# EP1000

3D Models - 2

Methods of Creating 3D Models

- Extrusion
    - Use a 2D plane profile
    - Extend into the 3rd plane

- Revolve
    - Use a 2D plane profile
    - Rotate the plane around an axis

- Sculpting
    - Start with a 3D object
    - Add, remove 3D objects
    - Subdivide the surface into sections
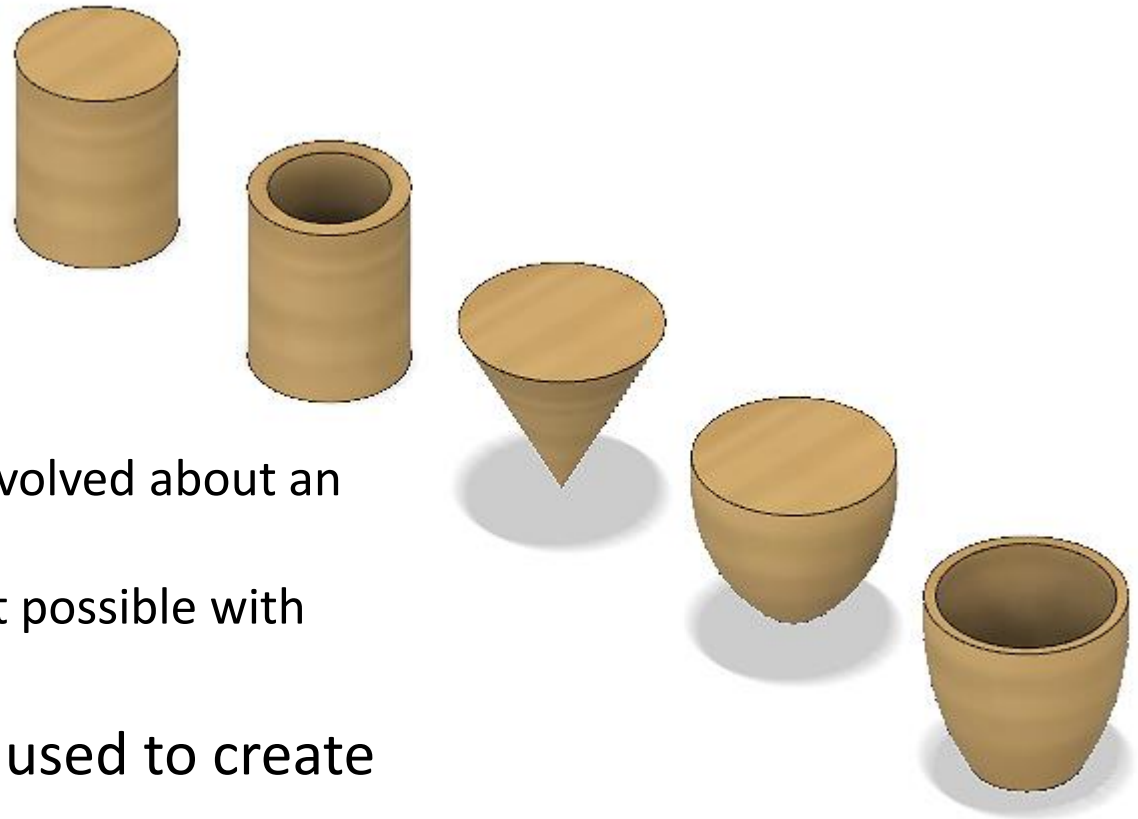   - Push, pull, extend, contract sections

