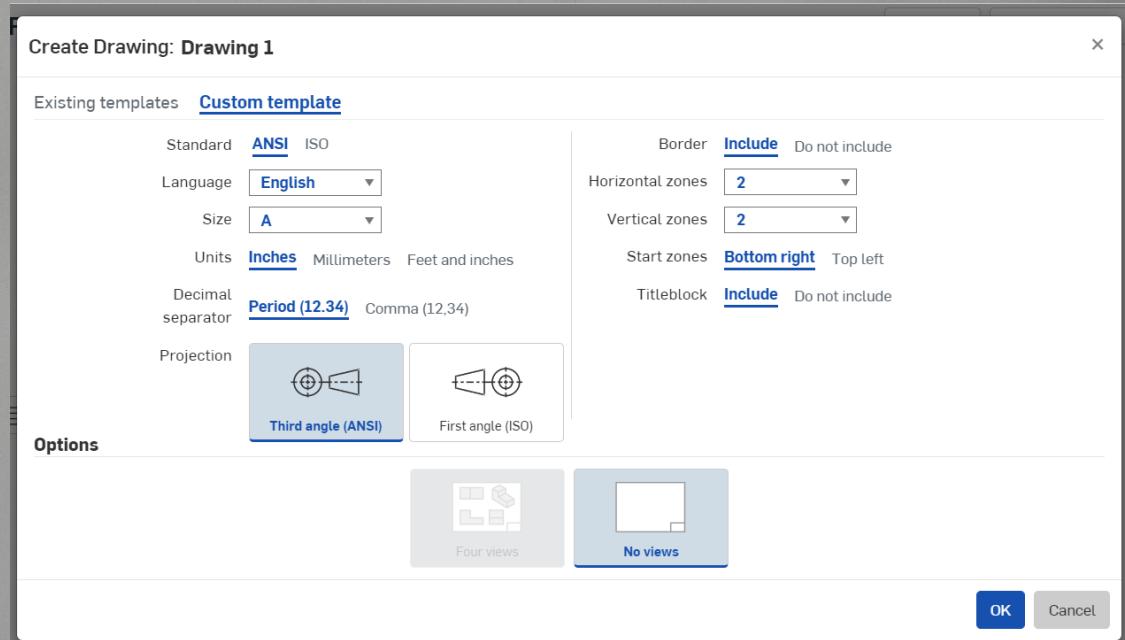


→ Select 'Custom template'.



→ This kind of box appears.

(Jushar Sharma
821MKT037)



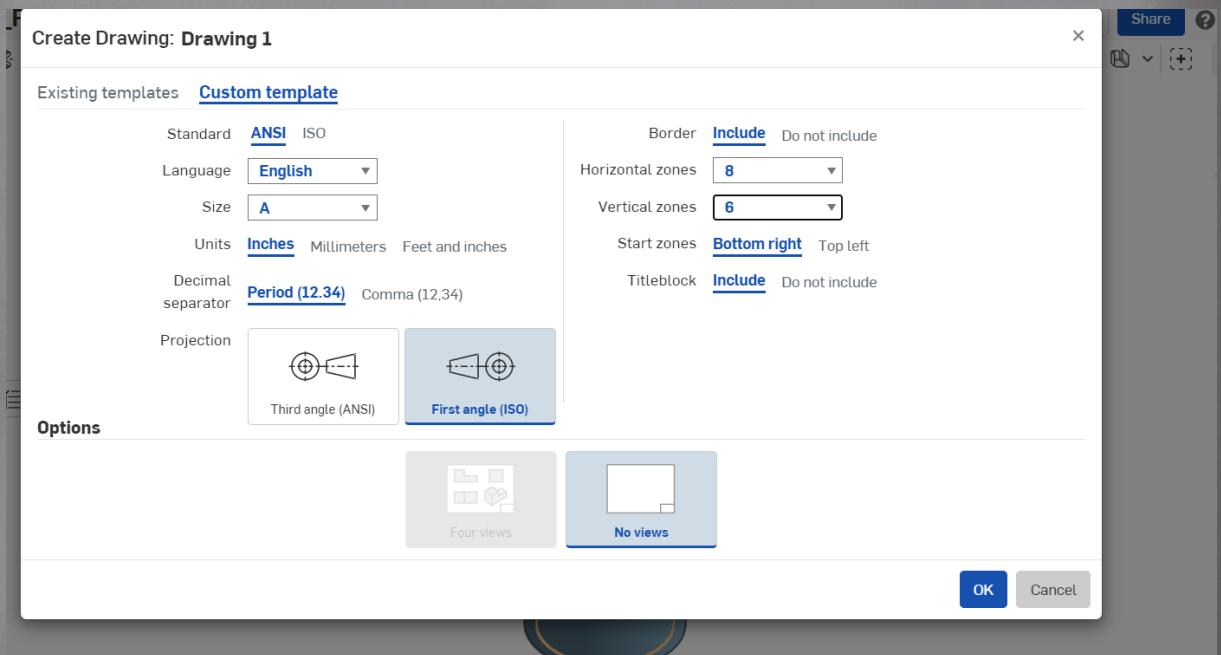
→ Make the necessary changes.

