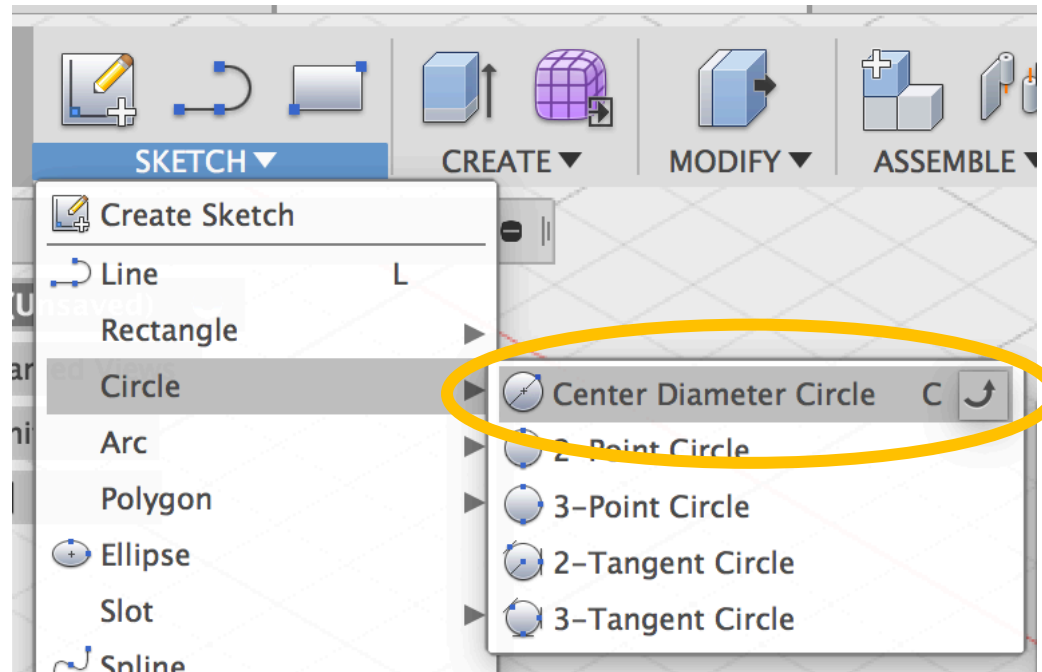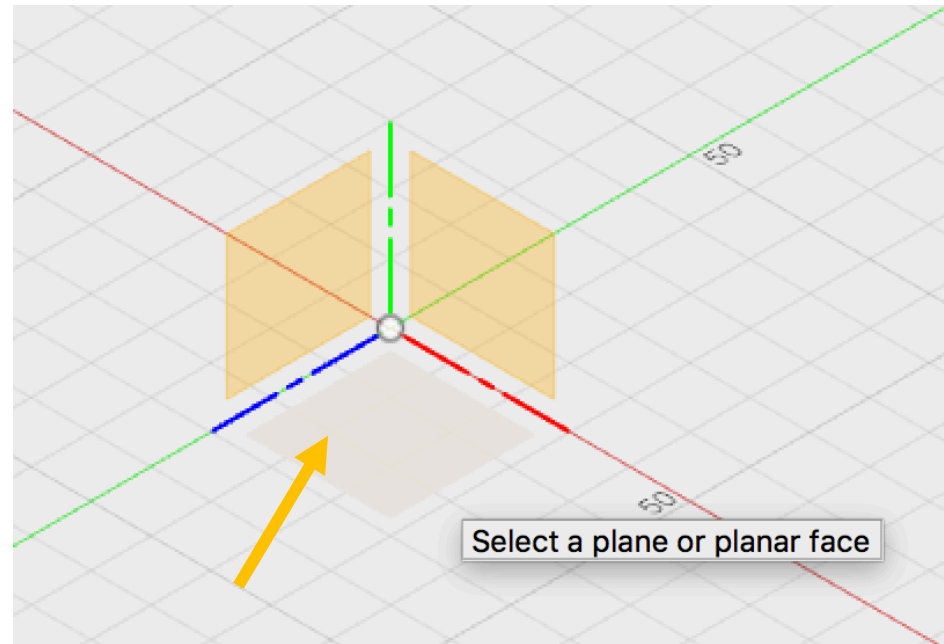# Lesson 4

Design a ring opener
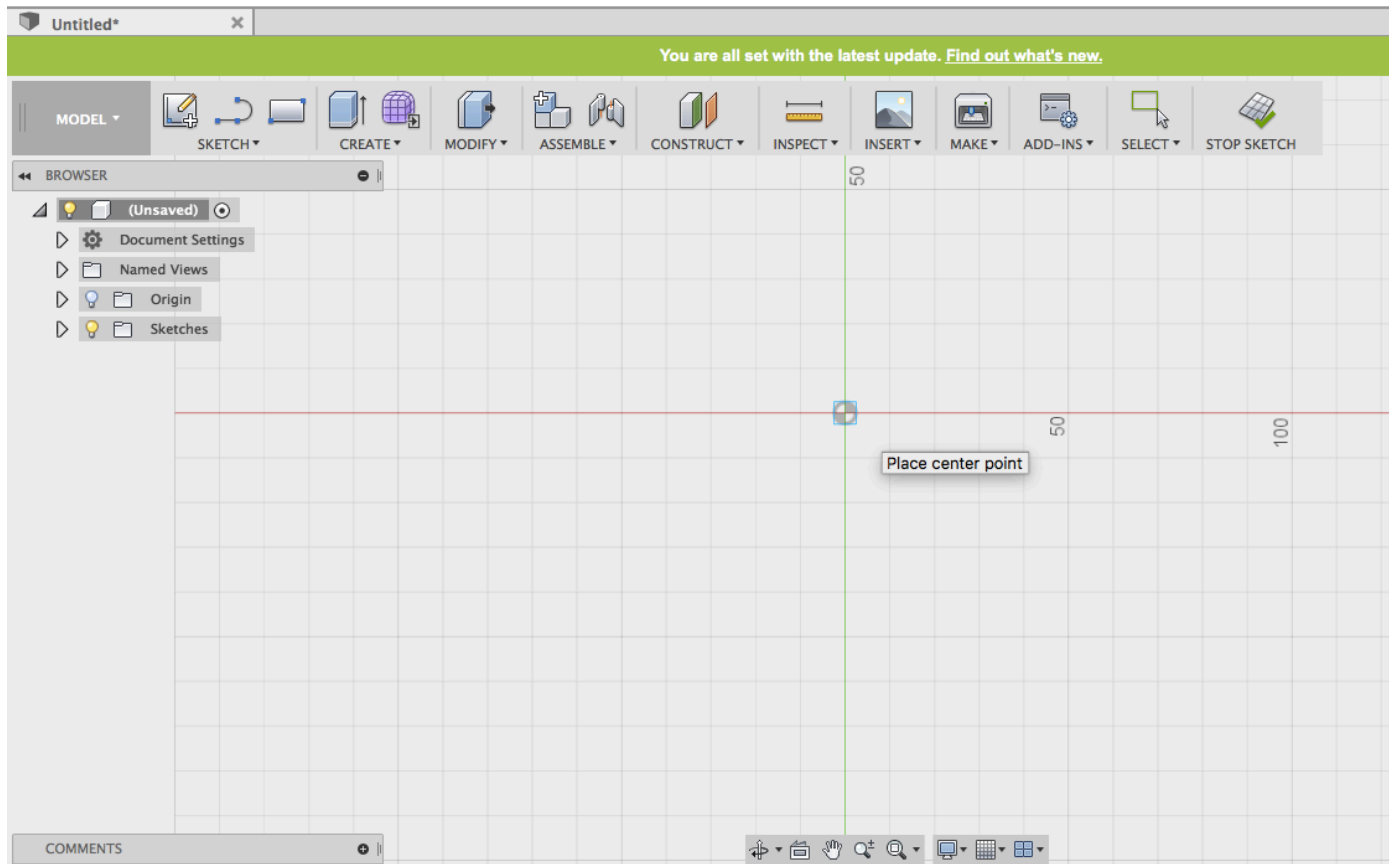
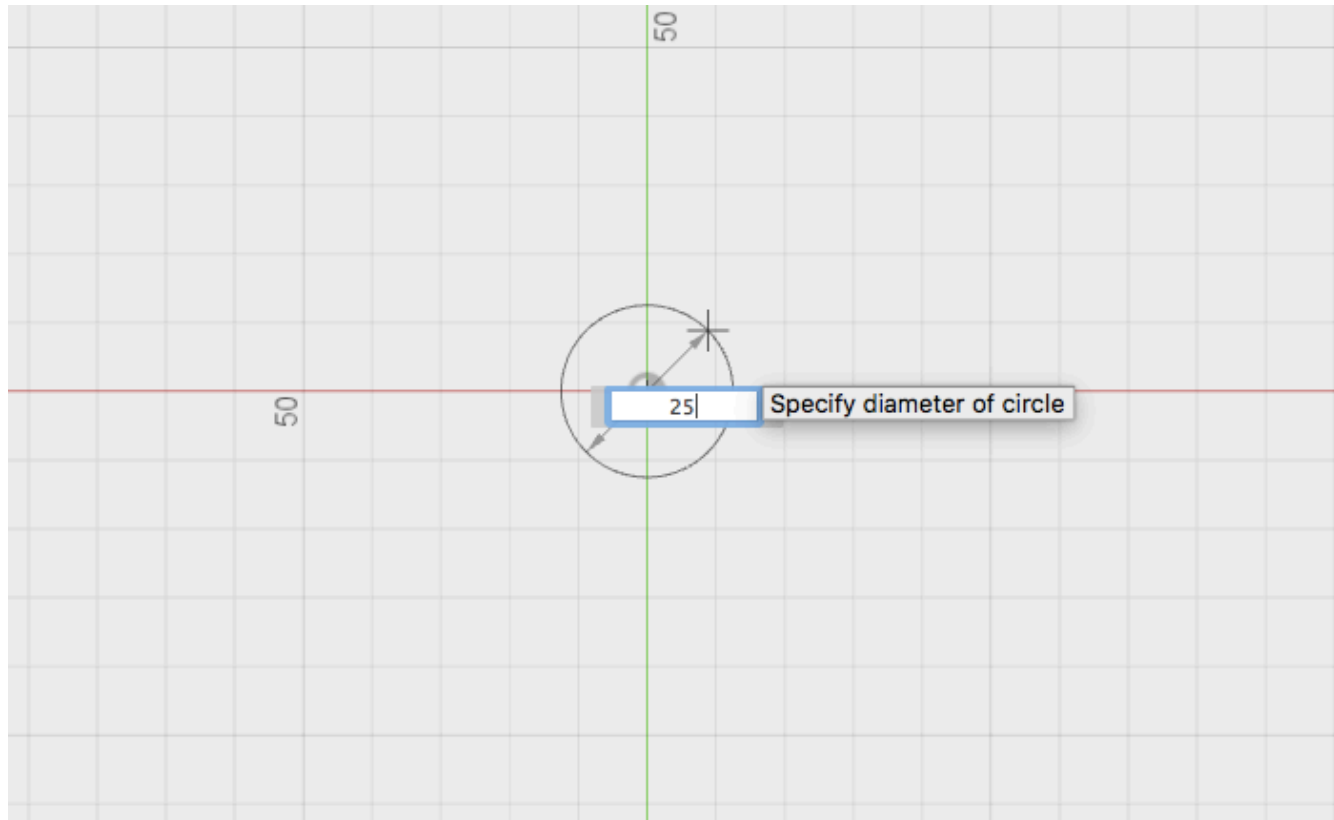# Step 1: Go to "Sketch" > "Circle"> "Center Diameter Circle".
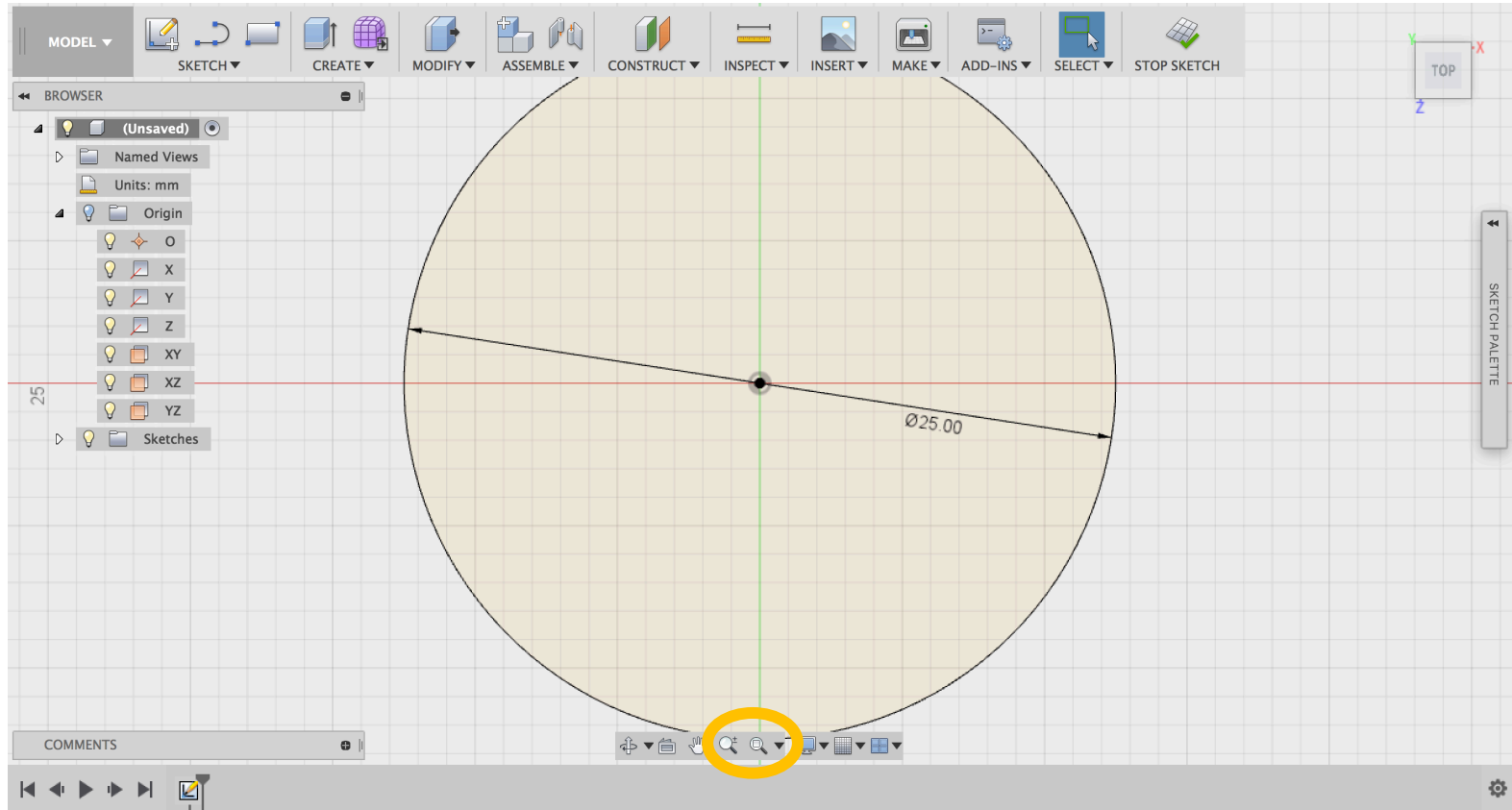
Step 2: Select the base plane.

