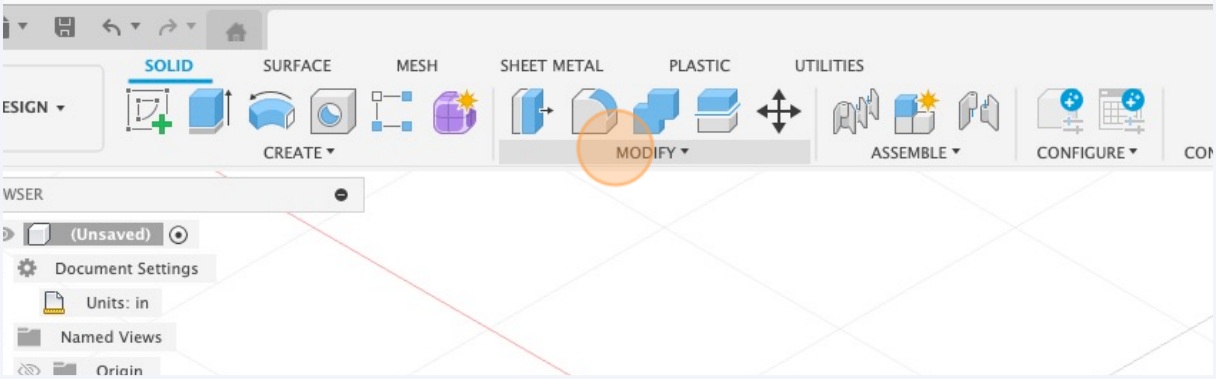
Creating a fully-parametric mortising template in Fusion 360

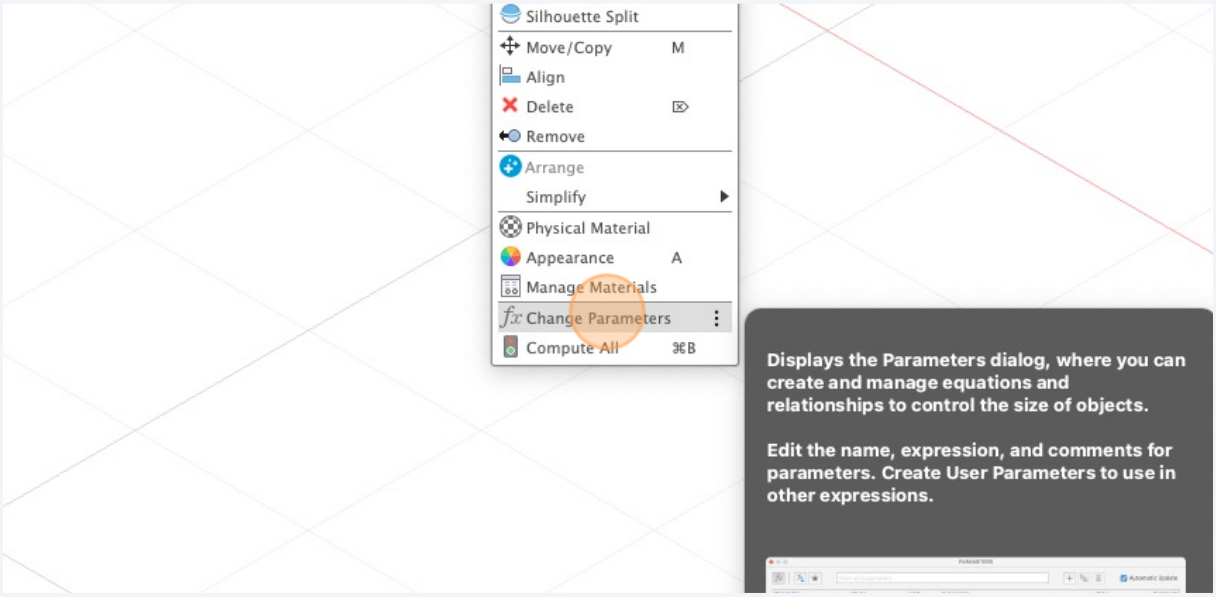
Setting the parameters for the project

If I have known measurements, I prefer to make them into parameters before beginning the modeling. It keeps you from having to go into and out of the Change Parameters menu and allows for a more efficient workflow.

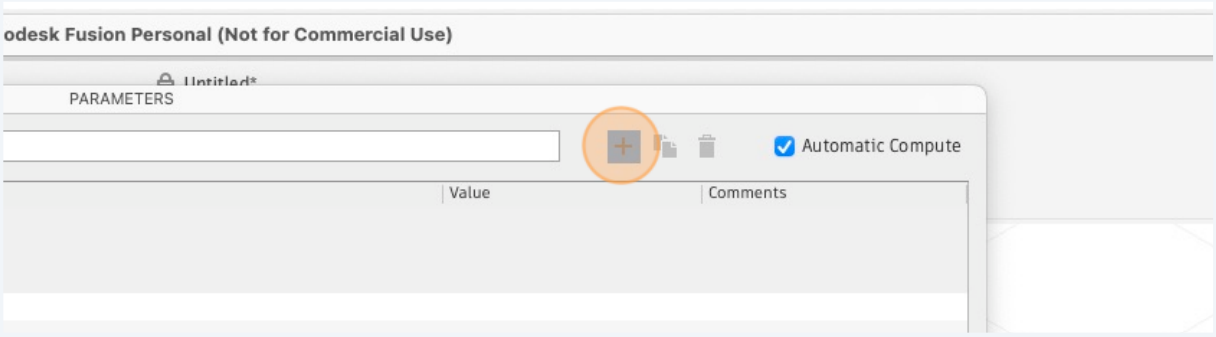
1 Click "Modify"



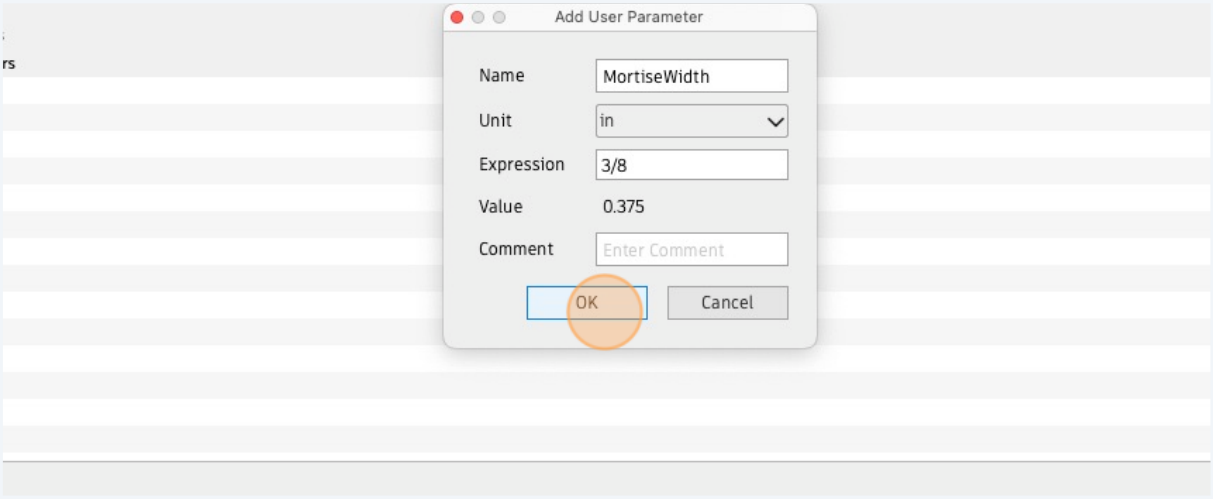
2 Click "Change Parameters".



