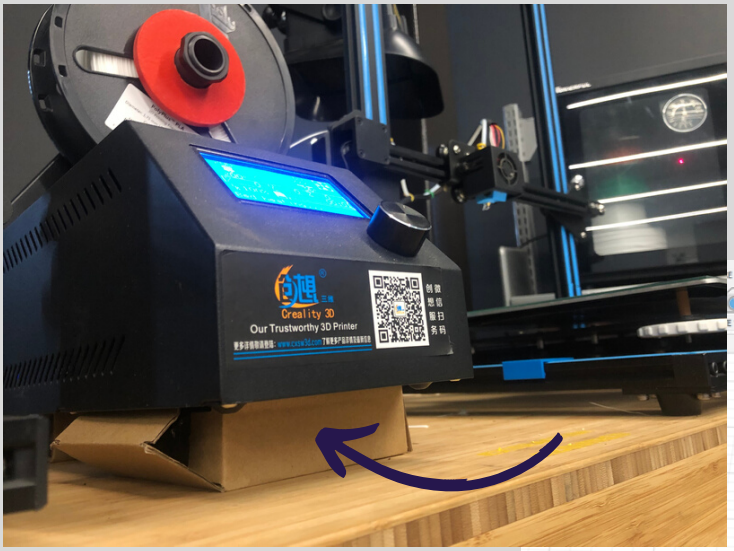


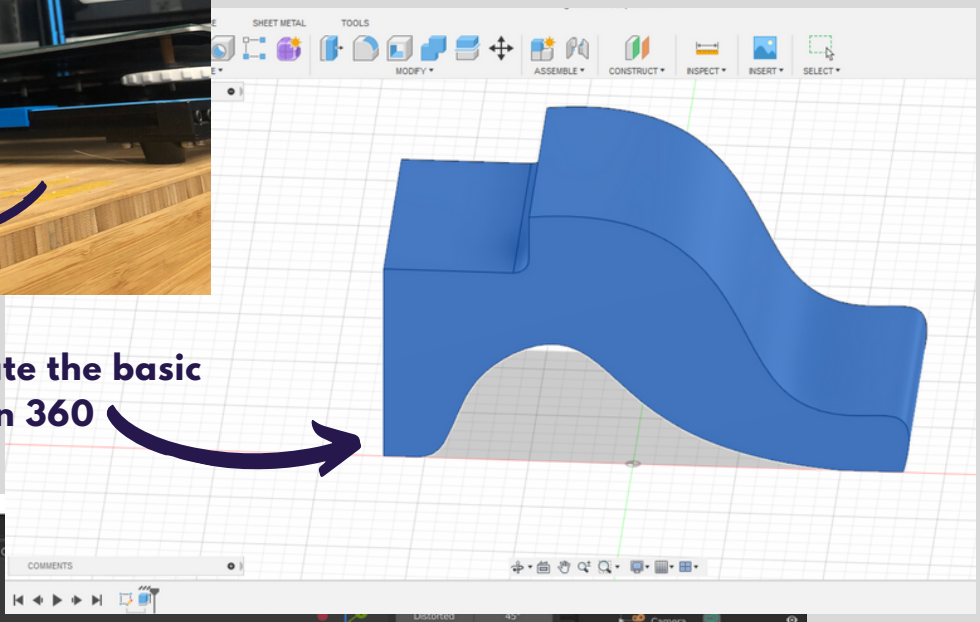
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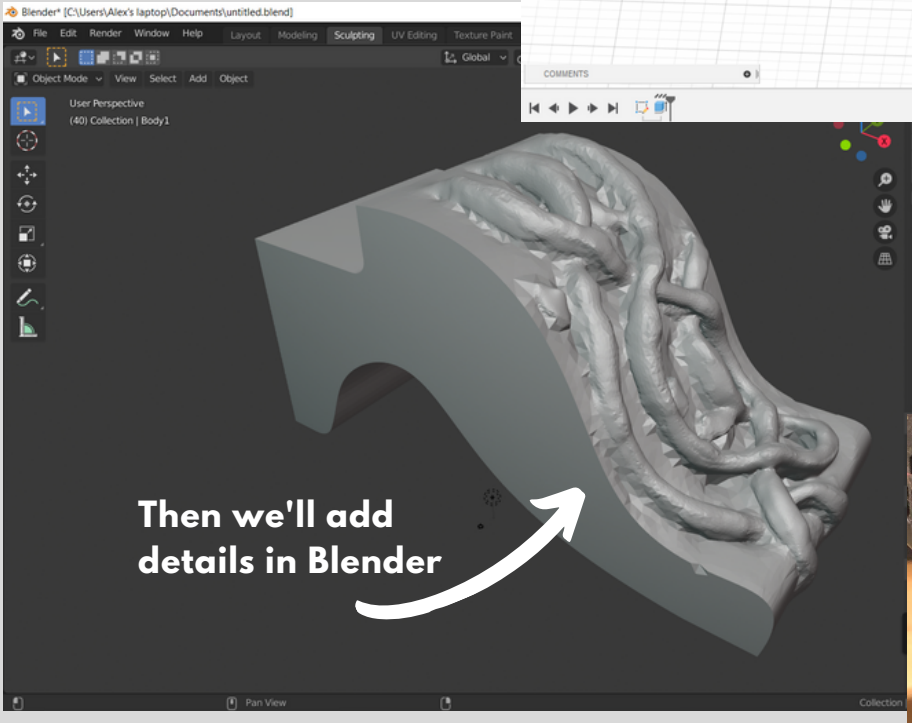
MAKING 3D PRINTER FEET



The 3D printer at The Learning Space has been propped up on cardboard boxes for a while to align the filament roll with the 3D printer, so this week we'll be making feet for the printer.

First we'll create the basic shape in Fusion 360





Then we'll add details in Blender



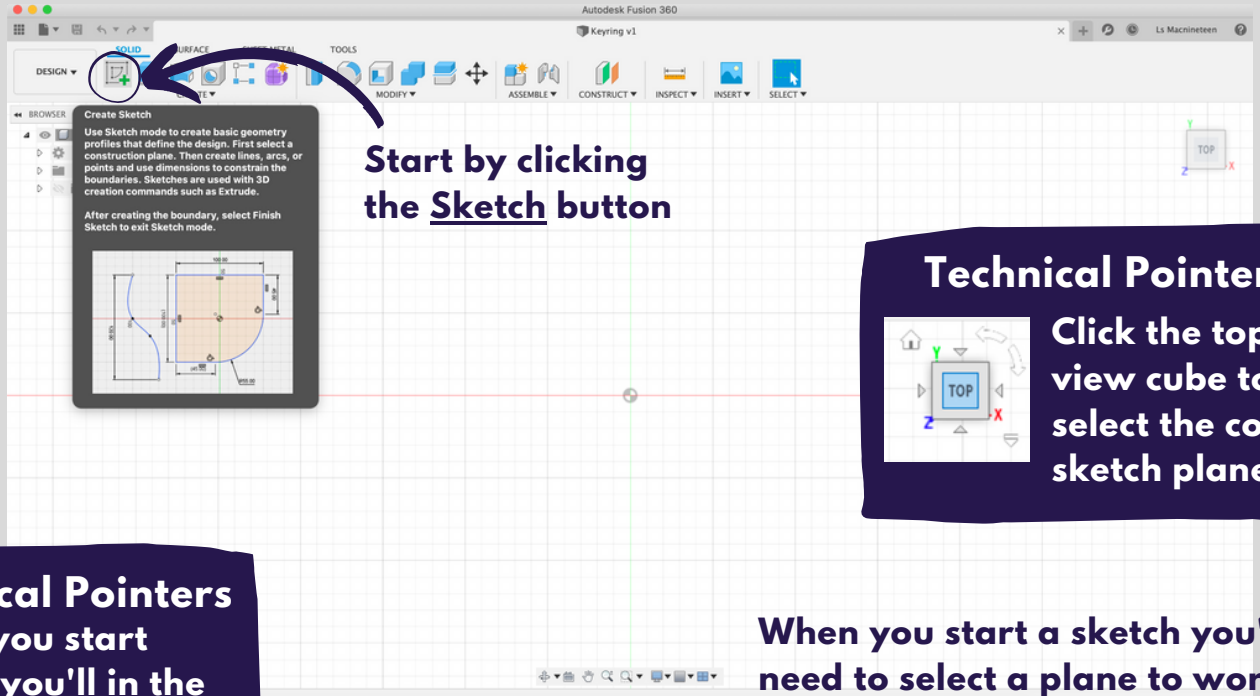
We should end up with something like this



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START WITH A SKETCH

We'll start by opening Fusion 360
First we want to make the basic shape of the foot



Start by clicking the Sketch button

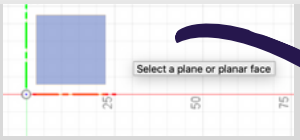
Technical Pointers

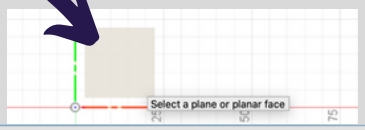
Click the top of the view cube to help select the correct sketch plane

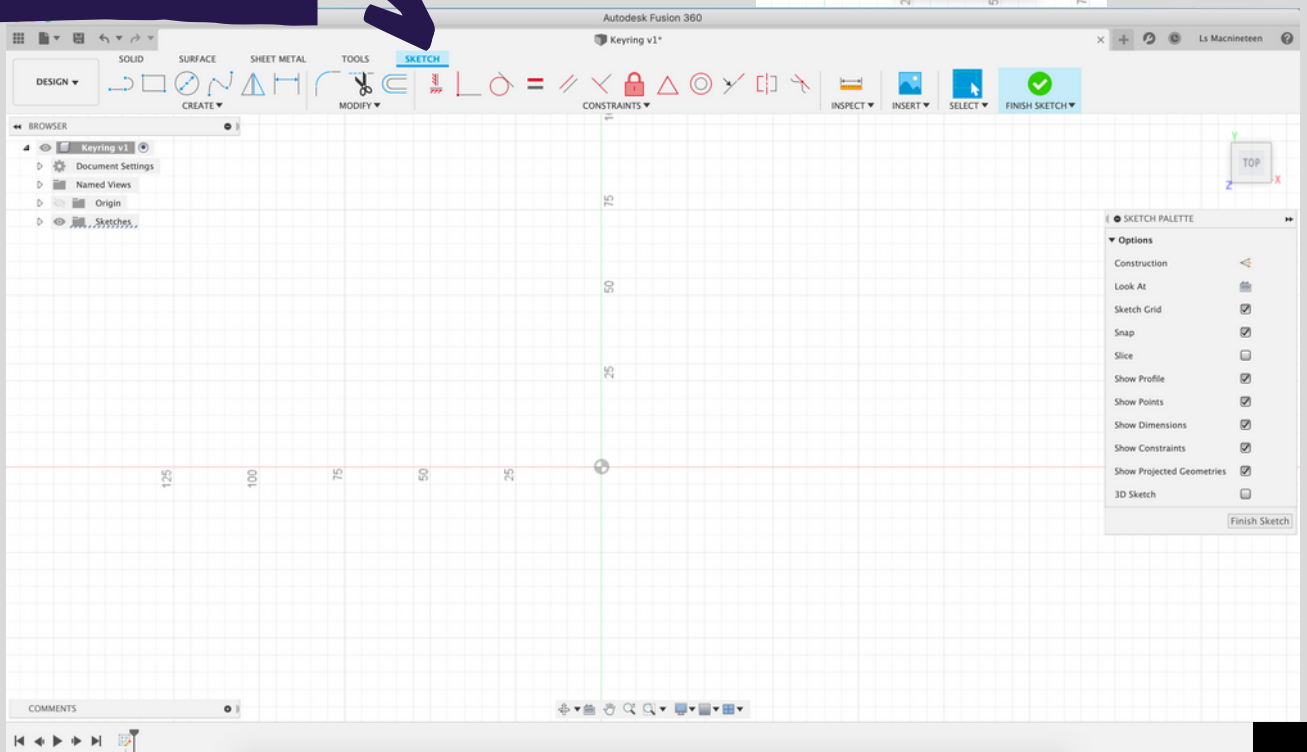
Technical Pointers

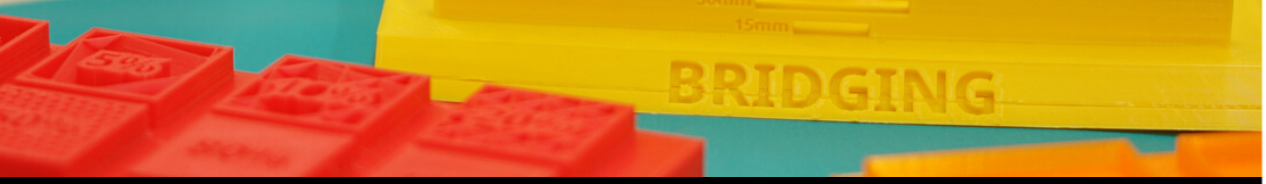
When you start Fusion you'll in the Design Workspace and the Solid Tab. When you start a sketch you'll enter the Sketch Tab.