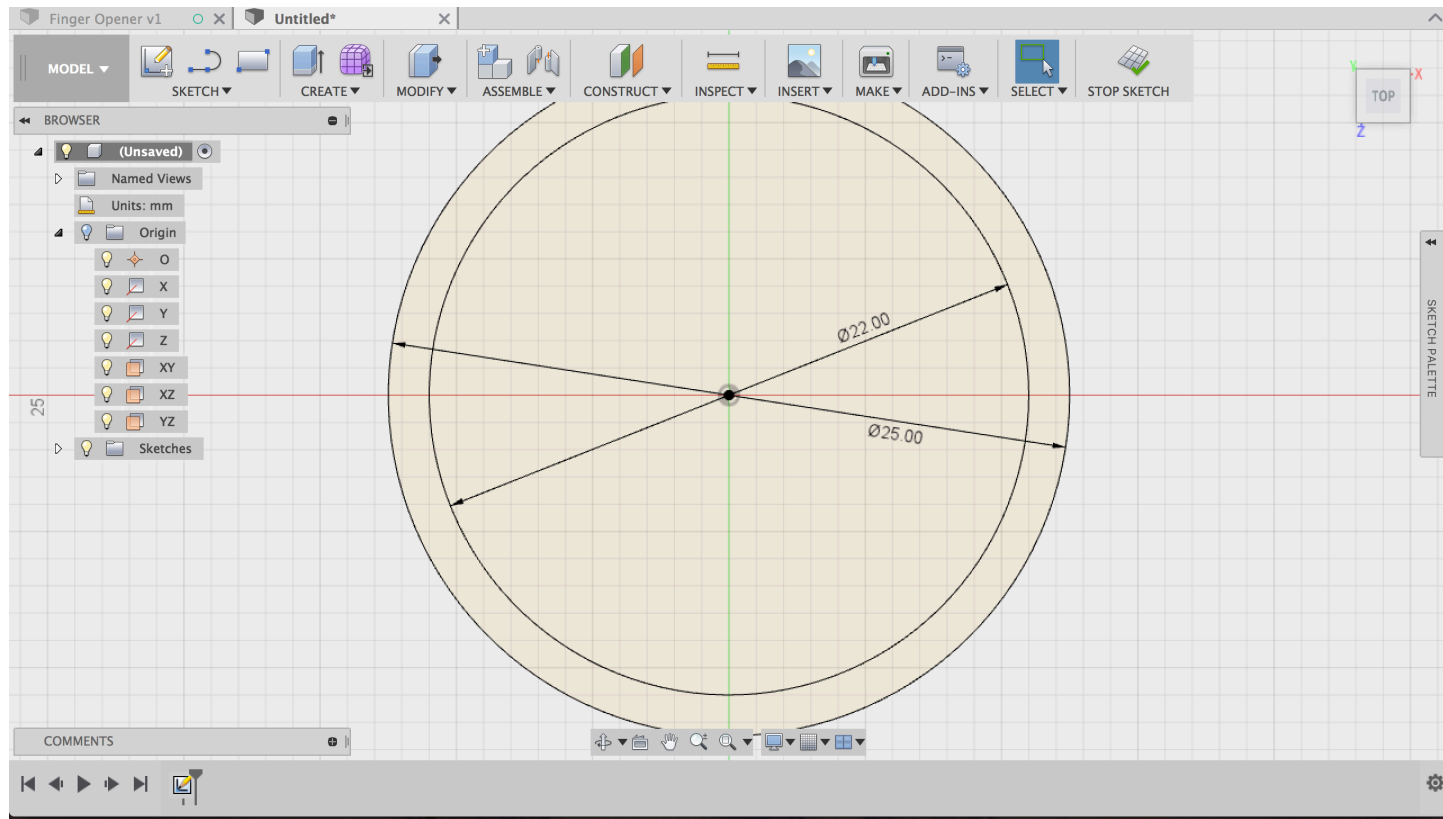# Step 3: Click on the origin point as the center point

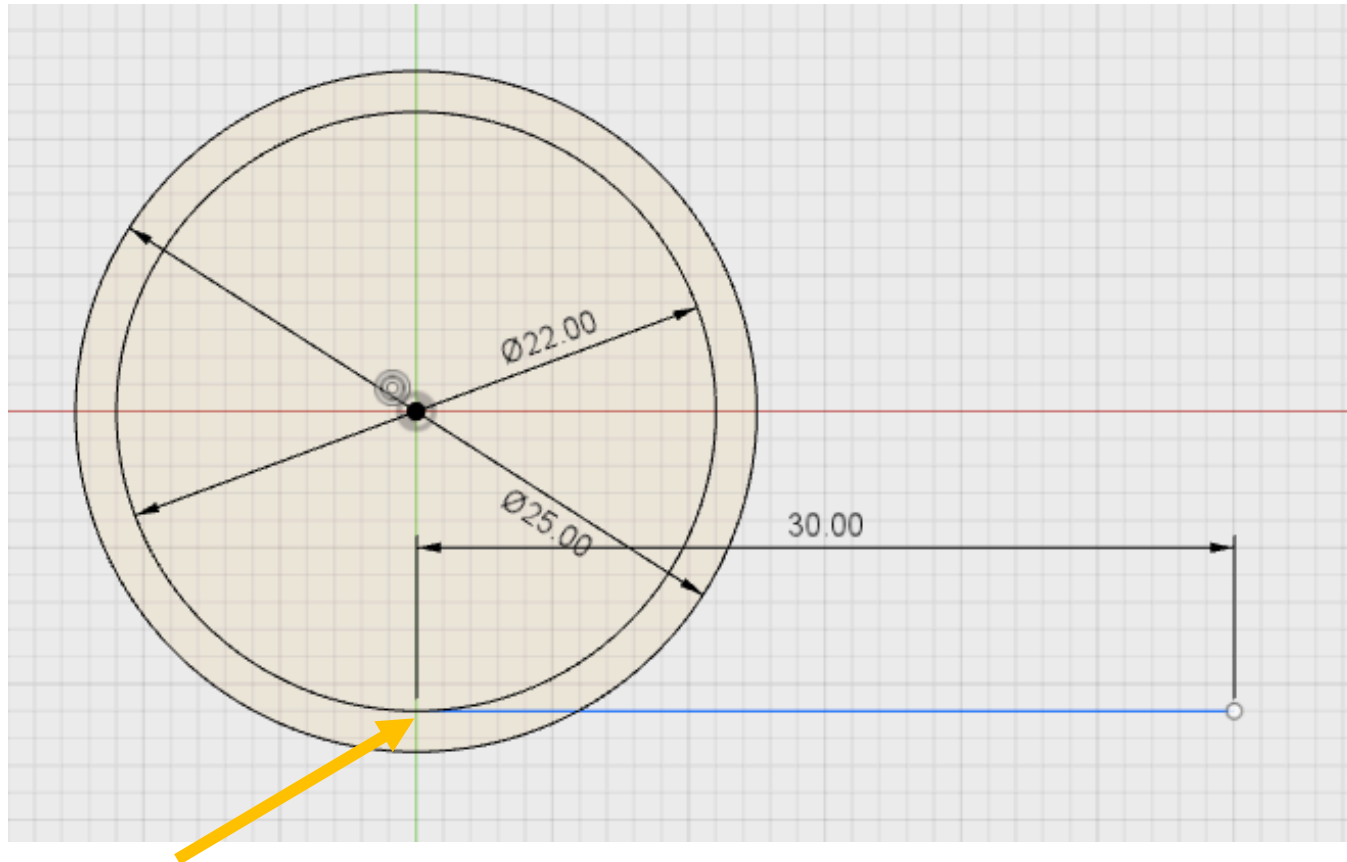# Step 4: Key in "25mm" as the circle diameter then hit "Enter".