3 Click the "Add User Parameter" button.



4 Fill in the name (no spaces!) and expression and click 'ok'.



5 Repeat for the rest of the parameters

The parameters used in the example are as follows:

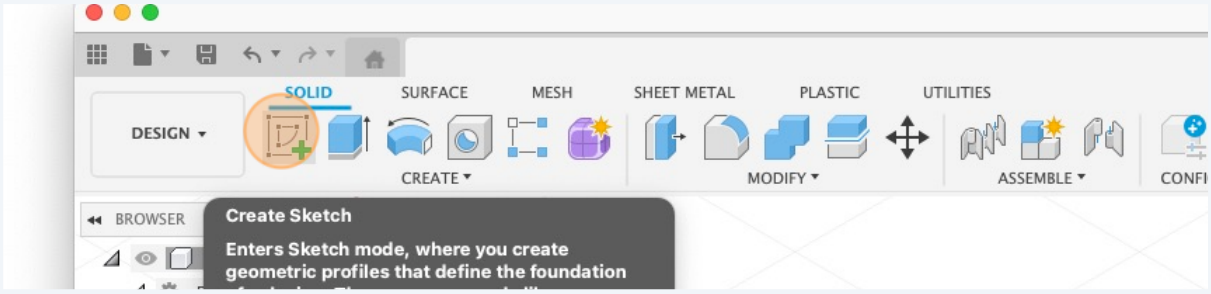
- MortiseWidth - 3/8
- MortiseLength - 2
- Bit - 1/4
- Bushing - 3/4
- Meat - 2
- SideOffset - 3/16
- EndOffset - 1
- BitOffset - (Bushing - Bit) / 2

6 Finished parameters

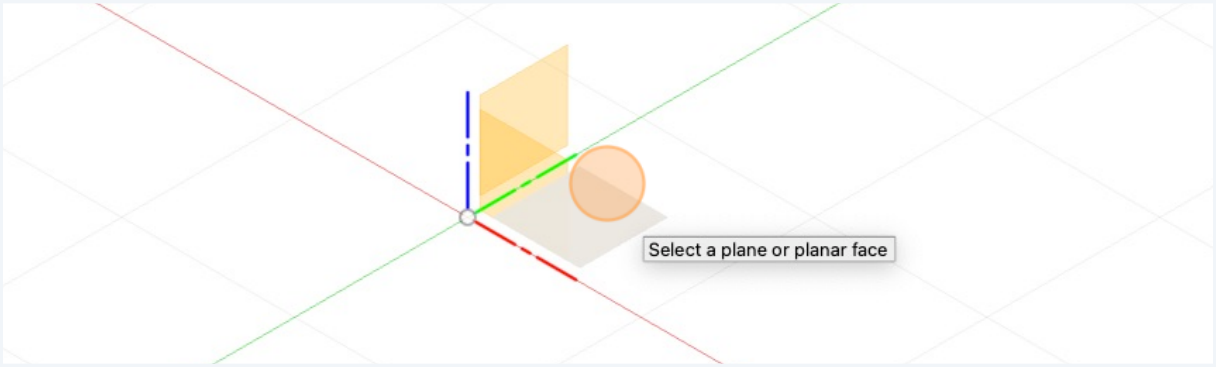
Favorites					
User Parameters					
User Parameter		MortiseWidth	in	(3 / 8) * 1 in	0.375
User Parameter		MortiseLength	in	2 in	2.00
User Parameter		Bushing	in	(3 / 4) * 1 in	0.75
User Parameter		Bit	in	(1 / 4) * 1 in	0.25
User Parameter		Meat	in	2 in	2.00
User Parameter		SideOffset	in	(3 / 16) * 1 in	0.188
User Parameter		EndOffset	in	1 in	1.00
User Parameter	✖	BitOffset	in	(Bushing - Bit) / 2	0.25

