

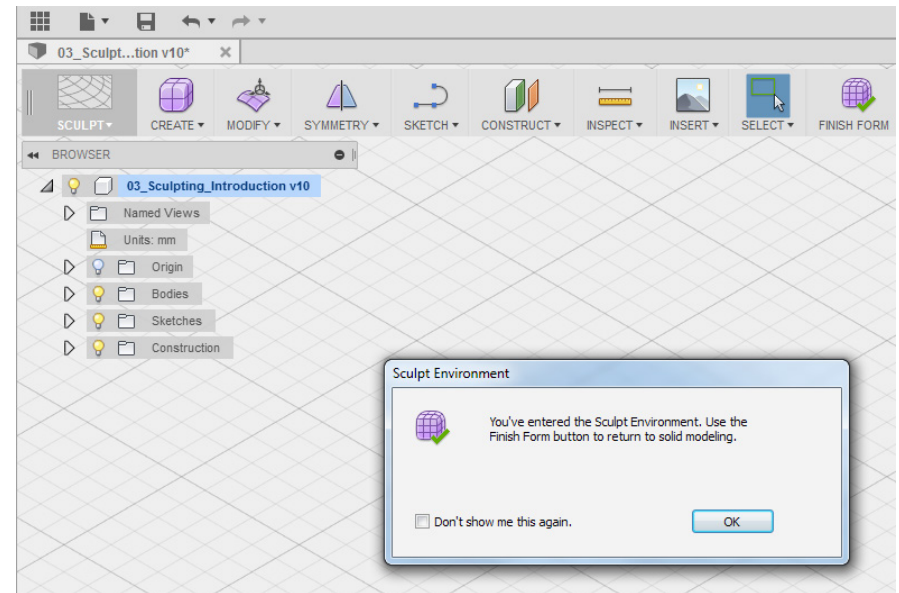
Goals

1. Create a T-Spline Primitive Form
2. Create a T-Spline Revolve Form
3. Create a T-Spline Sweep Form
4. Create a T-Spline Loft Form

Instructions

Step 1: Go to the Sculpt workspace

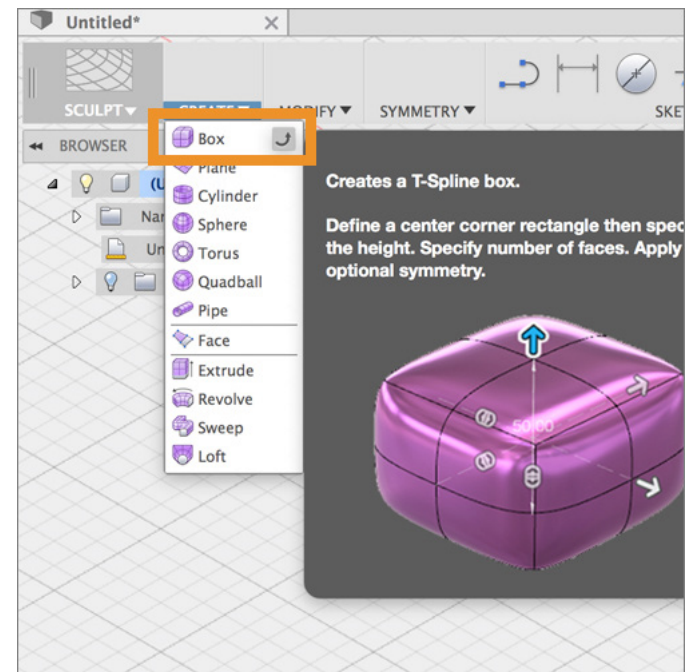
1. Let's go to the Sculpt workspace to access the Sculpt tools.
2. In the Model workspace select **Create Form** to enter the Sculpt workspace.
3. A dialog box appears, telling you to click **Finish Form** to return to the model workspace when you are finished sculpting.
4. Select **OK**.



Instructions (continued)

Step 2: Select the T-Spline Box primitive

1. Select the drop-down arrow under **Create** to expand the list of creation commands.
2. Select **Box** to create a T-Spline box.

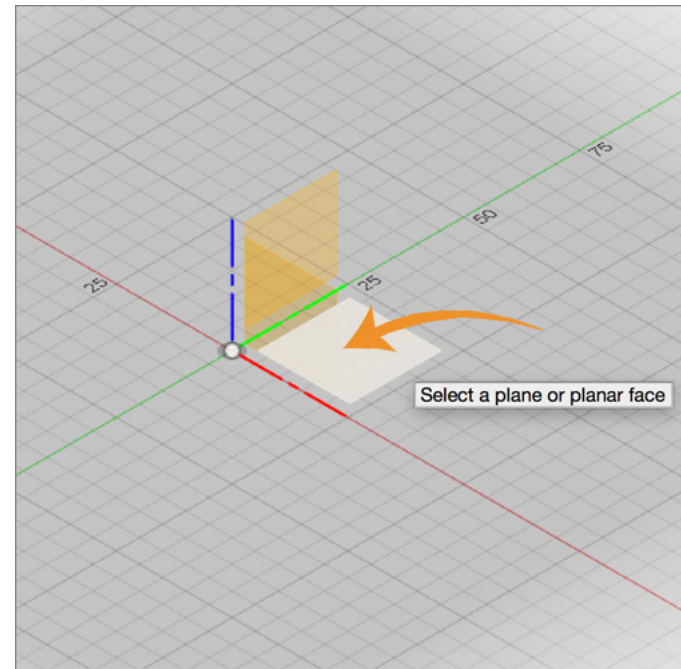


Instructions (continued)

