

FINDING A SVG

In this activity we're going to make a magnet using a Scalable Vector Graphic (SVG). To start, let's find a suitable SVG from Public Domain Vectors;

@publicdomainvectors.org

HOME VECTORS PUBLIC DOMAIN SVG GENERATOR SVG EDITOR

cat

kitten

Always make sure that SVG is selected as the format

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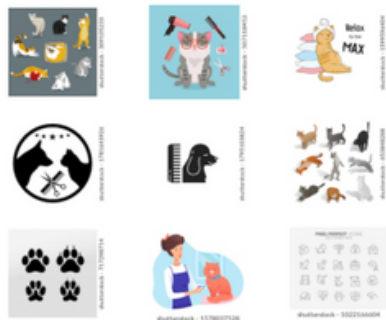


Grooming cat

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Description

Outlined image of cat sketch.

Categories

Animals

License

Public domain

Specs

0.01 MB
2017-07-20
743

Source

Openclipart



DOWNLOAD

Tags

Once you've found one you like click the 'Download' button



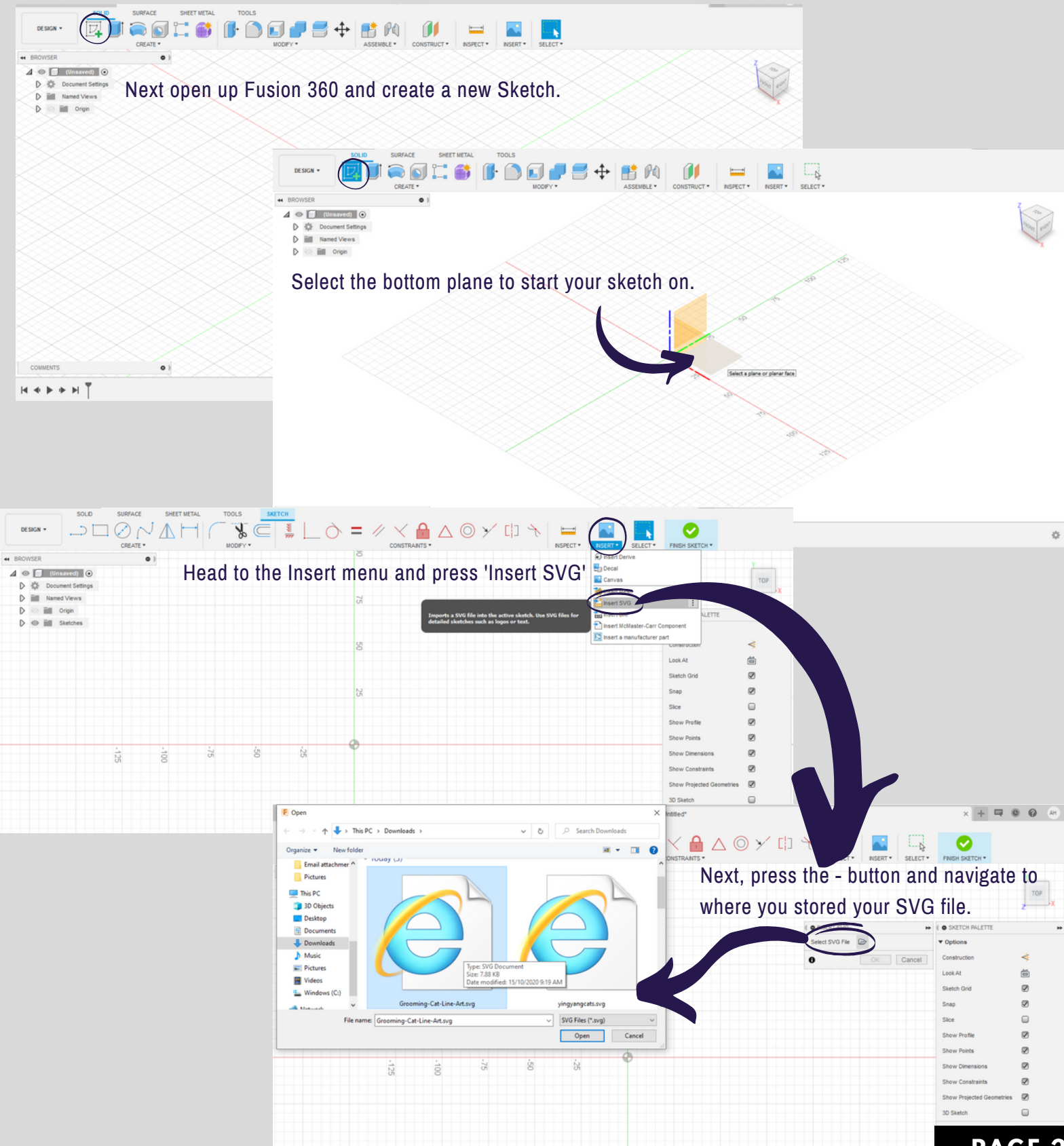
NOW TO FUSION!

Next open up Fusion 360 and create a new Sketch.

Select the bottom plane to start your sketch on.

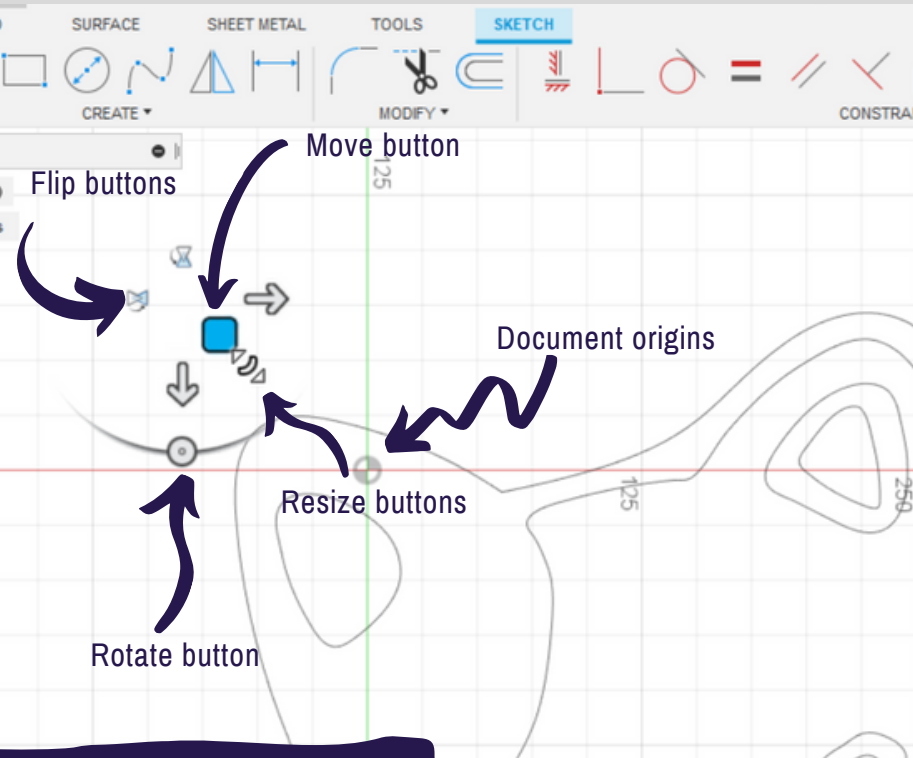
Head to the Insert menu and press 'Insert SVG'