When you start a sketch you'll need to select a plane to work on. Select the plane by hovering over it and clicking.



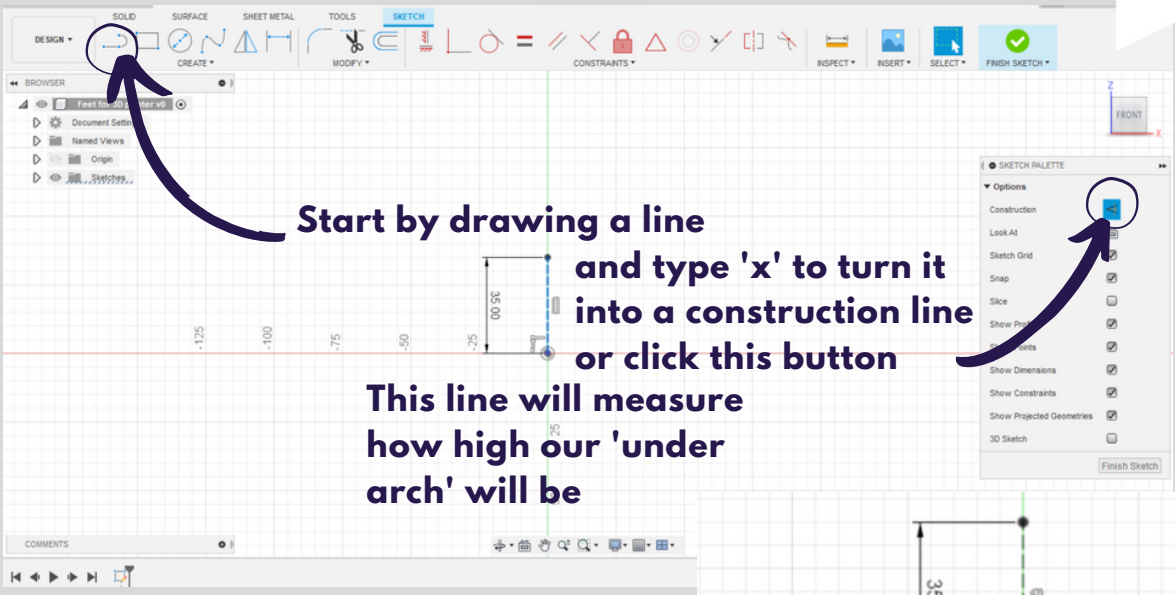






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CREATE A SCAFFOLD

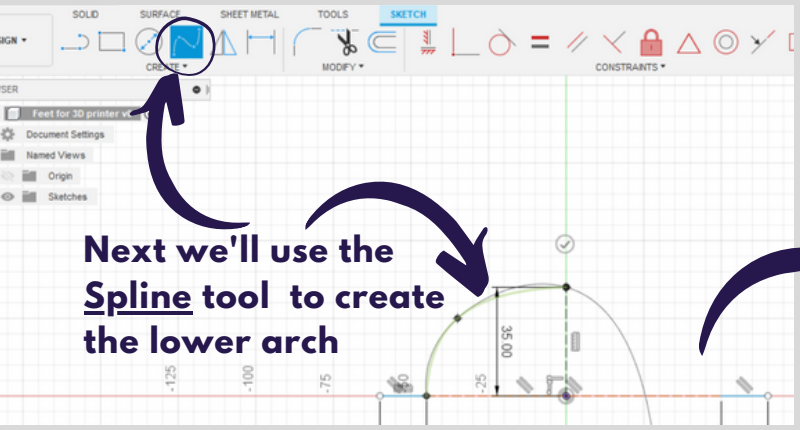


Start by drawing a line and type 'x' to turn it into a construction line or click this button

This line will measure how high our 'under arch' will be

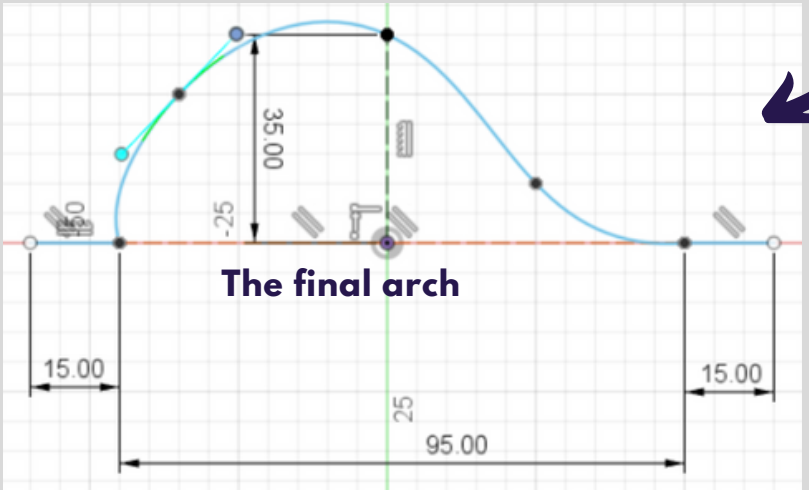


Now we'll create one more construction line for how long we want our 'under arch' to be. After that place two lines on either side - these will be the parts that touch the build plate



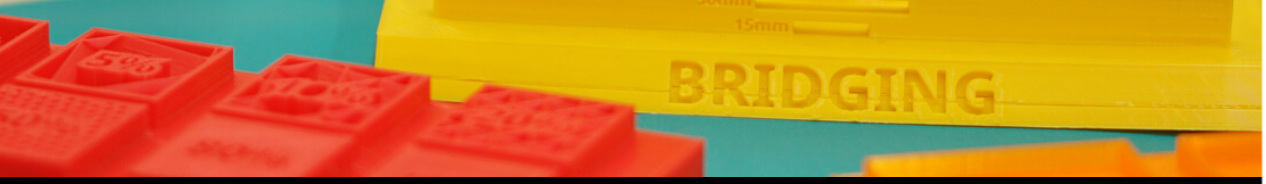
Next we'll use the Spline tool to create the lower arch





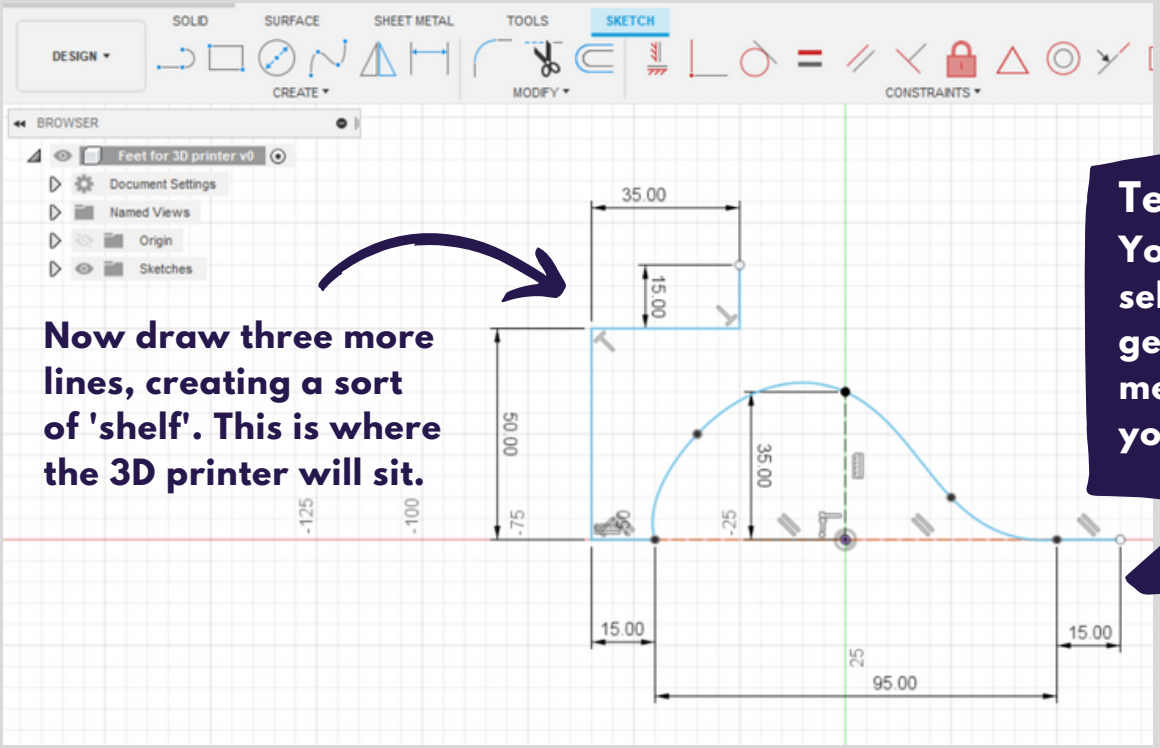
The final arch

Note that where you place the points is the peak/valley of the curve



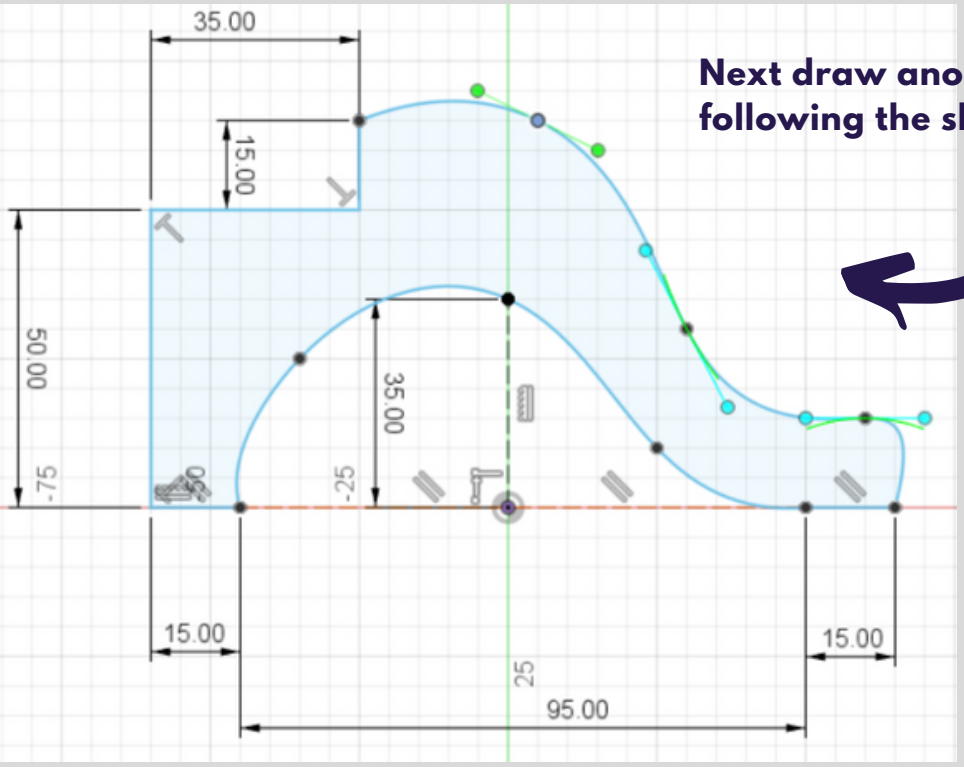
CREATE A SHELF

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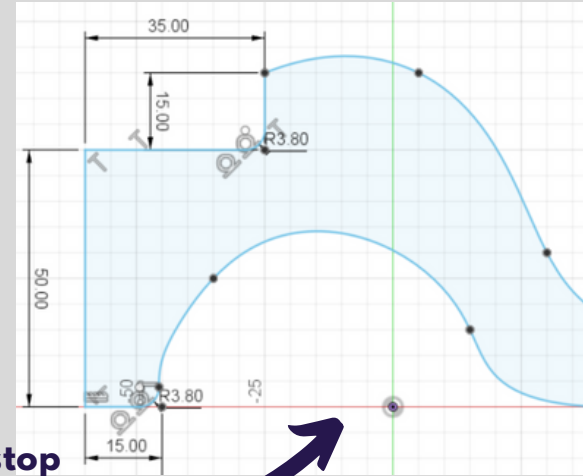


Now draw three more lines, creating a sort of 'shelf'. This is where the 3D printer will sit.