Step 5: Click 🔍 to zoom in the circle.

Step 6: Draw another circle with 22mm diameter from the origin.
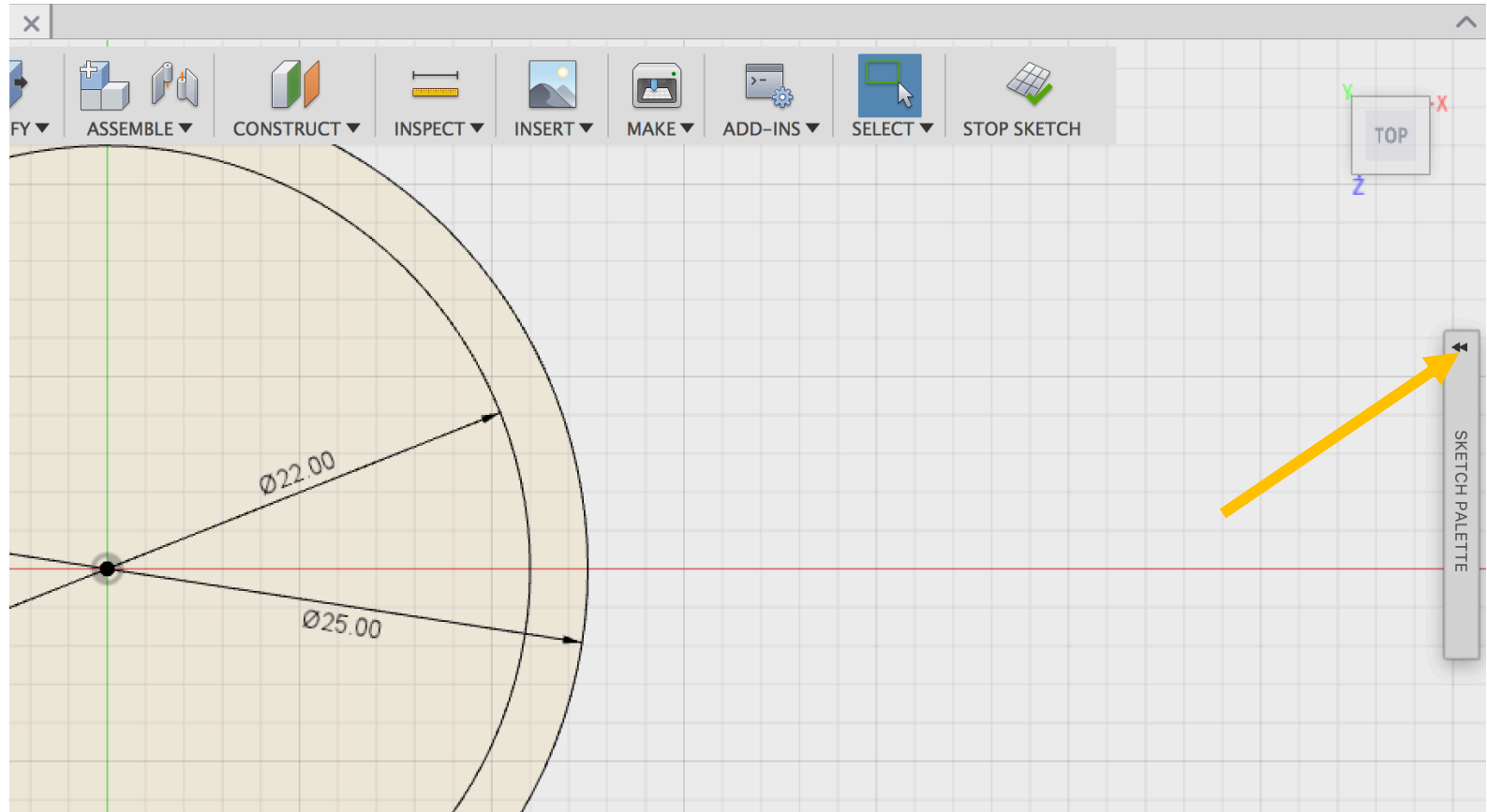
Step 7: Draw a 30mm line to the right starting from the point shown below.
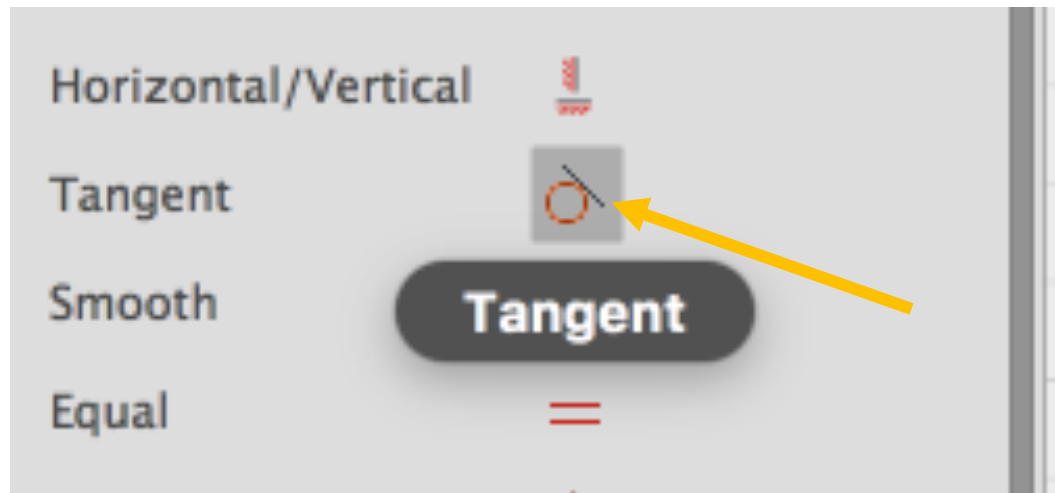
Step 8: Click ⏪ on the "Sketch Pallet".

Note: Step 8-11 are to ensure that the horizontal line always stay on the tangent of the inner circle.
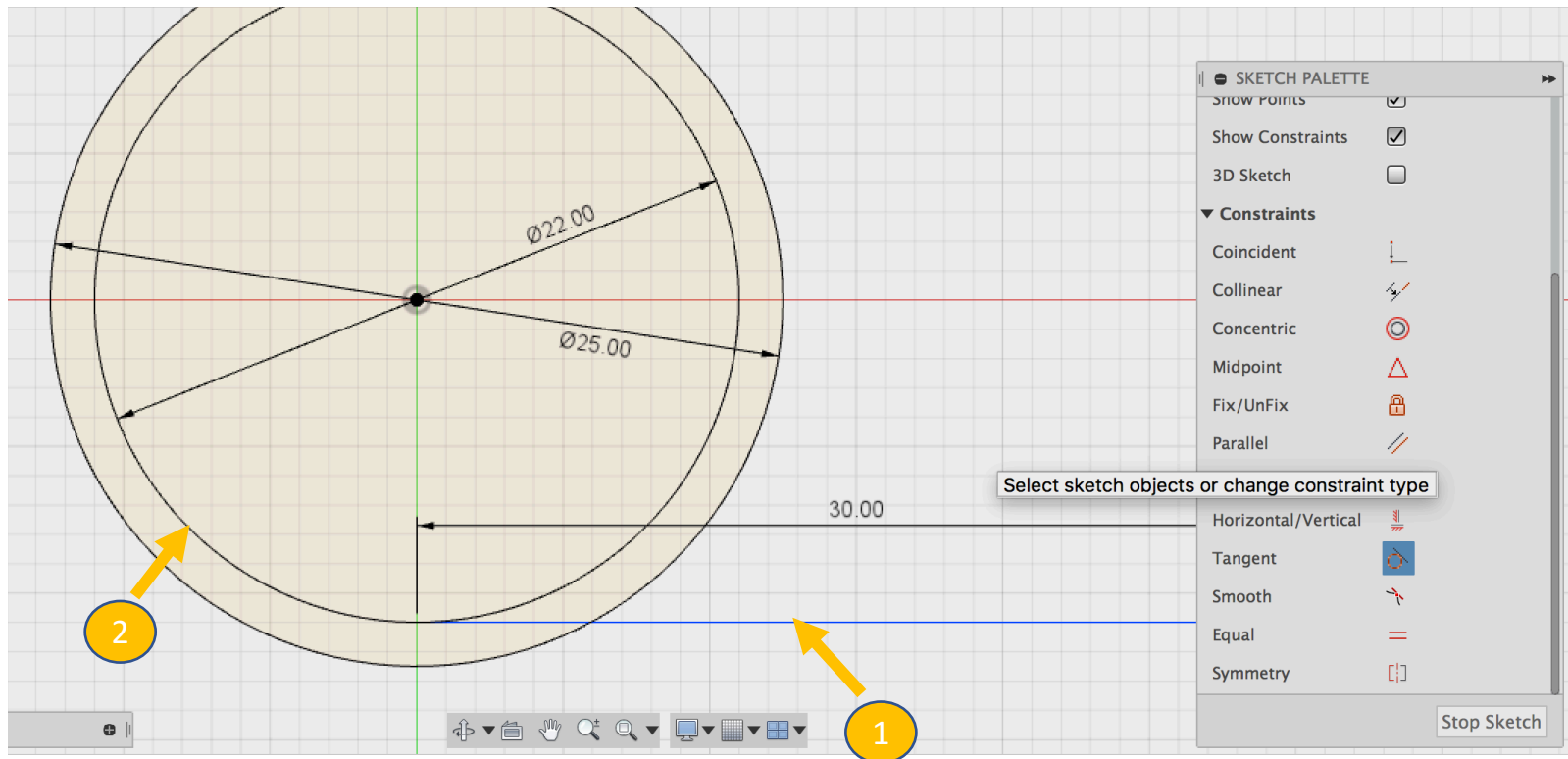
Step 9: Scroll down and look for "Tangent". Click on it