Step 3: Position the Box

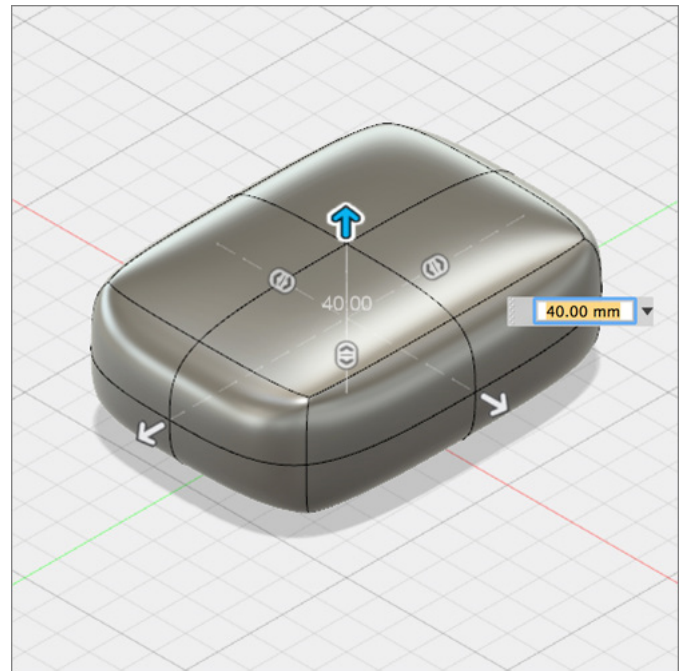
When you create a new primitive you first need to indicate which plane you want to build on and then enter the dimensions of the primitive.

1. Select the bottom plane
2. Select the origin to specify the center point of the box 2D profile.



Instructions (continued)

3. Drag the mouse and click on the plane again to specify the initial size of the rectangle.

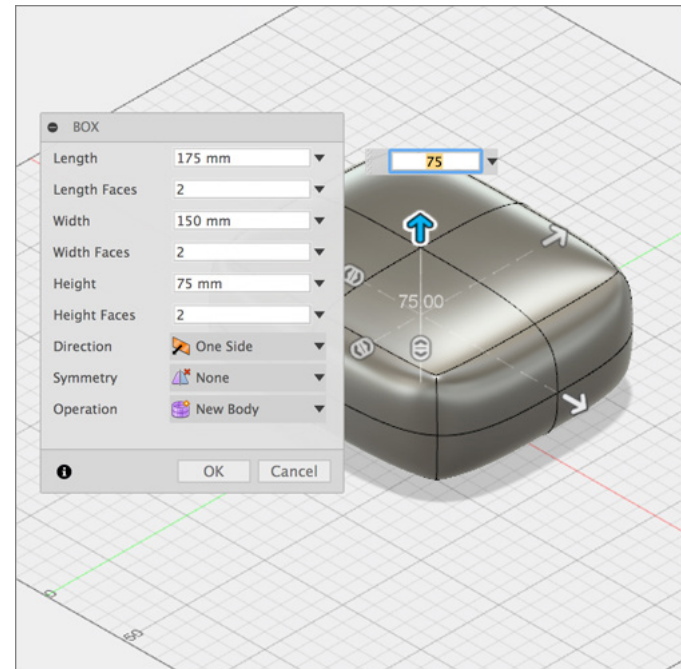


Instructions (continued)

Step 4: Set the dimensions for the box

1. In the Box dialog window set the length to **175mm**, and the width to **150mm** respectively by entering these numbers.
2. Drag the arrow pointing up from the box, and set the height equal to **75mm**.

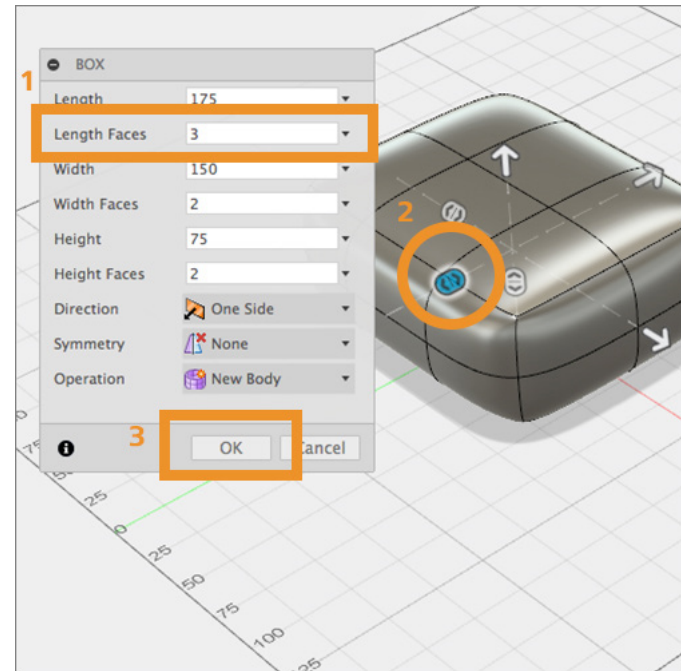
Note: When dragging a manipulator in Fusion 360 the increments for the move are tied to how close or far away the camera is to the manipulator. The closer you are the smaller the move increments, the farther you are the larger the move increments. If you find that the move is changing at too large of increments, simply zoom in to reduce the size of each step.



Instructions (continued)

Step 5: Increase the number of faces to the box in Length and Width.

1. In the Box dialog window set the **Length Faces** to **3**.
2. To set the width faces, drag the **double-headed arrow manipulator** on the box primitive up to increase the number of width faces until it equals **3**.
3. Select **OK** to complete the **Box** primitive setup.

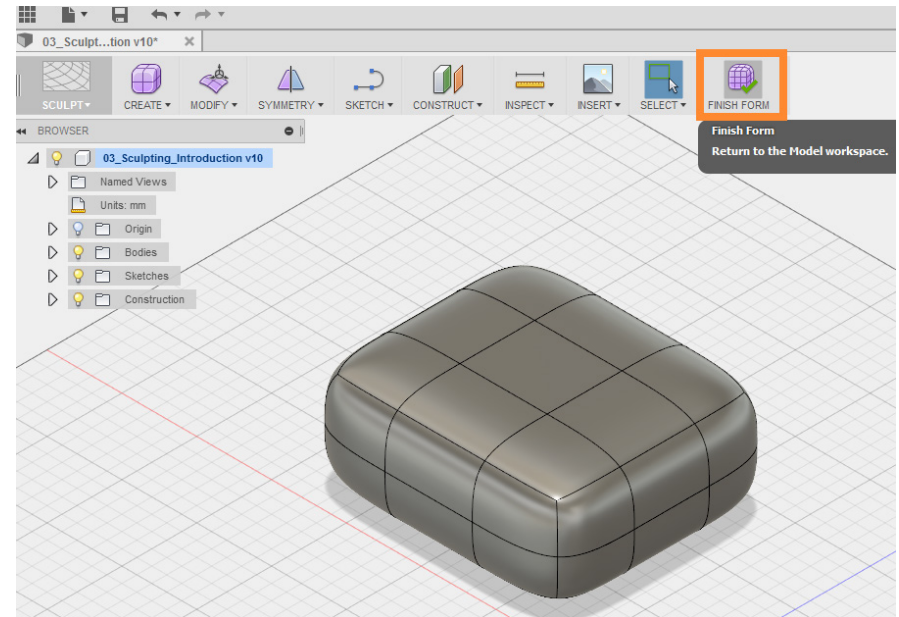


Instructions (continued)

Step 6: Finish the Form

You have just created your first T-Spline body. To include this form as part of your solid model you need to indicate that you are done creating T-Spline forms for the moment and that you want to go back to the Model workspace.