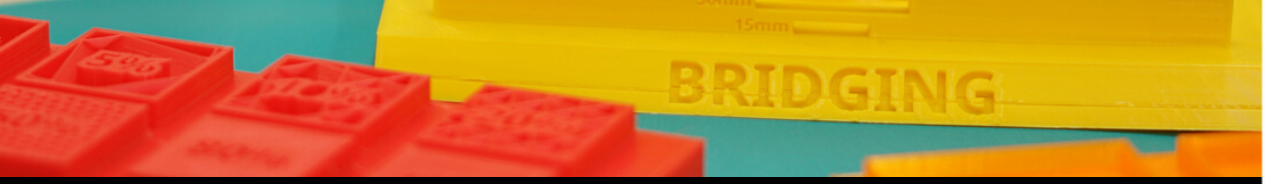
Technical Pointers
You can type 'd' while selecting your line to get these dimension measurements next to your sketch lines.



Next draw another spline vaugely following the shape of the first

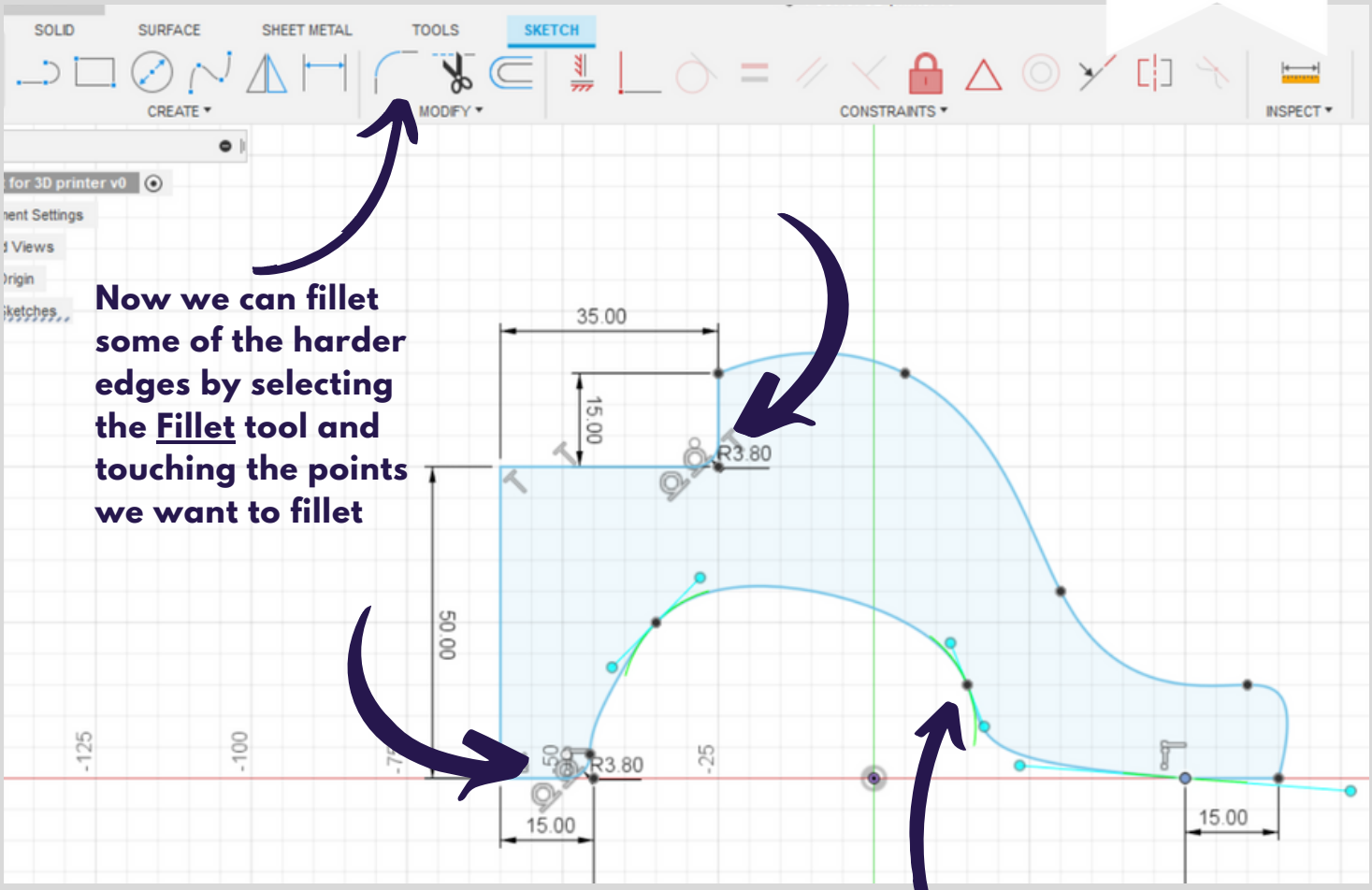


Then delete the construction lines to stop the sketch becoming too constrainted

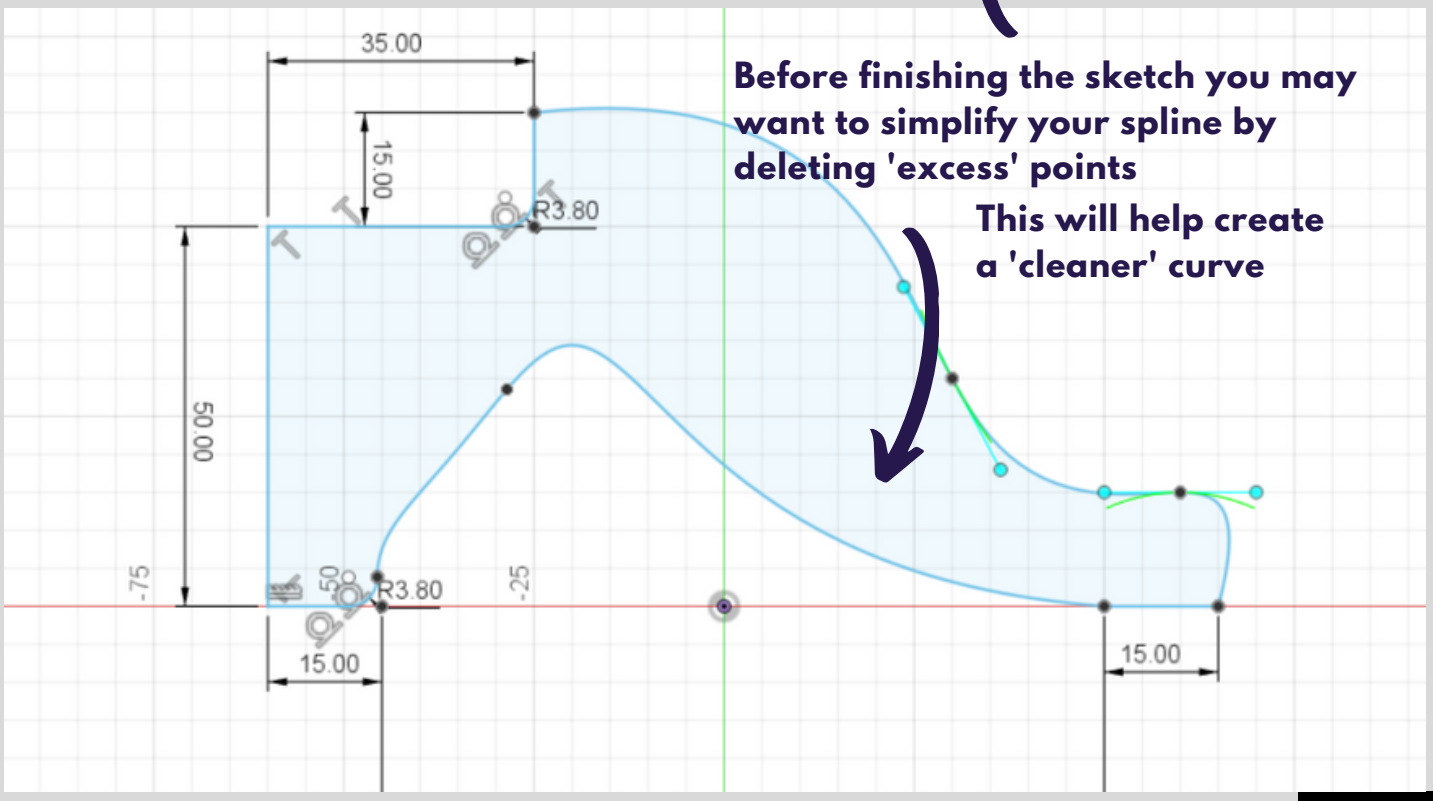


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ALWAYS GOOD TO EDIT



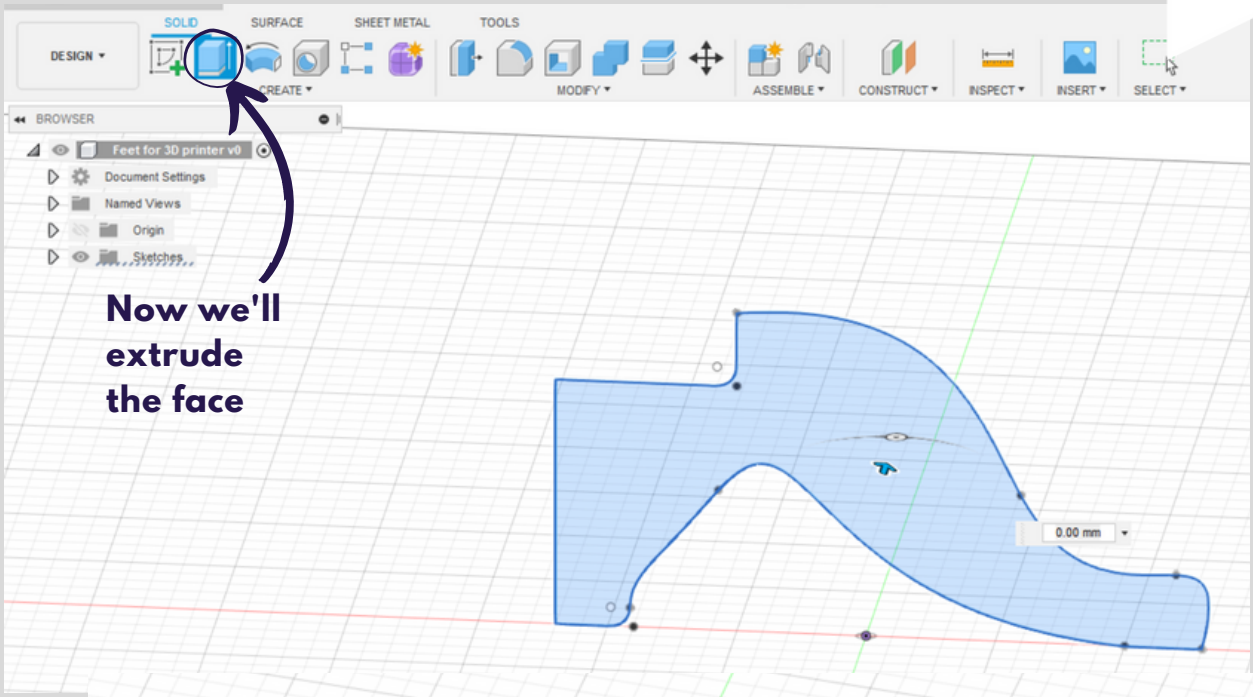
Now we can fillet some of the harder edges by selecting the Fillet tool and touching the points we want to fillet