Select → First angle

Include → Horizontal zones (8)

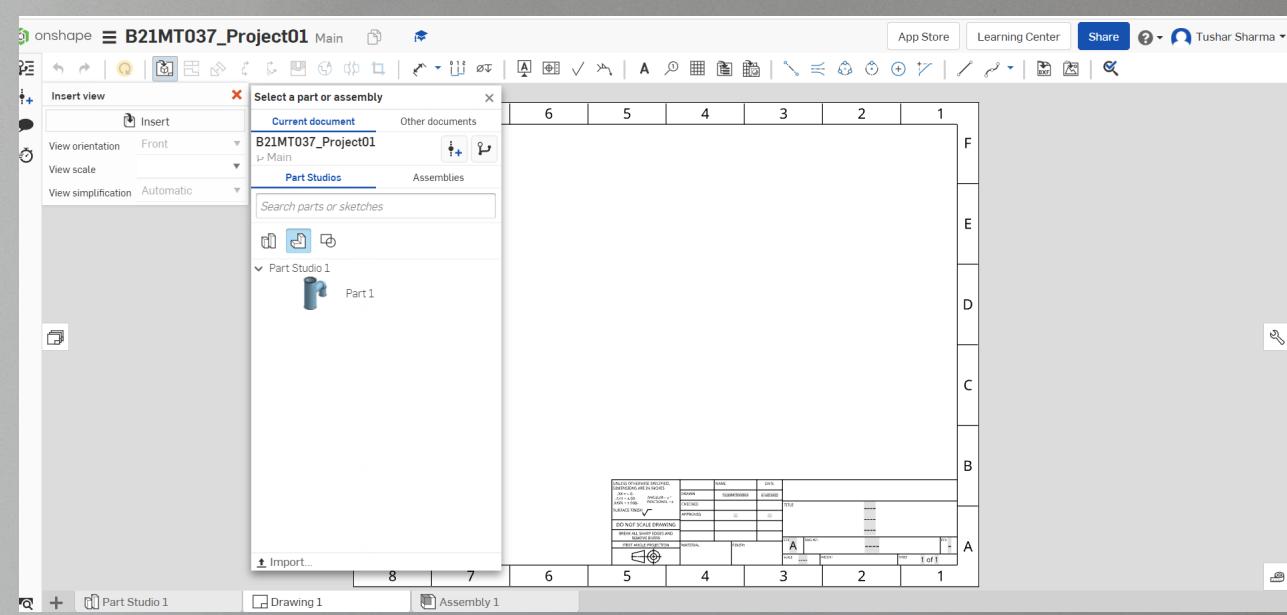
Vertical zones (6)

. Click 'ok'