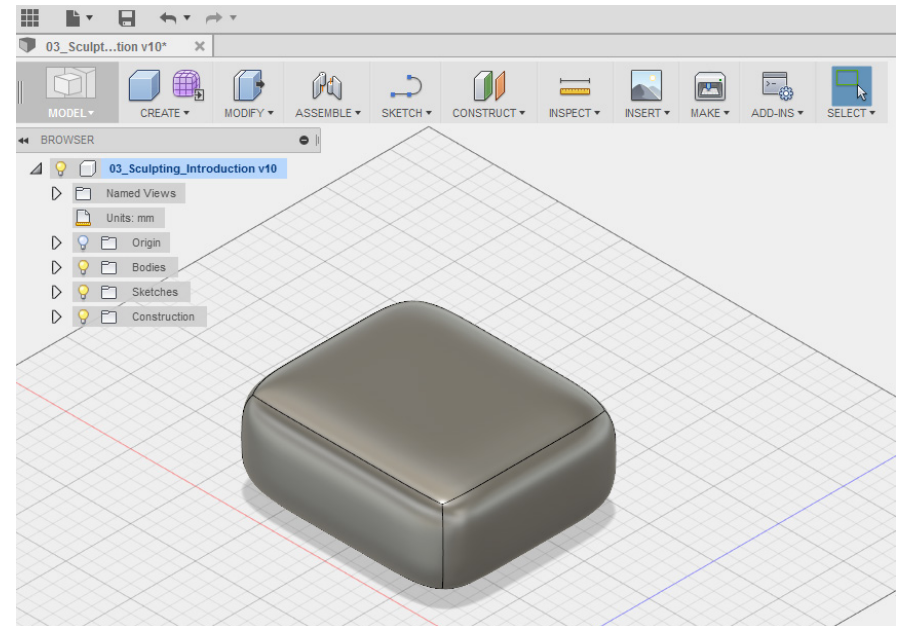
1. Select **Finish Form** at the end of the Sculpt workspace toolbar.



Instructions (continued)

2. The T-Spline form is automatically converted to a solid body and you are brought back to the **Model** workspace.

Note: If you create a closed T-Spline form, it will be converted to a solid body when you select **Finish Form**. If you create an open T-Spline form, for example a T-Spline Plane, it will be converted to a surface body when you select **Finish Form**.

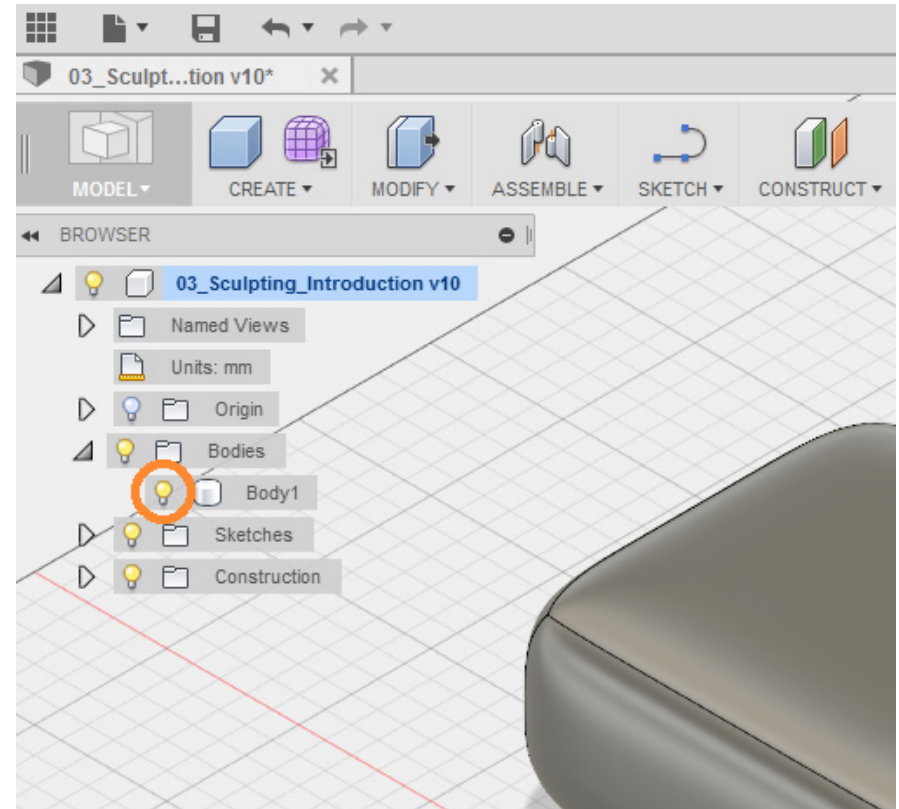


Instructions (continued)