Create > Revolve

- Start with a 2D closed profile in plane

- Create > Revolution

  - Select the axis of revolution
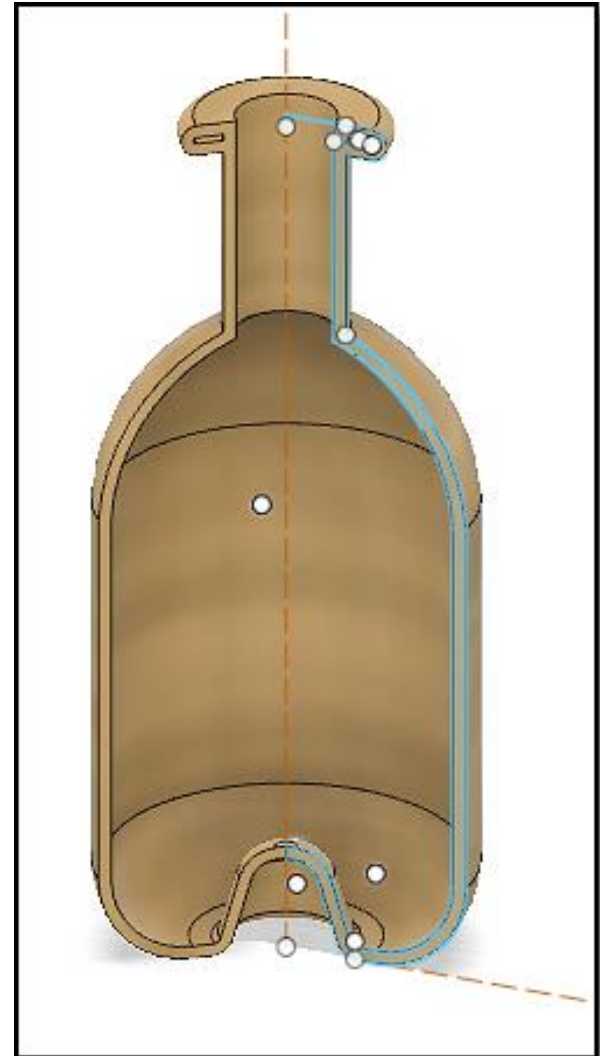
  - Select the angle to revolve
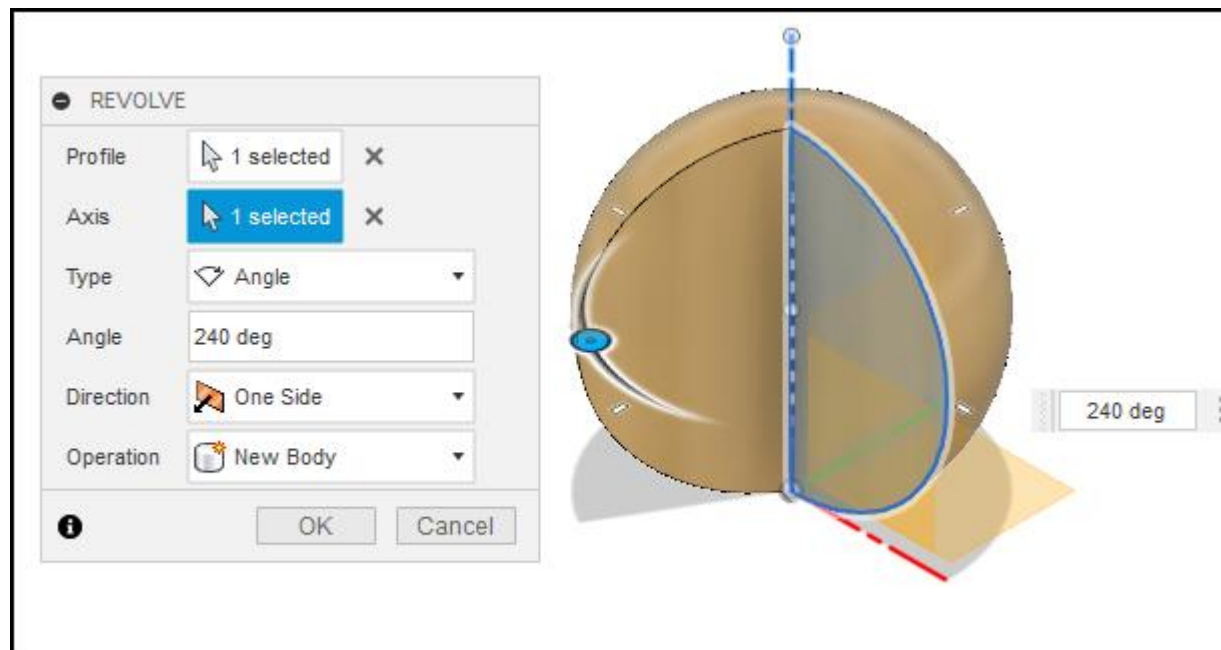
Create > Revolve

- Revolve used for
    - Uniform objects revolved about an axis
    - Creates objects not possible with Extrude
- What profiles were used to create these objects?

