

EDU[**CAD**]TION **STUDY GUIDE**

How to Use Revolve, Sweep, and Loft Tools in CAD

Chapter 1, Lesson 11

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Creating 3D Objects Beyond Extrude

- In addition to '**Extrude**', CAD provides multiple tools for creating 3D geometry:
- **Revolve**: Rotates a 2D profile around a defined axis to create a solid.
- **Sweep**: Extrudes a profile along a selected path.
- **Loft**: Connects two or more profiles to create smooth transitions. These tools expand design flexibility and are key for developing more complex shapes.

Revolve Feature

- The '**Revolve**' feature is useful for creating parts that rotate around an axis, such as knobs, pins, or cylindrical parts. The '**Revolve**' tool is underneath the '**Create**' dropdown (see Figure 1.1).
- Draw a fully defined sketch with a construction line to act as the axis.
- Select the profile to revolve. In the '**Revolve**' window you'll select your profile and axis (see Figure 1.2).
- Choose an angle (e.g., 180° for half a shape or Full for a complete object). The distance between the profile and axis determines if the revolve produces a solid or a hollow form. Everything will revolve around the construction line.

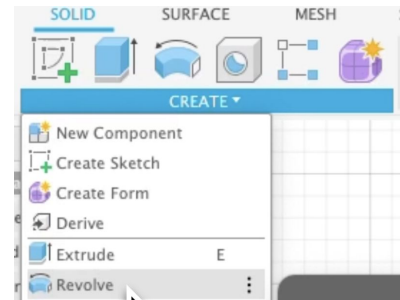


Figure 1.1

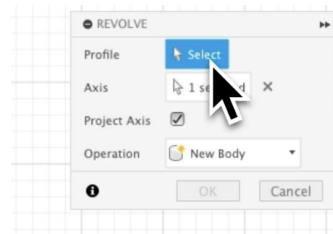


Figure 1.2

Practice Makes Perfect

- Mastery in CAD requires repetition and experimentation.
- Before moving to Chapter 2, it's recommended to practice creating parts using the tools from Chapter 1. Look for everyday objects such as a Kleenex box or a doorknob to practice reverse engineering.
- Precision tools like calipers are not necessary, focus instead on applying skills, building robust sketches, and experimenting with 3D features.

Summary

CAD offers many ways to create 3D objects beyond basic extrusion. Tools like Revolve, Sweep, and Loft expand design possibilities and allow for more complex shapes. Revolve, for example, lets you generate turning parts by revolving a sketch around an axis. The most important lesson, however, is that practice builds mastery. By modeling simple household objects, you strengthen your skills, gain confidence with different tools, and prepare for more advanced assemblies in future chapters.

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