Create the sketch

7 Create a new sketch.



8 Select a plane to draw the sketch on.

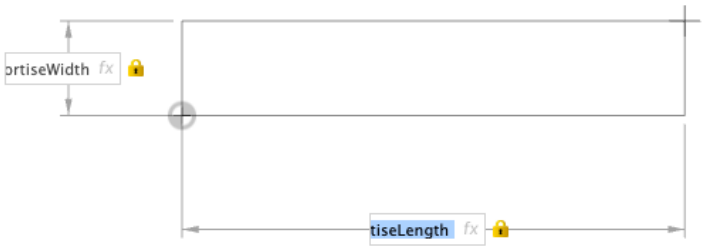


Add the base of the template

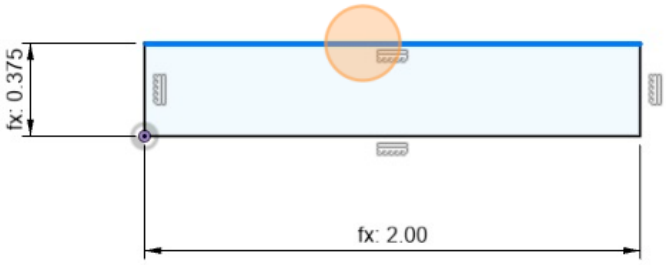
Add the mortise

9 Type "r" to select the rectangle tool.

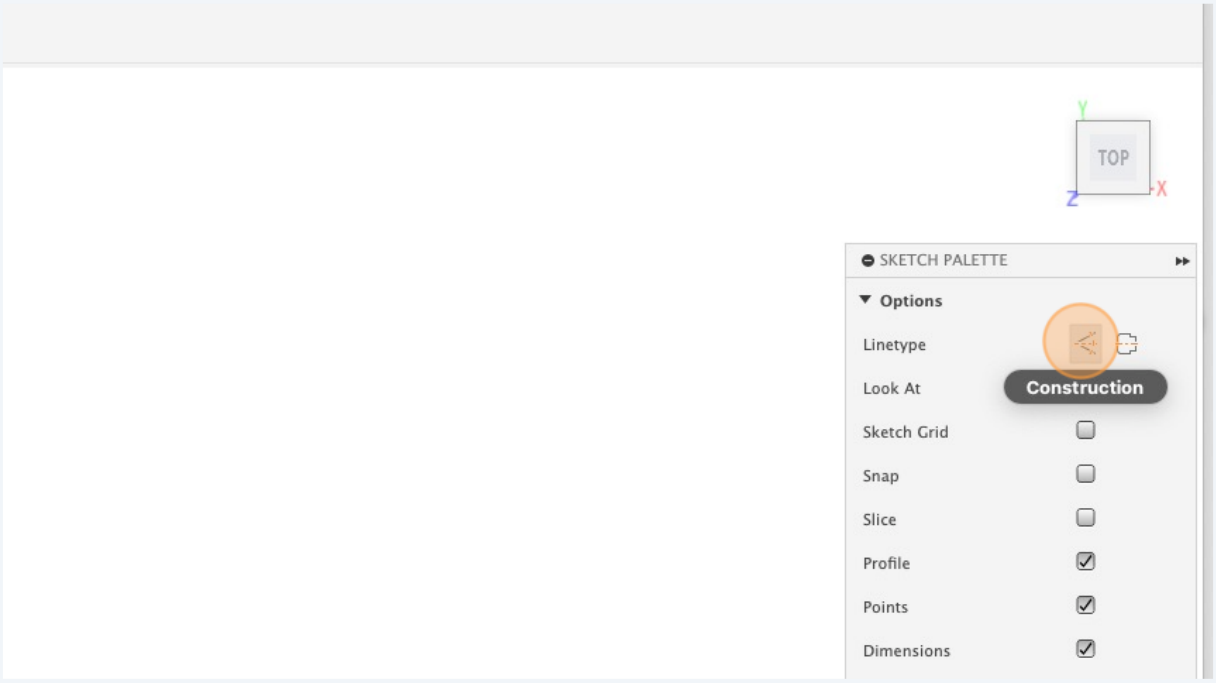
10 Place the first corner on the origin in the center. Draw out a rectangle and type MortiseWidth and MortiseLength in for the sizes.Use the 'tab' key to switch between selections.



11 Double-click the side of the rectangle to select the entire rectangle.

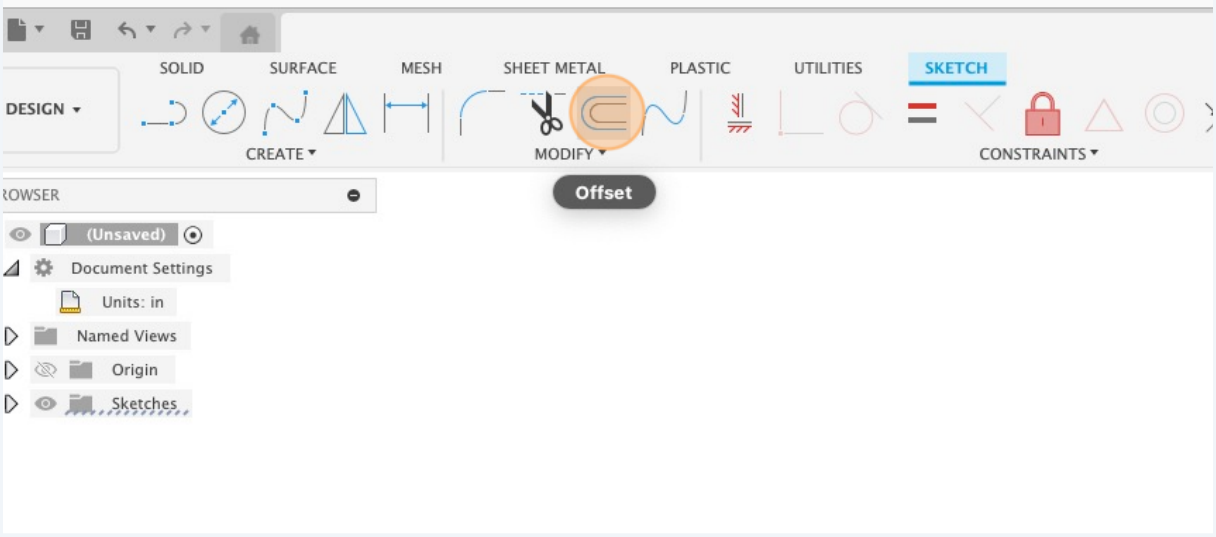


12 Change the line type to construction lines in the Sketch Palette.



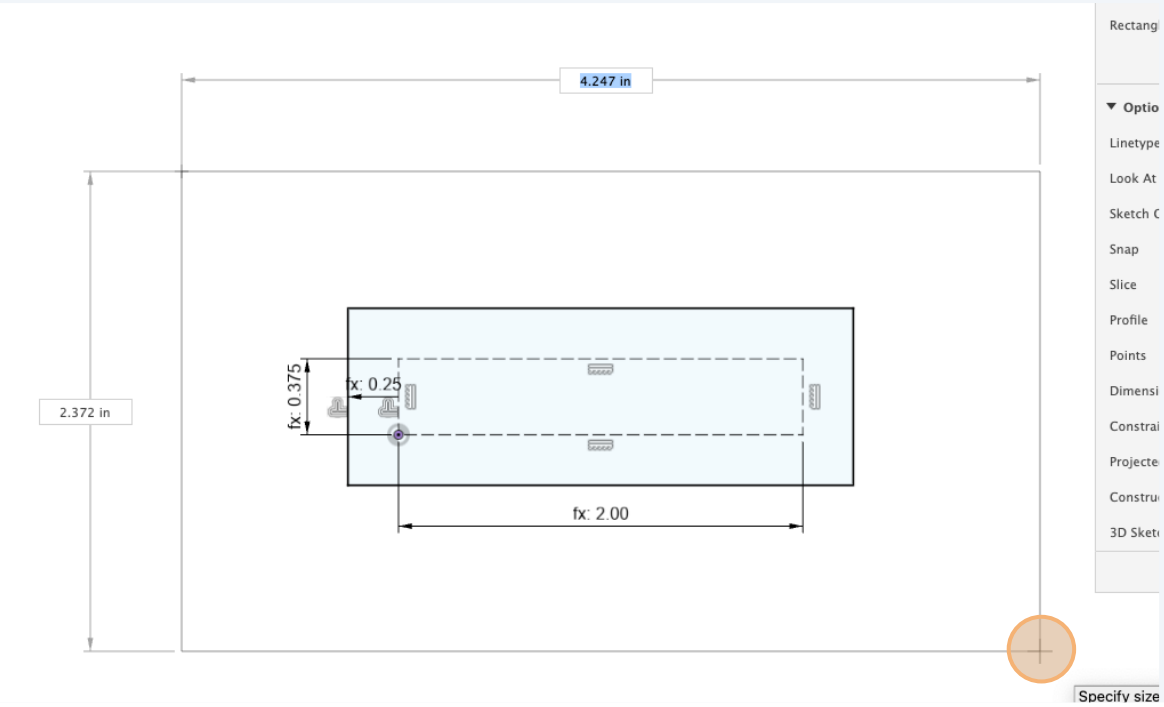
Offset a rectangle to guide the router bushing