Next, press the - button and navigate to where you stored your SVG file.

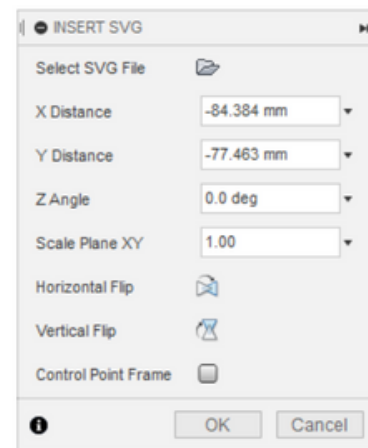


EDIT THE SVG

Now it's time to adjust your SVG. Use Fusion 360's rulers to resize your SVG (it usually comes in very big) and rotate/flip it until it's in the right orientation. You may also want to move it to the origins.



The magnets are 15mm in diameter so the suggested size for your 3D model is between 30mm and 40mm



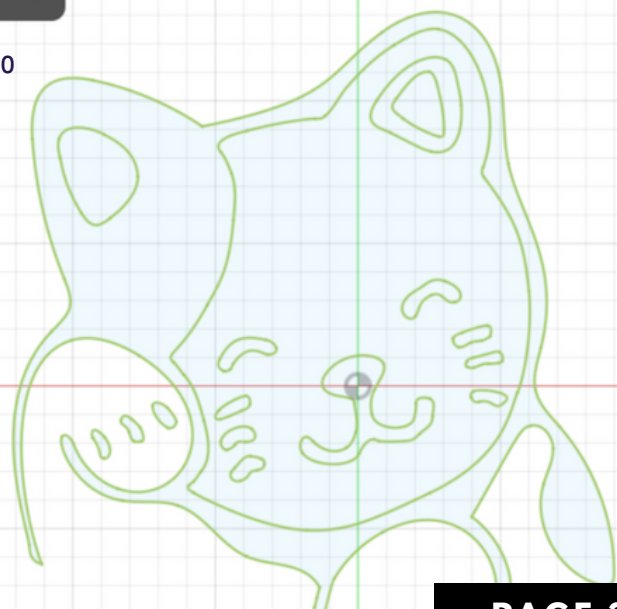
Technical Pointers

Fusion will import SVG lines as 'fixed' lines - that's why they're green.

Technical Pointers

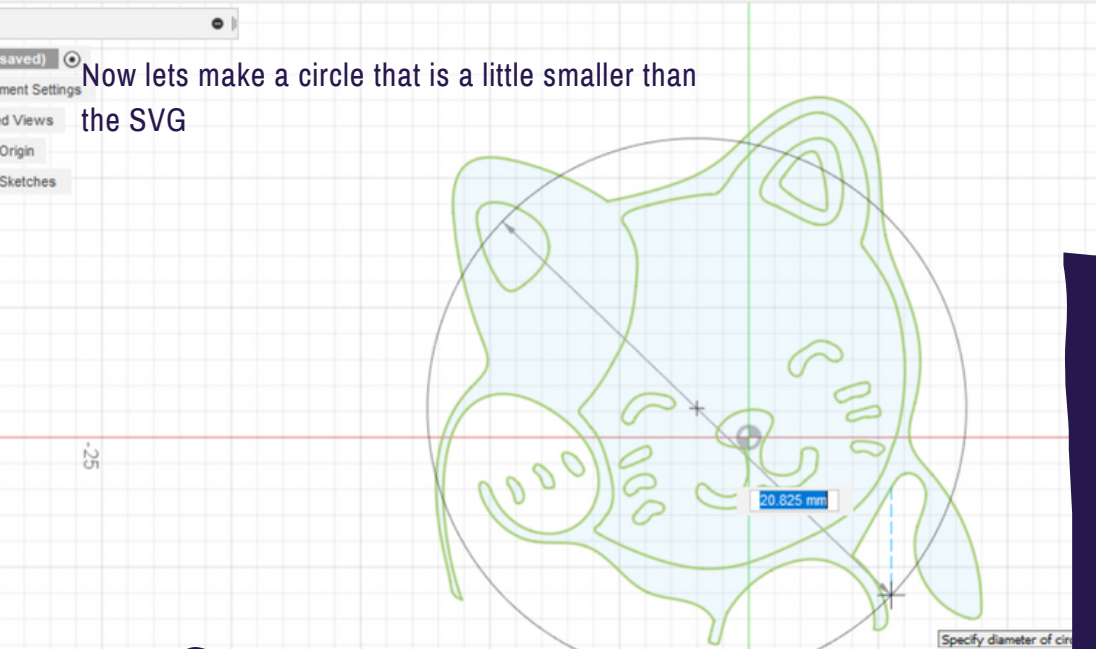
It's easy to get out of the sketch menu while editing your sketch. If this happens don't make a new sketch, instead double click on your original sketch in the timeline.

Now my SVG is ready, time to make a circular border!





