

Using Cad

How to use Fusion 360 to design foam planes



Whit's Rc Planes

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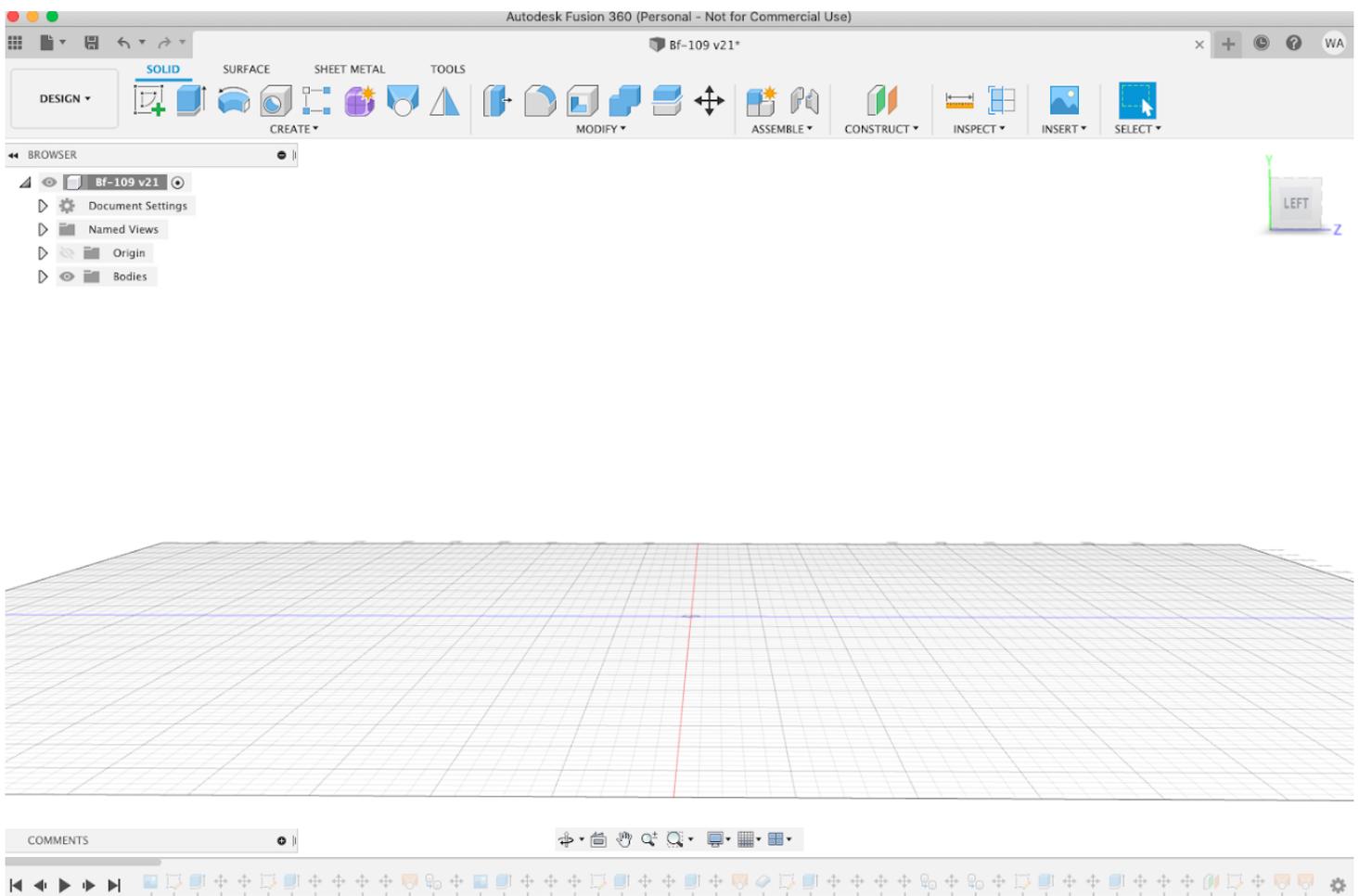
Before taking on this tutorial, I'd recommend being at least a little knowledgeable in Fusion 360.

Just search for tutorials on youtube, and completing 5 or so will get you started.

Once you've downloaded and installed both programs, it's time to start.

First, open up Fusion 360.

It will look like this:



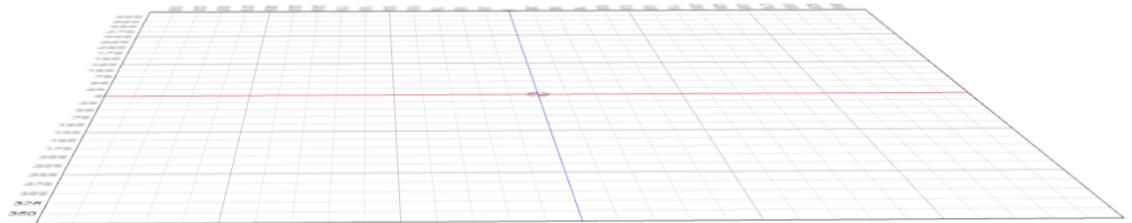
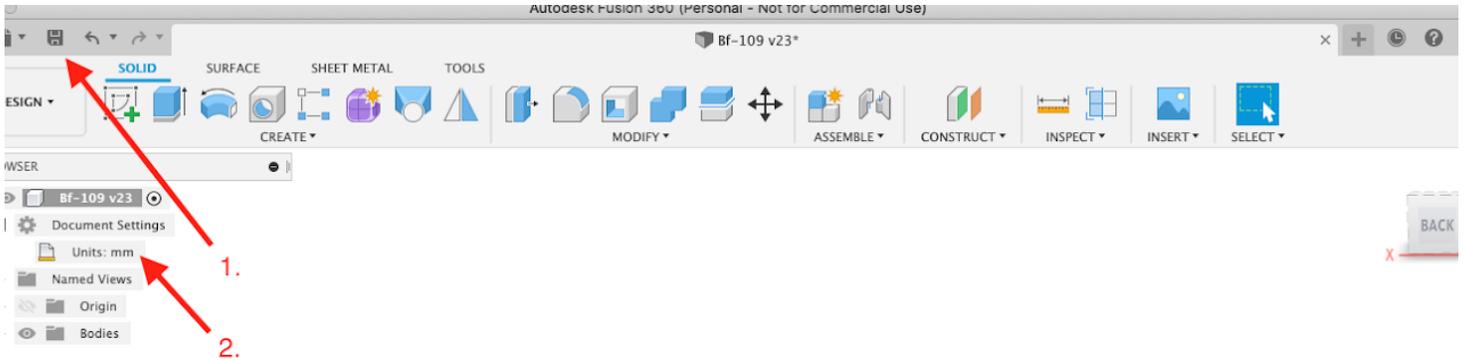
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you can save by clicking the hard drive symbol in the corner