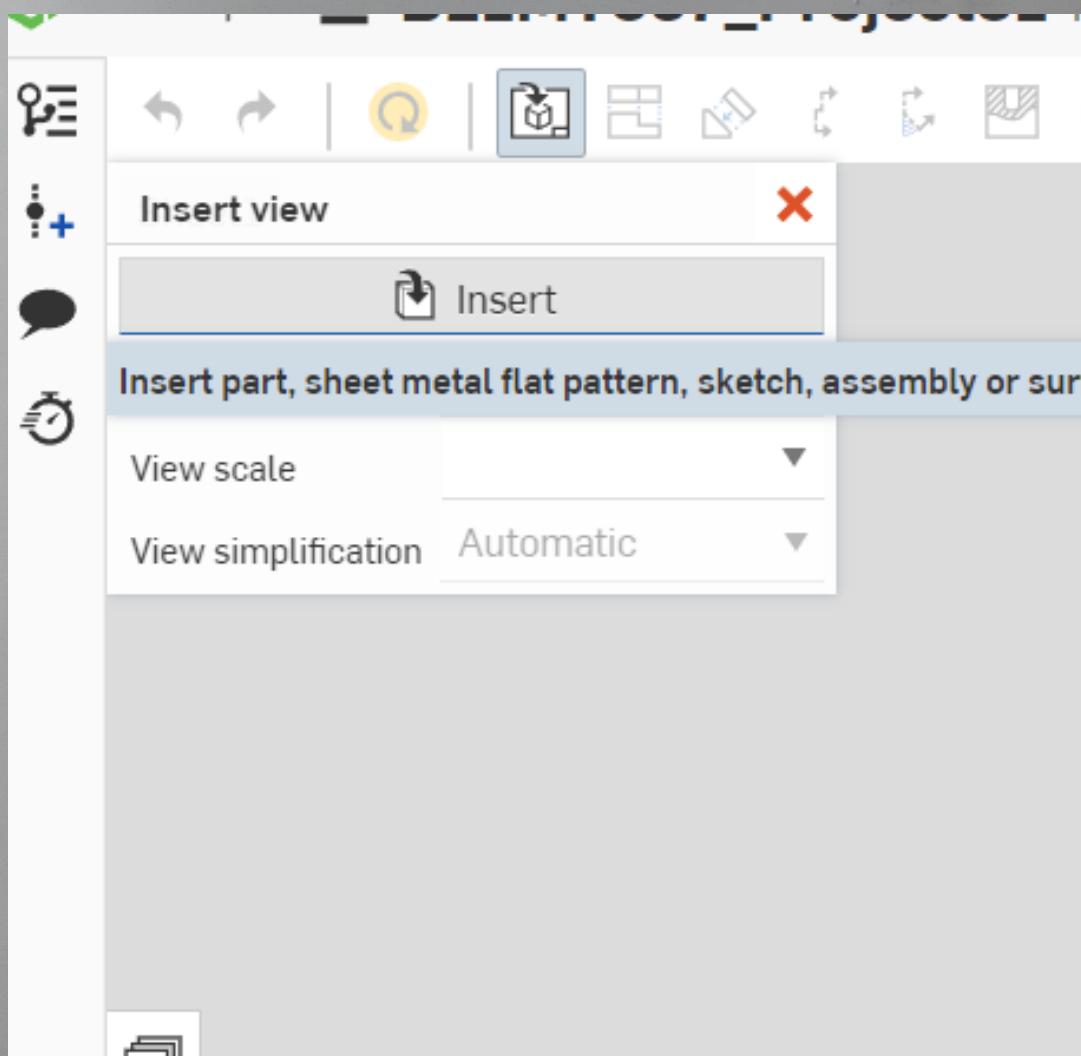


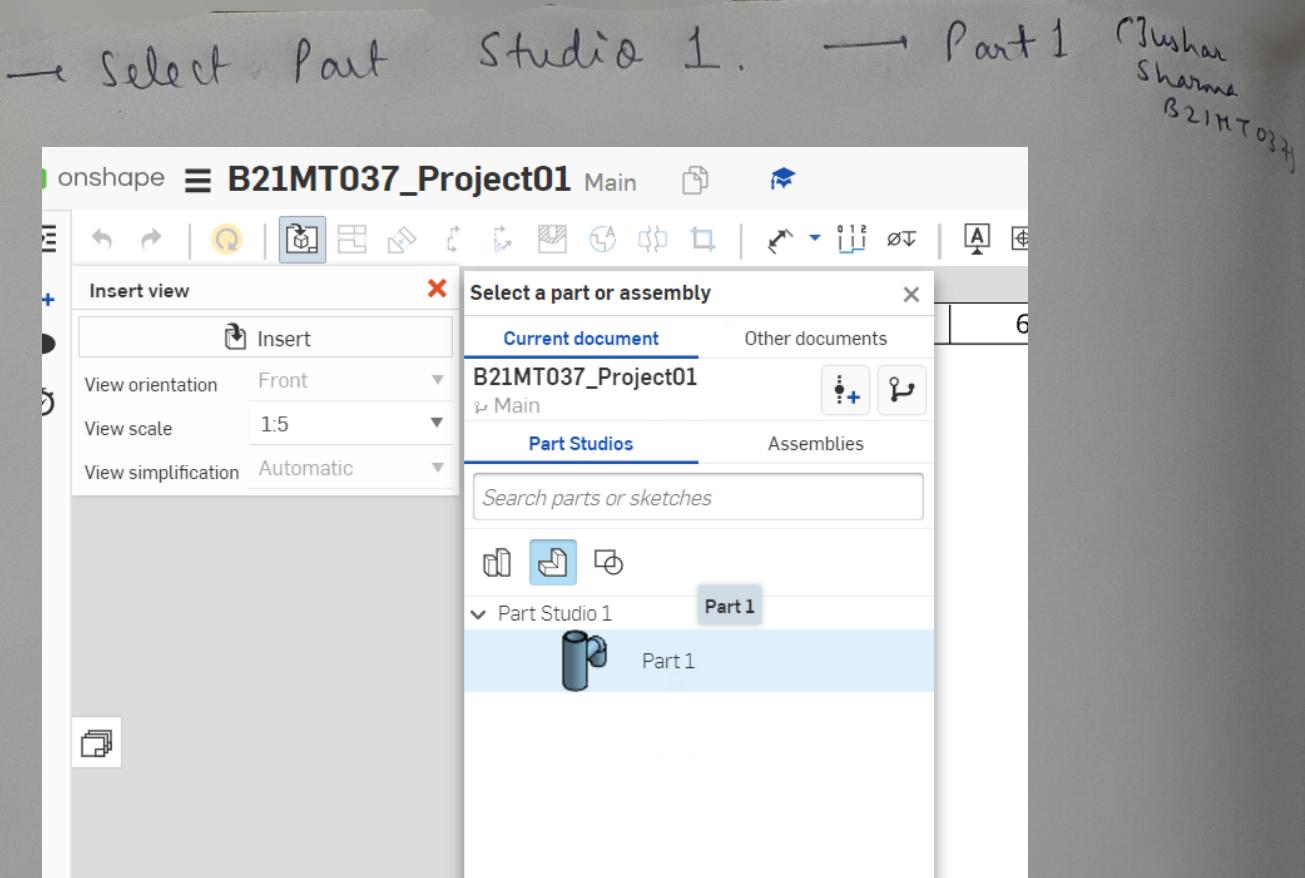
→ This screen appears.

(Tushar Sharma B21MT037)