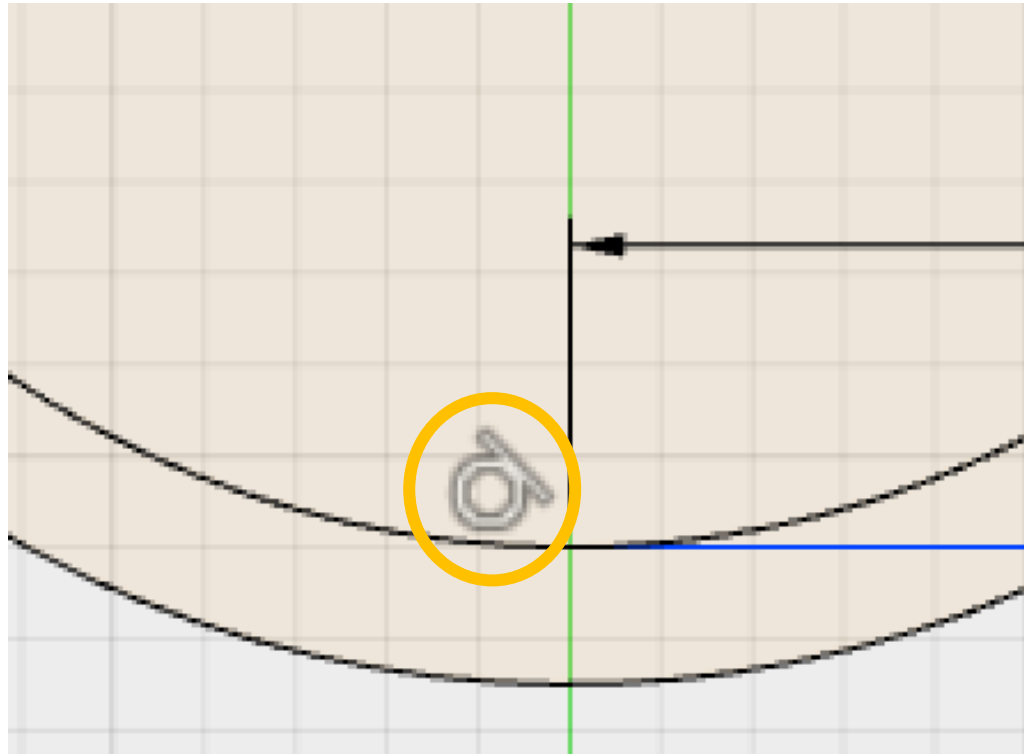Note: Step 8-11 are to ensure that the horizontal line always stay on the tangent of the inner circle.

# Step 10: Then, click on the horizontal line and the inner circle shown below

Note: Step 8-11 are to ensure that the horizontal line always stay on the tangent of the inner circle.

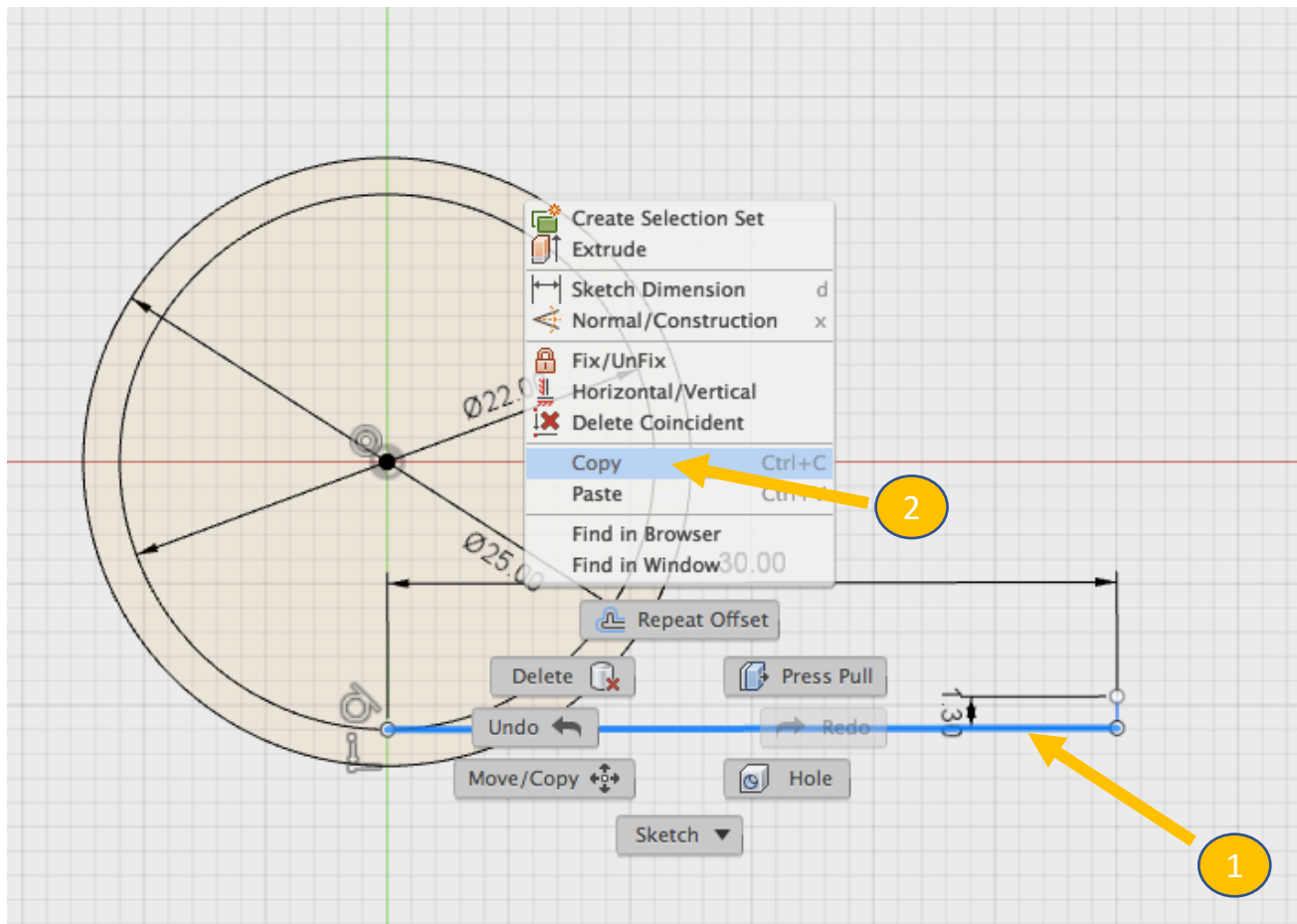# Step 11: Check your result, you should get a tangent symbol at this point