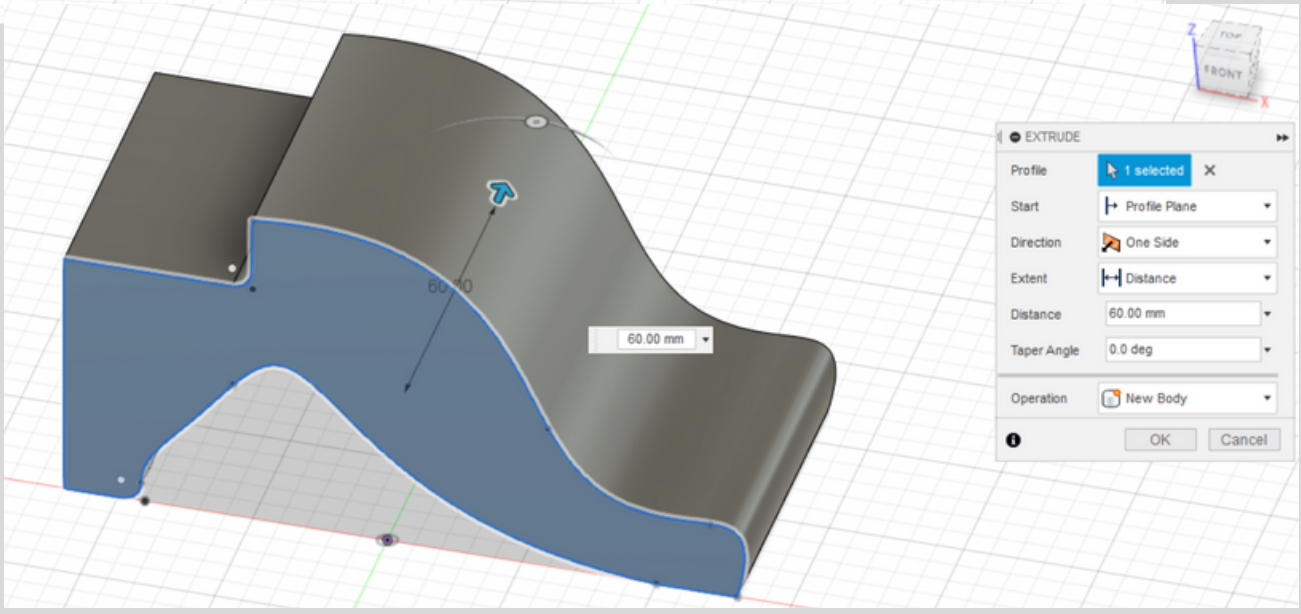
Before finishing the sketch you may want to simplify your spline by deleting 'excess' points

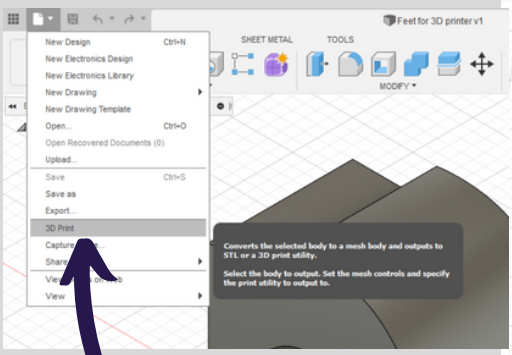
This will help create a 'cleaner' curve

TIME TO EXPORT

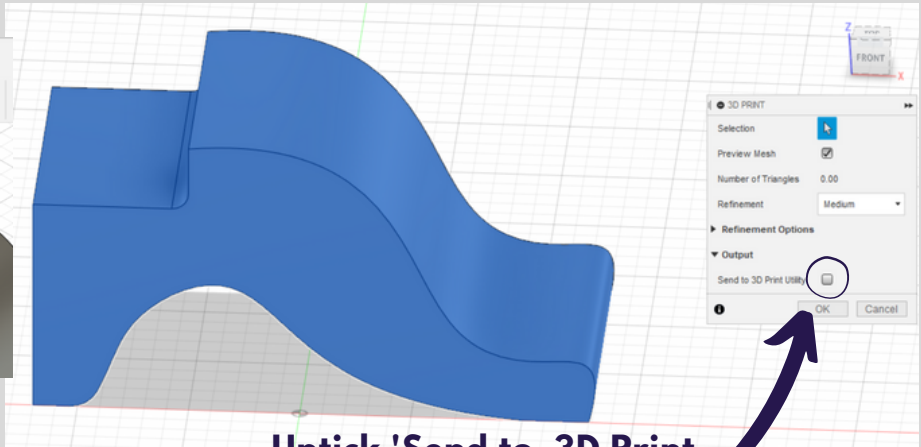


Now we'll extrude the face

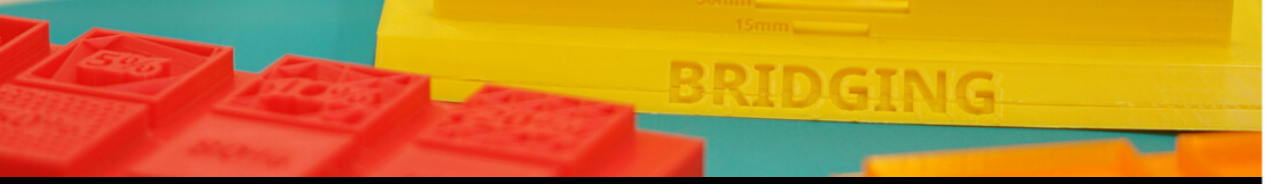




Now head to 3D print

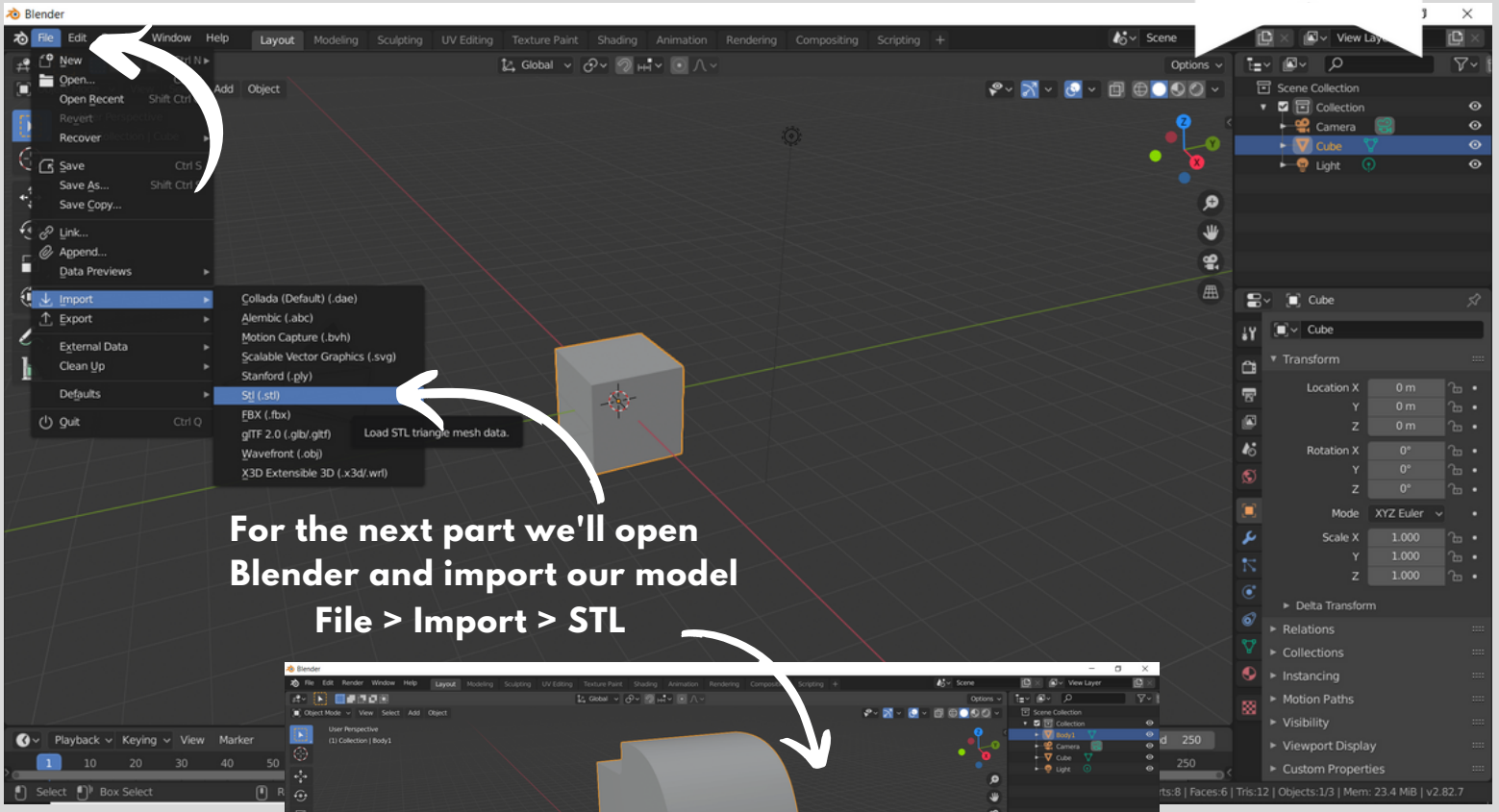


Untick 'Send to 3D Print Utility' and click 'OK'