Step 7: Create a T-Spline Revolve Form

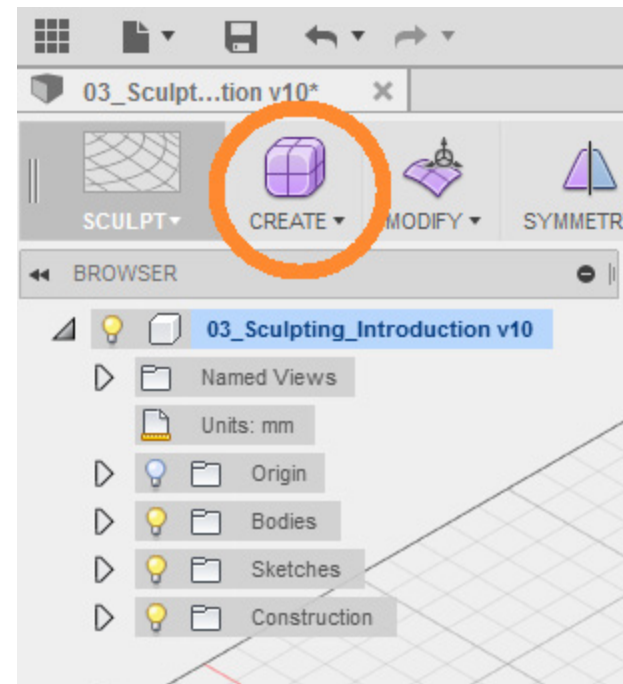
Let's create a T-Spline form by revolving a sketch curve. The Revolve command creates a form by rotation 2D geometry about a fixed axis.

1. In the **Browser**, select the drop-down arrow next to your **Bodies** folder.
2. Click the light bulb next to **Body1** to turn off the visibility.



Instructions (continued)

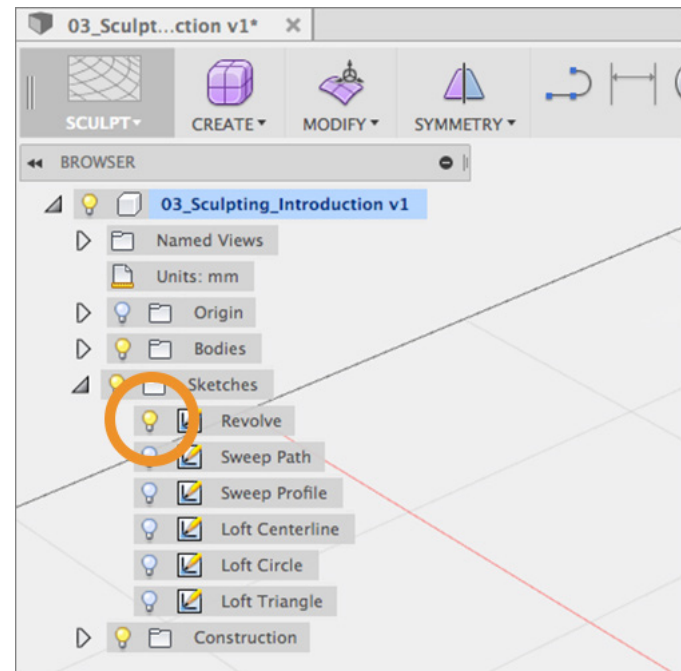
3. Select **Create > Create Form**.



Instructions (continued)

Step 8: Turn on the visibility of the sketch curve that you will be revolving

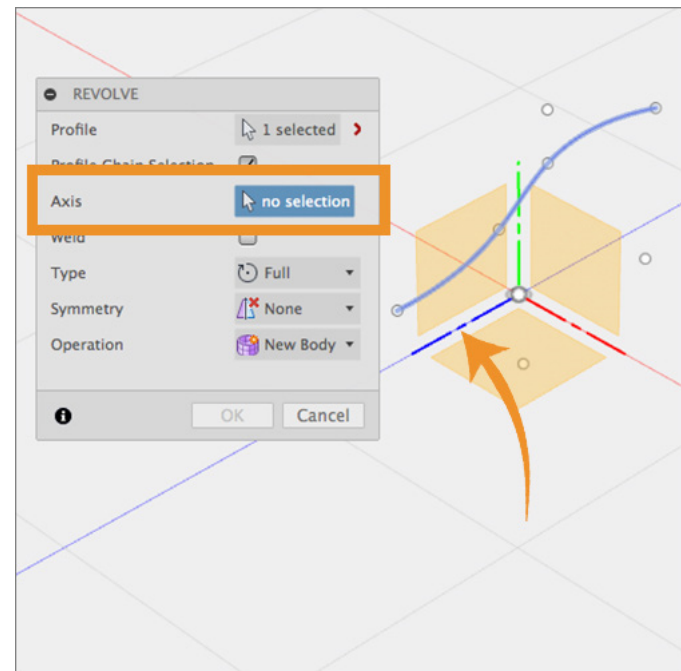
1. In the **Browser**, select the drop-down arrow next to your **Sketches** folder.
2. Select the **light bulb icon** next to **Revolve** to turn on the visibility of the **Revolve** sketch.



Instructions (continued)

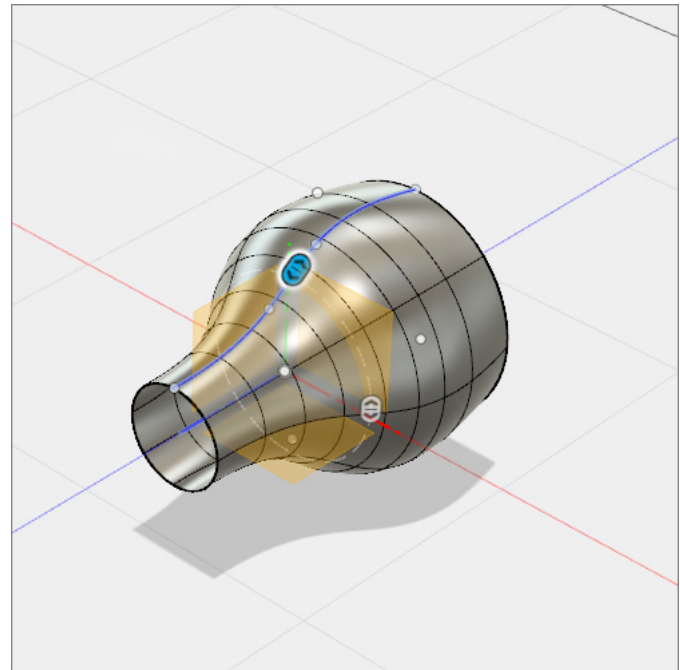
Step 9: Revolve a T-Spline using the sketch curve as input

1. Select **Create > Revolve**.
2. Select on the **sketch curve** to identify it as the Profile curve to be revolved.
3. In the dialog window select **no selection** next to **Axis** to show the axis selector in the workspace.