CREATE A BASE



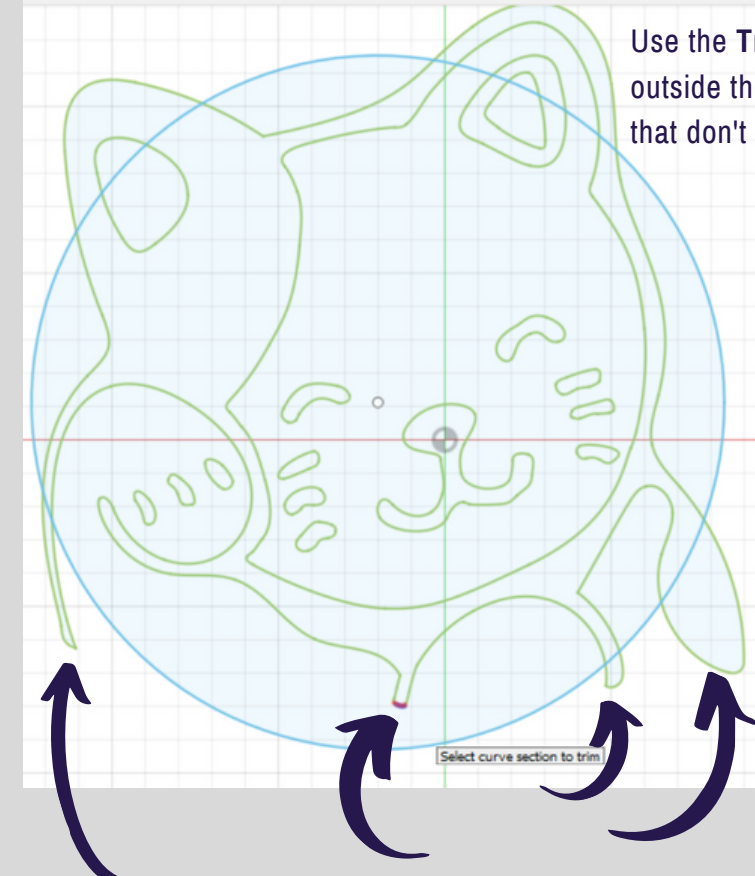
Now lets make a circle that is a little smaller than the SVG

Pro Tip

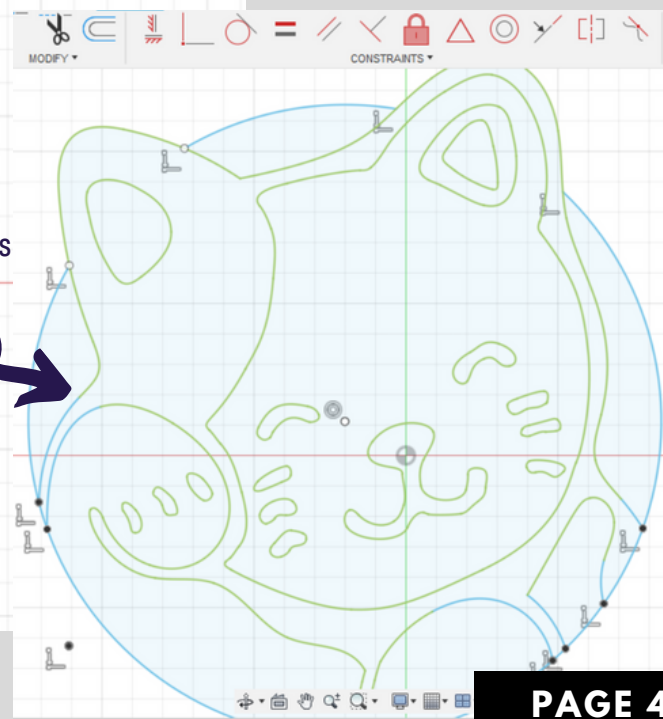
Why clean up your sketch?
If you could just leave all your lines in place and still extrude the same shape, why bother cleaning up your sketch and trimming lines? The main reason is a clean sketch helps with extrusion. It can be easy to miss small parts of your sketch when extruding, leading to holes in your design.



Use the **Trim** tool to trim the lines outside the circle and the ones that don't touch the edge

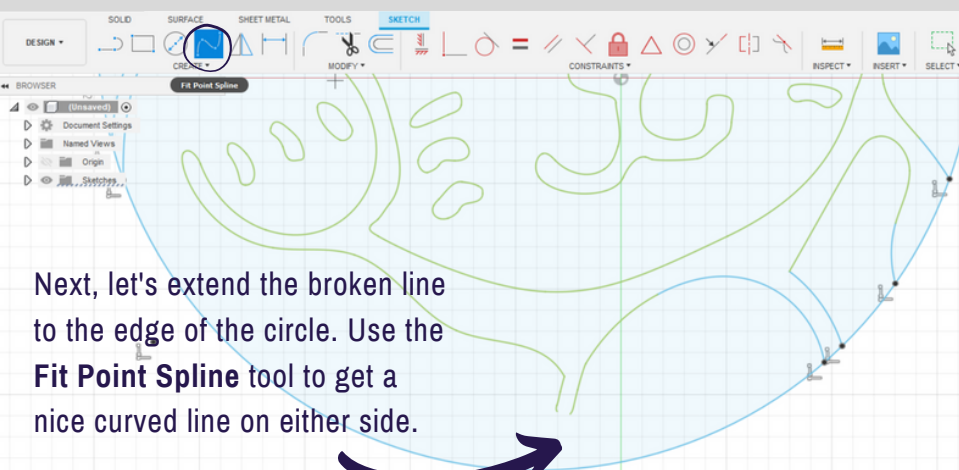
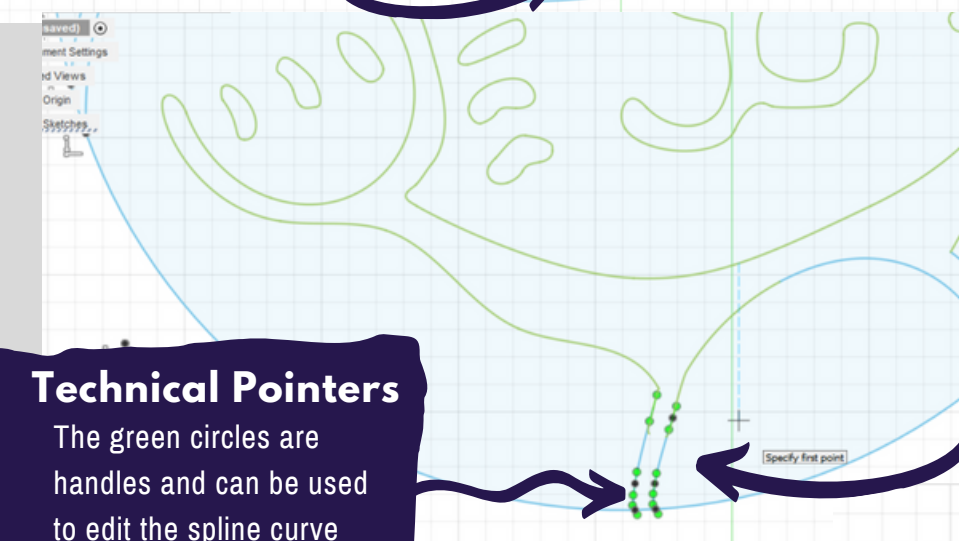