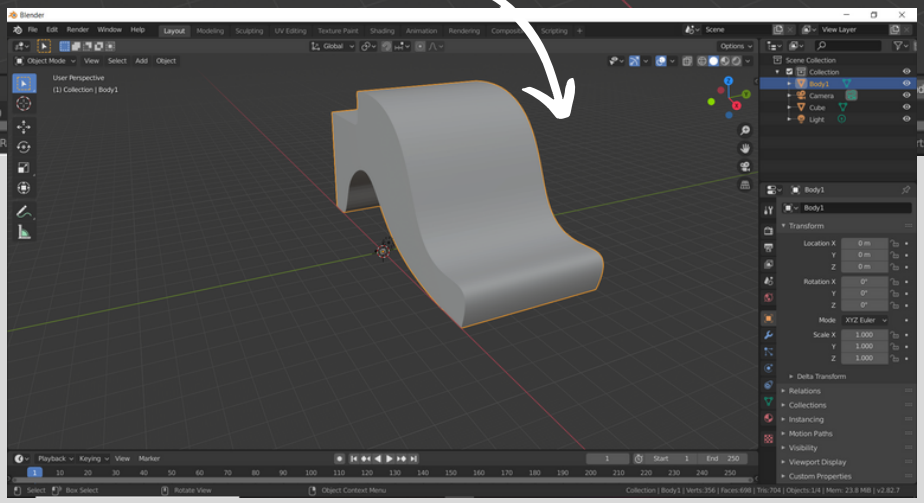


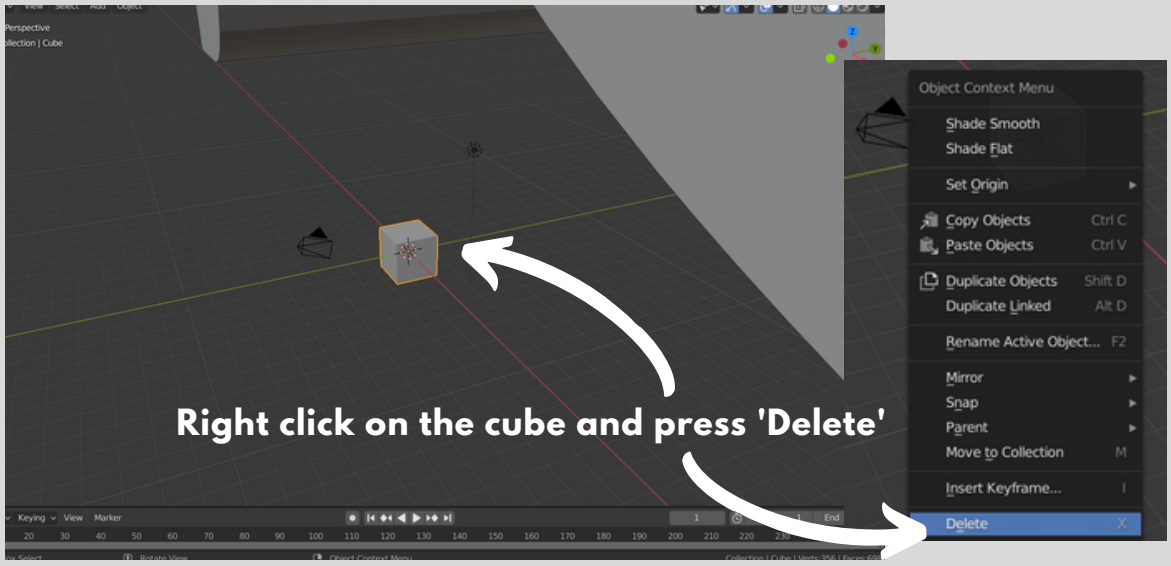
INTO BLENDER WE GO

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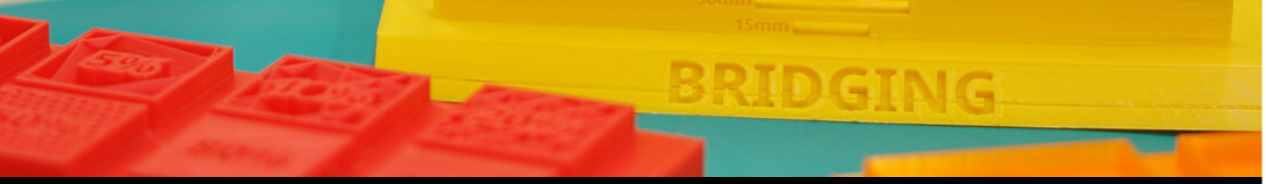


For the next part we'll open Blender and import our model
File > Import > STL





Right click on the cube and press 'Delete'



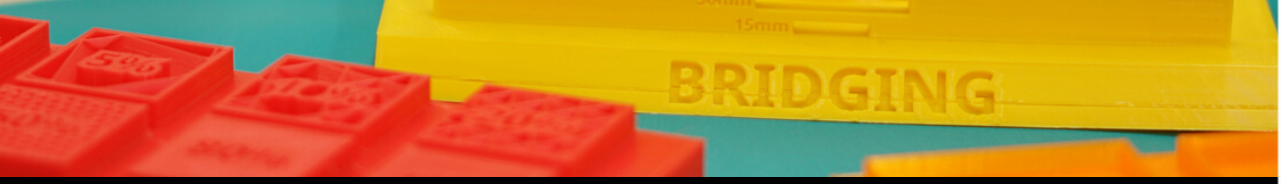
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SETTING UP BLENDER

Now we're going to quickly install a few plugins to make exporting a 3D printable model easier.
Head to Edit > Preferences

Then click Addons

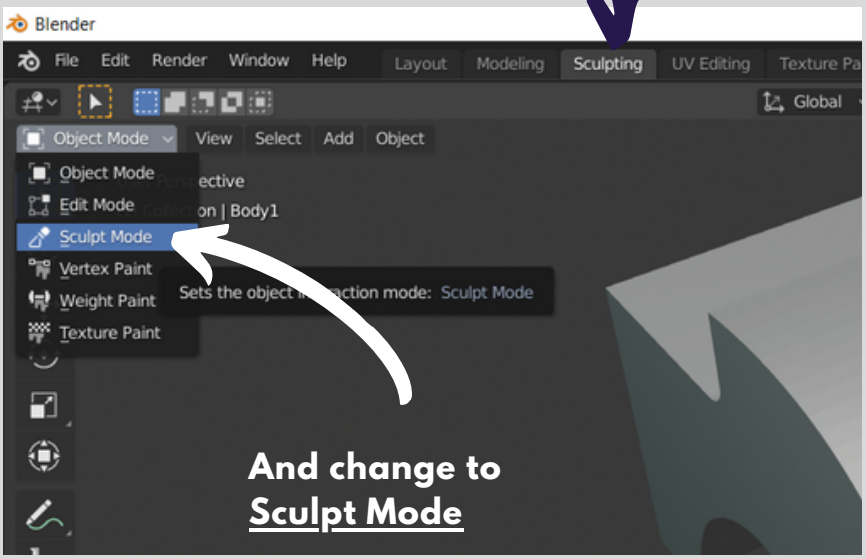
Type in '3D'
And install the Import-Export plugin and the Mesh 3D-print Toolbox



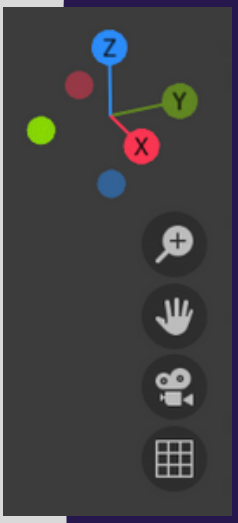
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DYNAMIC TOPOGRAPHY

Now head to the Sculpting tab

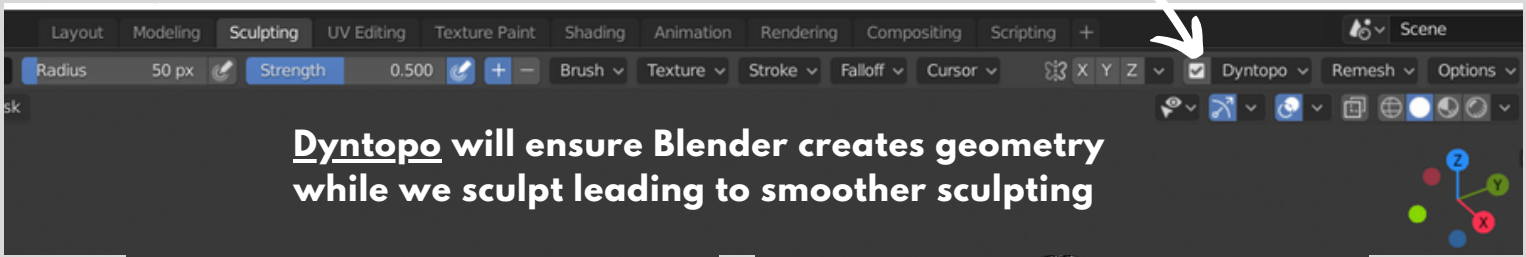


Navigation Pointers

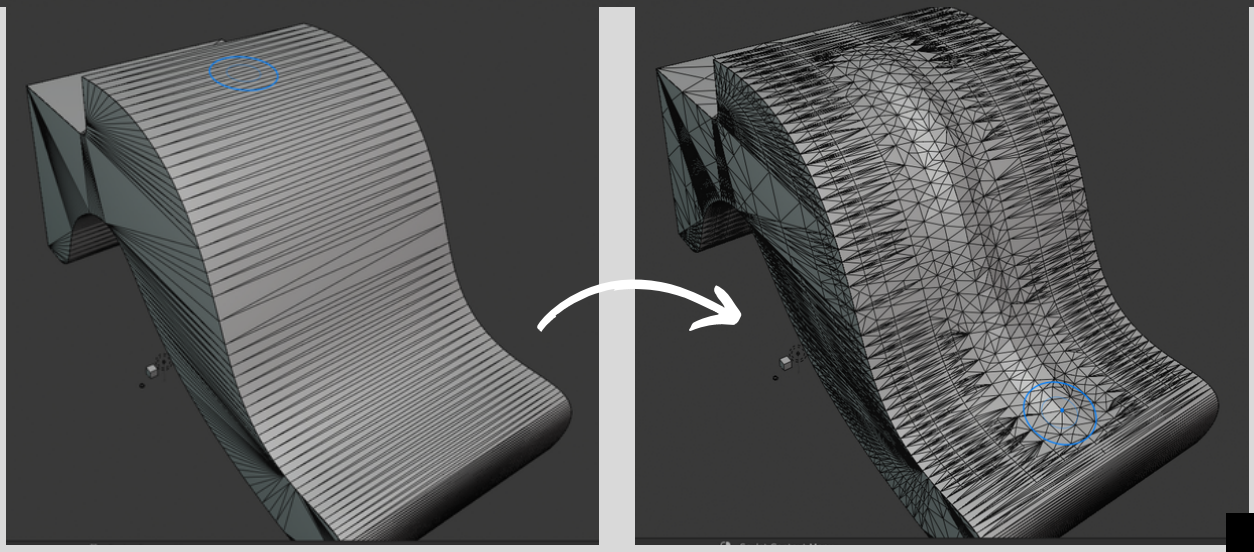


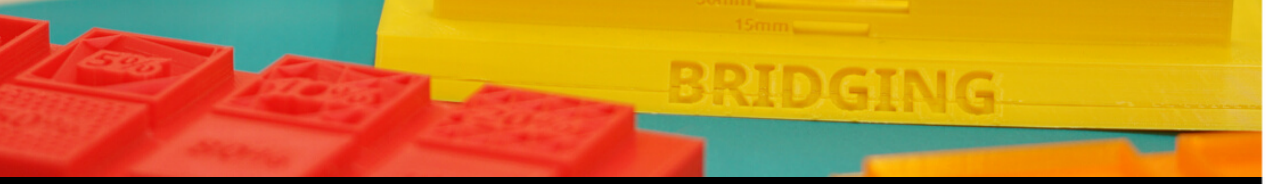
To navigate in Blender you can use the Navigation Gizmo, hot keys or your mouse.
Mouse shortcuts:
Zoom - mouse wheel
Pan - hold shift and middle mouse button
Orbit - hold the middle mouse button

Before we'll start sculpting lets turn on Dyntopo



Dyntopo will ensure Blender creates geometry while we sculpt leading to smoother sculpting





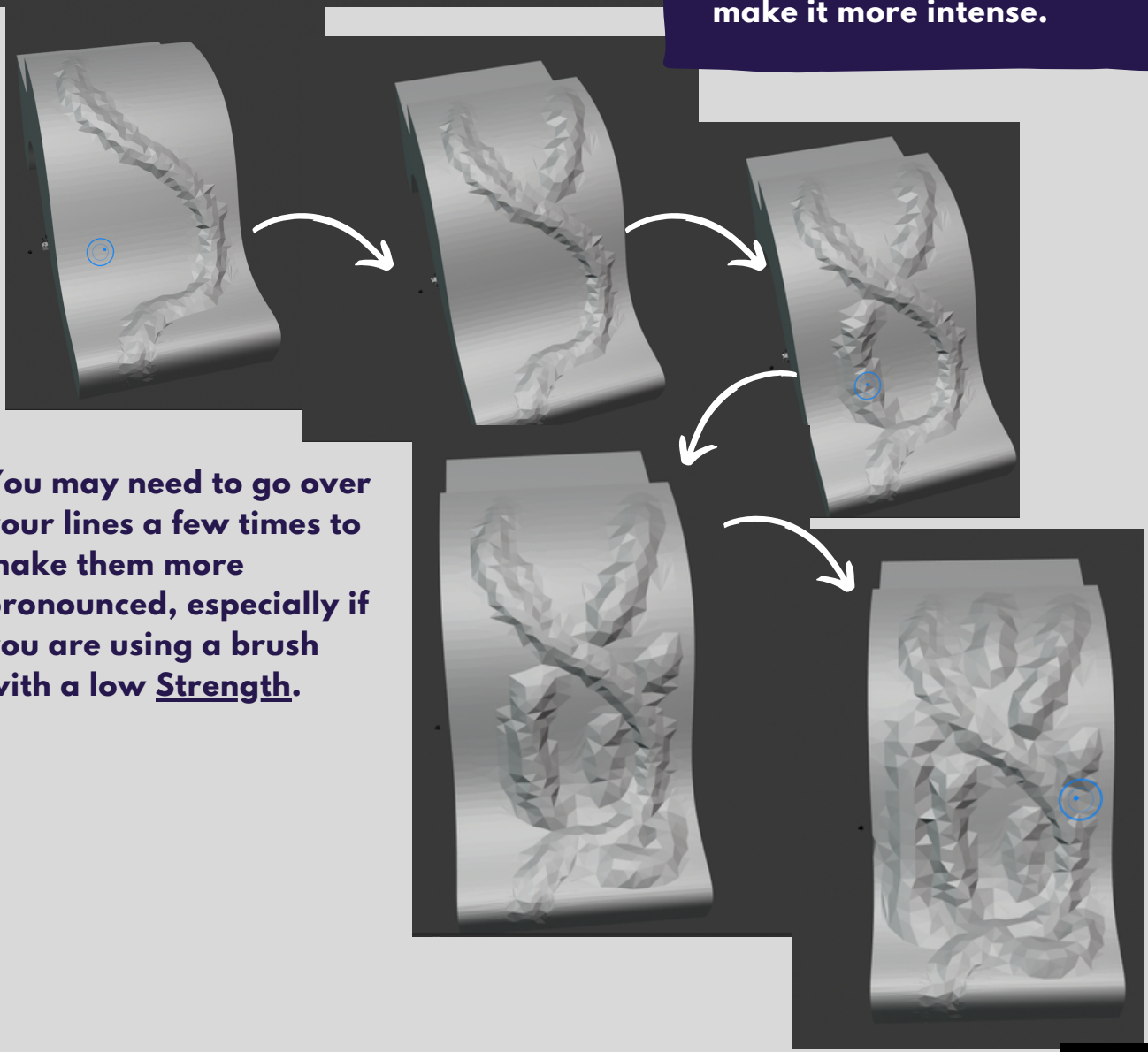
DRAW YOUR VINES

Now grab the clay brush and draw how you want your vines to look. Don't worry if they look rough - the aim is to get the vauge shape in