Instructions (continued)

4. Select the **Blue** axis. A T-Spline form is revolved 360 degrees around the Blue axis.

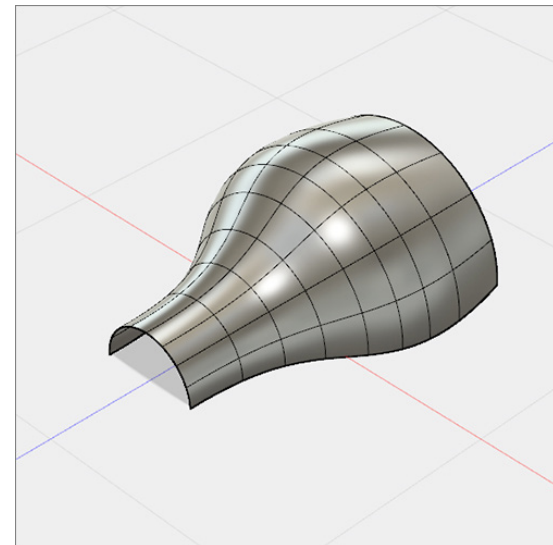
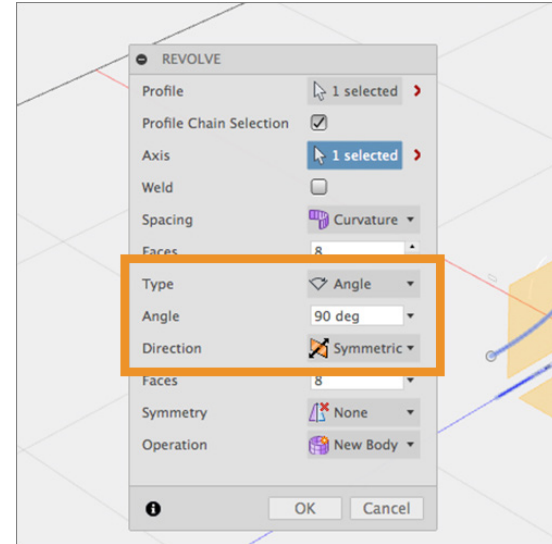


Instructions (continued)

Step 10: Change the Revolve settings

Let's change the settings in the Revolve settings to change the **Angle** the direction that the curve is revolved.

1. In the **Revolve** dialog window, change the **Type** from **Full** to **Angle**.
2. Enter **90 degrees** for the **Angle** field.
3. Change the Direction from **One Side** to **Symmetric**.
4. Select **OK**.



Instructions (continued)

5. Select **Finish Form** to return to the **Model** workspace.

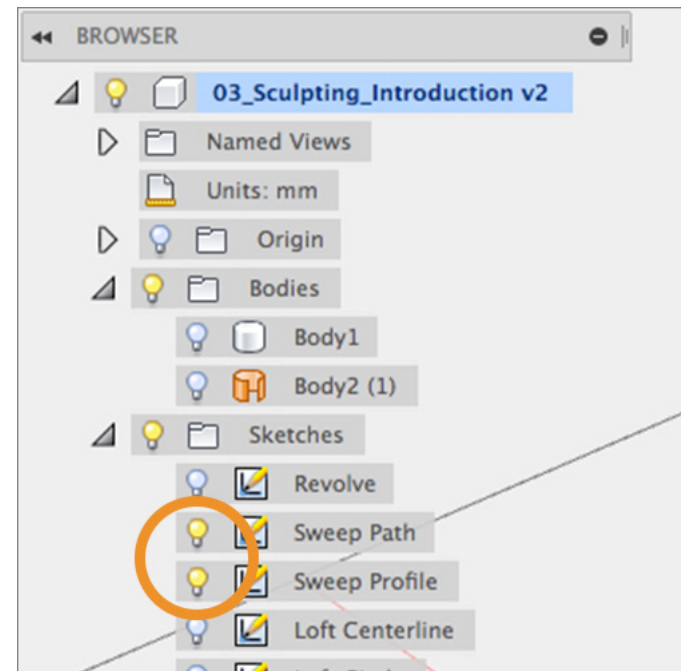
Note: The **Revolve** manipulator can also be used to adjust the number of faces in longitude and latitude of the revolved shape as well as the degree of the **Angle**.

Instructions (continued)

Step 11: Create a T-Spline Form using Sweep

The Sweep command uses two sketch curves to define a shape. One curve is selected as the Profile, which is swept along a Path curve to create the shape.

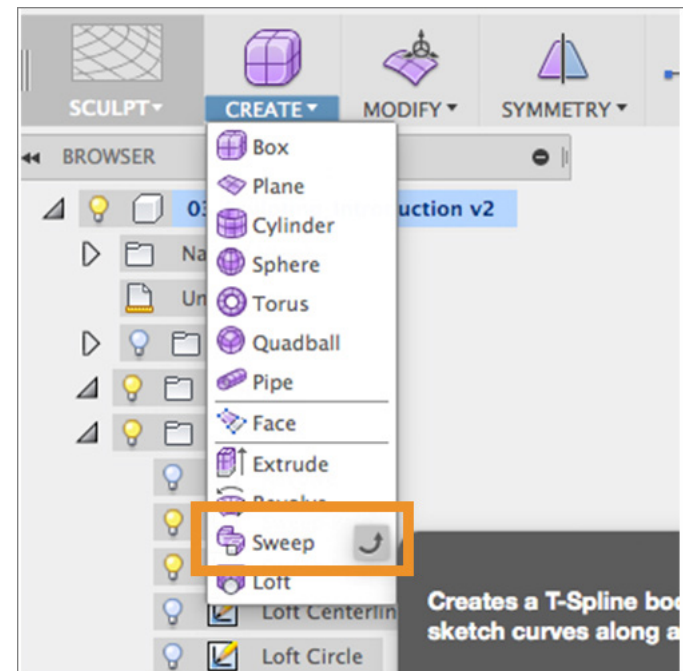
1. In the Model workspace hide the previously created Body 2 (1).
2. In the Browser in the Sketches section select the light bulb icon next to Revolve Sketch to turn off the sketch visibility.
3. Turn on the visibility for the Sweep Path and Sweep Profile sketches.