Note: Step 8-11 are to ensure that the horizontal line always stay on the tangent of the inner circle.
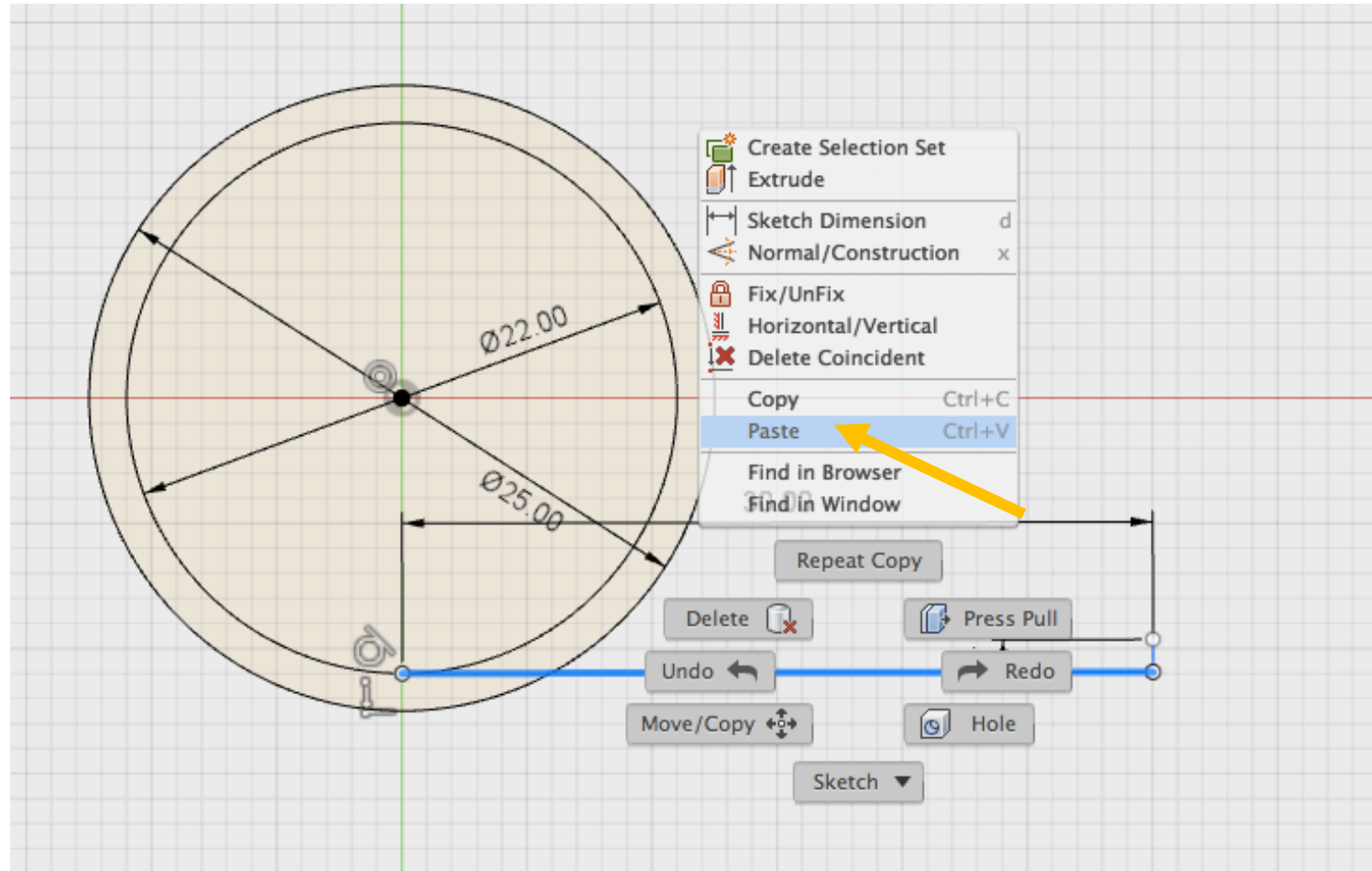
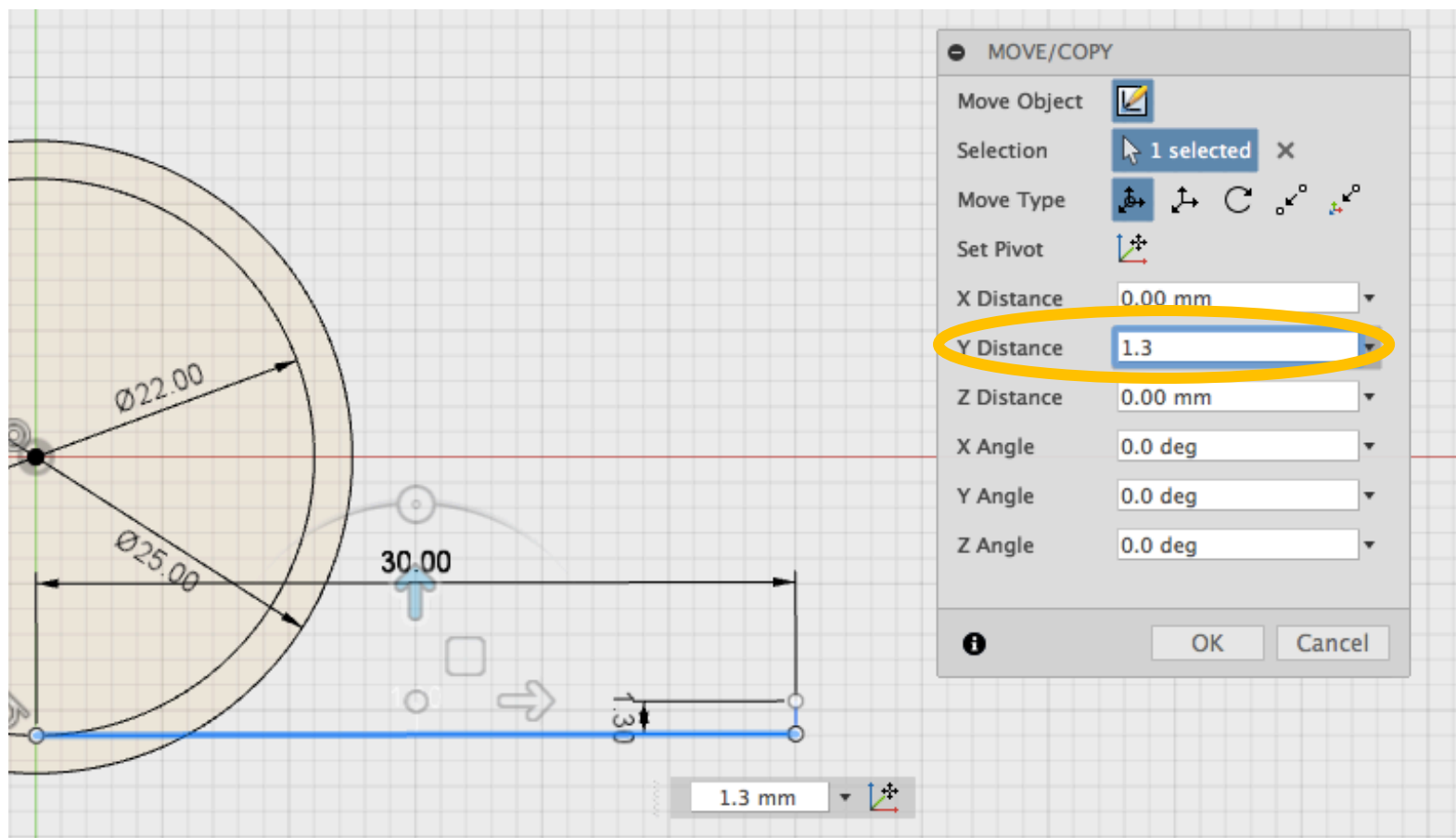# Step 12: Draw a 1.3mm vertical line at the end of the horizontal line.
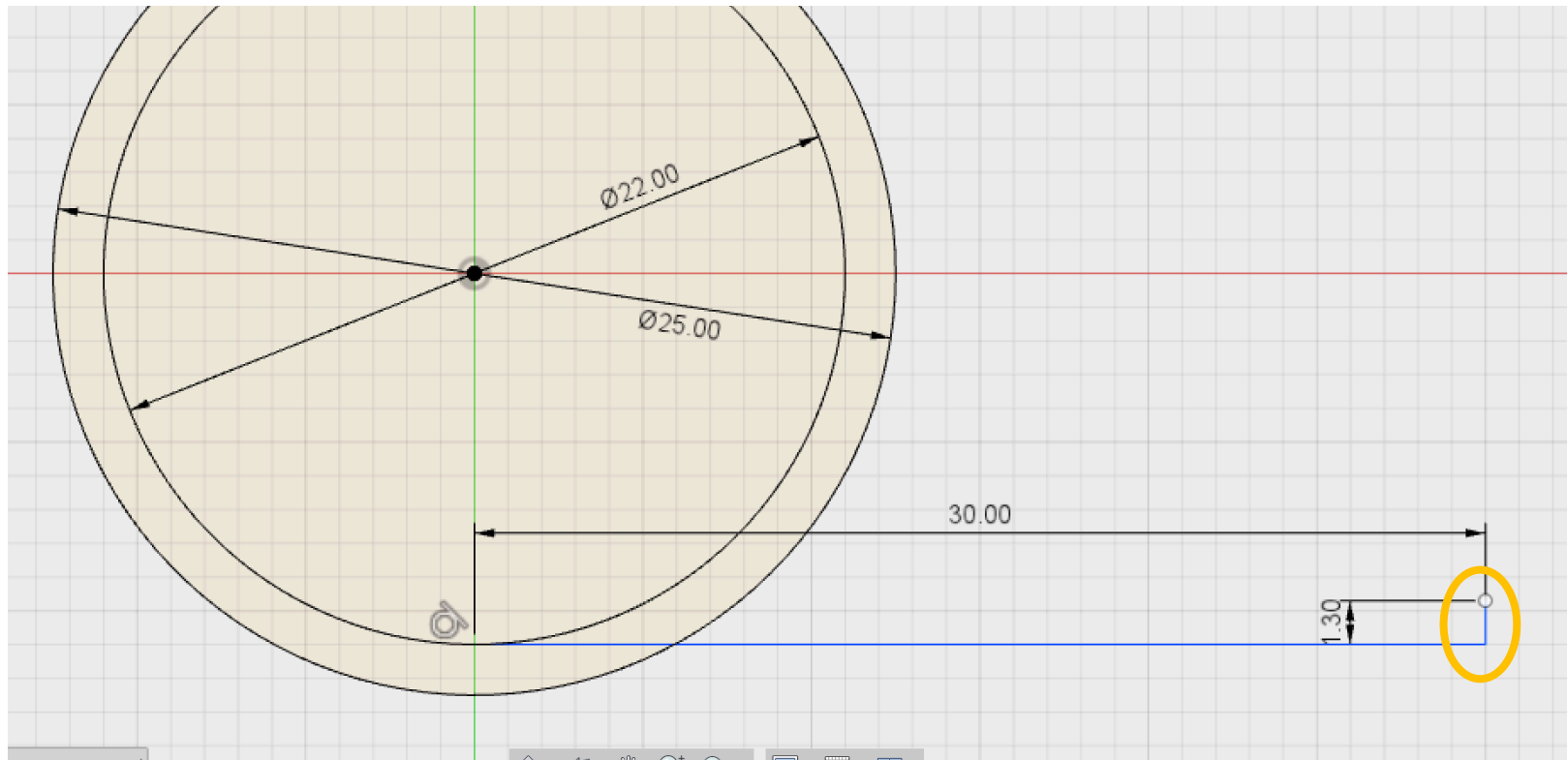
Step 13: Click on the 30mm line, right-click, then click "Copy".
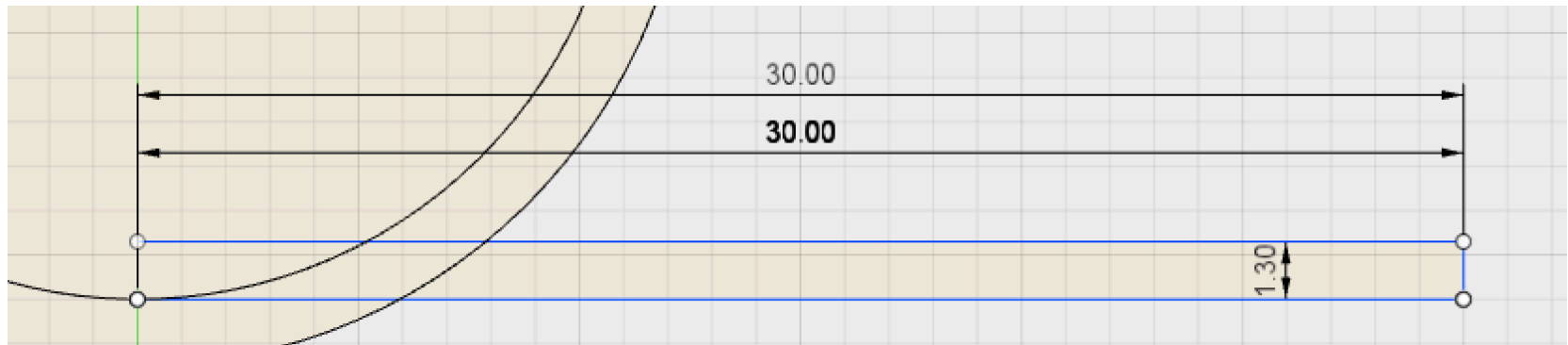
Step 14: Right-click again, click "Paste".