13 With the rectangle still selected, click on offset to create a new rectangle offset from the original.

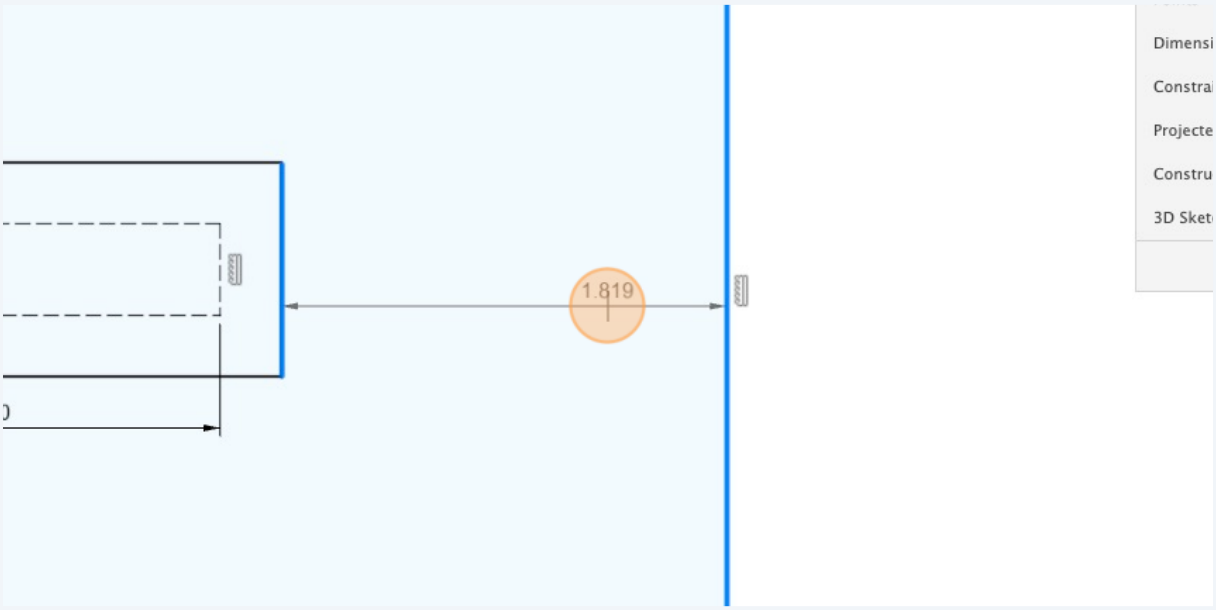


Add the base of the template

14 Use the rectangle tool (key command R) to create a new rectangle around the previous two.

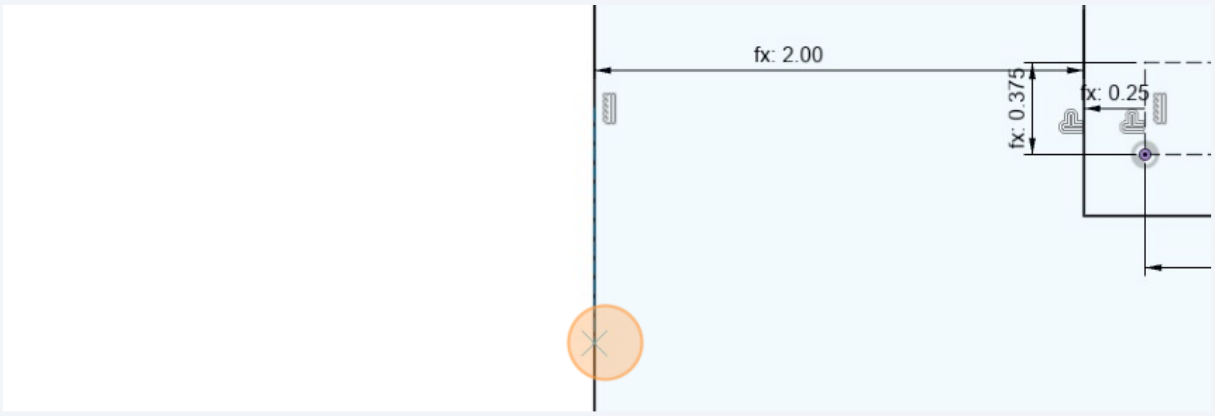


15 Add dimensions using the dimension tool (key command "D") to all four edges to the outside of the second rectangle. Set the dimensions to "Meat".

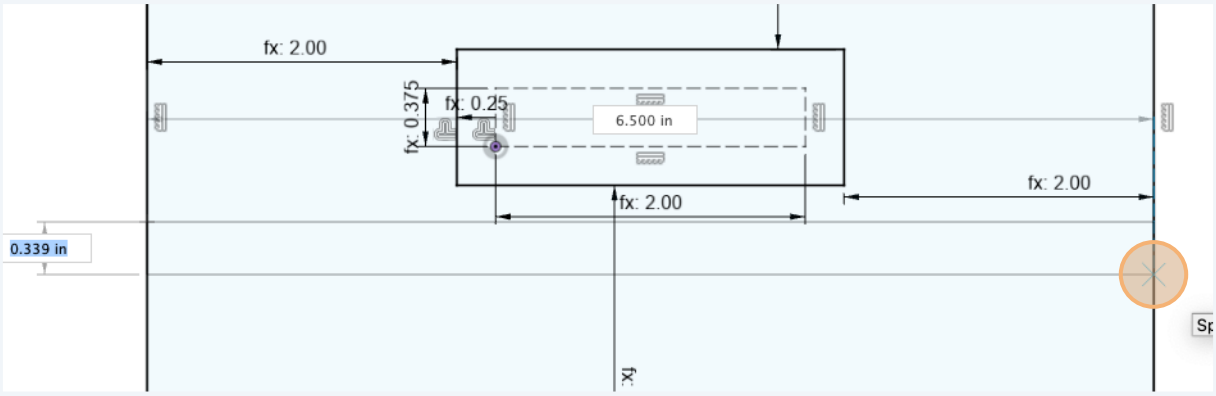


Adding fences stops to the base

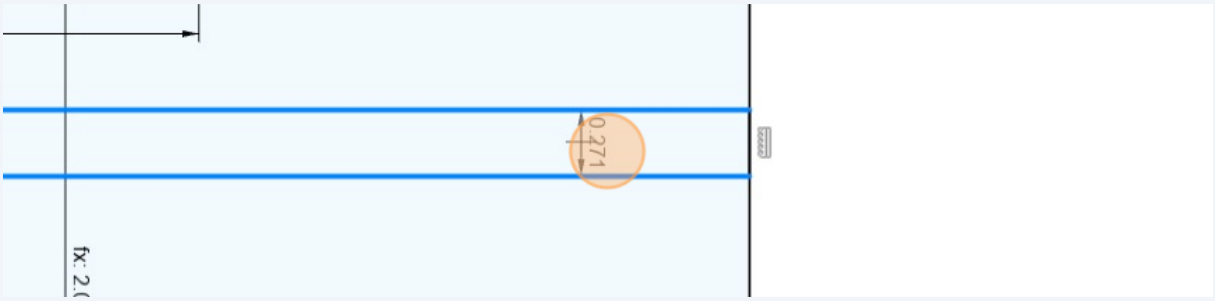
16 Select the rectangle tool and click on the edge of the base.