Revolve using Arc profiles

- You can create bottle objects using arc profiles.

- You can also use the revolve command to cut parts which you do not need.

Exercise 1: Mug with Handle

- Let's make a mug with a handle
    - dimensions: 50mm (diameter), 80mm (height)
    - Include an arc at the base of the mug
    - let the mug's thickness be about 2.5mm
    - add a handle (ear) of thickness 6mm of your choice

- Go wild with your design! It's just an exercise on using the revolve and extrude functions.
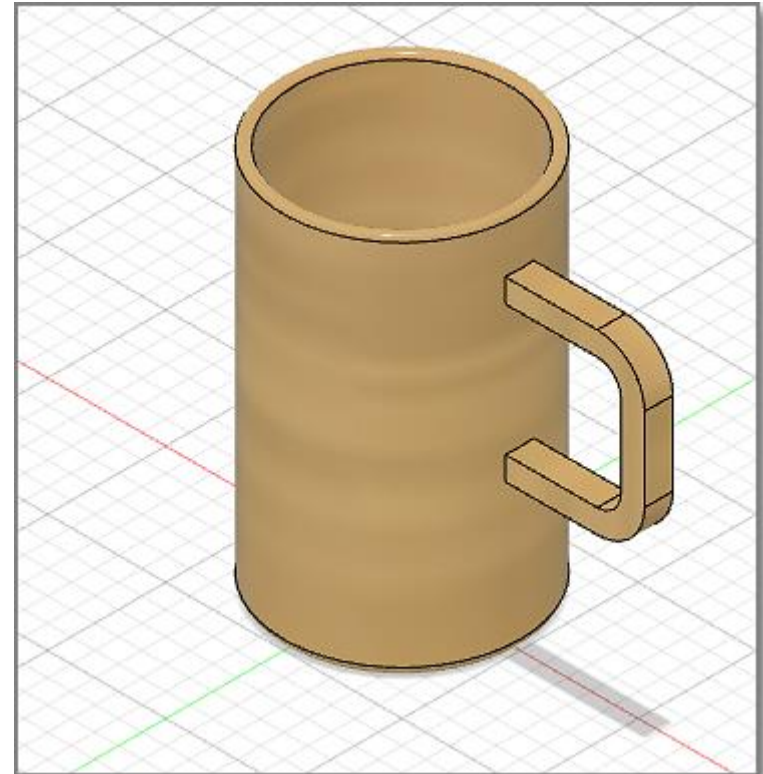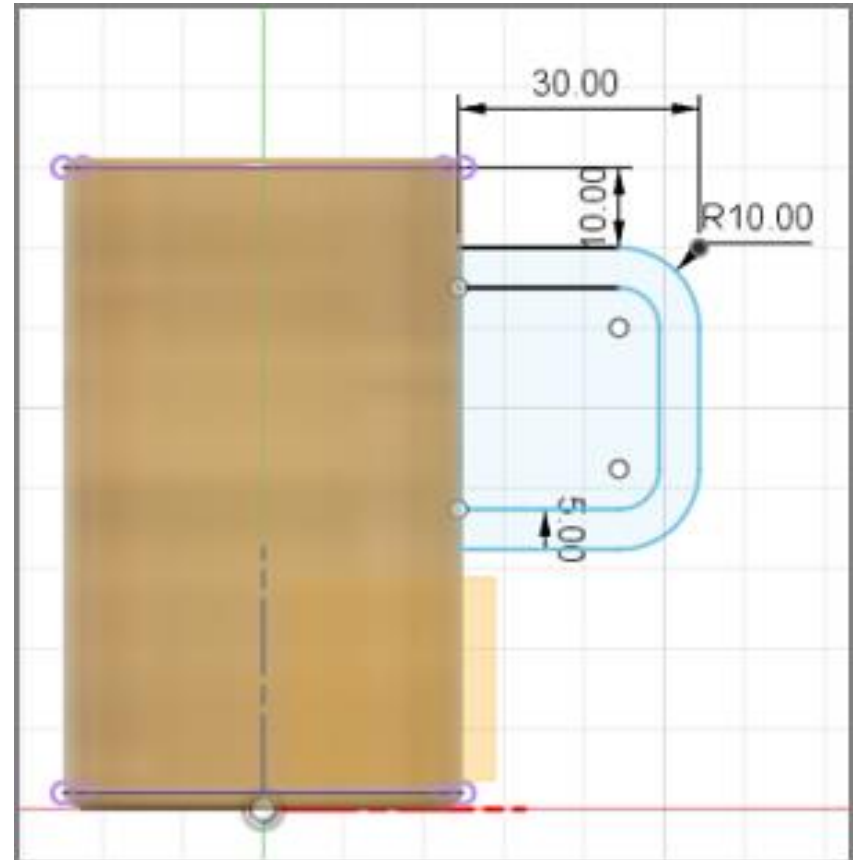
Tip 1:

- You can use the profile as a guide.

- Make sure you have a closed profile before you revolve.

- Also, ensure that you do NOT overlap across the axis
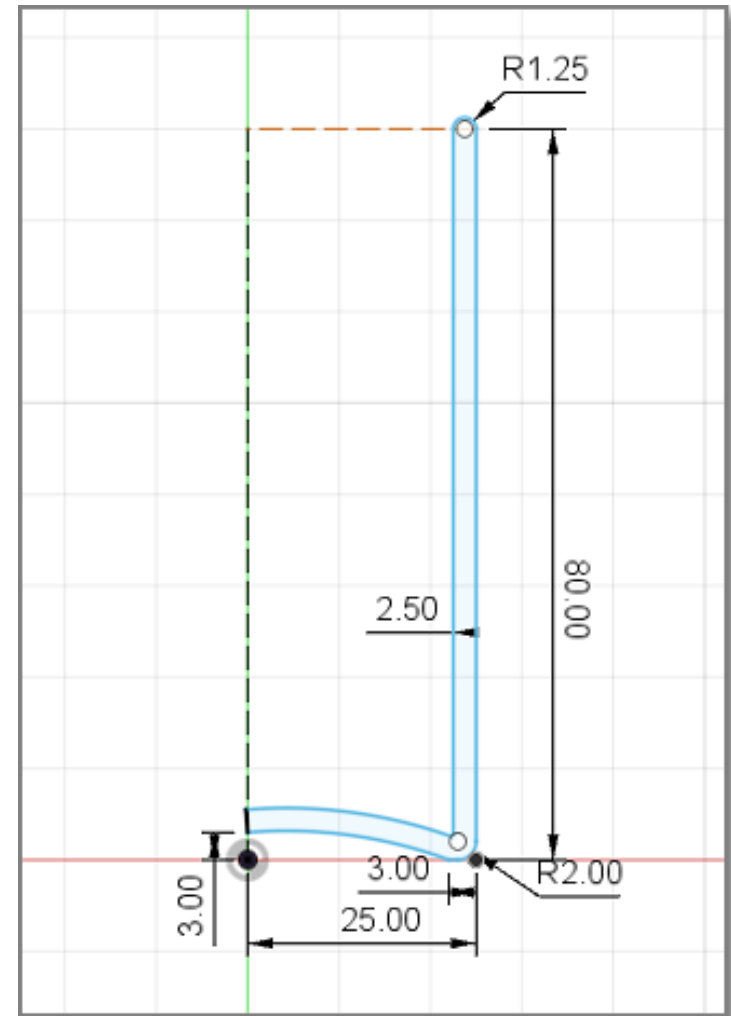
Tip 2:

- Create the handle on the mid-plane.

- Project the mug onto the plane to get the intersect points.

Exercise 2: How to model a Hex Nut

- This is Kevin Kennedy's video tutorial on the modelling of a hex nut: https://youtu.be/Xho87HJ-XDo

- A useful tutorial should you need to create odd-sized fasteners.