Step 15: Key in "1.3mm" into the "Y Distance" then click "OK".
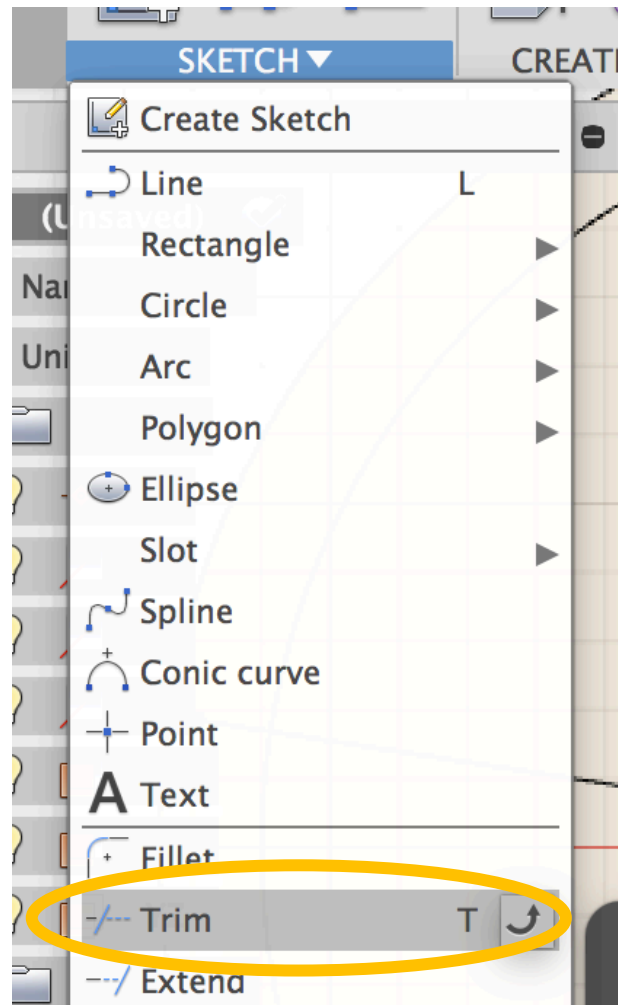
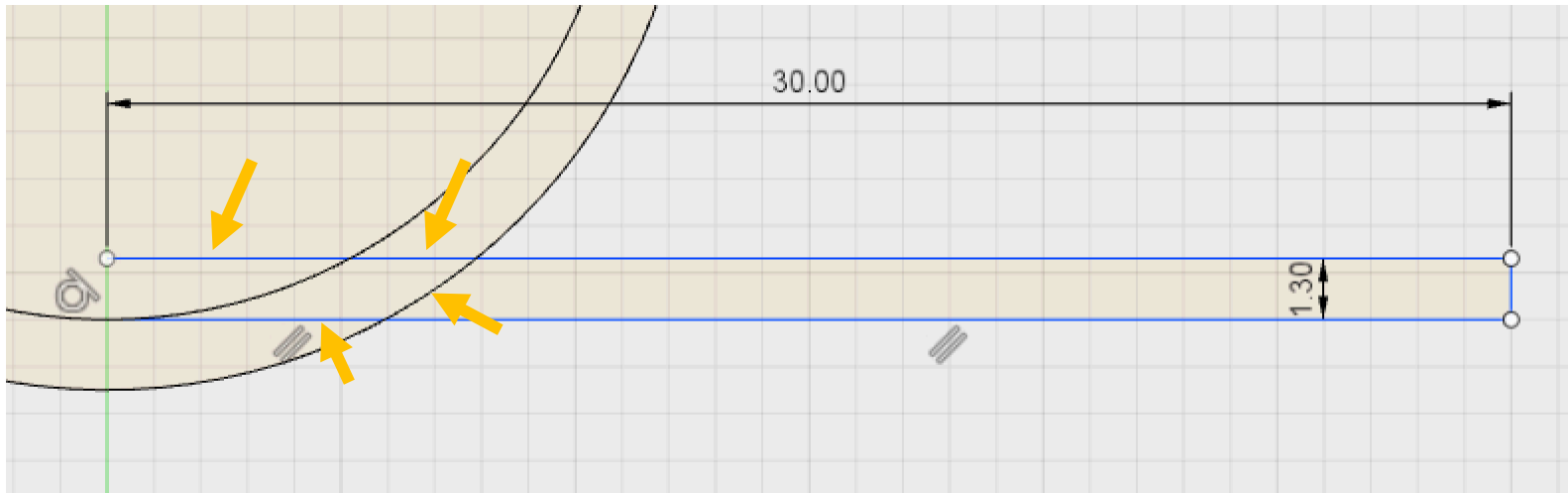# Step 16: Check your result, it should look like this:

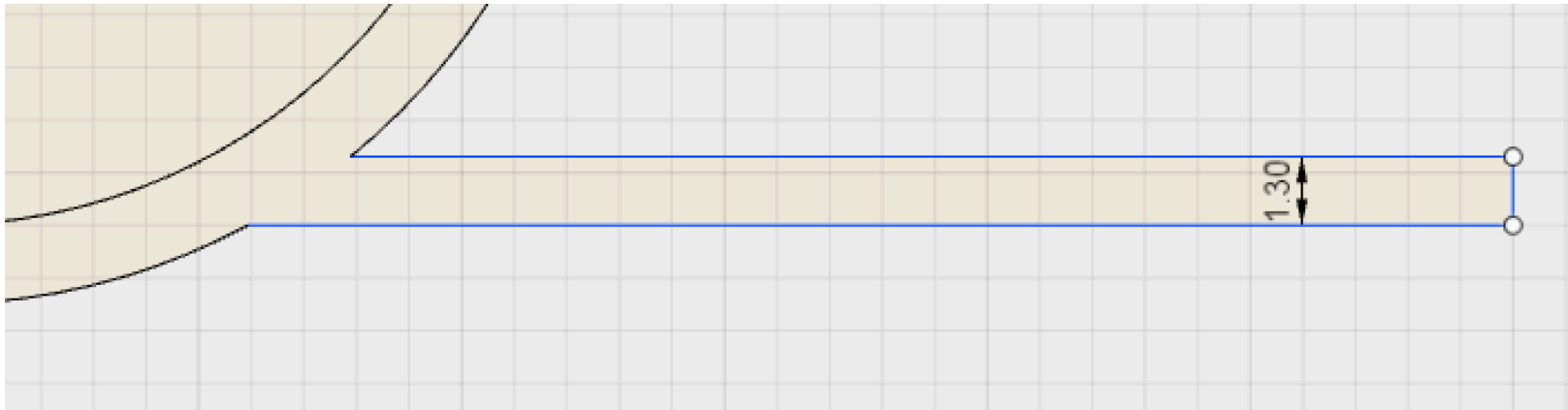Note: Alternatively, you can draw a 30mm line with the method you learnt before
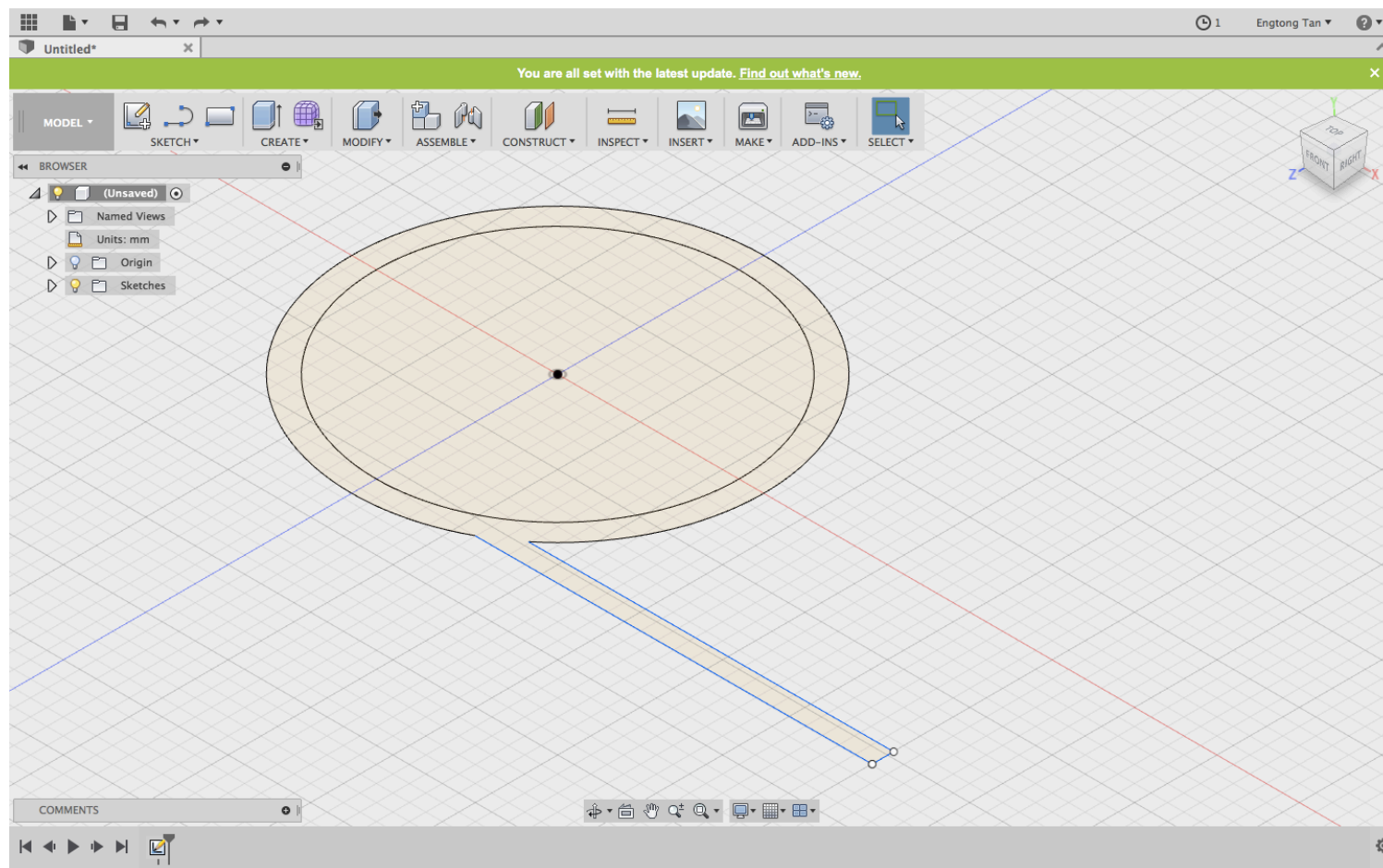
Step 17: Go to "Sketch" > "Trim".