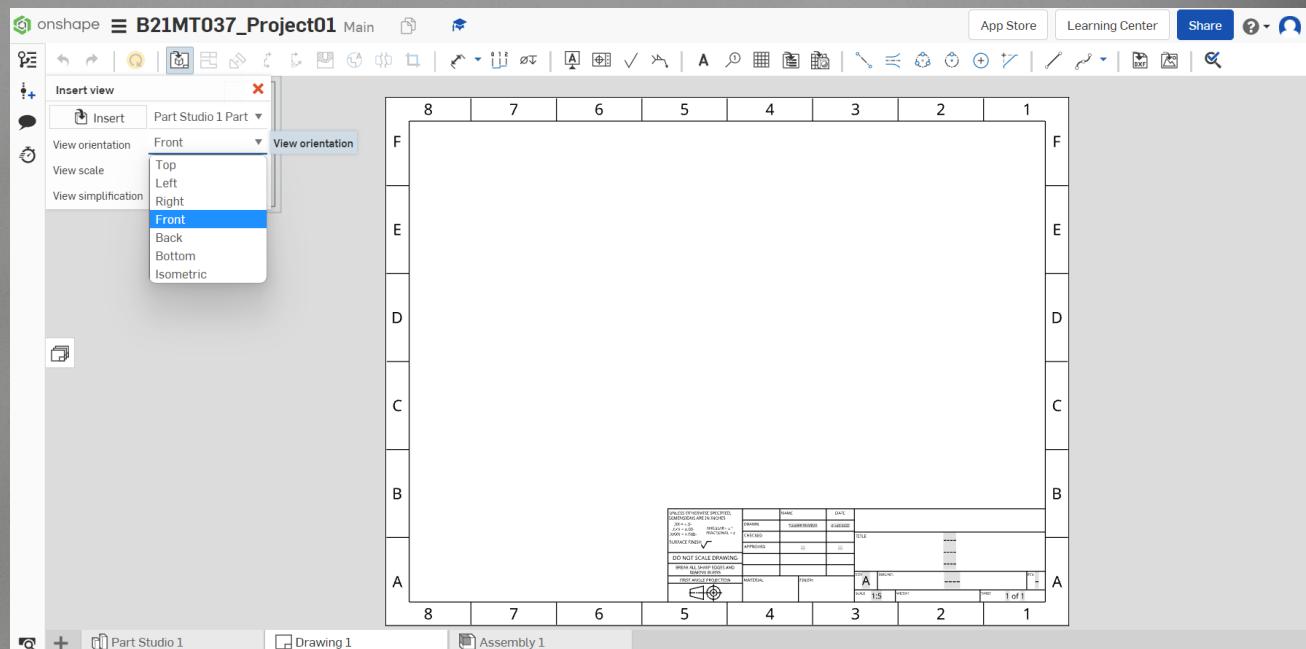


→ Click on 'insert view' from top bar.



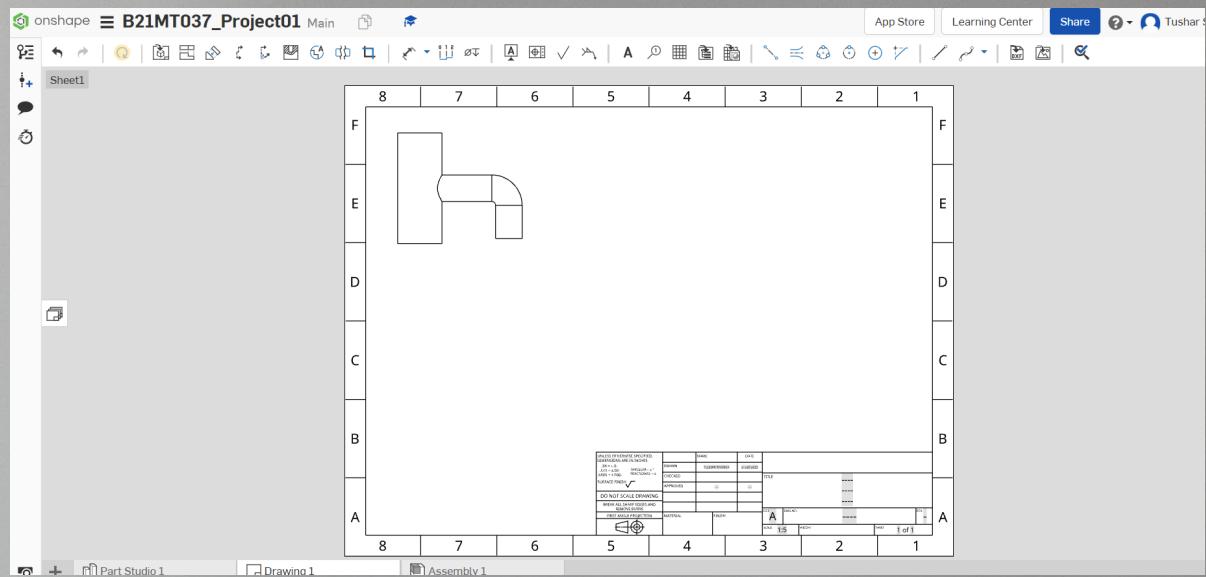


→ Now select whatever orientation you want to draw.