Instructions (continued)

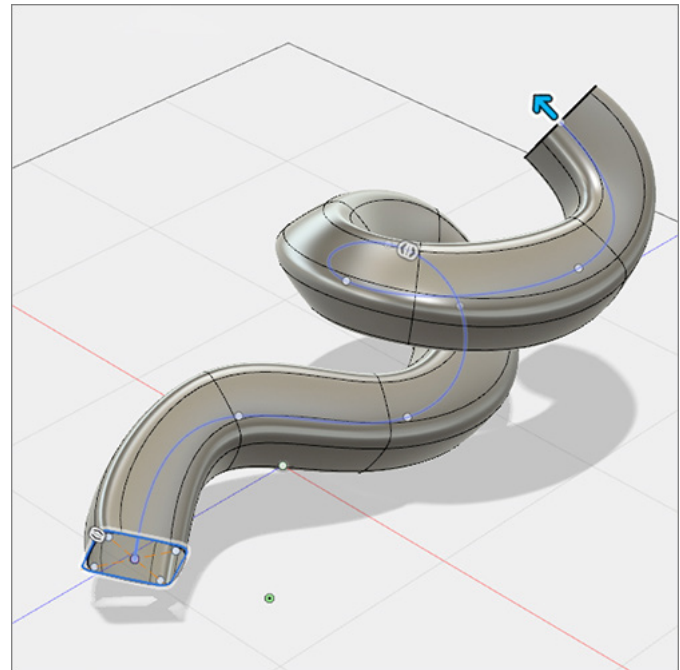
Step 12: Start the Sweep command

1. Select Create Form in the Model workspace to change to the Sculpt Workspace.
2. Select Create > Sweep to launch the Sweep dialog window.



Instructions (continued)

3. Select the Sweep Profile sketch to identify this sketch as the Profile.
4. Select no selection next to Path.
5. Select the Sweep Path sketch to identify this sketch as the Path. The swept T-Spline Form is generated.

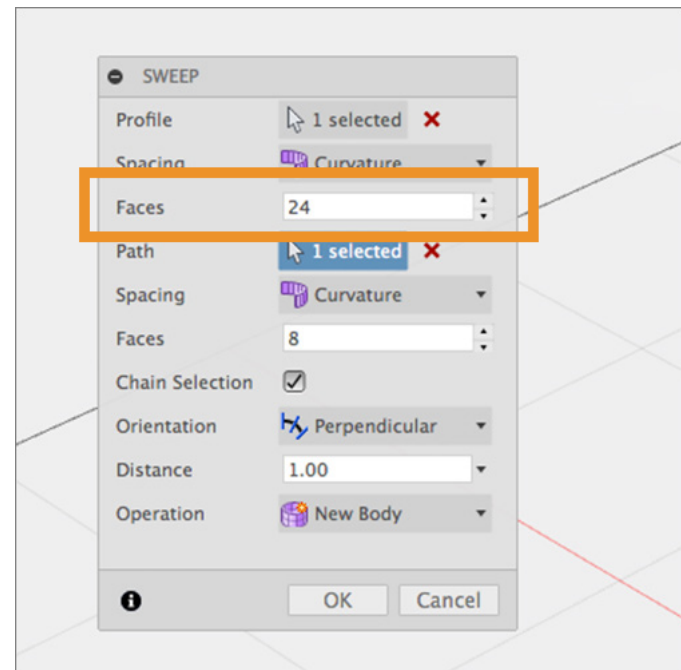


Instructions (continued)

Step 13: Add faces to the swept surface

1. In order to match our rounded-square profile, we need to increase the number of faces for the profile.
2. In the dialog window, set the number of faces for the Profile equal to 24.

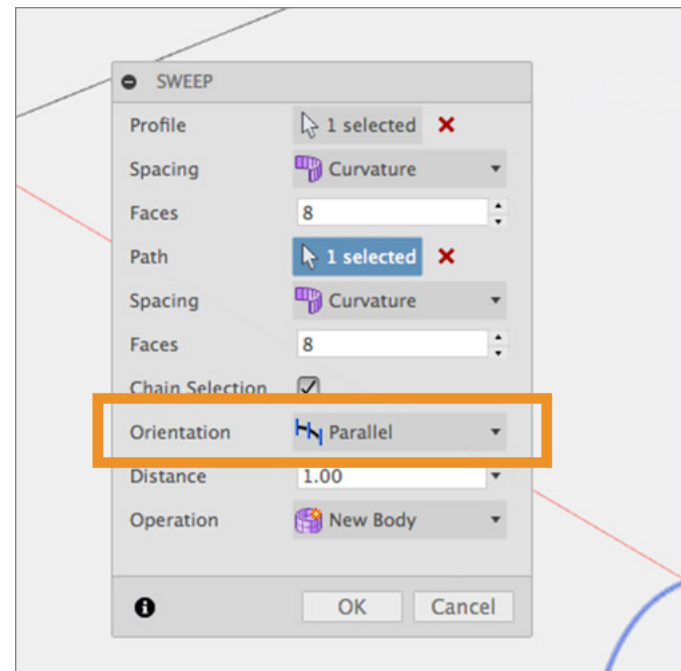
Note: The greater number of faces, the closer the body matches the path.



Instructions (continued)

Step 14: Change the sweep orientation

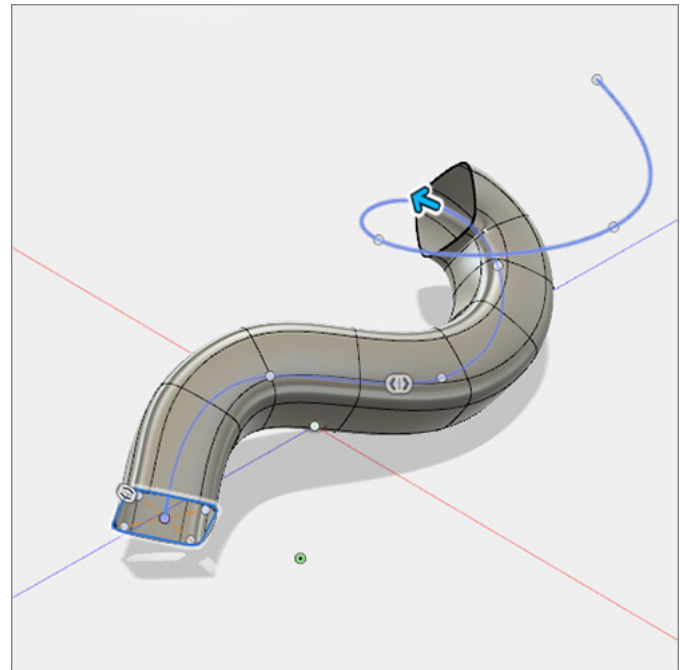
1. There may be instances where the orientation of the profile as it moves along the path will give you a more desirable result. Use the Orientation option to change the sweep behavior.
2. In the dialog window, change the Orientation from Perpendicular to Parallel. Observe how the sweep behavior drastically changes.
3. Change the Orientation back to Perpendicular.