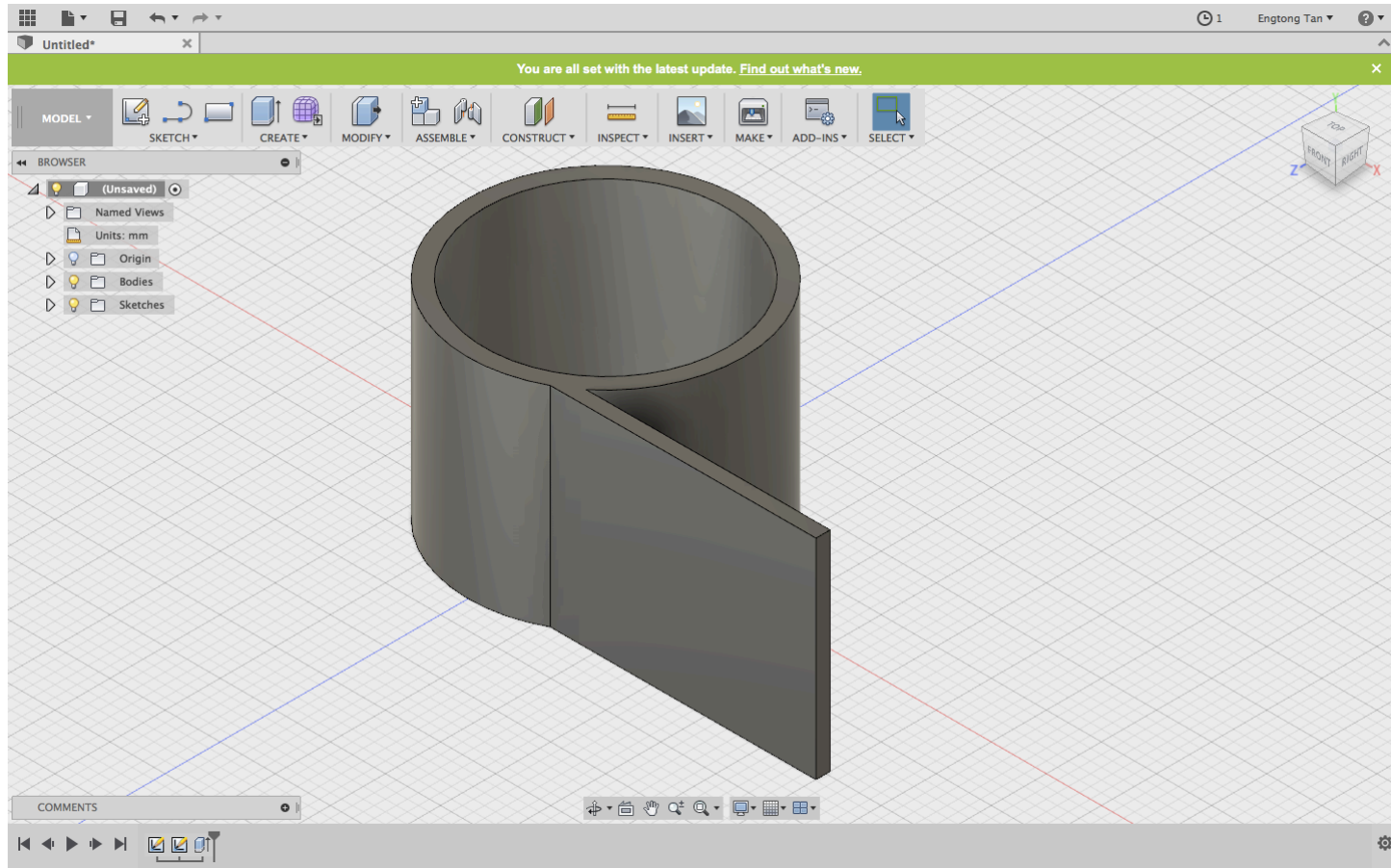# Step 18: Click on each section as shown by the arrow.

Step 19: Check your result, it should be like this:
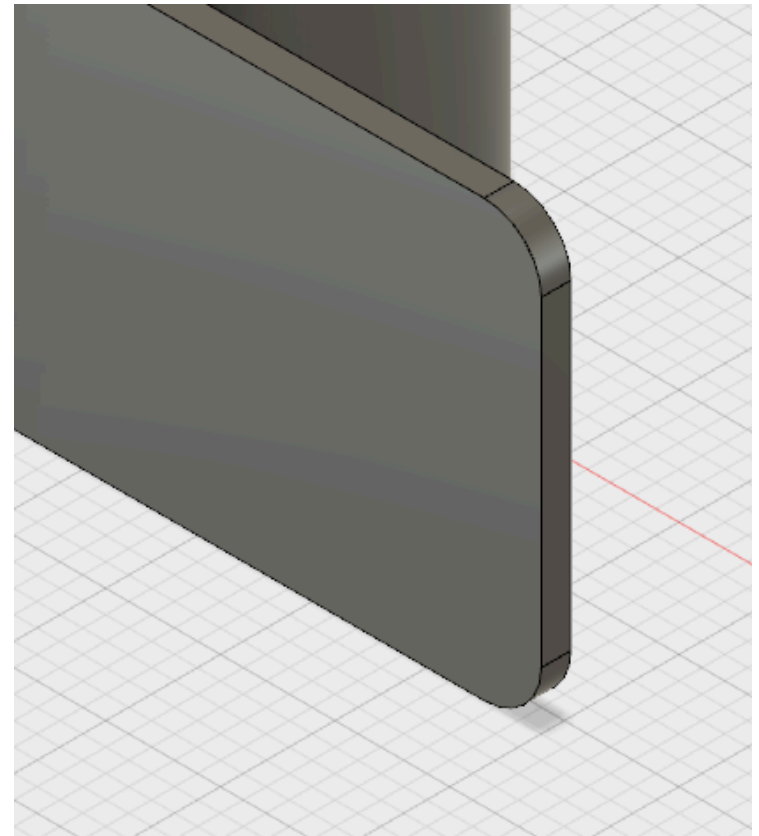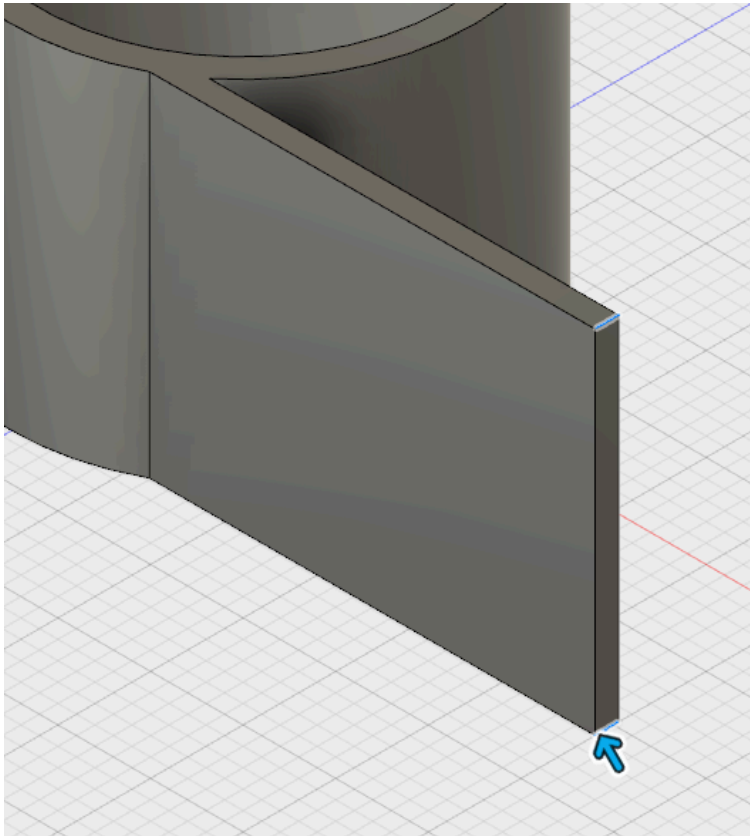
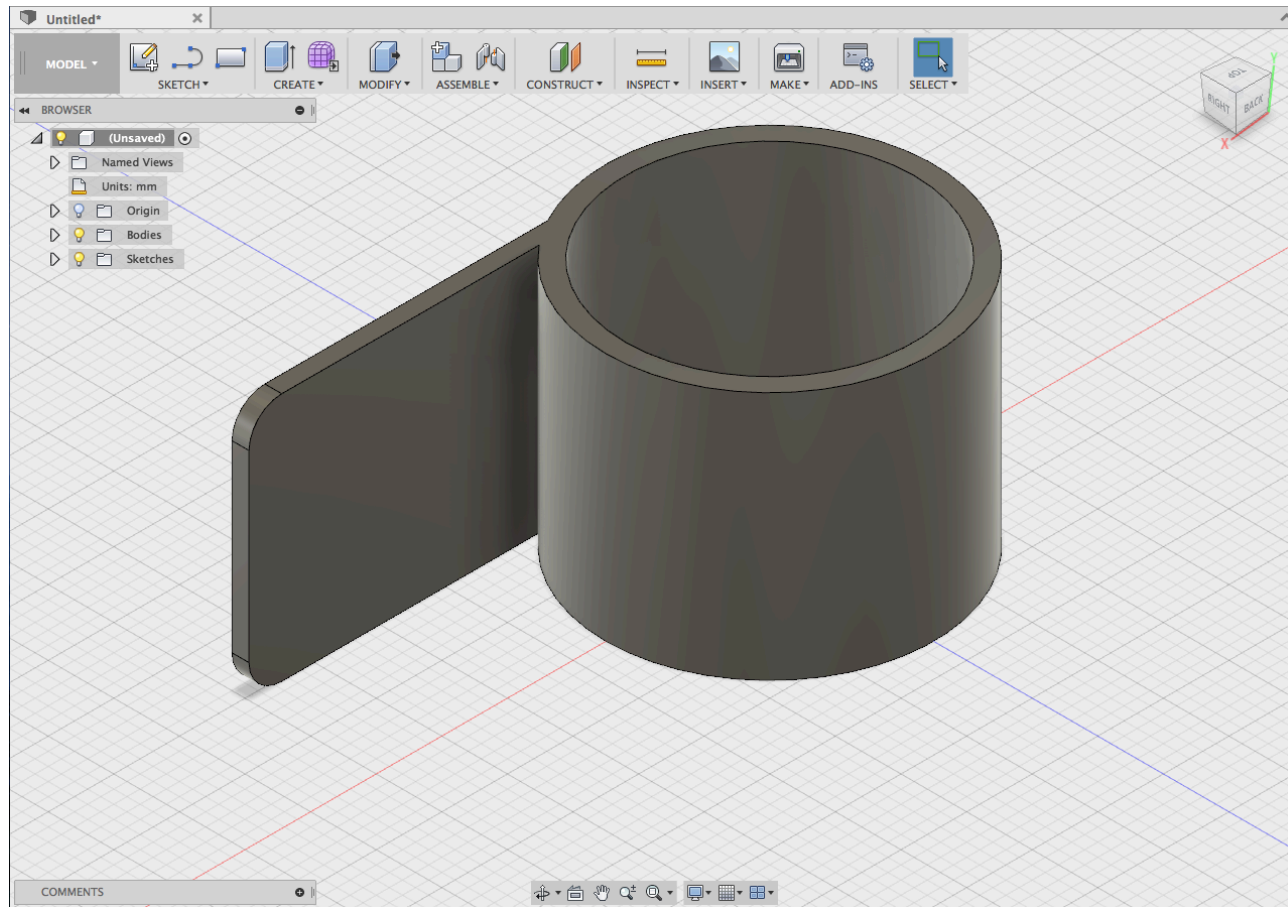# Step 20: Click "Stop Sketch" then change to the isometric view like this:

Step 21: Extrude your sketch by 19mm.