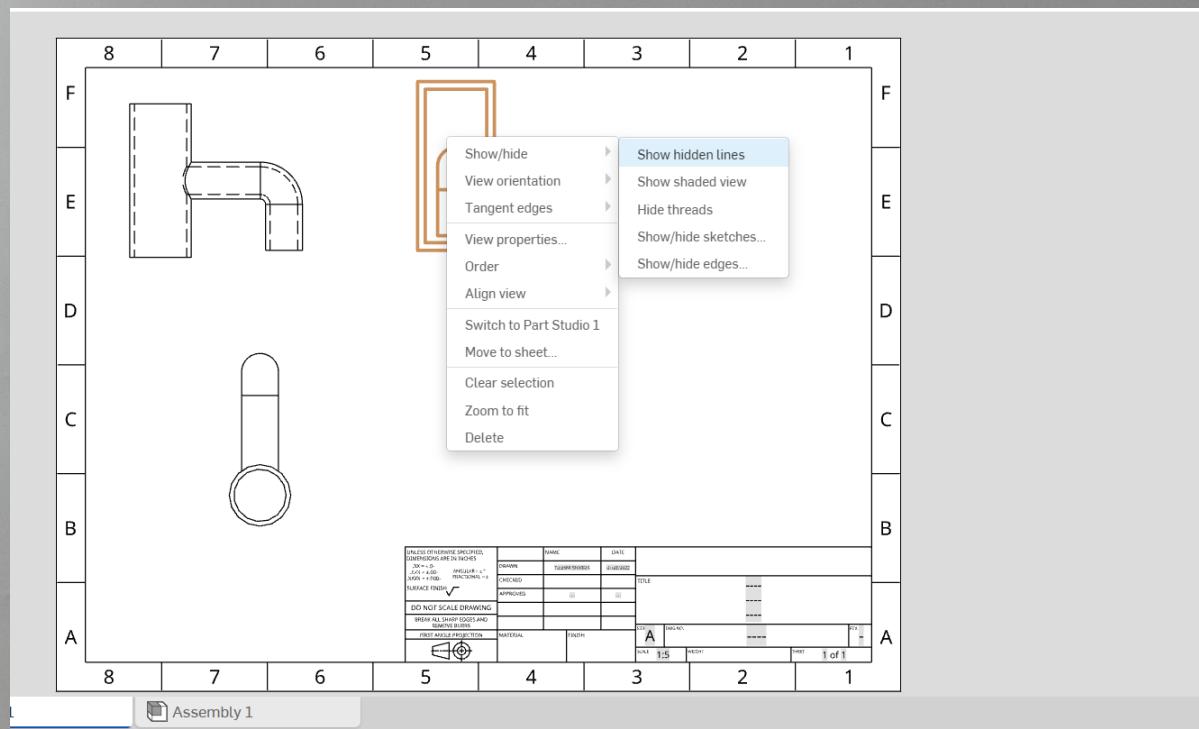


→ Start making the drawings by drag and drop method.

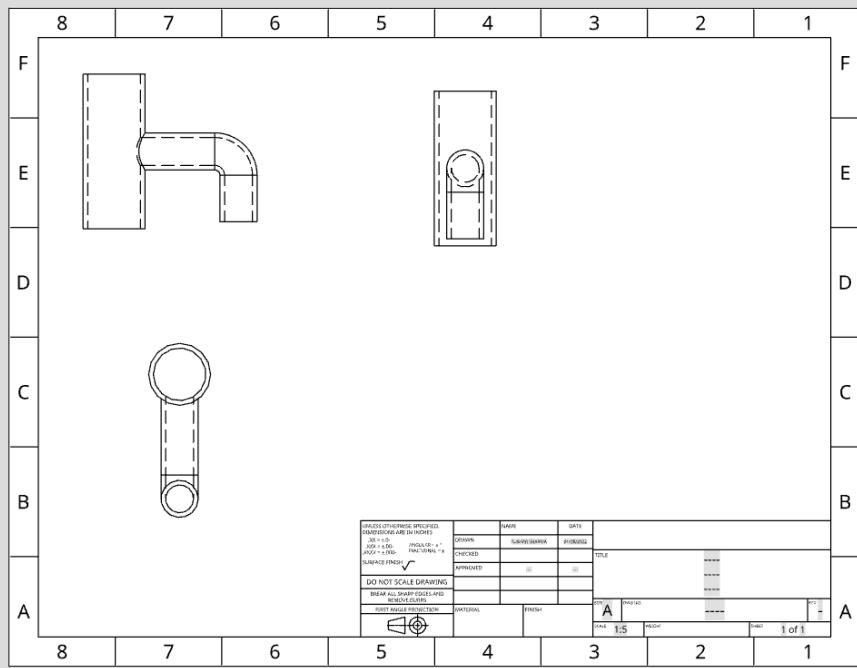
(Tushar Sharma B21MT037)



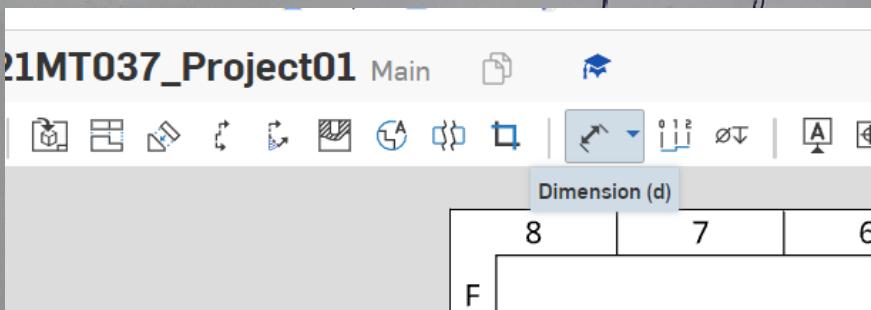
→ click on the drawing → show/hide
↓
show hidden lines



→ This kind of Sheet Comes. (Jushar Sharma
B21MT037)



→ Select 'dimension' option from Top bar.