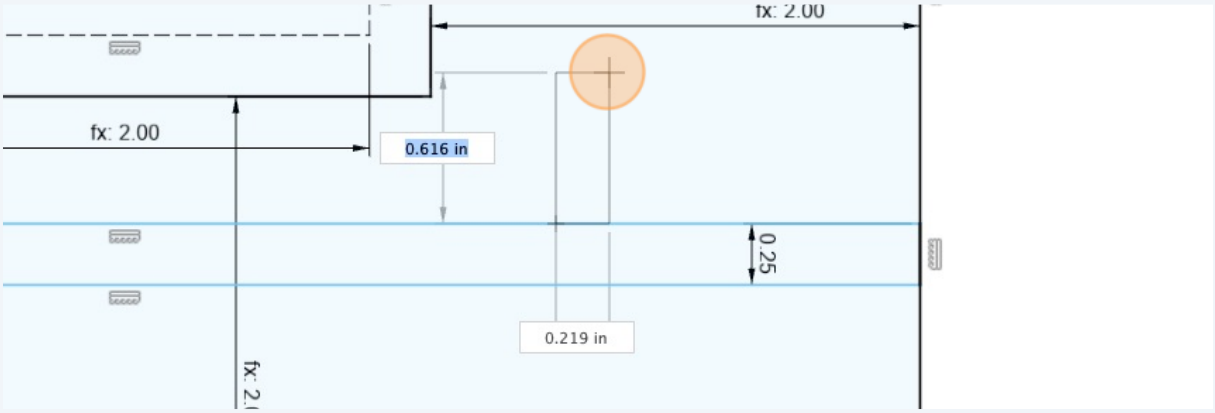
17 Draw out a rectangle to the far edge of the base.



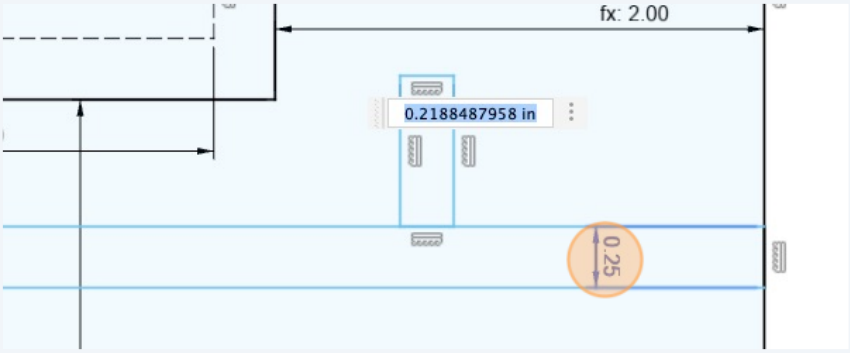
18 Dimension the side fence to .25 inches.



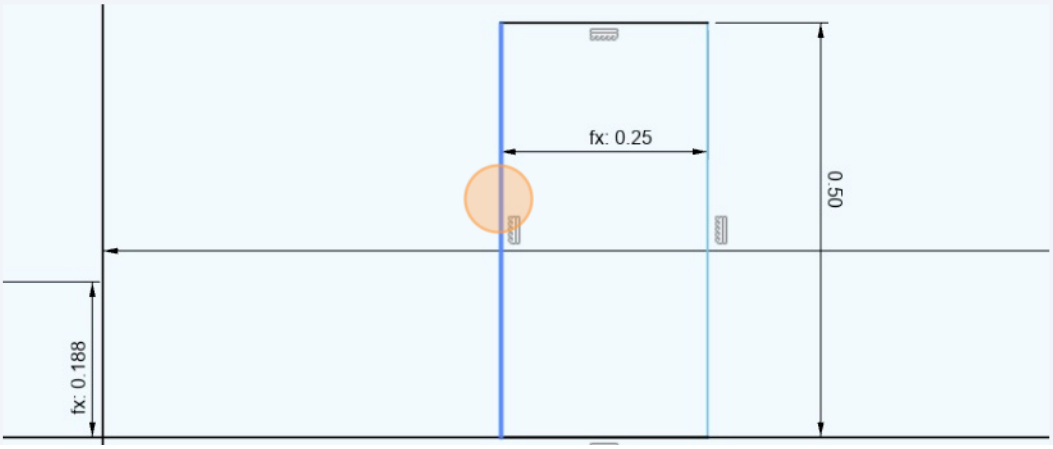
19 Add a second rectangle for the end fence.



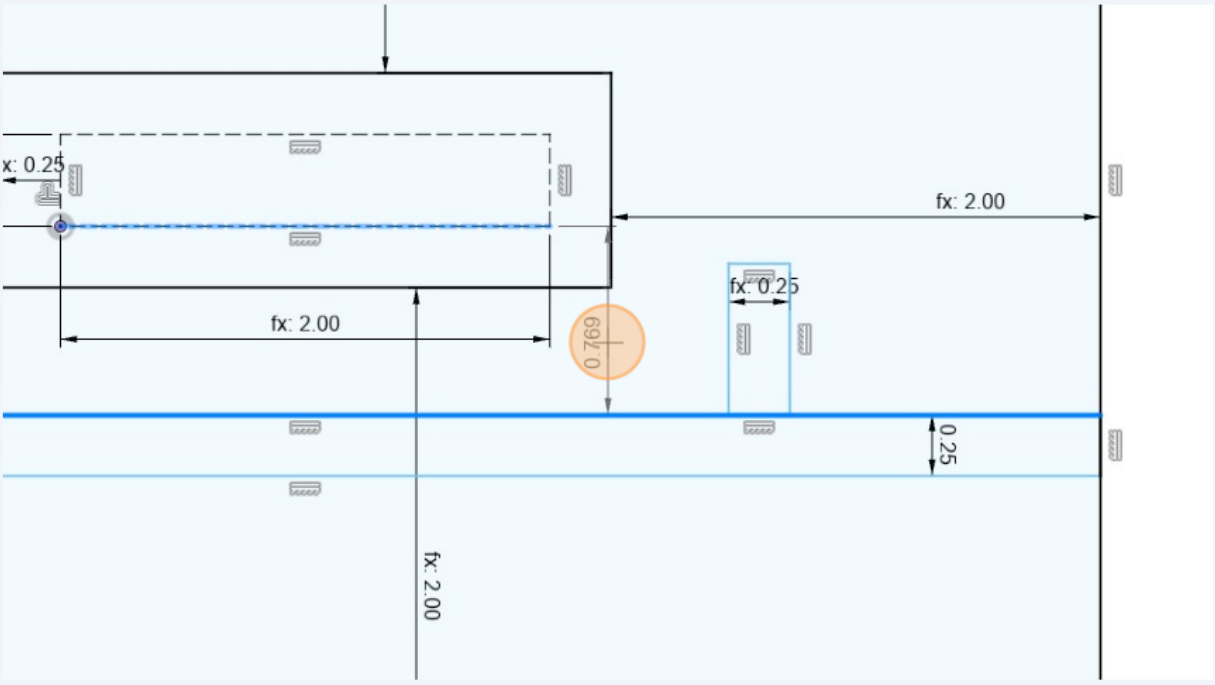
20 Dimension it and select the dimension from the side fence.