Instructions (continued)

Step 15: Change the sweep distance

1. The Sweep command allows you to alter the amount of the path curve that is used to create the T-Spline form.
2. Drag the arrow at the end of the Path to alter the sweep distance. In addition to using this arrow, we can set the distance in the dialog window.
3. In the dialog window, set the distance equal to 0.5.
4. The sweep now travels half the length of our Path curve.
5. Select OK.
6. Select Finish Form.

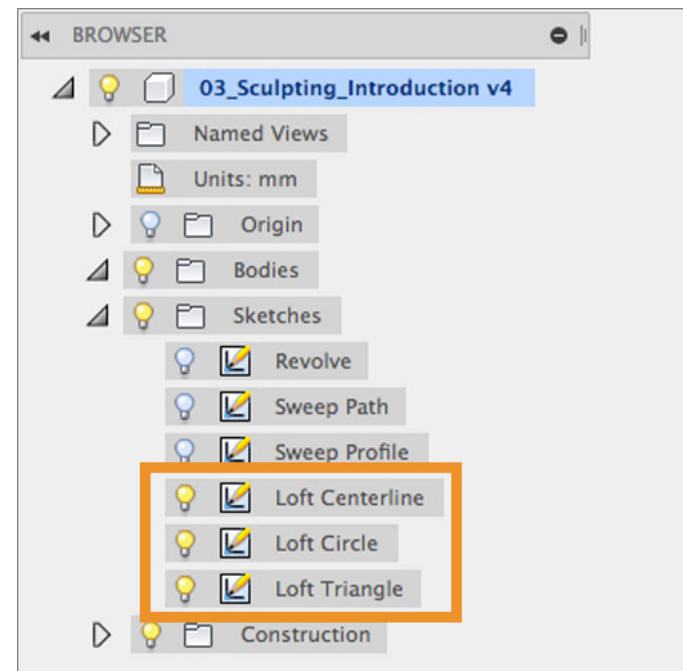


Instructions (continued)

Step 16: Create a T-Spline Form with Loft

We will use three sketch profiles as input to create a lofted shape.

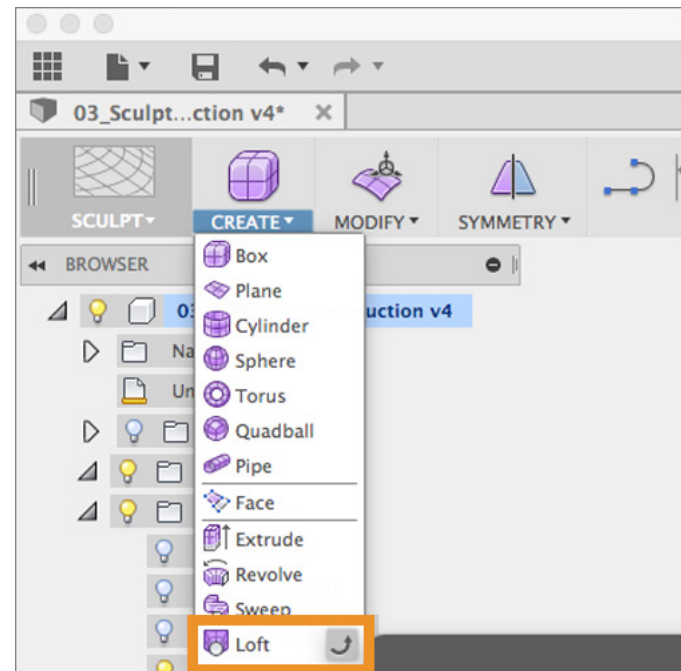
1. Turn off visibility of Body 3 (1).
2. Turn off visibility of the two Sweep sketches.
3. Turn on visibility for sketches labeled Loft Centerline, Circle, and Triangle.
4. Select Create > Create Form to change to the Sculpt workspace.



Instructions (continued)

Step 17: Select the profiles to create the loft form

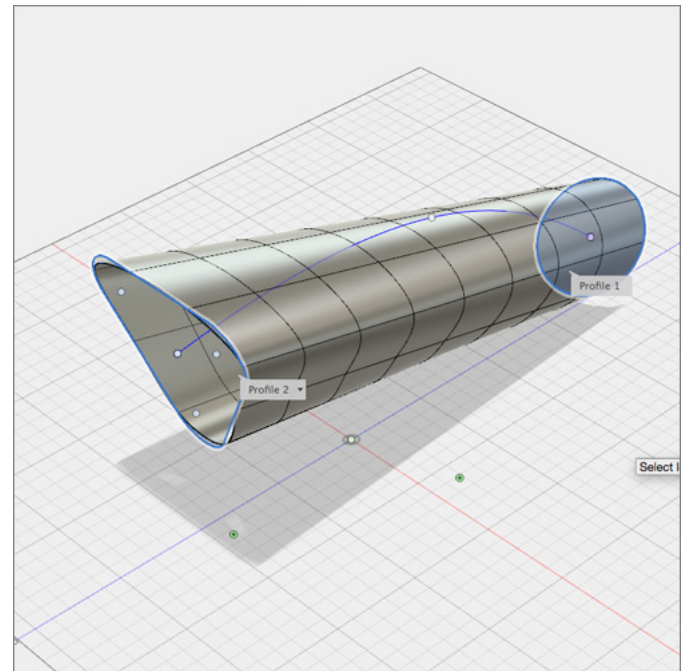
1. Select Create > Loft.