It should look like this

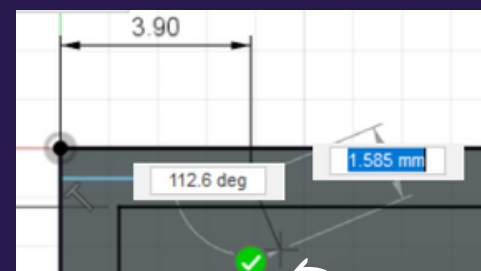




EXTEND THE LINES



Technical Pointers

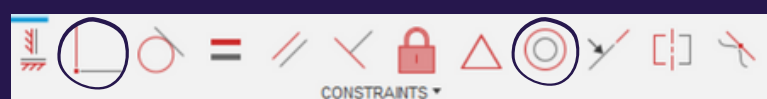


How do I finish a line?

When drawing lines unless you close the shape, Fusion will assume you want to keep on drawing. To finish just press the **green tick** or press the **escape** button.

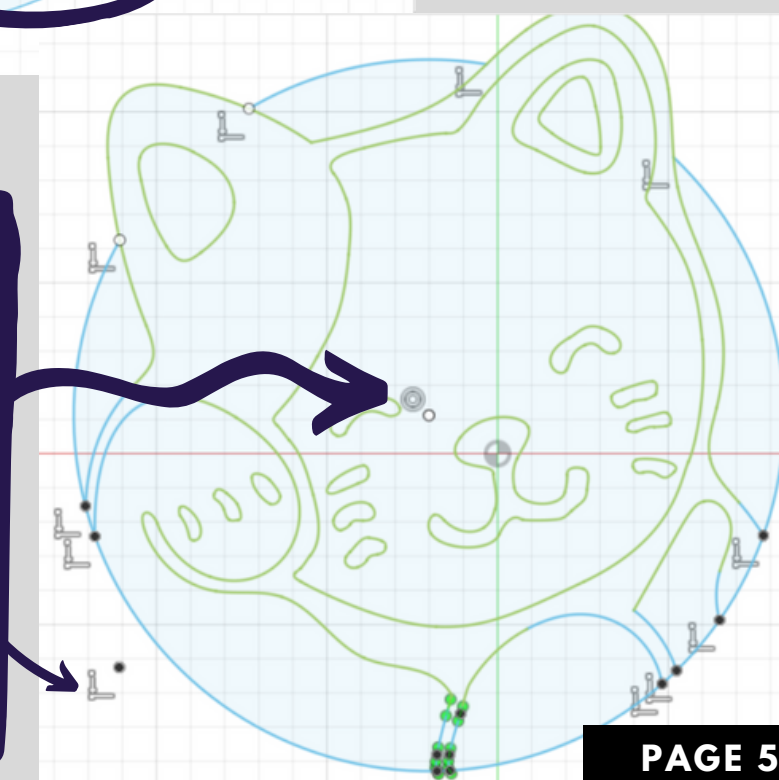
It should look something like this

Technical Pointers



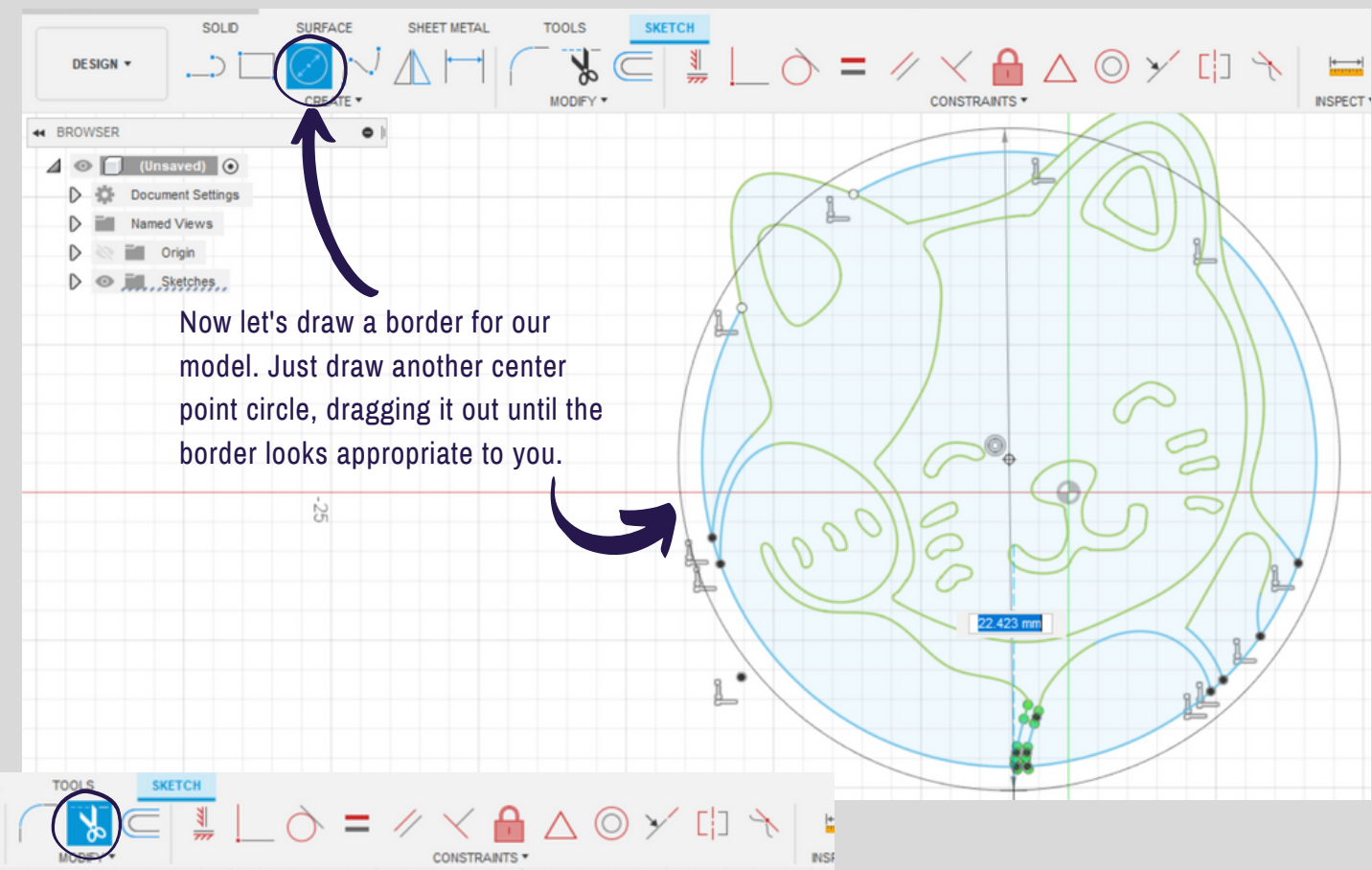
What are constraints?