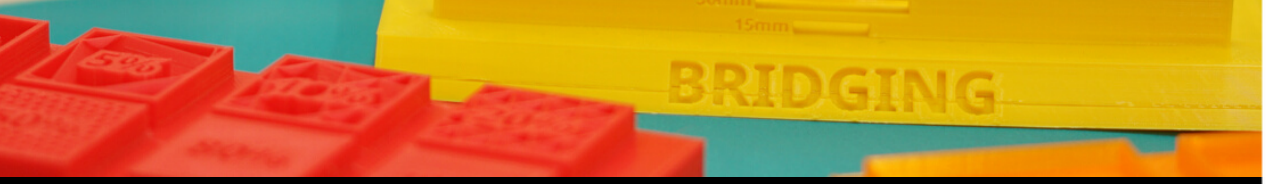


Technical Pointers

If your brush is too small, adjust its Radius to make it bigger. If you brush isn't doing anything, adjust its Strength to make it more intense.

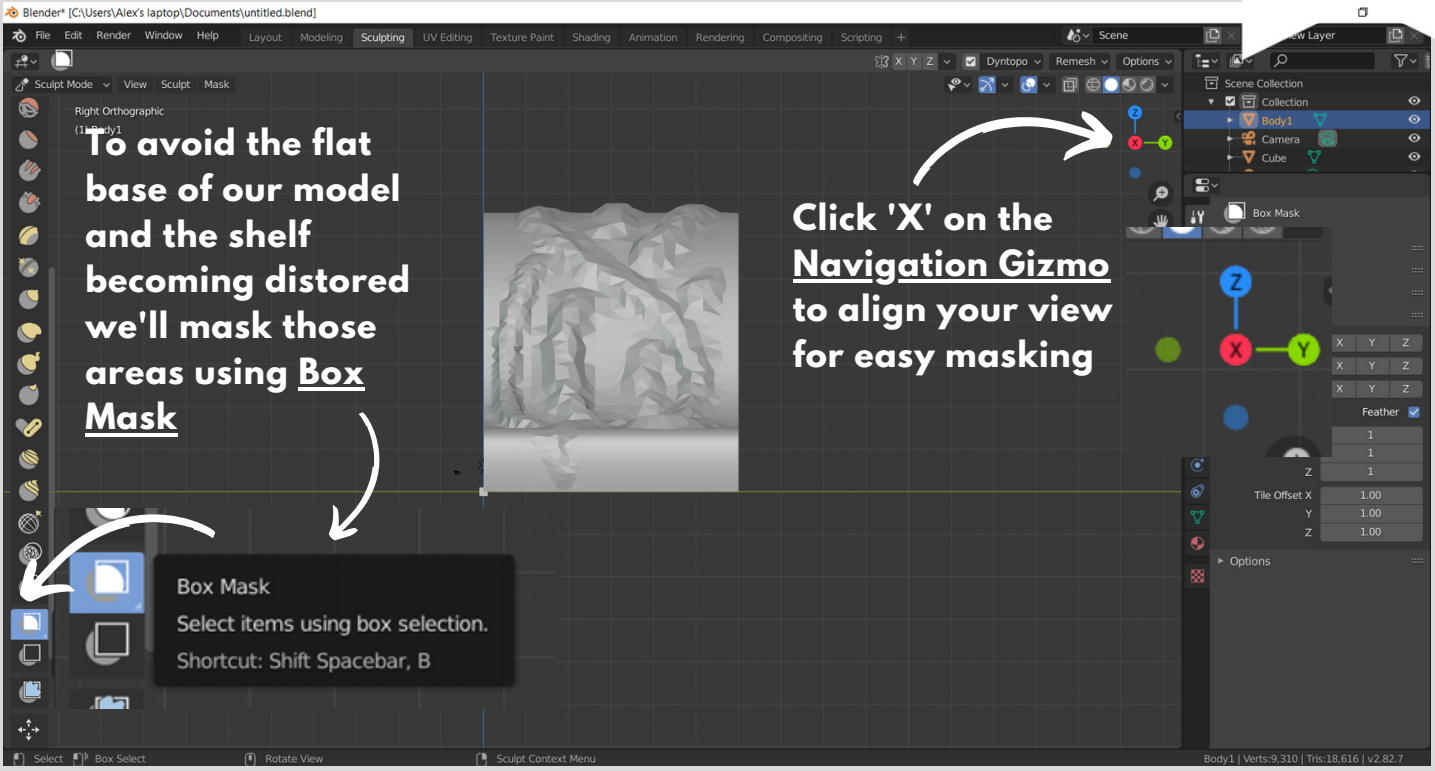


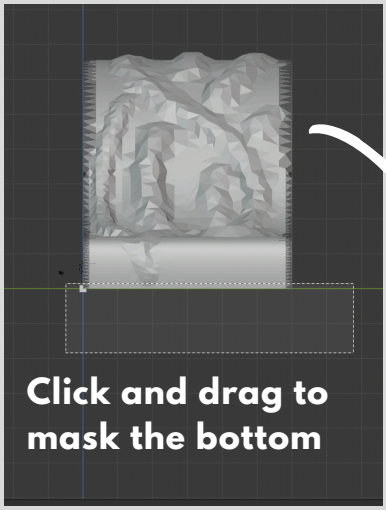
You may need to go over your lines a few times to make them more pronounced, especially if you are using a brush with a low Strength.

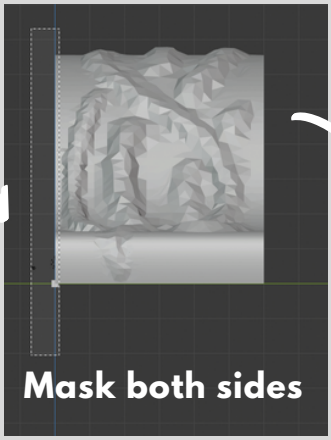


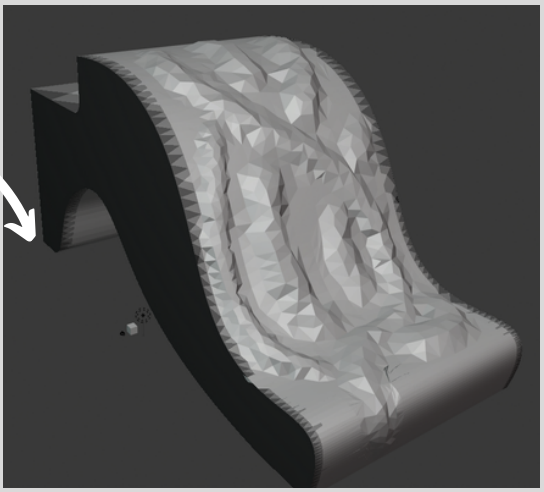
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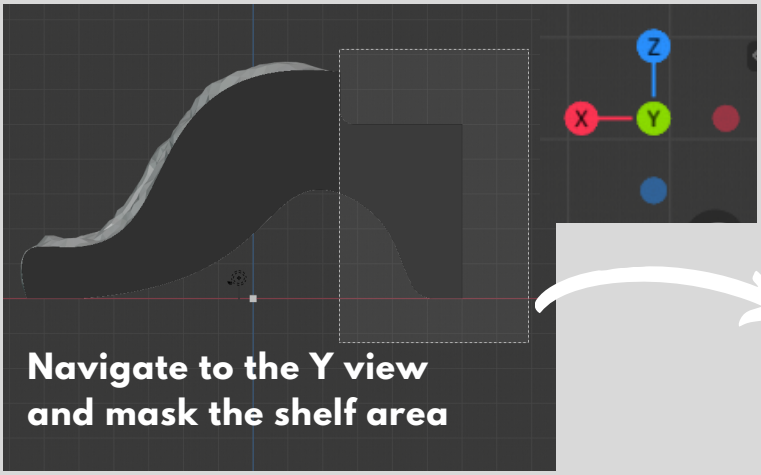
MASK TO KEEP AREAS