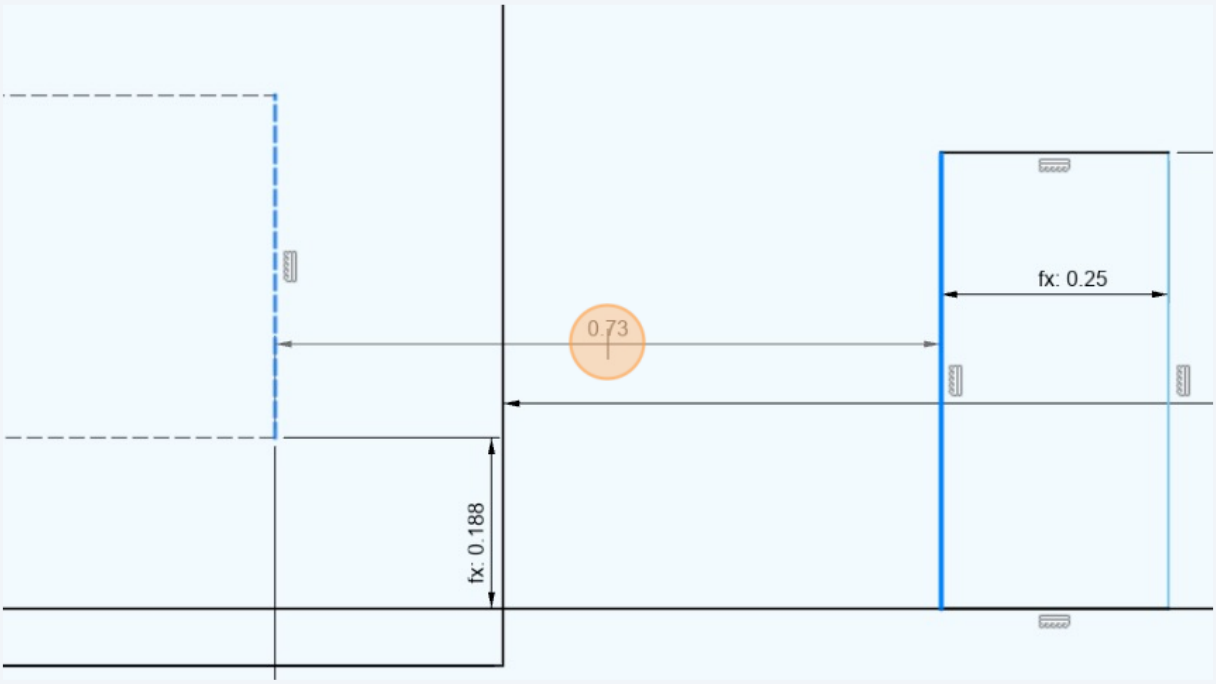
21 Dimension the length of the end fence.



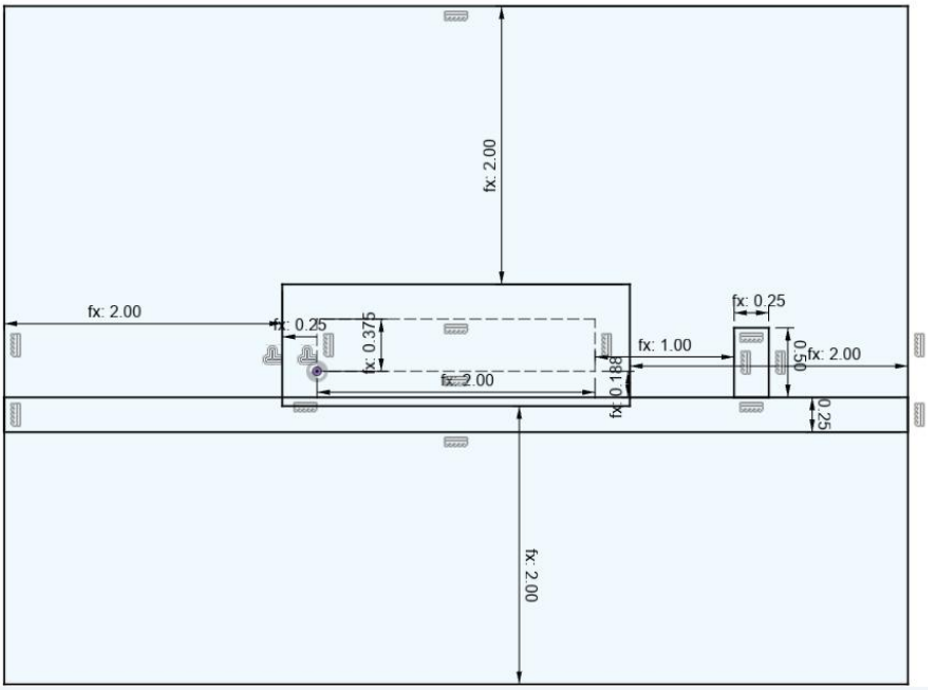
22 Referencing off of the mortise, set the dimension of the side fence to "SideOffset".



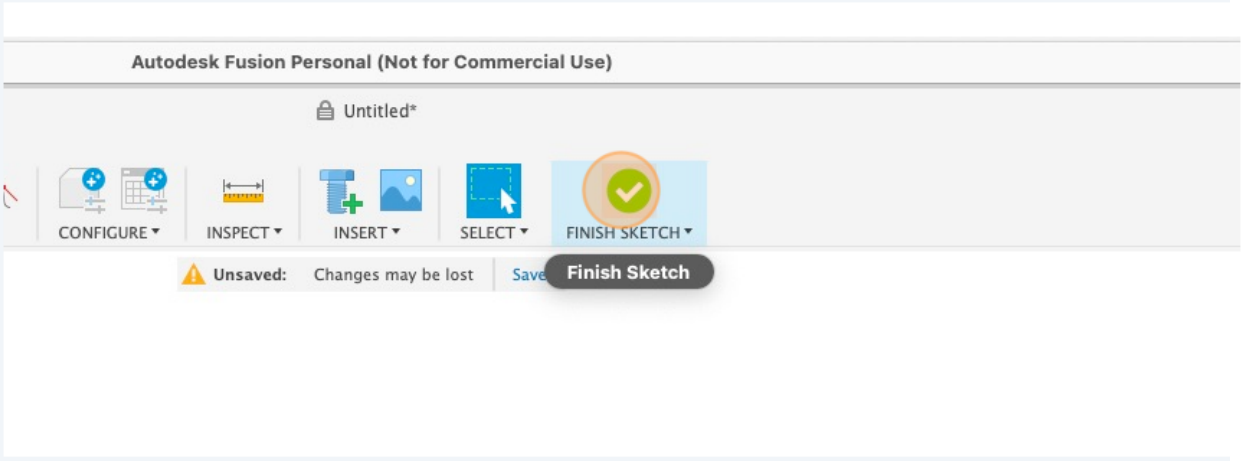
23 Set the dimension of the end fence to "EndOffset".