Constraints are tools in Fusion that allow you to relate one sketch entity to another sketch entity. Like making sure a line intersects with another at it's midpoint or one circle is at the absolute center of another. Constraints are your friends in sketching and Fusion will often automatically apply best the constraint to your sketch while you're working.

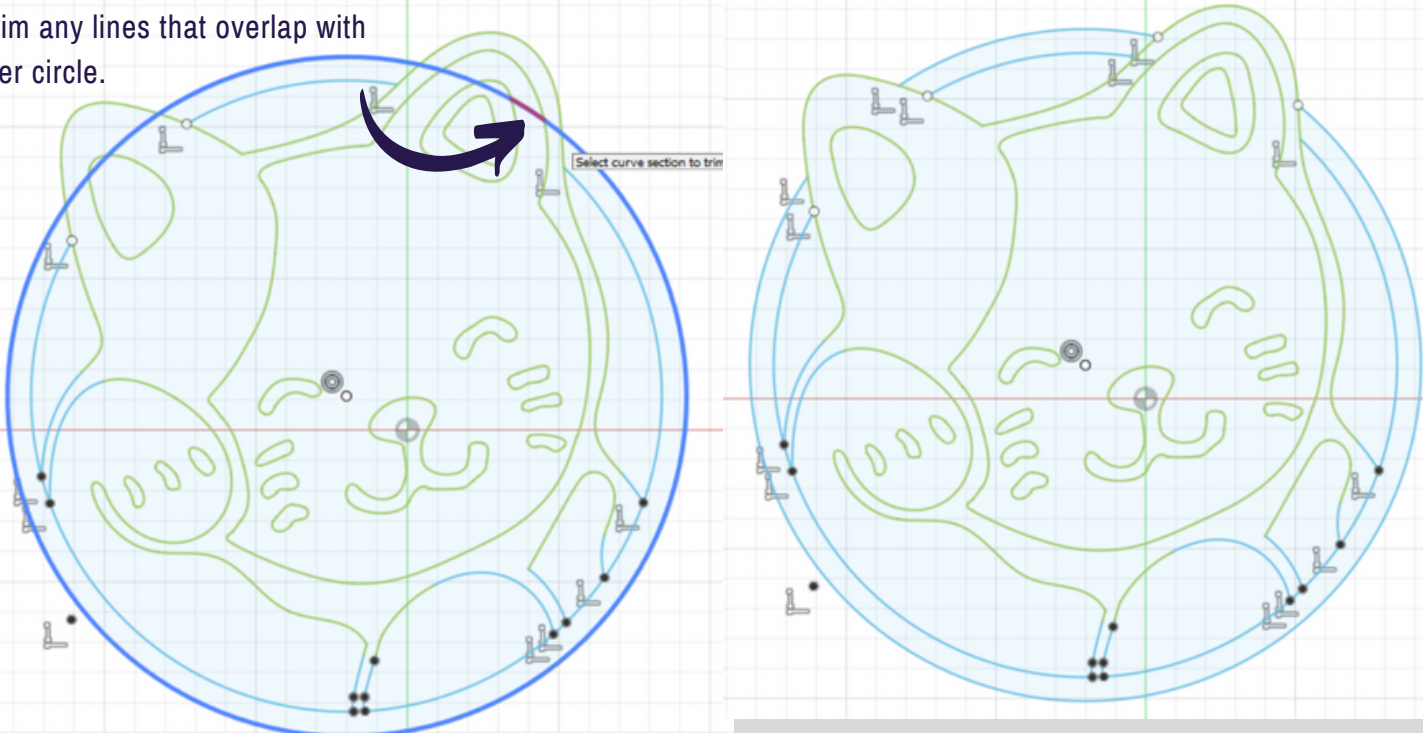




DRAW A BORDER



Then trim any lines that overlap with the outer circle.

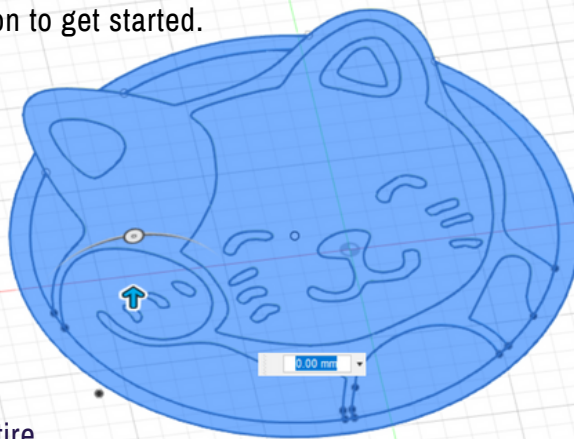
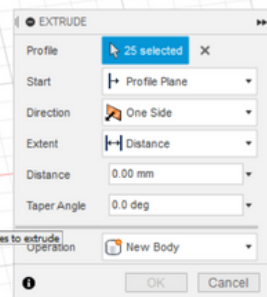