Exercise 3: Chess piece - Knight

- Design a Knight chess piece:
  - Base: 30mm
  - Height: 50mm
  - Head thickness: 5mm
- Use a template for the head
- The base should be hollow
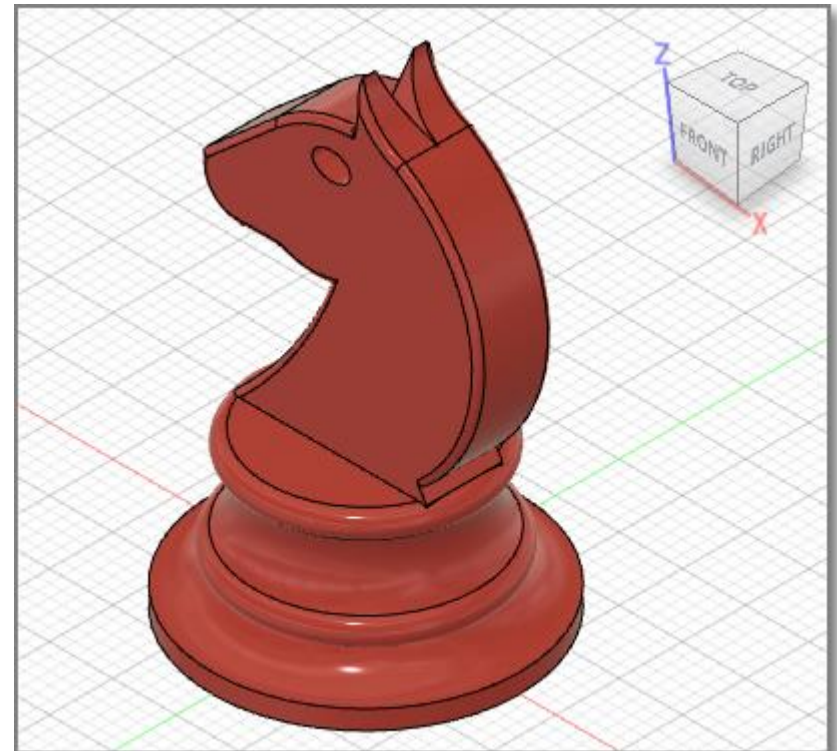
Tip: Use a canvas

- Let's cheat and use a template (do a Google search)
  - Insert > Canvas
  - Adjust transparency
  - Adjust position
  - Create Sketch
 - Draw the profile
  - Switch off canvas
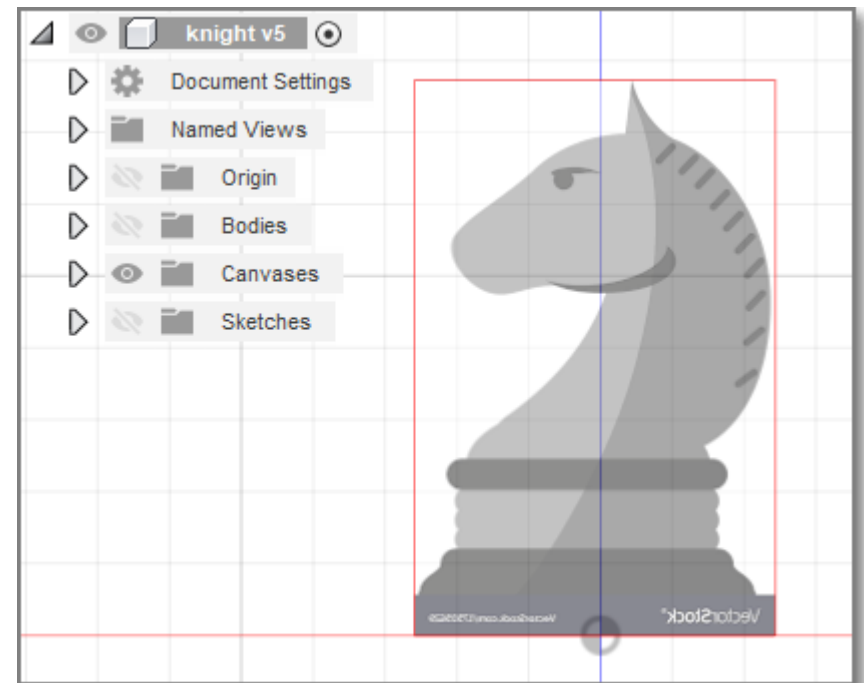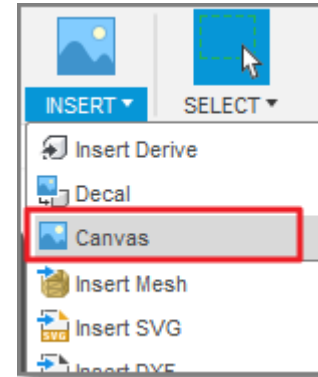
When you have finished...