2. change the default units

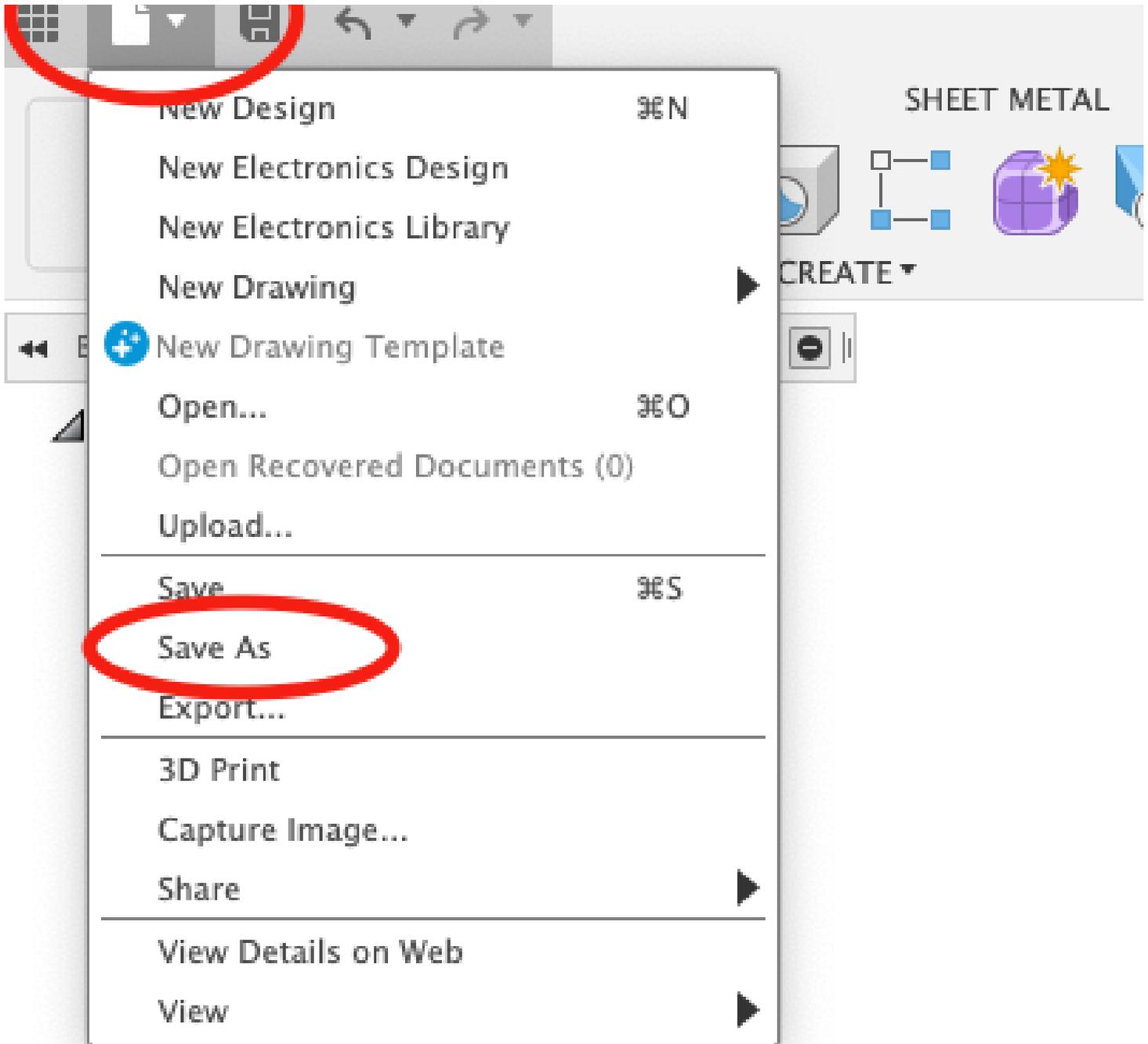
you can change the units by expanding "document properties" in the object browser and changing the object labeled units. (double click on it to change the value) (you'll want to set them in millimeters)



Ignore the timeline at the bottom and the name of the project at the top.

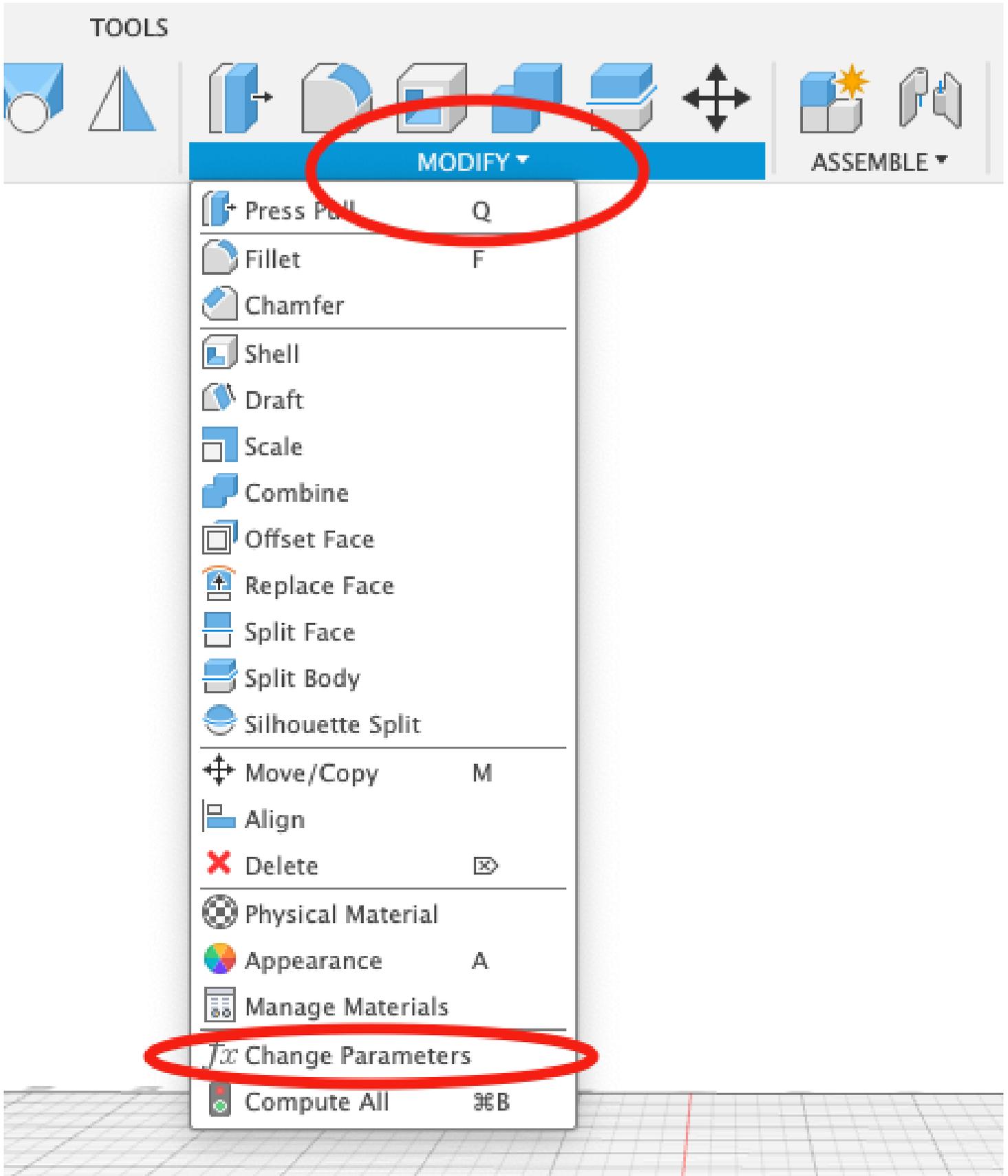
To name your project, go to file -> save as, and when it prompts, type the name of the project. In fusion 360, your edits get captured in the timeline, and you can go back in time and add edits, rearrange the order of things you did, and change the values you put into things (ie, go back in time and make an extrude have a value of 3 instead of 4)