24 Your finished sketch should look something like this.

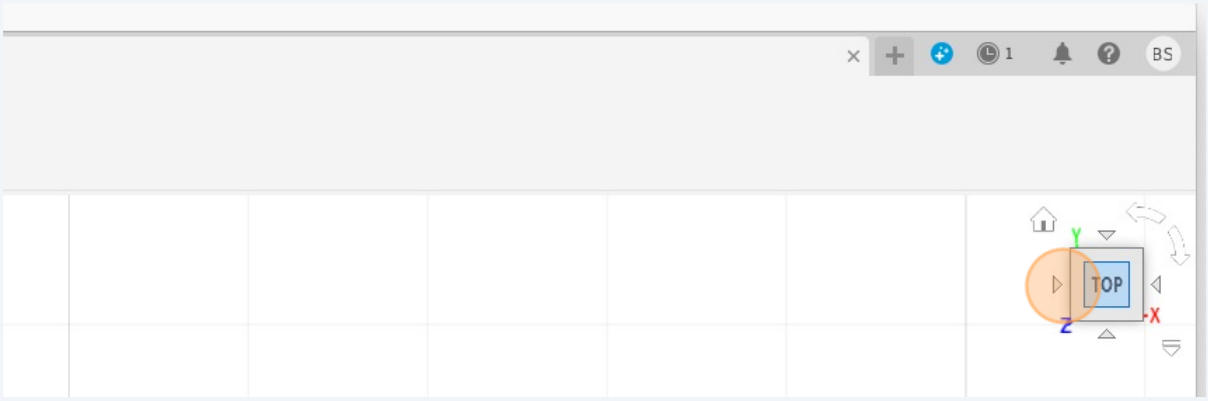


25 Click "Finish Sketch".

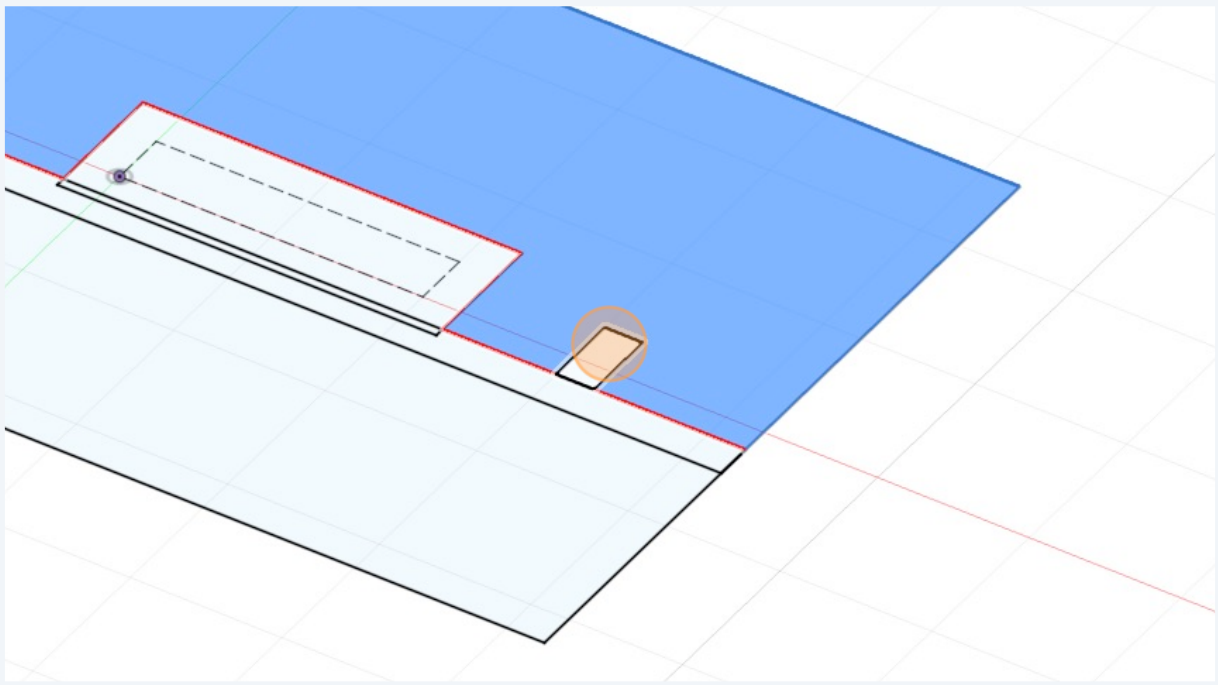


Extruding out the template

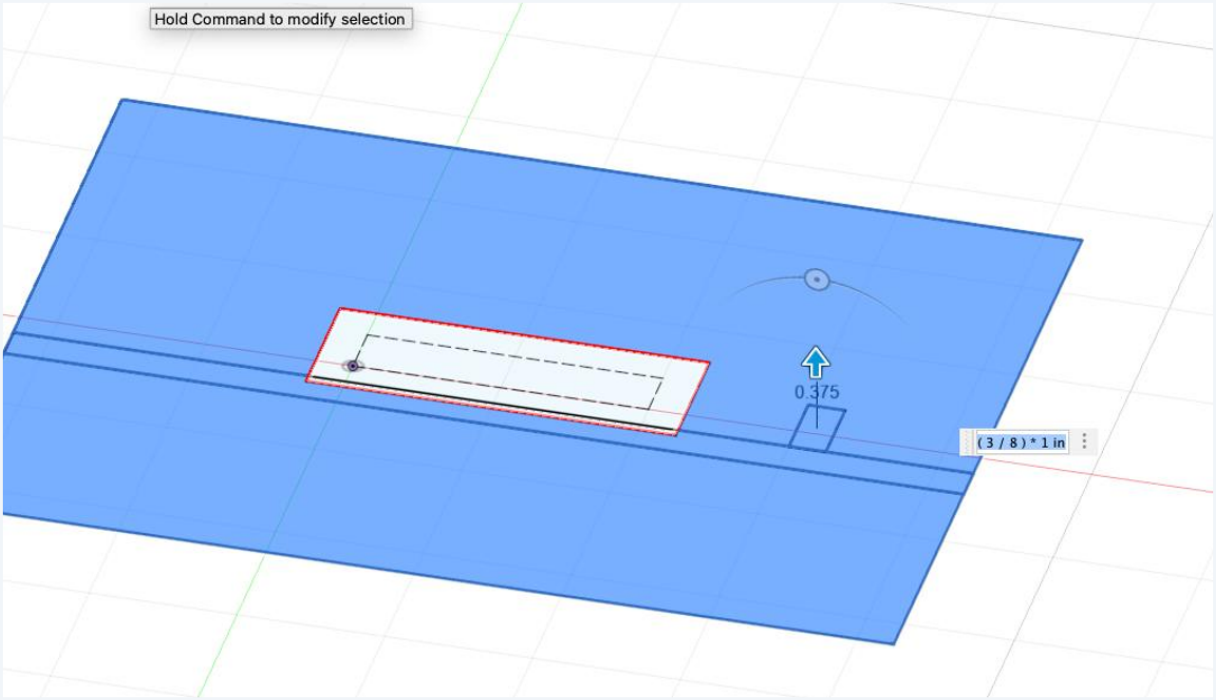
26 Use the orbiter to move the view.