Instructions (continued)

2. Click the Triangular profile in the canvas.
3. Click the Circular profile in the canvas. This creates a straight lofted shape that transitions between the triangle and the circle.

Note: You can have multiple profile shapes to loft between.

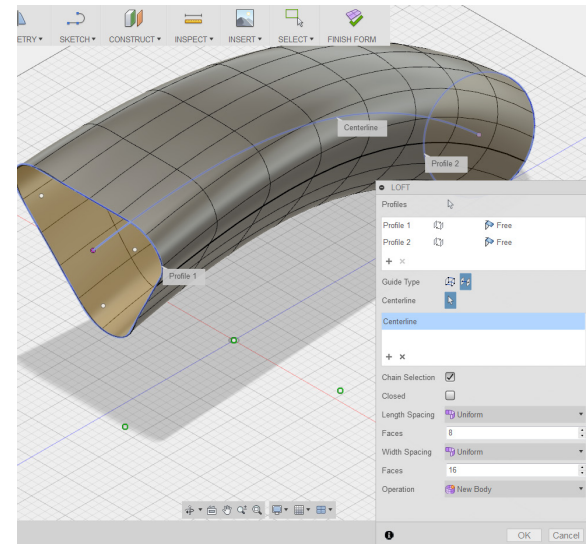
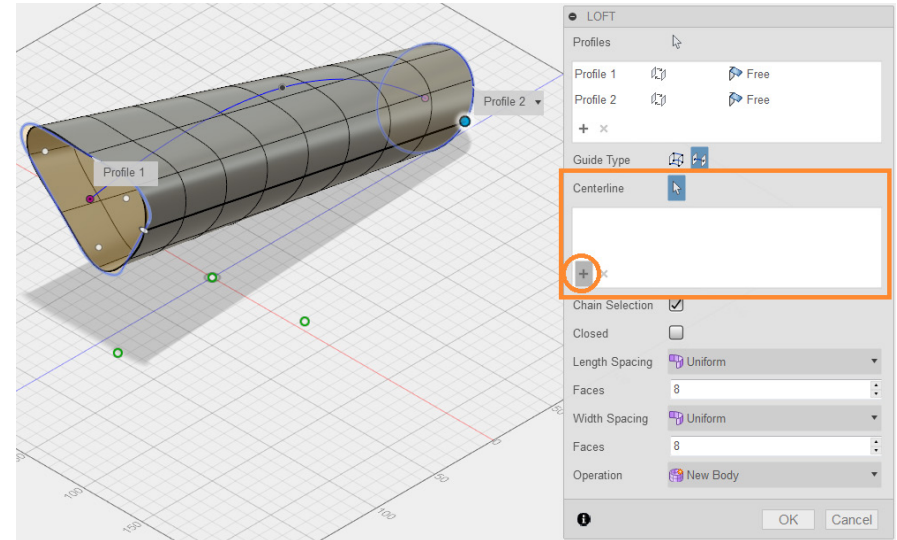


Instructions (continued)

Step 18: Change the Loft shape by defining a centerline

By default the loft will always create straight transitional surfaces between profiles. To control the direction of the surface between the profiles you can add a sketch curve a centerline.

1. In the dialog window click the + icon in the centerline section.
2. Click the centerline curve.

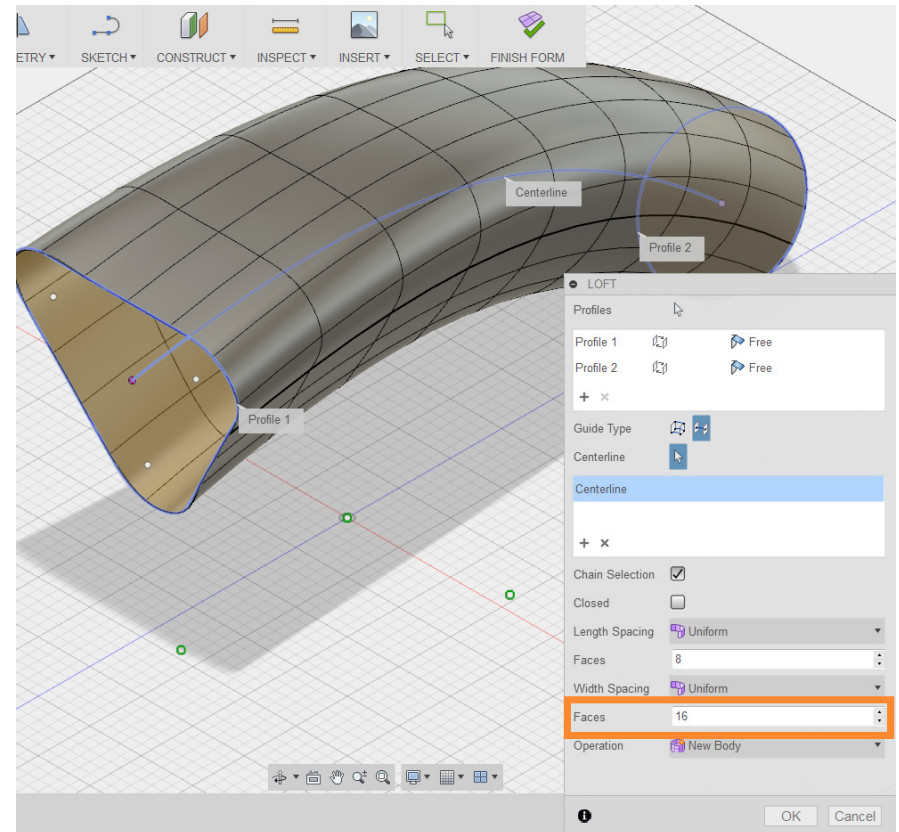


Instructions (continued)

Step 19: Increase the number of faces to improve the match

The T-Spline surface is not matching well to the triangle profile. Let's increase the number of faces to improve the match.

1. In the dialog window, set the number of faces for the Width equal to 16.
2. Click OK.
3. Select Finish Form.



Wrap up

Congratulations! You've learned how to create a T-Spline Form in Fusion 360!

In this lesson, you accomplished the following:

- Created a T-Spline Primitive Form
- Created a T-Spline Revolve Form
- Created a T-Spline Sweep Form
- Created a T-Spline Loft Form

In the next lesson, we discuss how to modify a T-Spline form.