The next step is to create a parameter called *foam*. In Fusion 360, parameters are variables that you use so that you don't have to type the same numbers over and over again. Another reason to use parameters is that whenever you want, you can change them, say, make foam 6mm instead of 5mm, and the design will automatically make all extrusions, thicken or anything that used foam correct to 6mm.





Parameter	Name	Unit	Expression	Value	Comments
Favorites					
User Parameters					
☆ User Parameter	foam	mm		5.00	
Model Parameters					
▶ Bf-109 v21					

Add User Parameter

Name:

Unit:

Expression:

Value: 5.00

Comment:

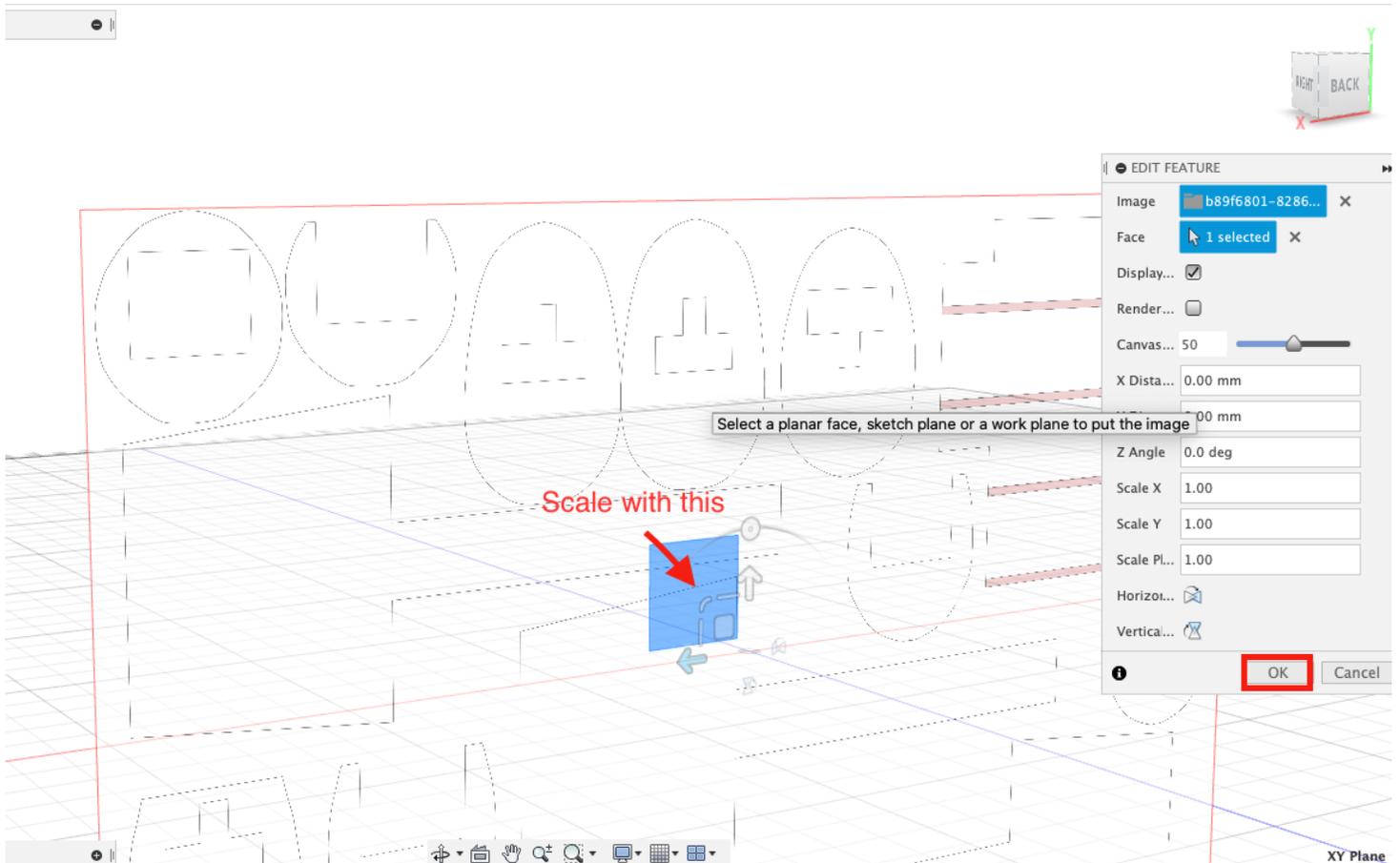
Next, you can import your plans. On the toolbar, click the "canvas" icon. It will then prompt you to choose an image. Select "choose an image from my computer"

Insert

PROJECT	NAME	LAST UPDATED
Admin Project		
Default Project		

After that, select a plane and scale it big enough to see properly. Then click ok on the right.