Step 22: Go to "Modify" > "Fillet" to make the sharp edges into rounded edges by 2.5mm radius.
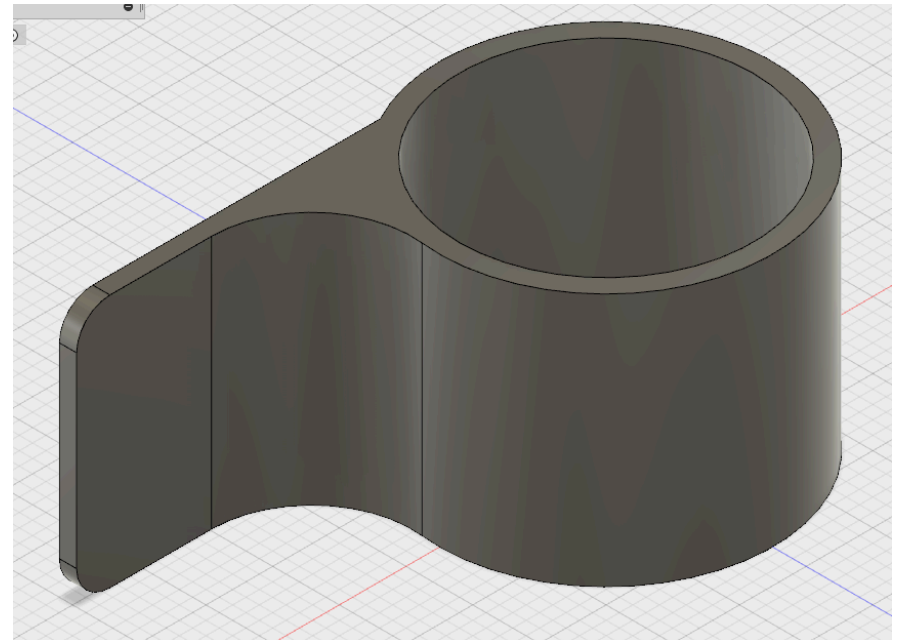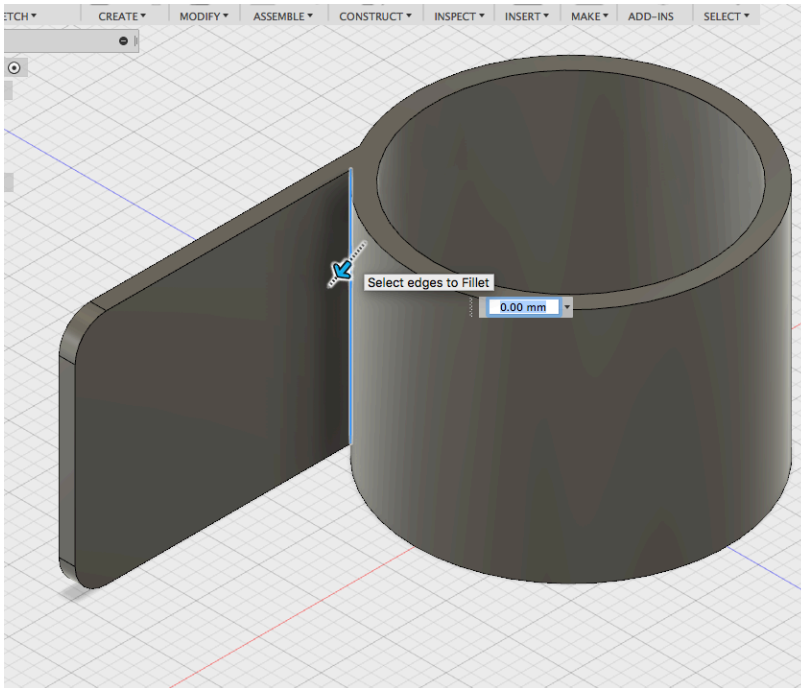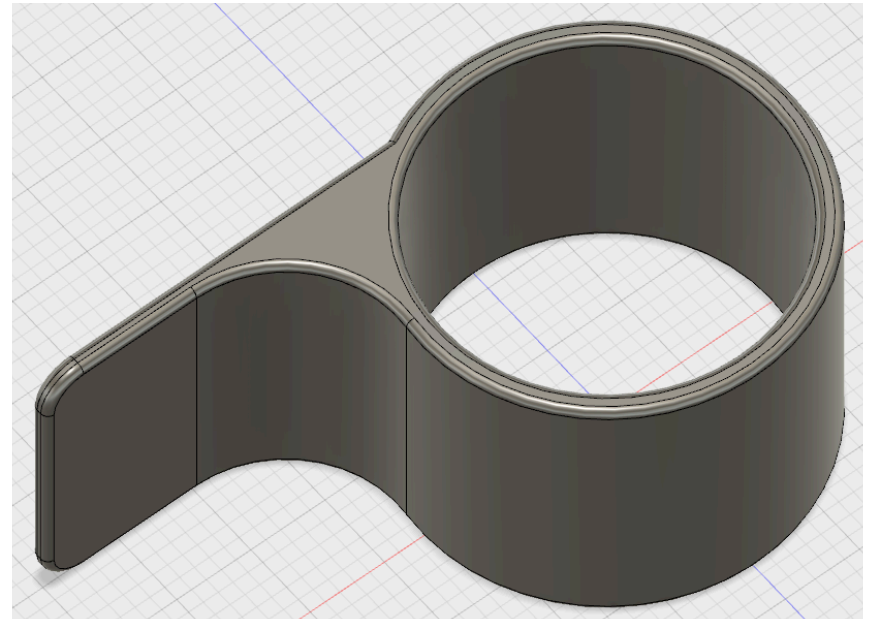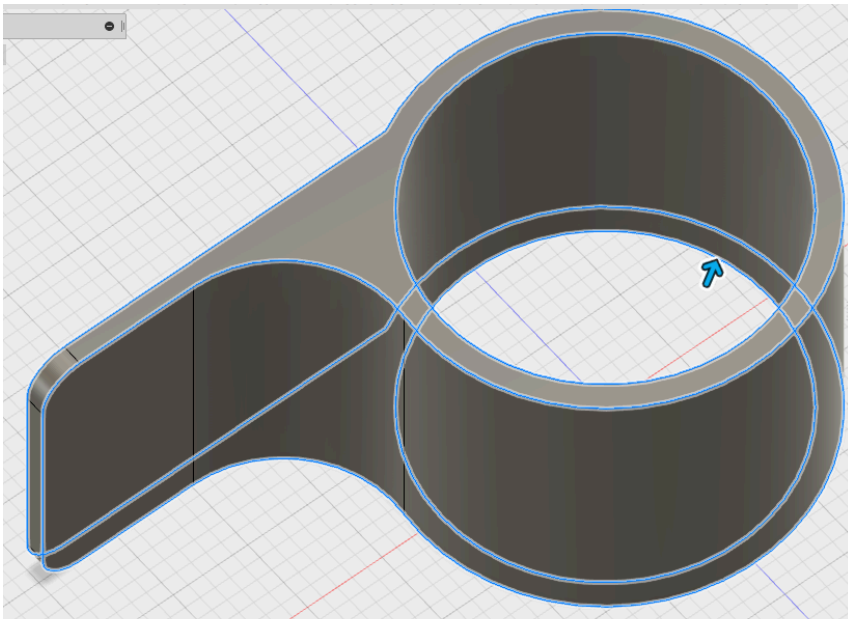
Step 23: Change your view into this view.

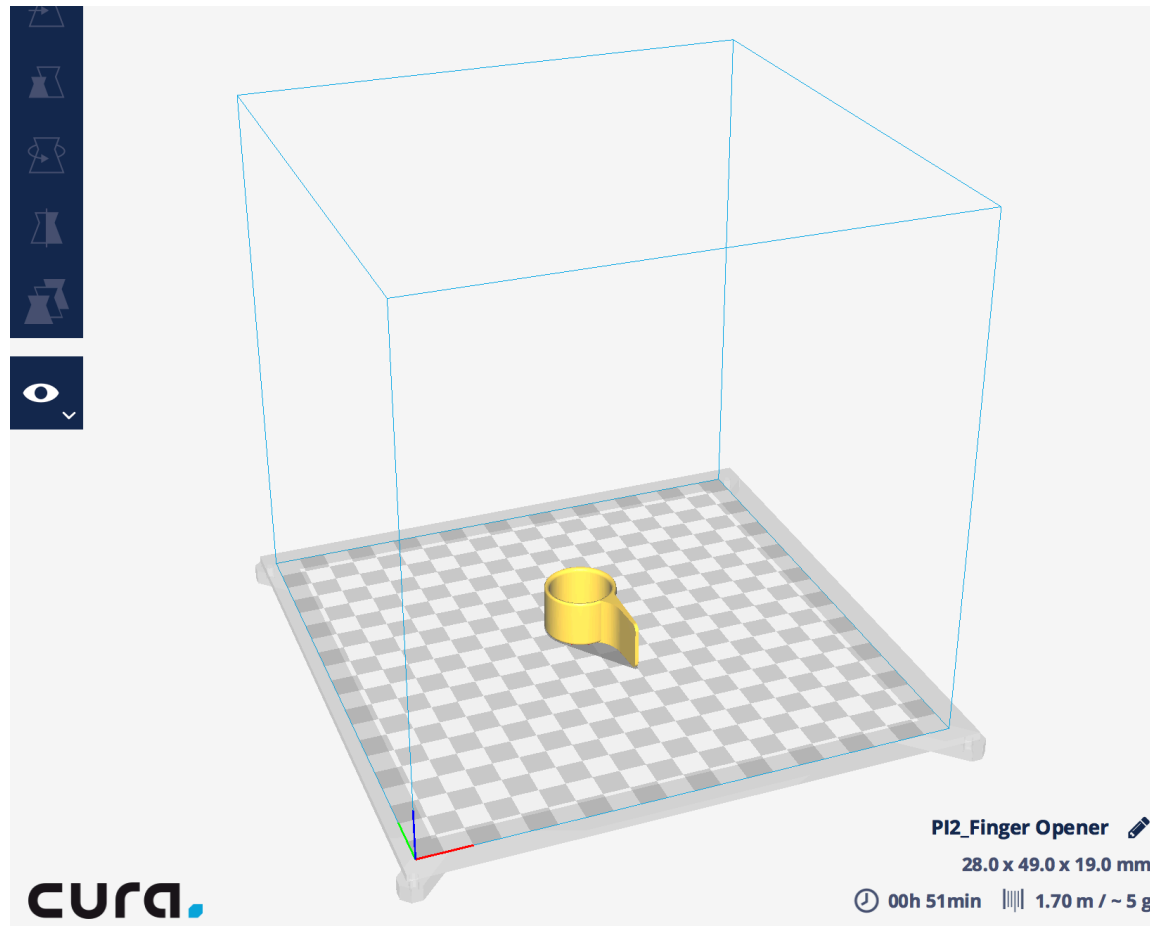# Step 24: Use "Fillet" again, select the inner edge, use 7.5mm radius.

Step 25: Next, use "Fillet" again to make all edges rounded by 0.5mm radius.

Note: You might need change the view in order to select all edges

Step 26: As usual, save it as STL file then send it to Cura to generate the printable file.

PI2_Finger Opener
28.0 x 49.0 x 19.0 mm
00h 51min   1.70 m / ~ 5 g

cura.

Step 26: Follow these setting
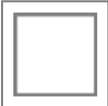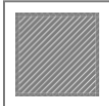
Challenge: Write your name on the ring opener