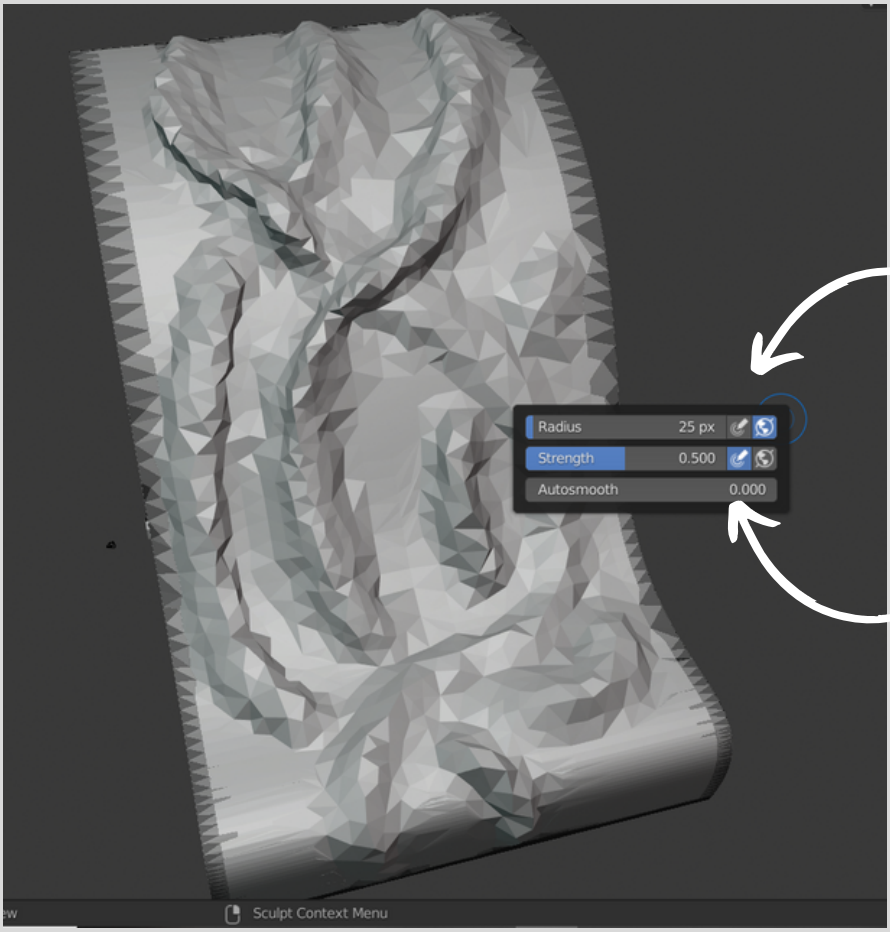








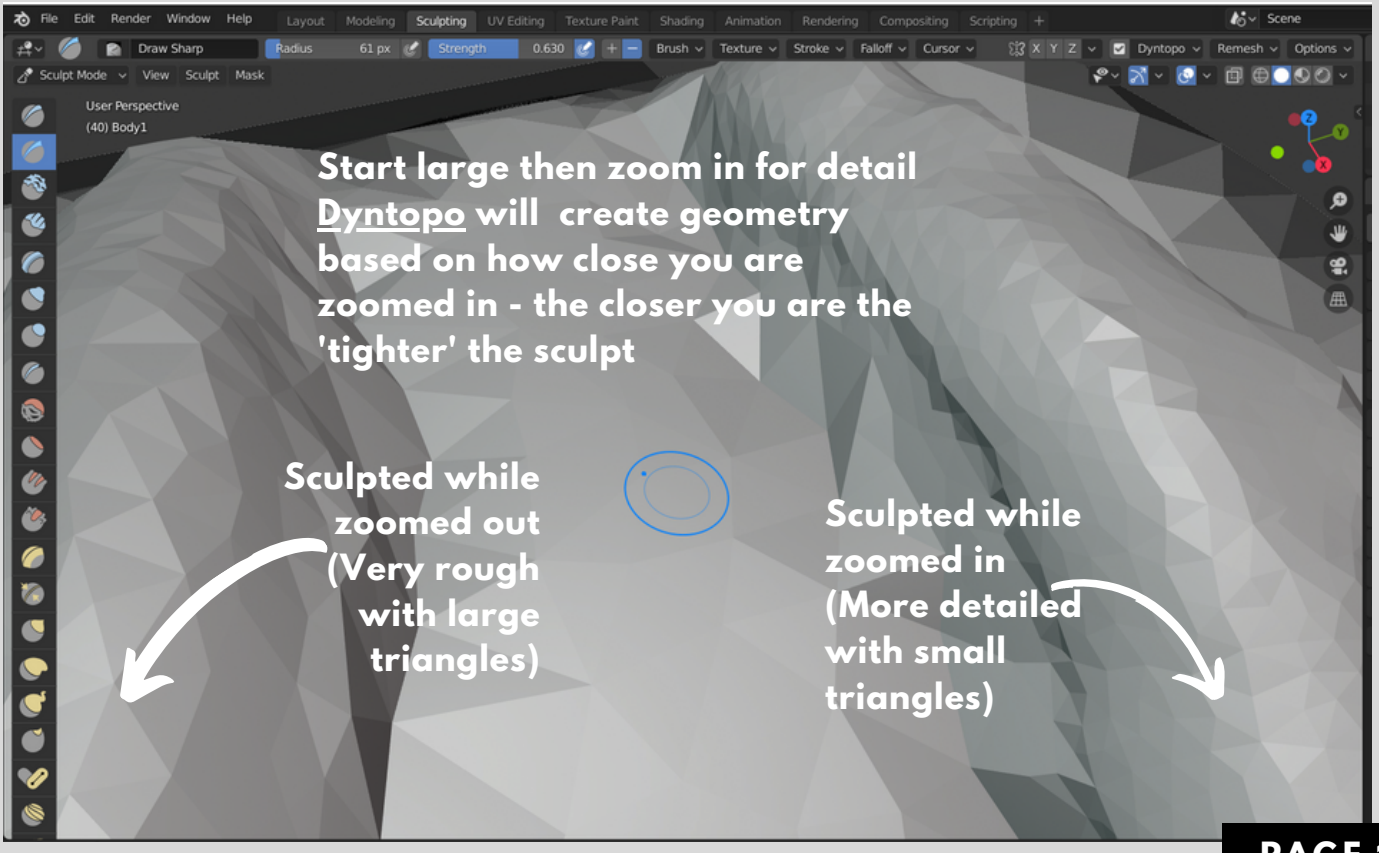
MODELING TIPS PART 1

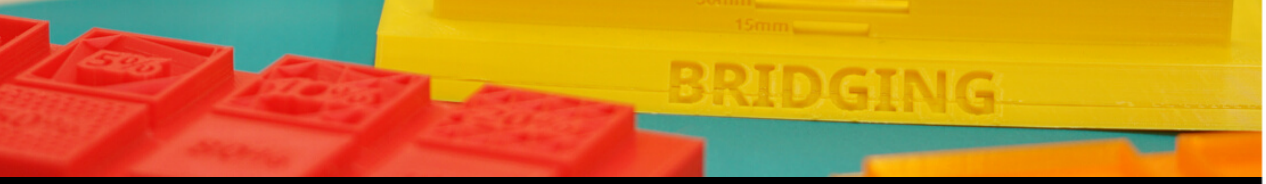


To help you sculpt your vines here are some tips:

Right Click to access your brush settings

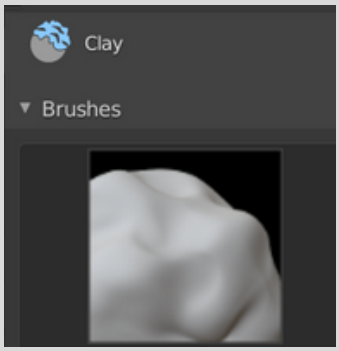
If Autosmooth is turned too far up you may find you brush lacking impact

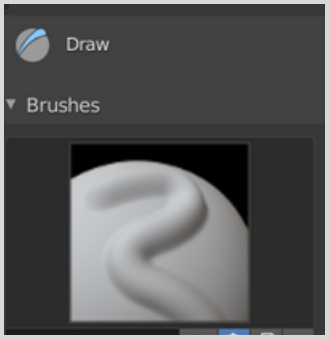




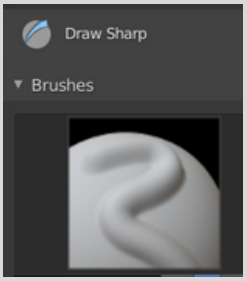
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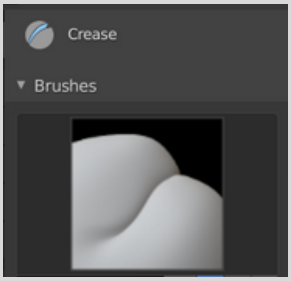
MODELING TIPS PART 2



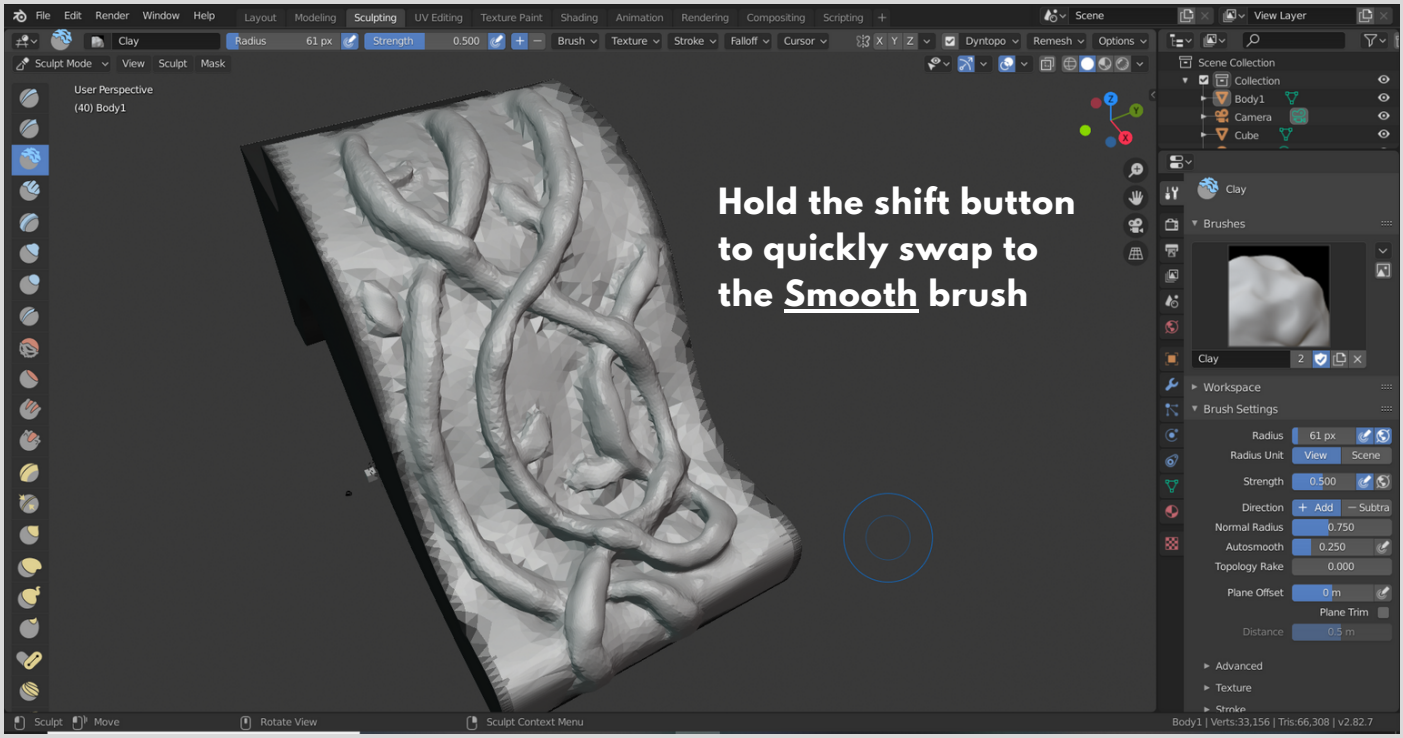


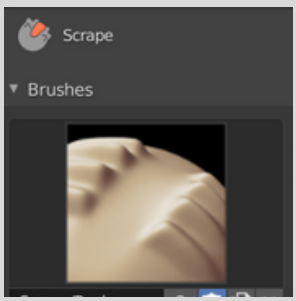
The Draw and Clay brushes are good for adding shape to your vines



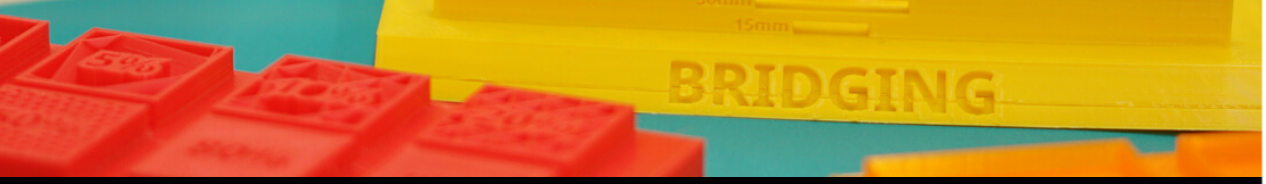


The Draw Sharp and Crease brushes are good for defining the undersides of the vines