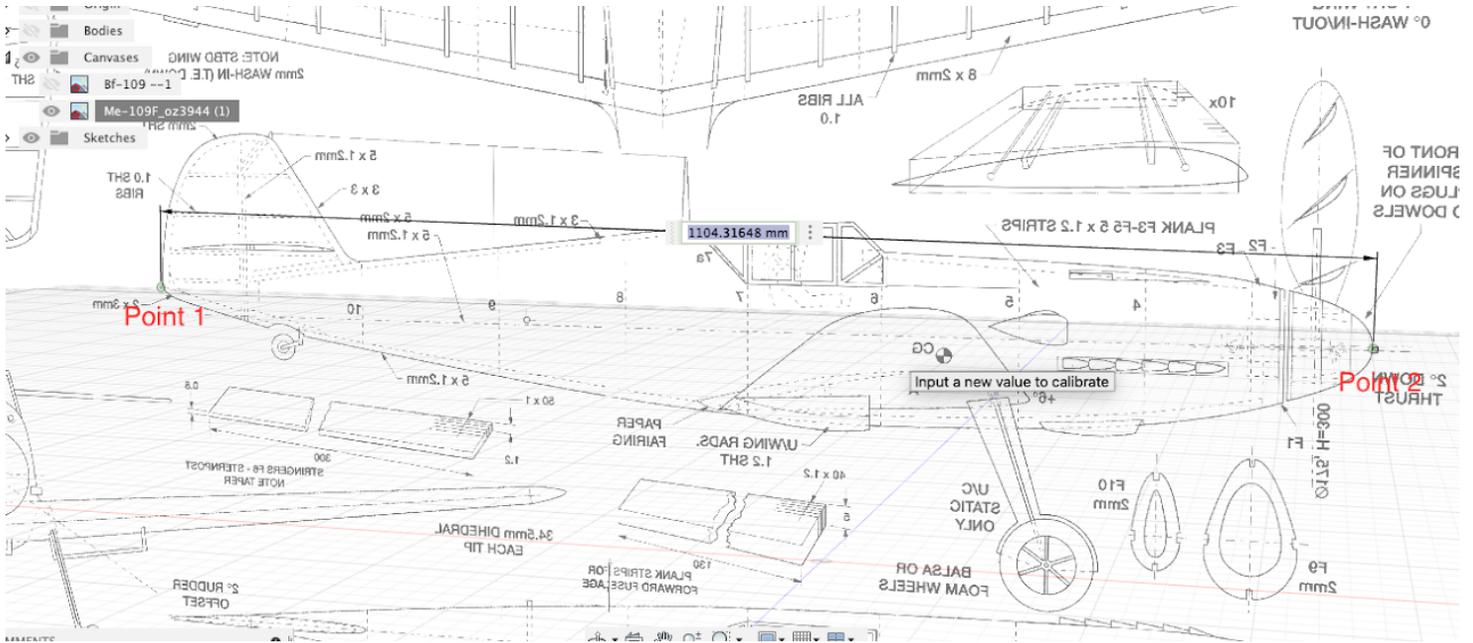




I'm using plans I drew up in inkscape, but you'd probably be using balsa plans you found.

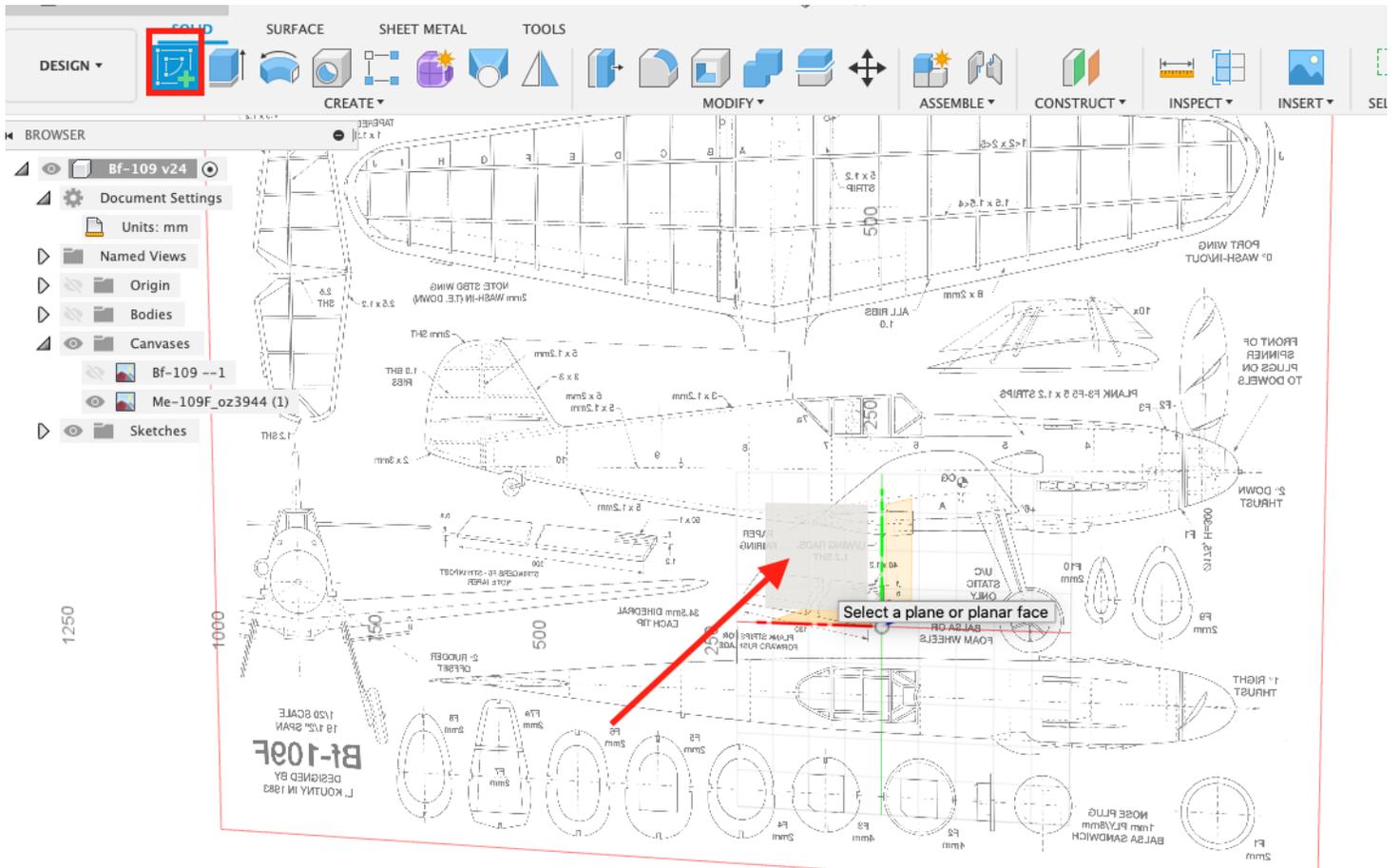
The next step is to calibrate the image. In the object browser, open the canvases tab and right click on the canvas you created. Select 'calibrate' from the drop-down menu. Then click one point at the nose of the plane, and the next at the tail. Next, enter how many millimeters you want your plane to be. You can also measure the wing on the plans if you have a specific wingspan in mind.