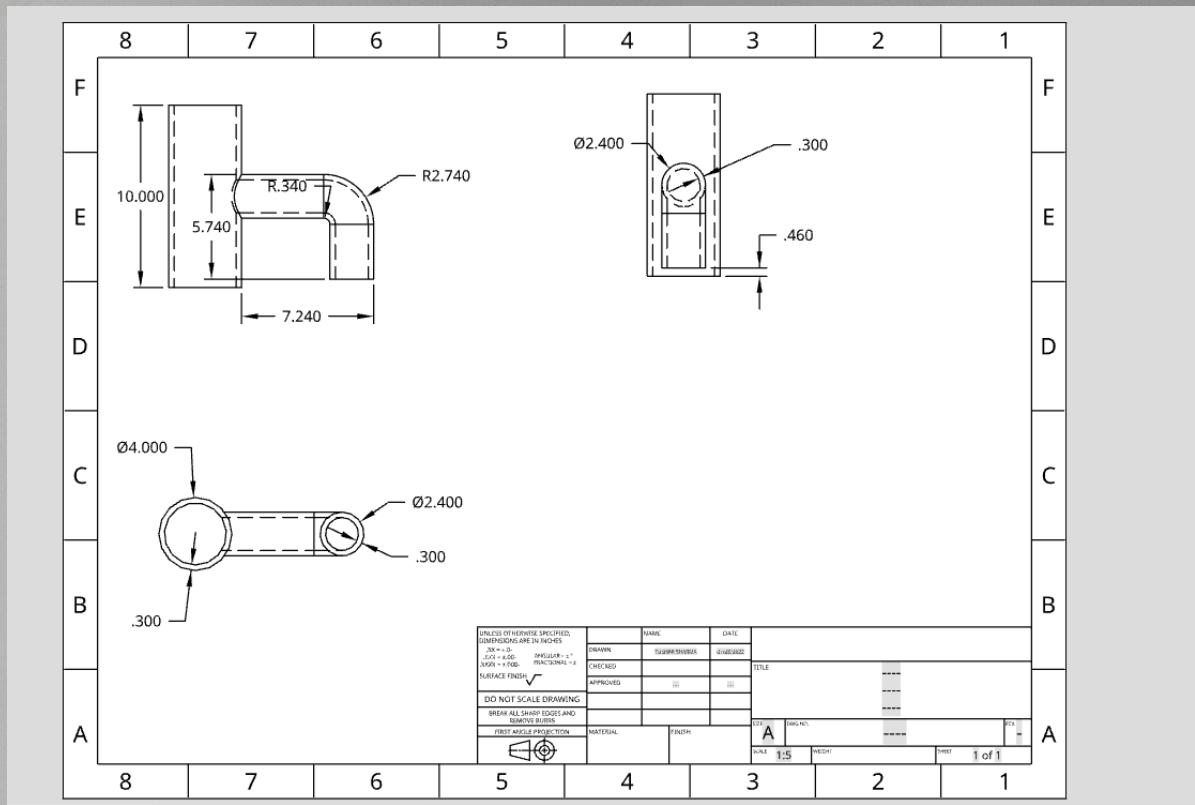
→ Do dimensioning as per the question.

Select the line to dimension it.

Select 2 points, to dimension the length between them.

Select 2 lines, to dimension the length between them.

Select the circle / Arc to dimension its radius / diameter.