- Embed your Fusion 360 file in your web page
- Ref:
  - Fusion 360 [How to embed a viewer of a Fusion 360 design into a website](#)
  - EP1000 Assignment: [3D Modelling](#)
- Include this exercise in your documentation, including the steps taken

Sculpting

- Use a basic 3D shape, break up the shape, manipulate each part.

- Like playing with plasticine
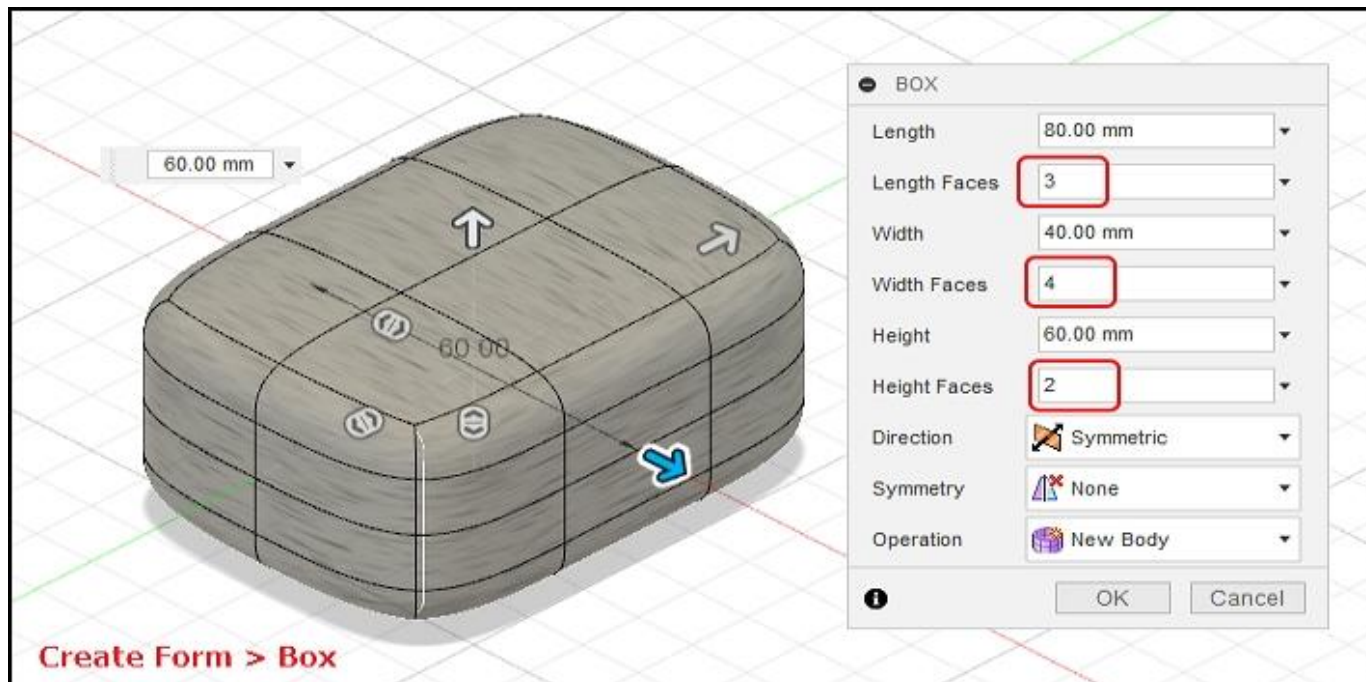
Sculpting

- Product Design Online Tutorials:
    - How to sculpt an Earbud
    - Sculpting for plastics parts:
      Part 1, Part 2
- Good for creating objects with no definite shapes
- Time consuming
- Great Effects

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End