Once all of this is done, it's time to get modelling!

To create your first former, you have to create a fusion 360 "sketch" of the shape. First, click the "create sketch" button in the top left corner. Then select the same plane as your plans.



Try to only sketch one half of the former, but it's ok if it isn't perfect. Fusion 360 makes it really easy to fix things like this.

When you get near the bottom, a blue dashed line will appear, your cursor will snap to any point directly below the top point of your spline. It's really helpful to line things up with this tool.

Once you're done sketching, click the check mark that will appear, or right click and select "ok" in the pie menu that will appear.



Or:

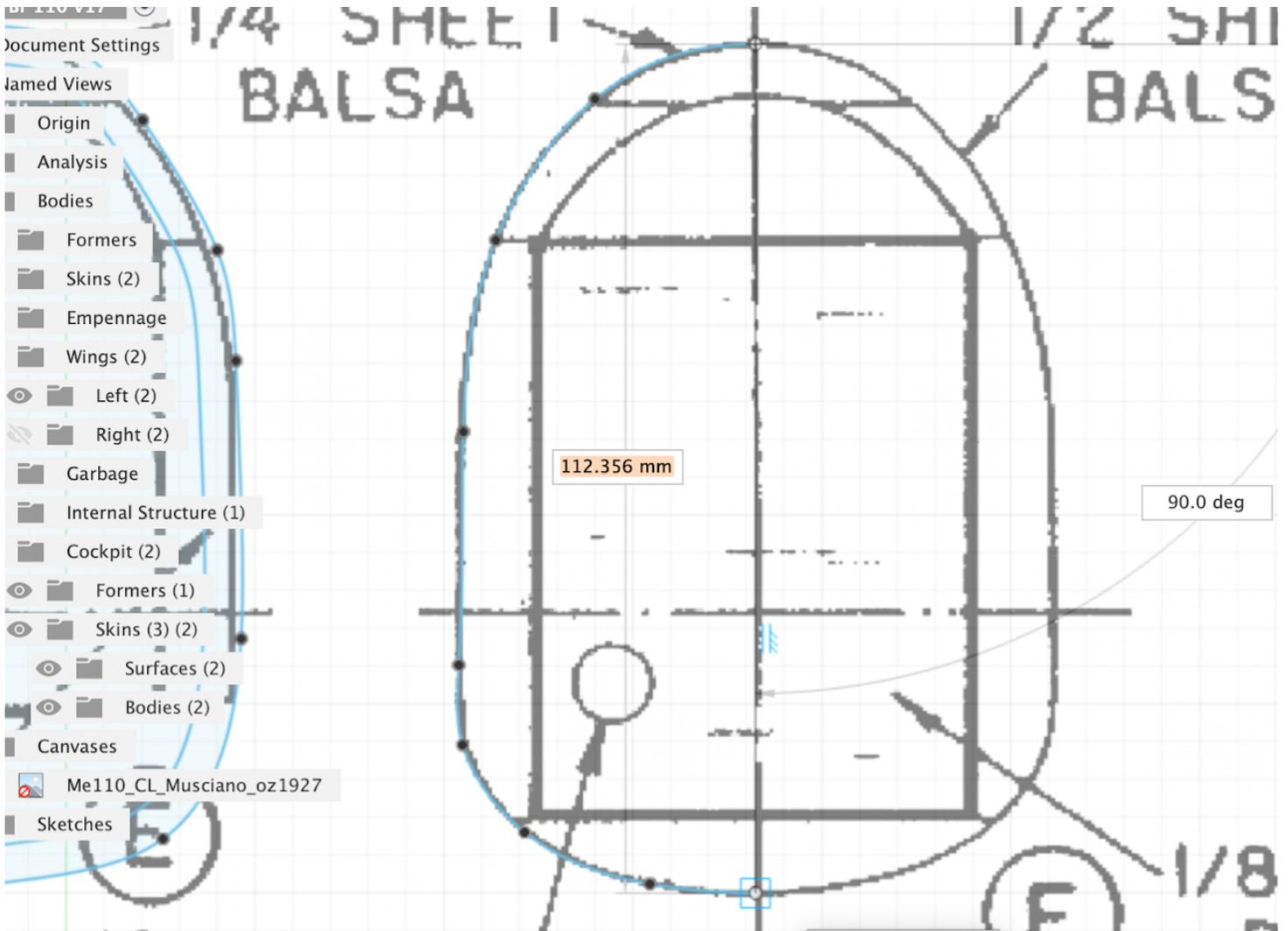


Once that's done, you can adjust the positions of the points and their effect on the line with the handles. Play around with it and see how close you can make it to the real former. Next, it's time to mirror the line.

Click the polyline tool and add your first point exactly at the top, where the line for your former starts. It will snap into place. Bring your cursor down to about the bottom of the former, it's not critical, and make it so the line is roughly vertical. it should snap into place.

When the line has both points on it, you can finish like you did in the last step. Click the green check mark or click ok.