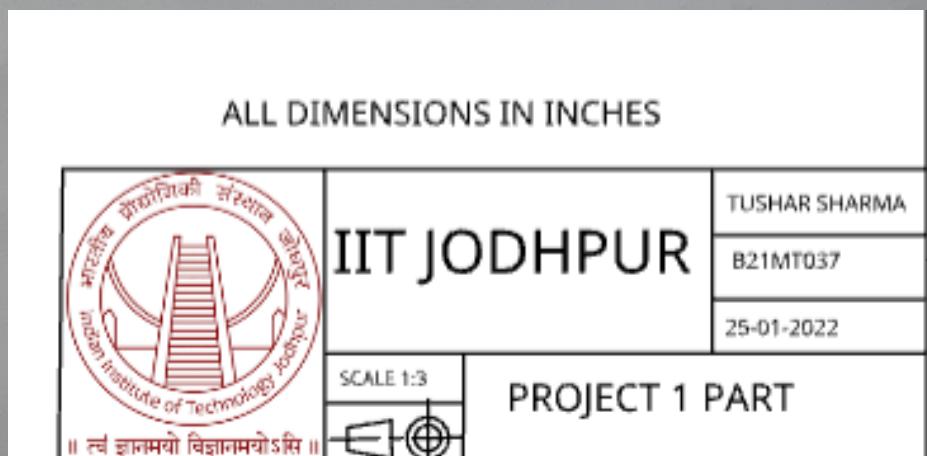
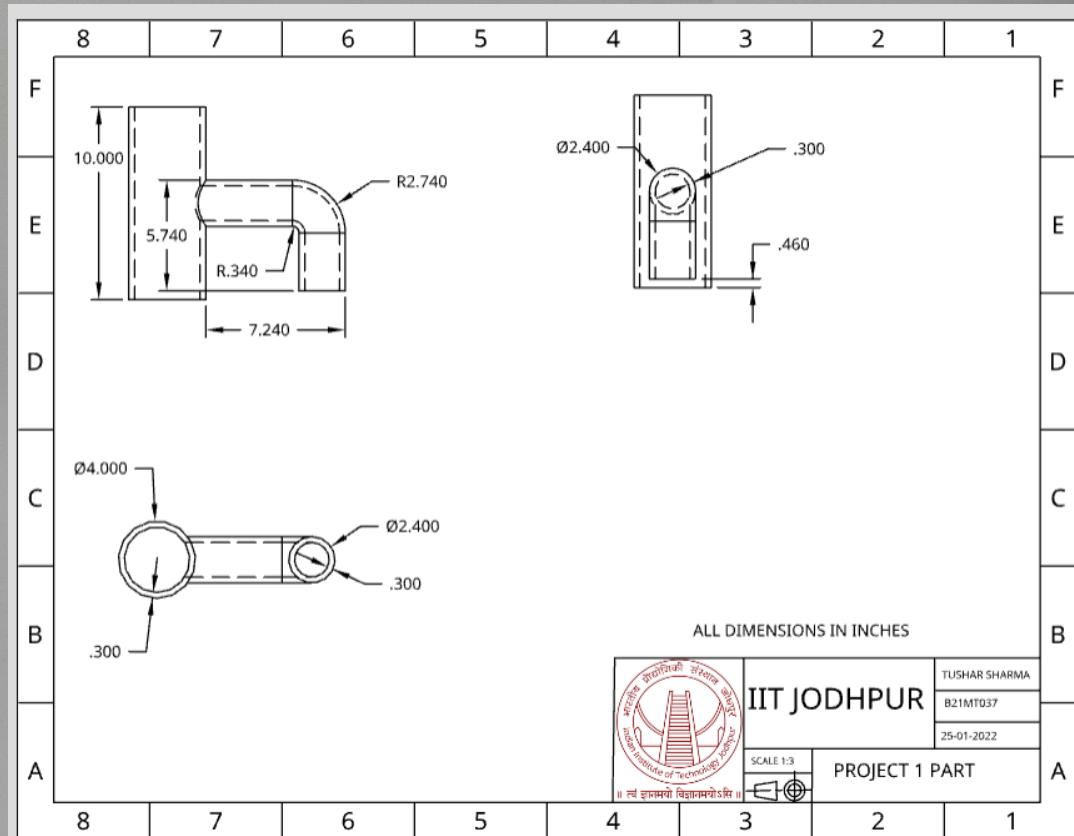
→ Finally Using the tools from the top bar, customise the Title box.

Click on + sign to import the image, You have downloaded and saved.

Select upload the image from top bar.

Use lines and 'A' option at top bar to customize your title box.

This will be the final outcome
(This is my drawing using the software with the title box as instructed in class).



This is all. The 3D part is made.
Then, using the same software, the drawing is made.