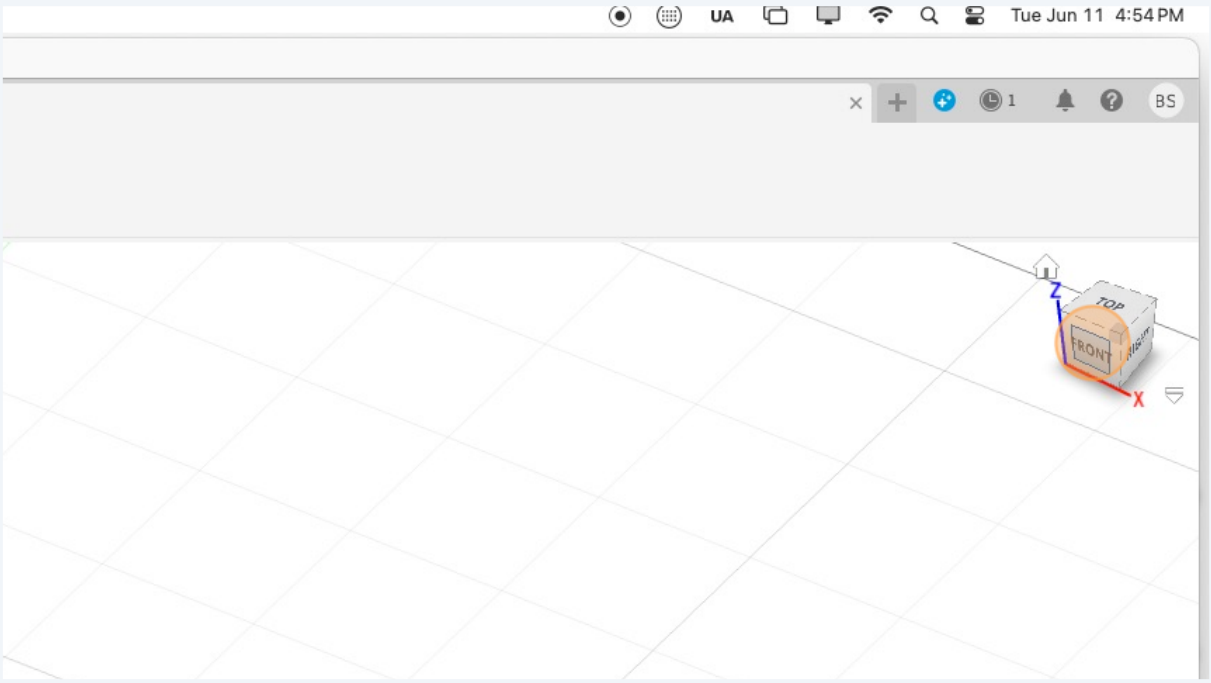
27 Holding down "shift", select all of the segments to extrude.



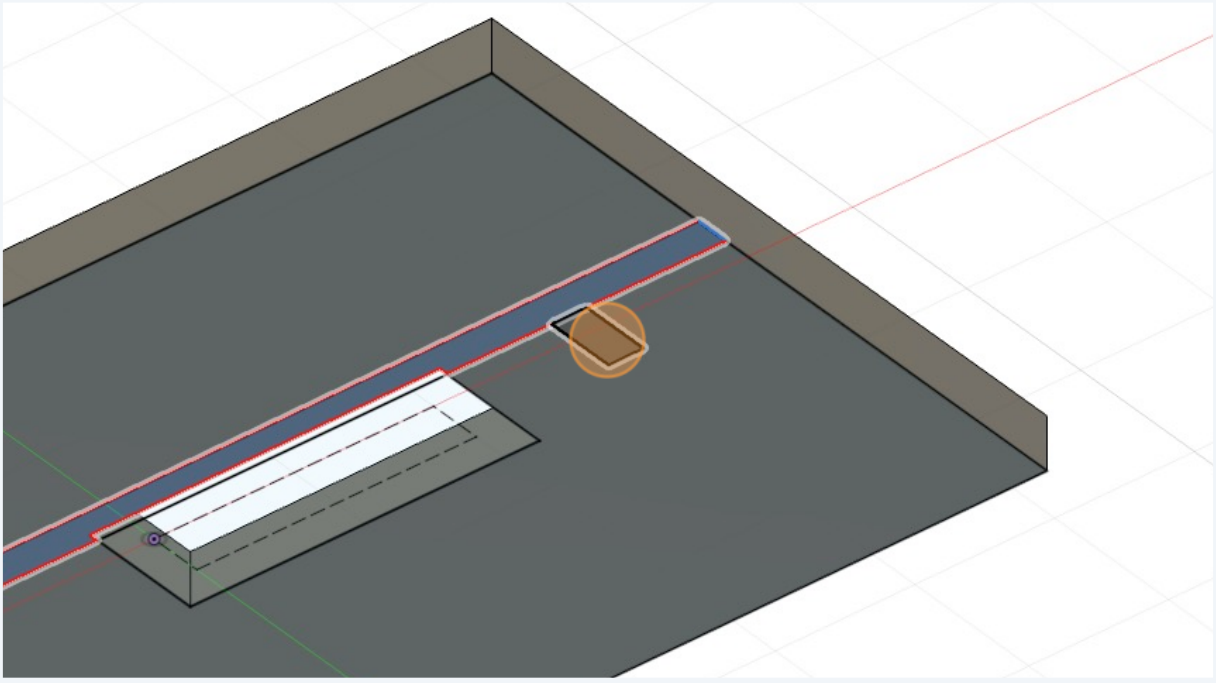
28 Using the extrude tool (key command "E"), extrude the selection 3/8of an inch.



29 Orbit until you can see the bottom of the body you just created.



30 Show the sketch again in the browser and extrude the two fences out -1inch.



31 You have created a parametric mortising template!