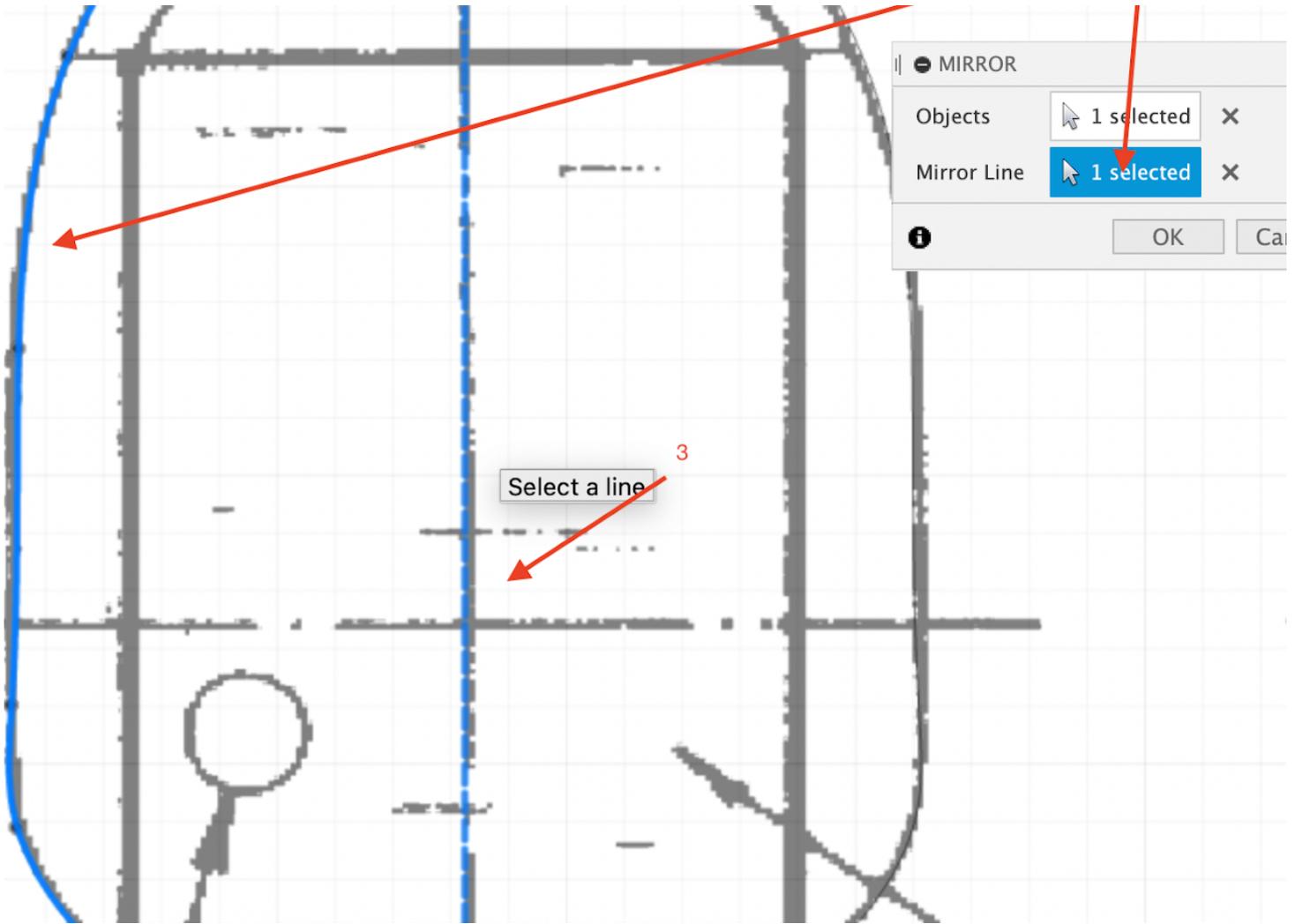
Please ignore the fact that I've moved to a different plan. This one will let me demonstrate more features.

The process is the same regardless of which plan you use.

Select your vertical line, and click "x" to make it a construction line. It will have no effect on the drawing, besides being an axis to mirror on. It will become dashed.

The next step is to mirror the former, so click the mirror tool on the top, and select your spline, then click on the "mirror line" box, and select the vertical construction line.

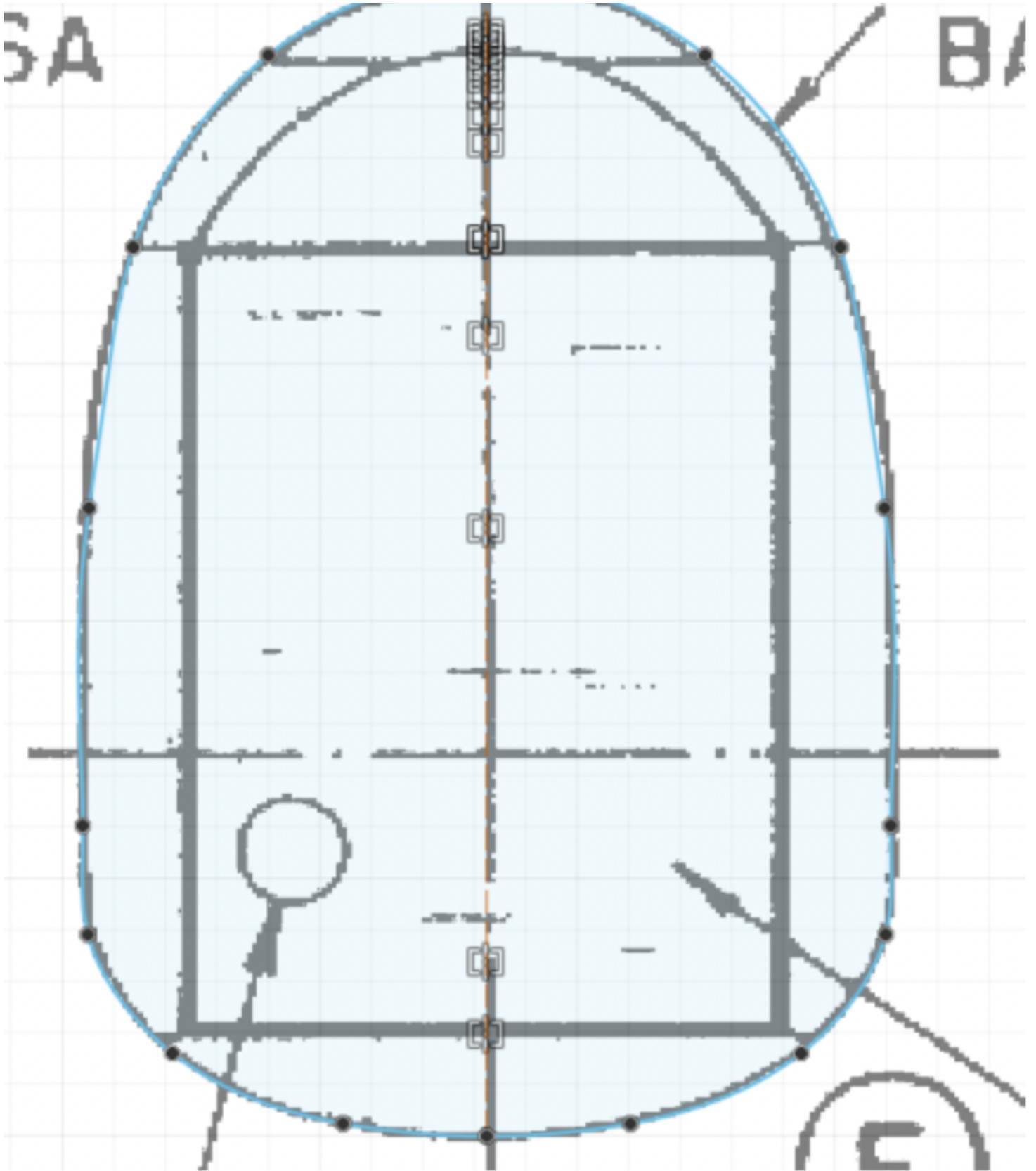




Click "OK" to confirm the mirror.