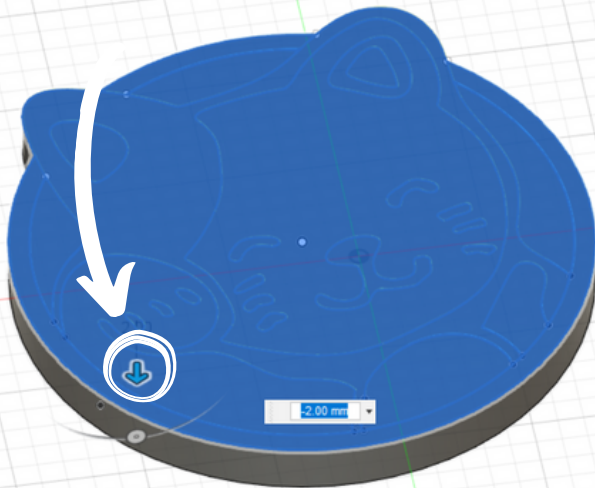
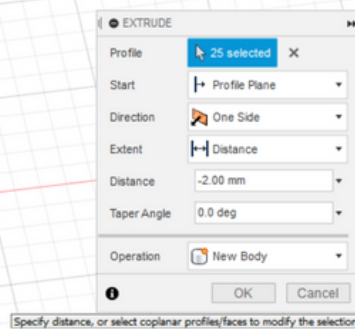
EXTRUDE THE BASE



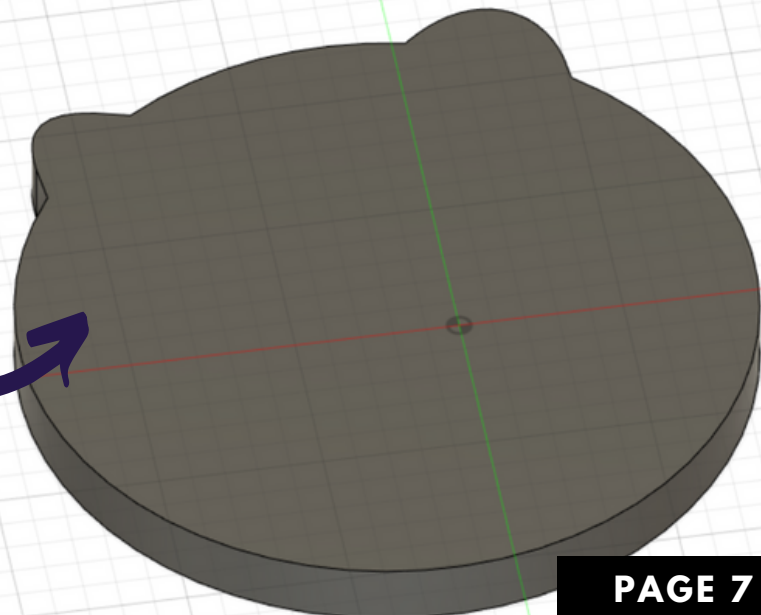
Now it's time to extrude our magnet!
Press the **Extrude** button to get started.



Make sure you've selected your entire design (don't leave sections out or you'll get holes!) and extrude down.

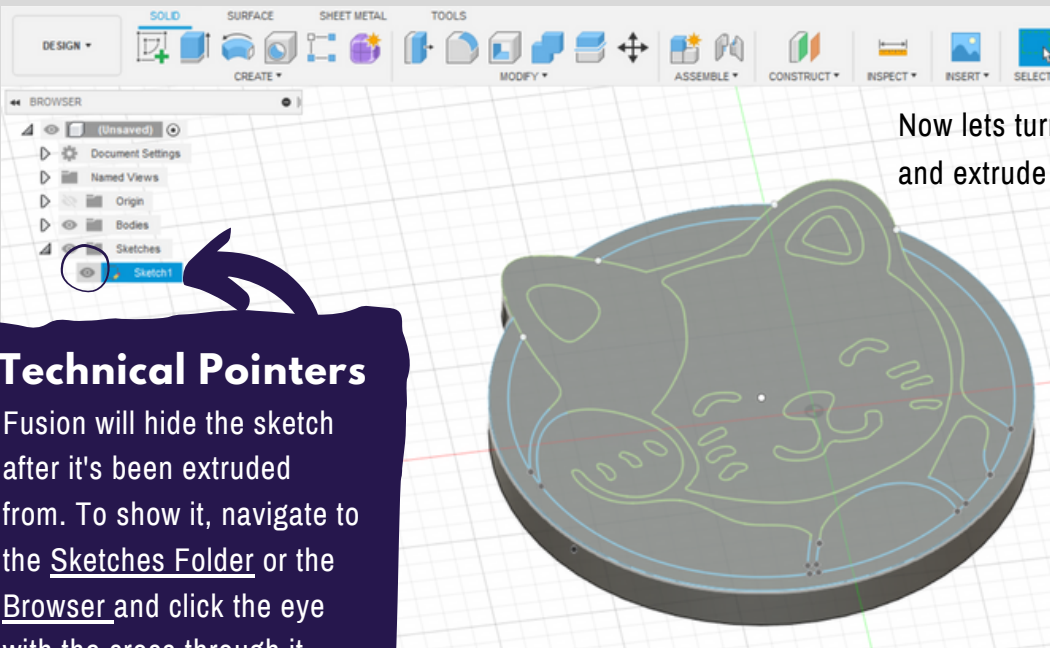


Now we've got the base of our model,
lets add some features!



