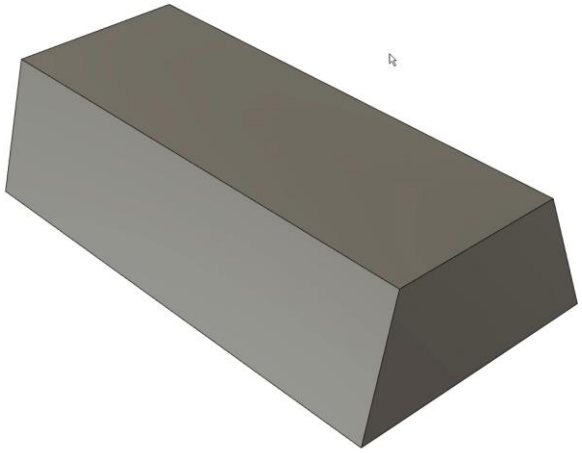
Lesson: Extrude a Sketch into 3D

In this lesson, you'll convert a sketch's 2D geometry into a 3D model.



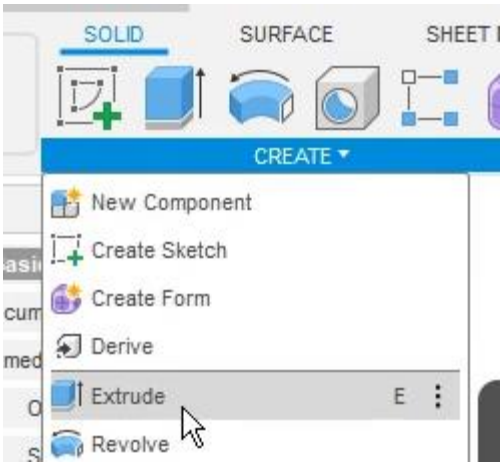
The completed exercise

Learning Objectives

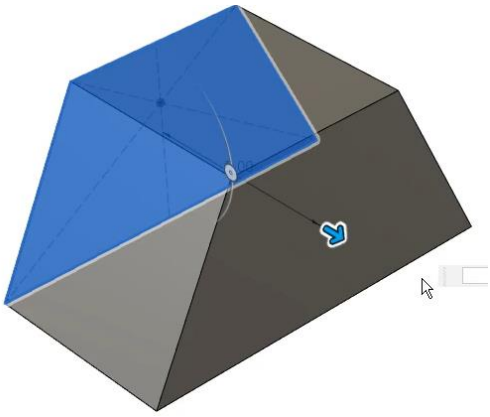
- Use Extrude.
- Change a parameter.

1. Continue with the *Basics of Fusion* file from the previous module.	
2. Click the eyeball icon next to the Browser's Revolve Sketch to turn off its visibility.	

3. A sketch's 2D geometry can be converted into 3D geometry by extruding it. Click Create> Extrude. Alternately, press E to open the Extrude tool.

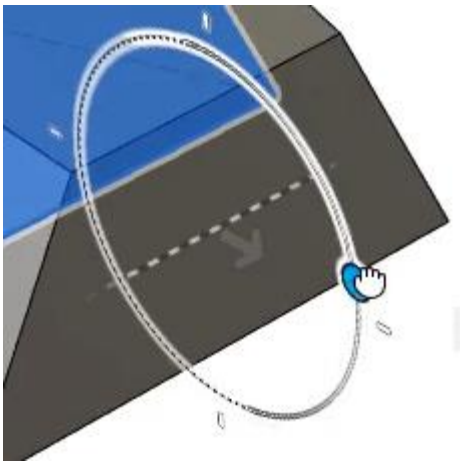


4. Select the trapezoidal shape and the sketch as the dialog's Profile selection. Enter **5** into the value field to extrude the selection 5 inches.

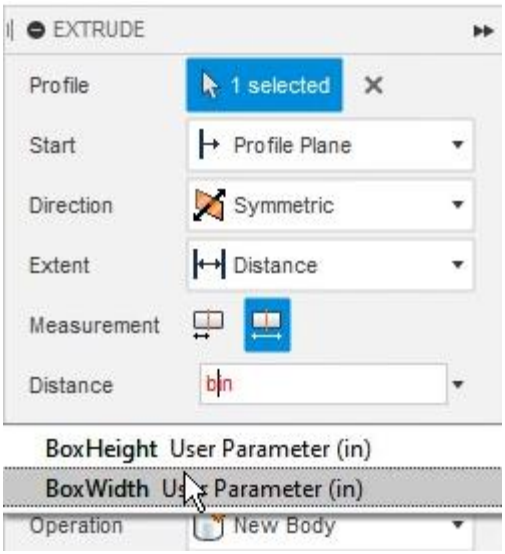


5. Instead of entering a value into the value field, the on-screen manipulator arrow can be clicked and dragged to extrude the selection. Extrude the selection 4 inches.

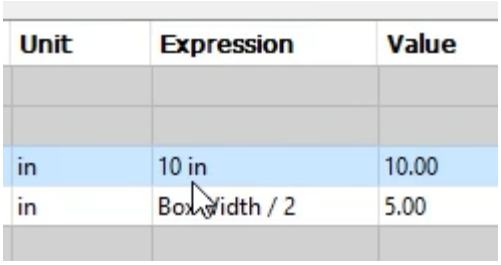
6. The on-screen manipulator also has a rotation handle to determine the extrusion's taper angle. Play with the taper angle but choose 0° for the taper angle.



7. In the Extrude dialog, choose the Symmetric option from the Direction menu. This option allows the extrusion to extend the same amount in both directions. Choose the Whole Length option in the Measurement section. In the Distance value field, type **BoxWidth** to control the extrude distance using a custom parameter. Explore the dialog's other options, then click OK to finalize the extrusion.

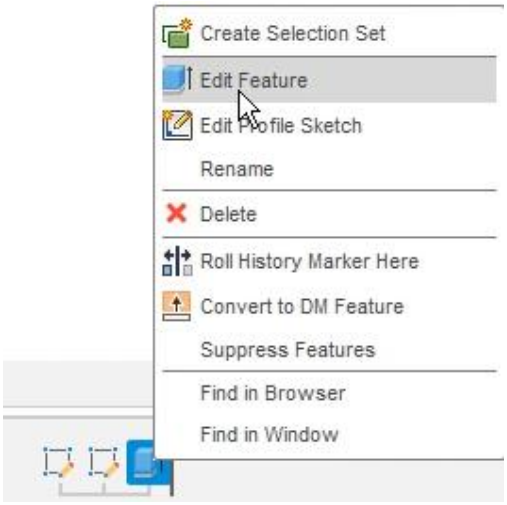


8. Even after the feature is created, its parameters can be modified. Click Modify> Change Parameters. Change the BoxWidth parameter's Expression value to **10**, then click OK. The solid model's geometry updates to reflect the new value.

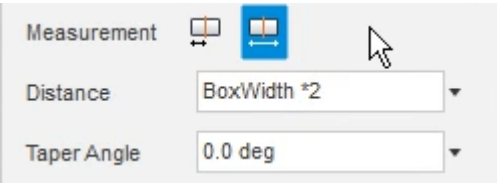


Unit	Expression	Value
in	10 in	10.00
in	BoxWidth / 2	5.00

9. In the timeline, right-click the Extrude1 feature and choose the Edit Feature option from the menu.



10. In the Edit Feature dialog, update the Distance value to **BoxWidth *2** and notice the geometry updates to double the parameter's value. Click the dialog's OK to accept the changes.



11. Save the file and continue to the next step.