What's cool about the mirror tool is that after you mirror the spline, you can adjust one side, and it will automatically adjust the other one.

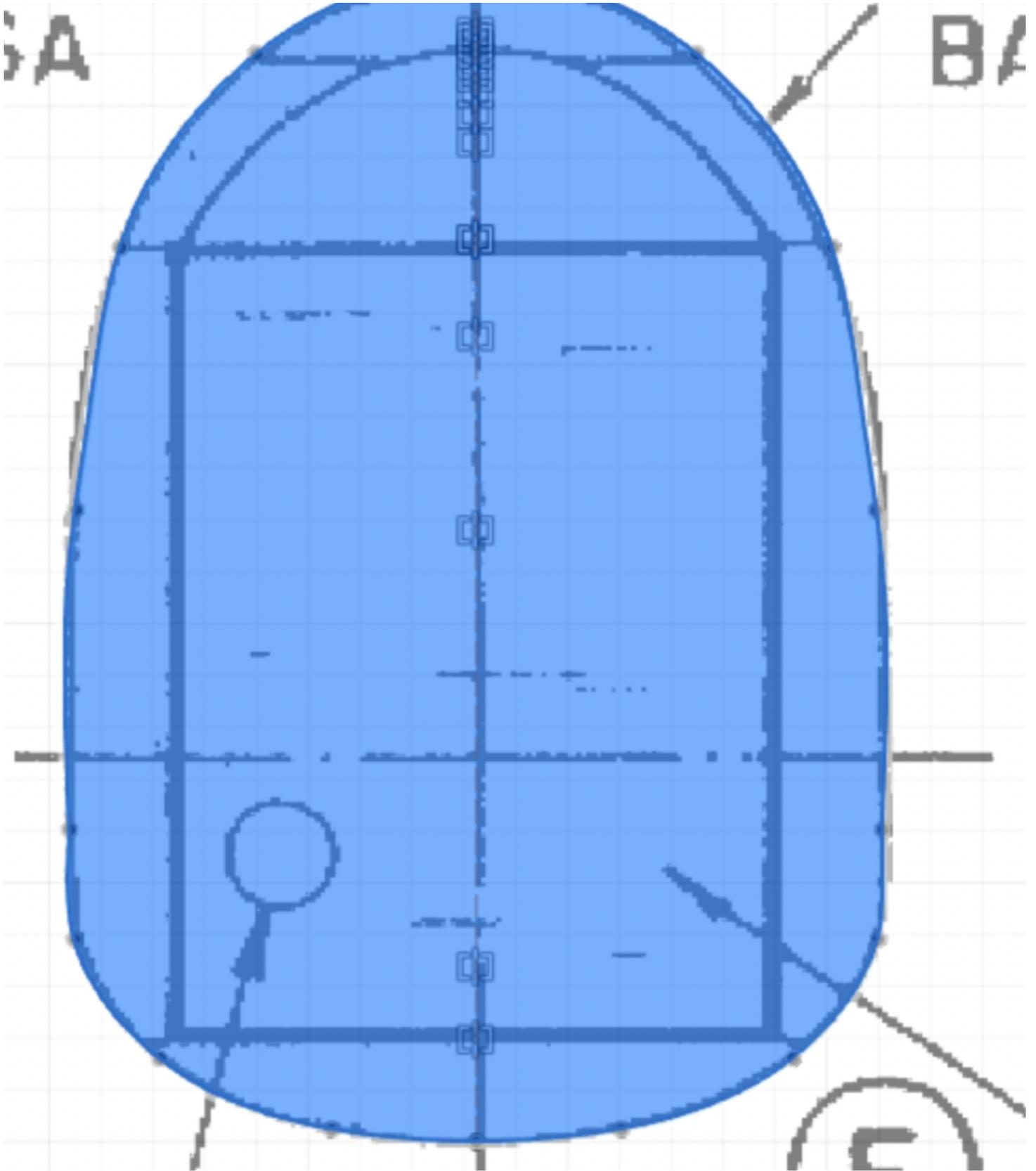




If you click inside the field, then it should turn blue.

If not, adjust the top & bottom of the spline until they line up and the face is closed.