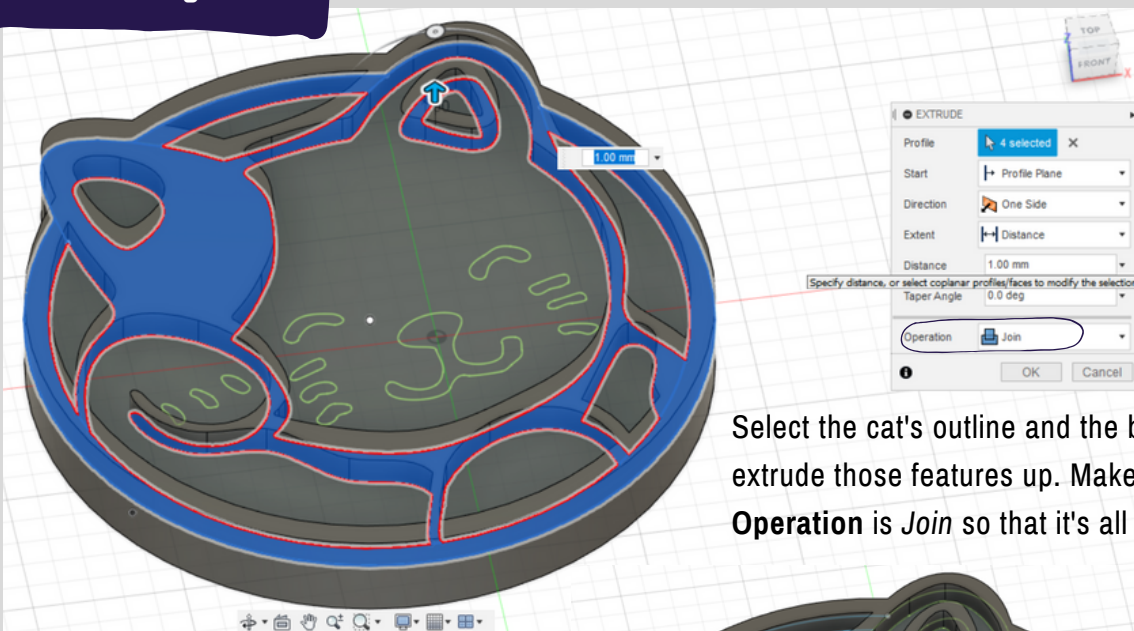


EXTRUDE THE DETAILS



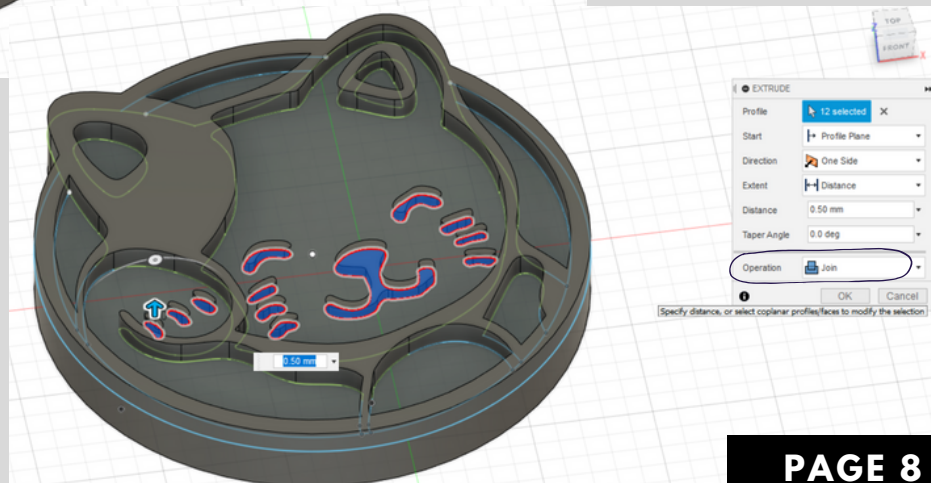
Now lets turn the sketch back to *visible* and extrude up the details.

Technical Pointers
Fusion will hide the sketch after it's been extruded from. To show it, navigate to the Sketches Folder or the Browser and click the eye with the cross through it.

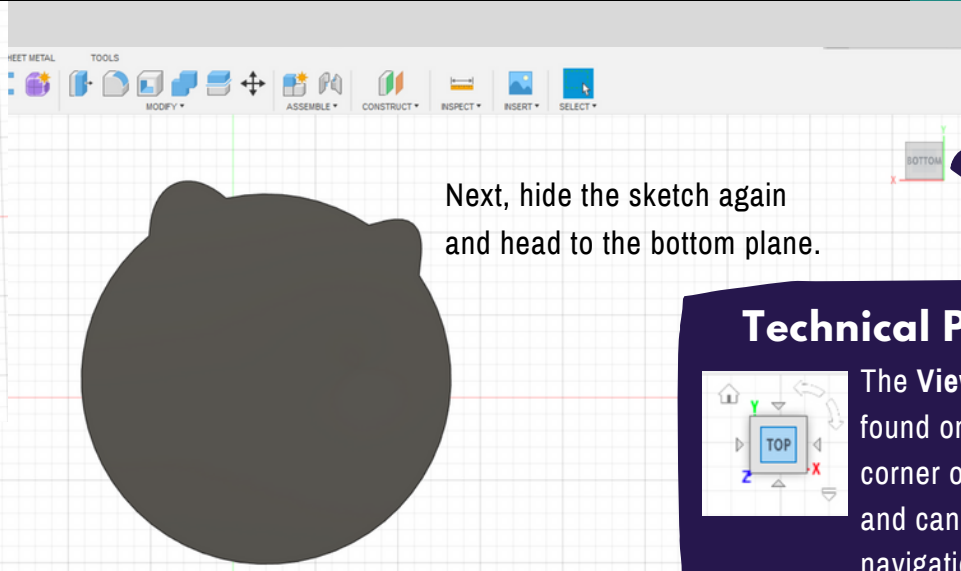


Select the cat's outline and the border and extrude those features up. Make sure the **Operation** is *Join* so that it's all attached!

Finally, extrude up the cat's facial features and claws, just a little less than the overall outline to create some height variation.



ADD THE MAGNET



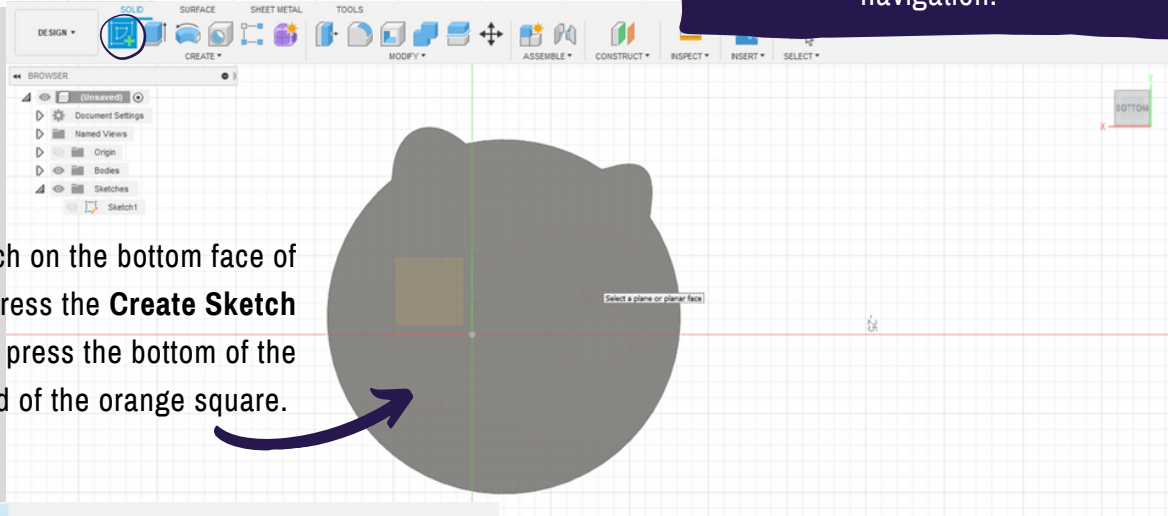
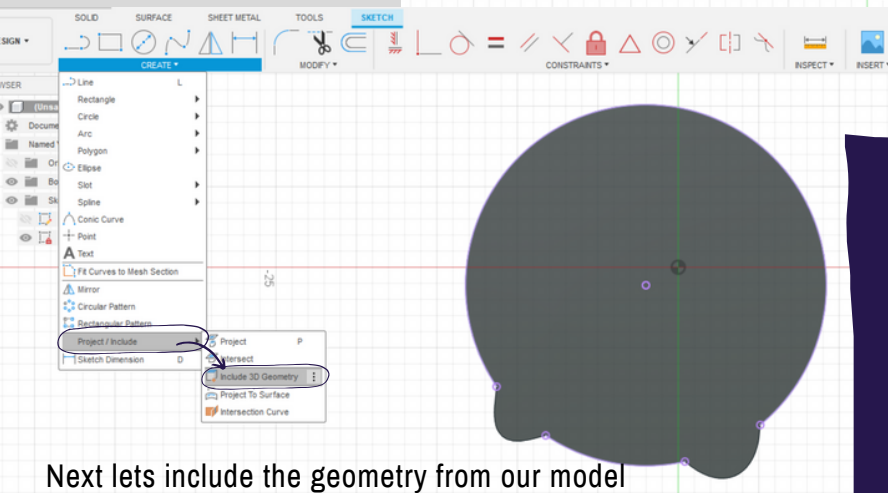
Next, hide the sketch again and head to the bottom plane.