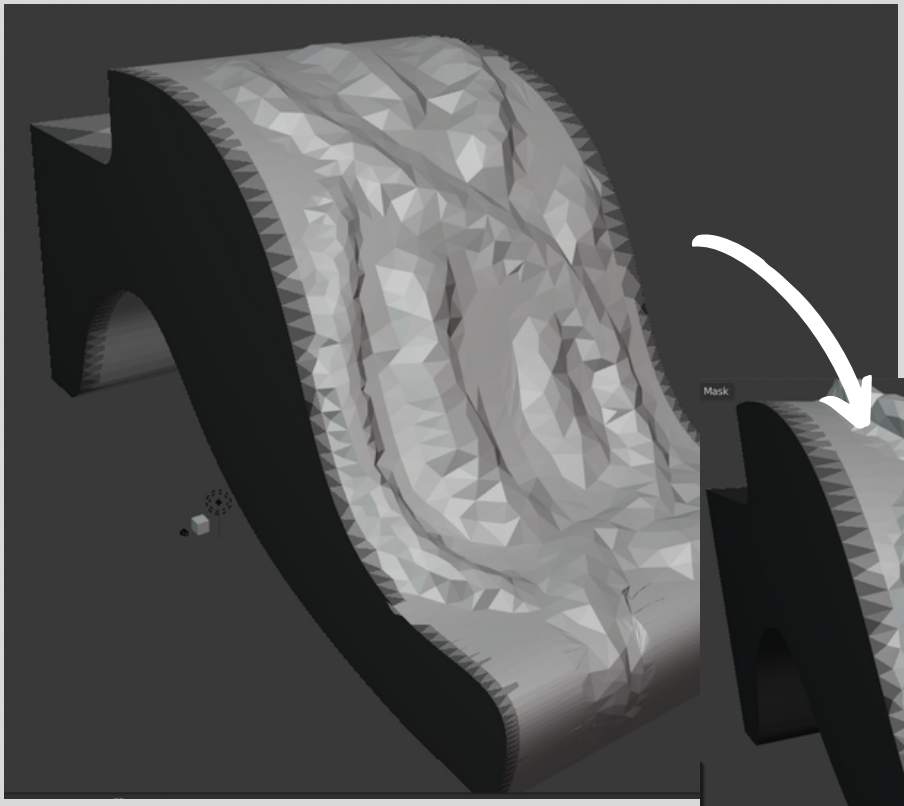




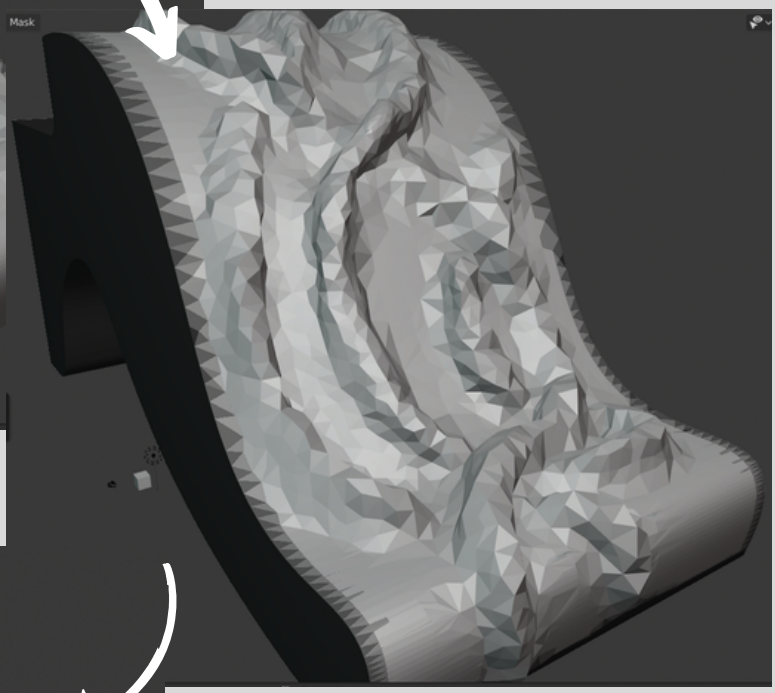
The Scrape brush is perfect for defining the area between the vines

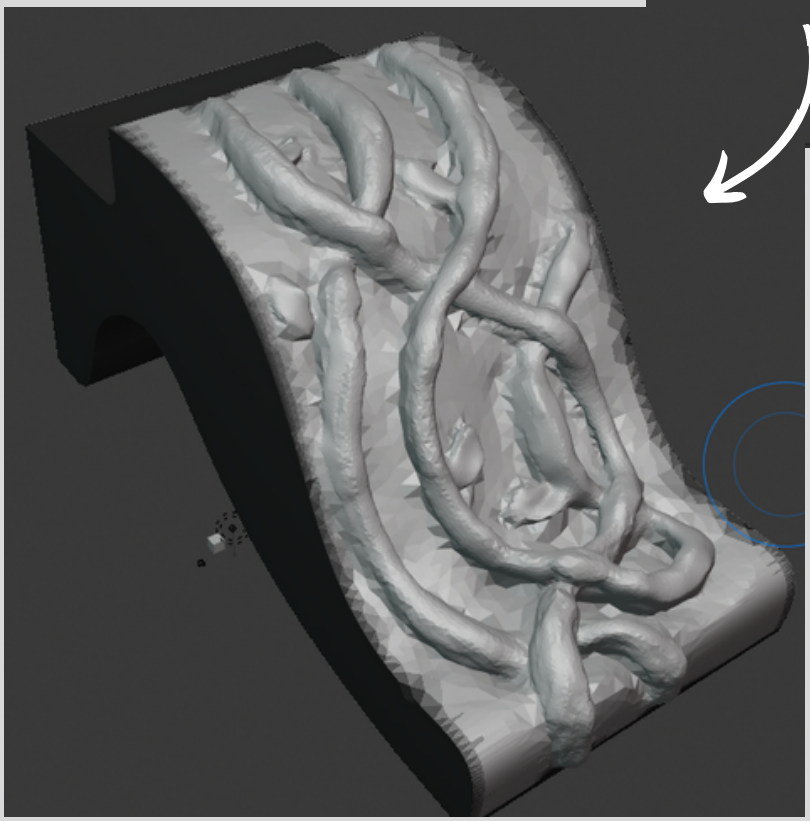


MODELING TIPS PART 3



The best thing to do when sculpting is to start with big shapes and slowly whittle down to a more detailed and defined version

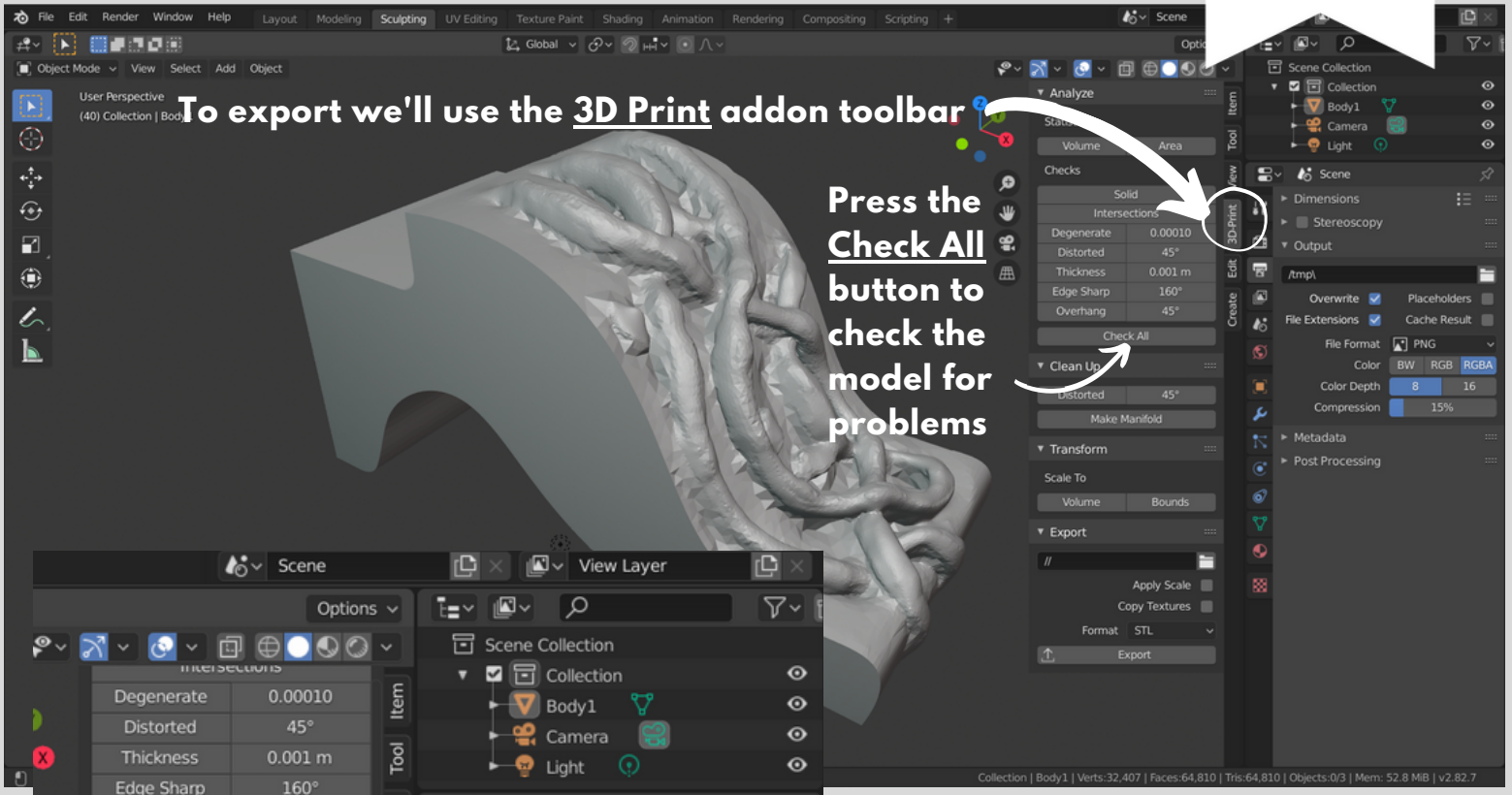


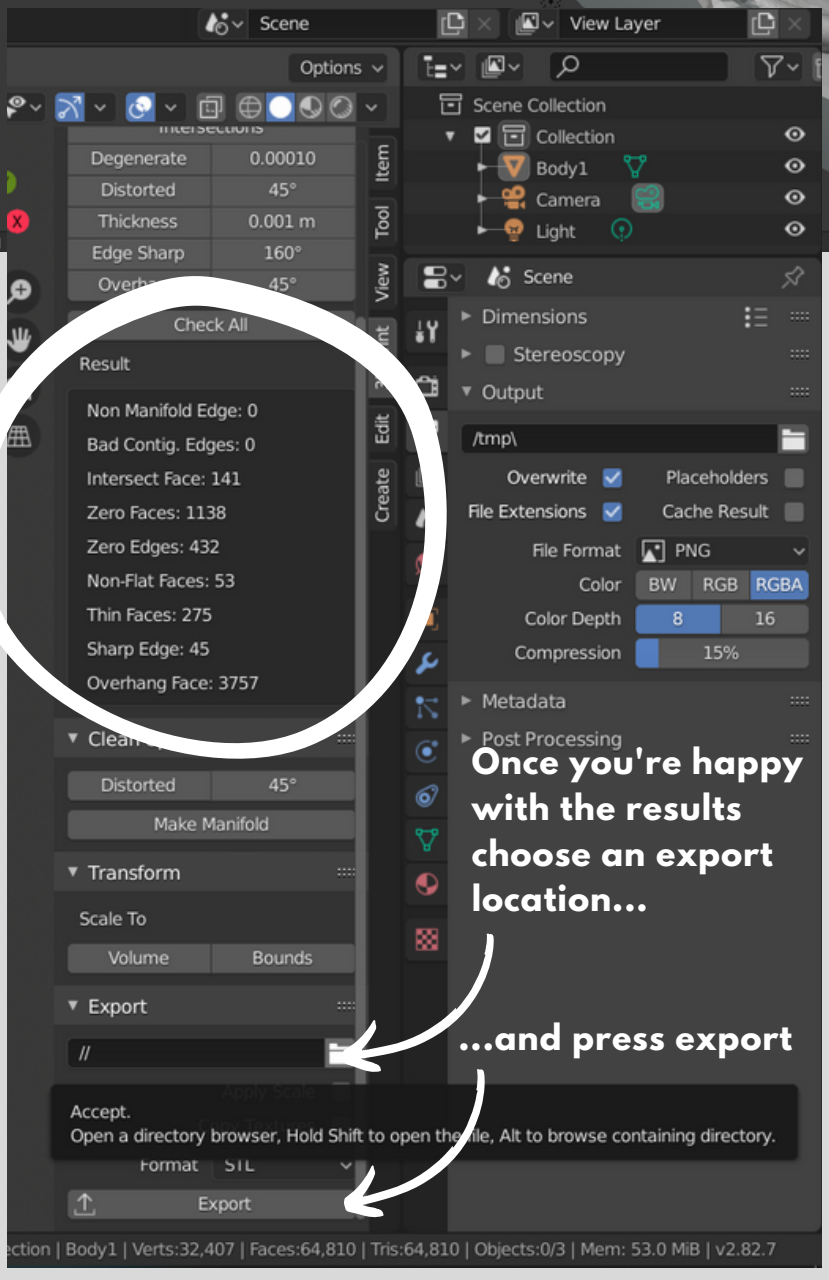




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Happy printing!