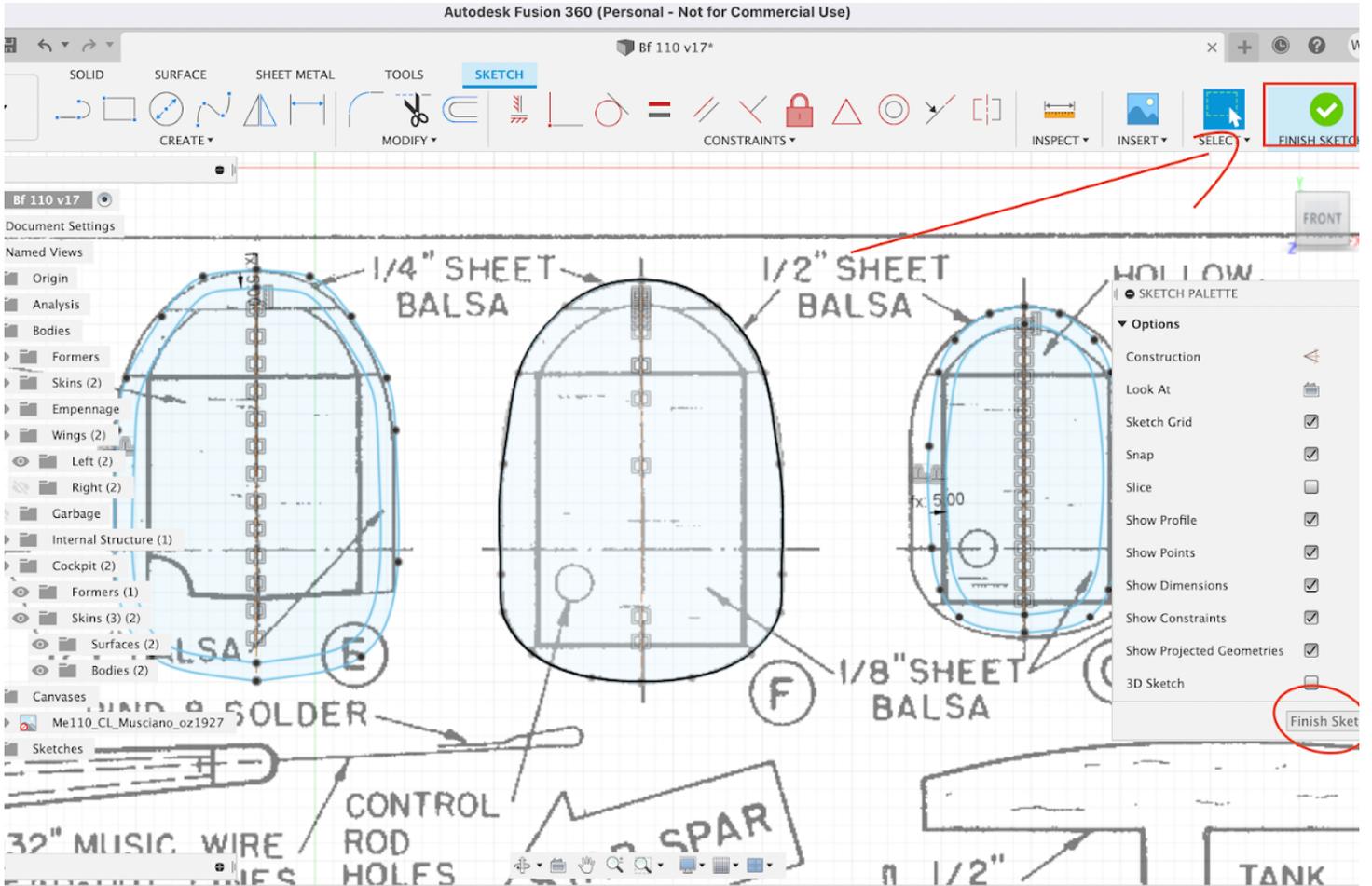




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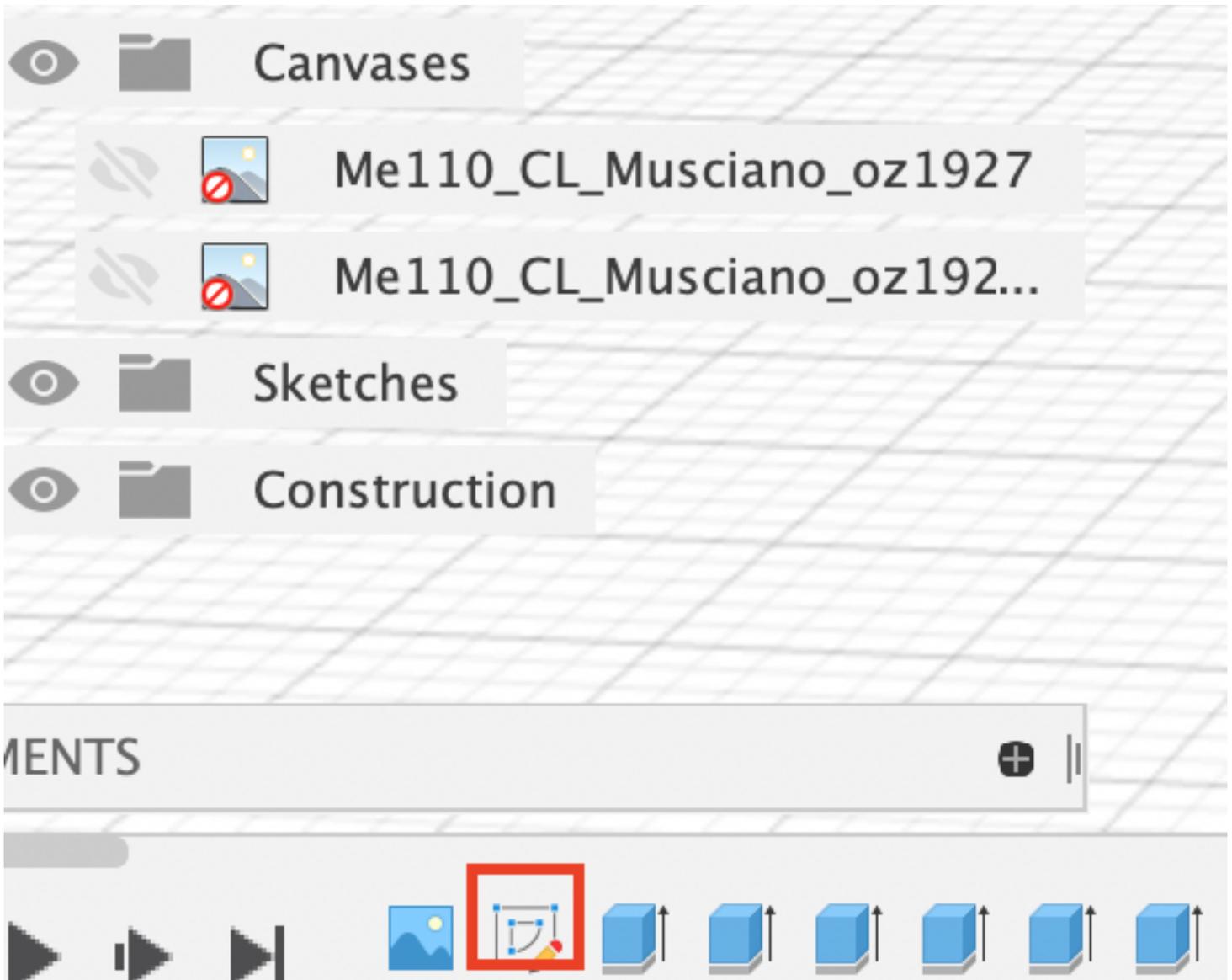
CLICK FINISH SKETCH IN THE TOOLBAR TO FINISH THE SKETCH.

If you ever want to come back and change something later, just double click on the sketch feature in the timeline. You can then edit the sketch like normal.



Finishing the sketch





Editing it later.

With the face selected, press "q" to extrude the face. Then type "foam" into the box. It should autocomplete when you type "f". Hit "enter" and then select "New Body" from the drop down menu at the bottom.



5.00

foam

EDIT FEATURE

Profile 2 select

Start Profile P

Direction One Side

Extent Distance

Distance foam

Taper Angle 0.0 deg

Operation New Bo

Specify distance, or select coplanar profiles/faces to modify the selection

OK

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