Technical Pointers



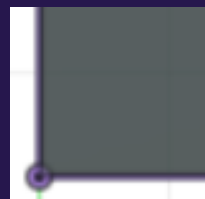
The **View Cube** can be found on the top right corner of your browser and can help a lot with navigation.

To create a sketch on the bottom face of our model press the **Create Sketch** button and press the bottom of the model instead of the orange square.



Next lets include the geometry from our model by heading to the **Create** menu and going to: **Project/Include > Include 3D Geometry**

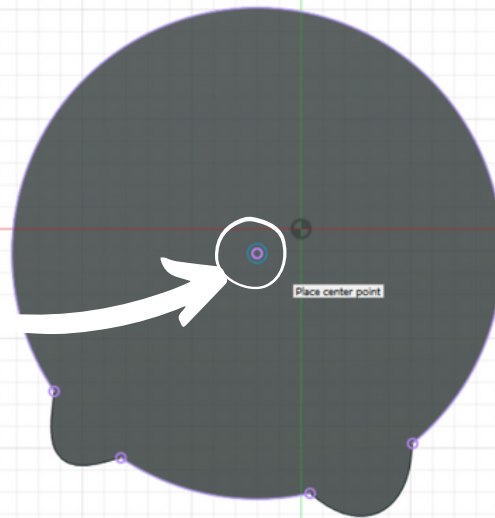
Technical Pointers



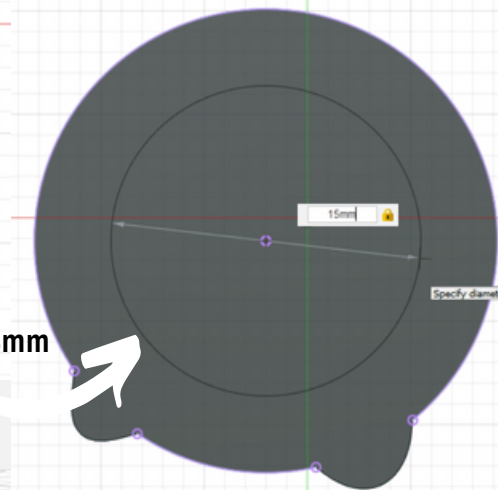
Including geometry helps to line up your sketch with previously created bodies. When a line or point has been 'included' it will turn purple. Always check you've got the line you want by rotating your model.

DRAW THE HOLE

Now let's create space for a circular magnet. Start by drawing a center-point circle using the center provided by your 'included geometry' (it's the purple circle)

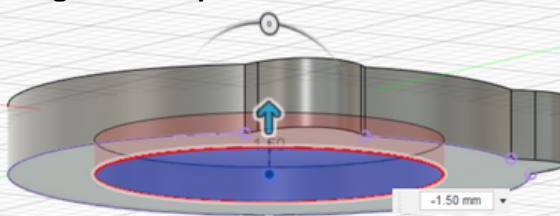
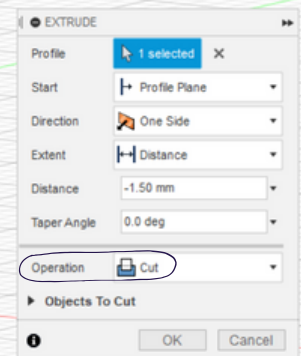


The magnet is 15mm in diameter so draw a circle with a slightly larger diameter: **15.3mm**

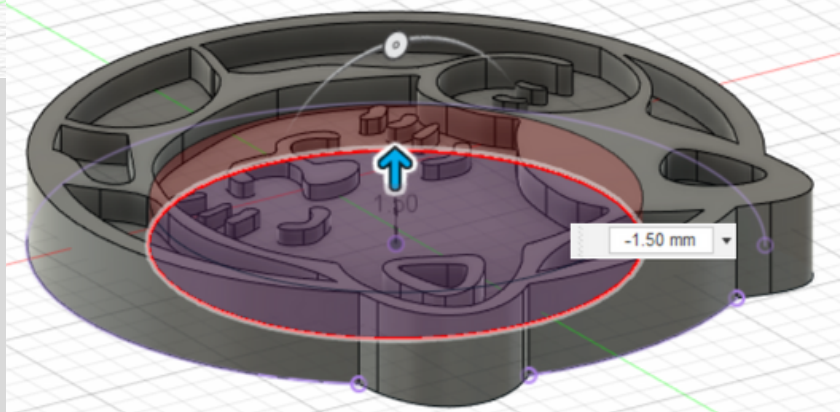


Then press the **Finish Sketch** button and start extruding using the profile we drew.

Extrude into the magnet base -1.5mm (not quiet the height of the magnet). Make sure you're using the **Cut Operation**.



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



It's always good to double check from all angles that you aren't cutting through your model.



TIME TO PRINT!

