

Unit 2 - Intro to Modeling with Blender

Lesson #4 - Bevel, Inset and Knife Tools

CG Cookie Videos used in this Lesson

Videos for this unit are available within the [Mesh Modeling Fundamentals](#) Download, or Included within the [Educator Blender Bundle](#).

- The Bevel Tool 6 min
- The Inset Tool 4 min
- The Knife Tool 4 min
- Delete & Dissolve 5 min

Key Training

- Using the Bevel Tool to create beveled edges and corners.
- Using the Inset Tool to create new geometry from mesh faces.
- Using the Knife Tool to cut new edges into mesh objects.
- Using the Delete and Dissolve tools to modify a mesh object.

Instructor Focus and Tips

- Start a class discussion on what the difference between a **Chamfer** and **Fillet** and show how the Bevel tool can produce both.
- With the Bevel tool there are two different types of bevel edge and vertex bevel. There is also a Bevel Modifier. This lesson will focus on the Bevel tool that works in edit mode. *Some students will try and use the Bevel modifier instead of the Bevel edit tool.*
- When some students use the Knife Tool they will have some difficulties. They will either not hit the enter key to end their cut or they will want to start their cuts in mid-surface, not realizing they need to start and end their cuts on an edge of a surface. Be on the watch for students struggling with the Knife Tool.

Student Activities and Assignments

- Have the students practice with the The Bevel Tool, The Inset Tool, The Knife Tool and Delete & Dissolve videos. First use the tools one a time on different Blender objects then use these tools and the ones introduced in Unit 2 Lesson 3 to create complex shapes.
- Assignment - Have the students start a new blend file. Have the students delete the Cube and insert an UV Sphere. Have the students use the Knife Tool and Delete and Dissolve to make a face on an UV sphere.

- Assignment (Challenge) - Have the students start a new blend file. Have the students delete the Cube and insert the UV Sphere. Have the students transform the UV Sphere into a Cube using the only Delete and Dissolve and the Knife Tool.

Blender Terminology, Commands and Hotkeys Introduced

- The Bevel Tool (While in edit mode Hotkey: Ctrl+B)
- The Inset Tool (While in edit mode HotKey: I)
- Thickness of Inset (While in Inset Tool + Ctrl Key)
- The Knife Tool (While in edit mode HotKey: K)

BellRinger Prompts and Ideas

- What is the definition of a Bevel? What is the difference between a Chamfer and Fillet.

Exit Ticket Prompts and Ideas

- What happens when us use the bevel tool on a UV Sphere?
- What is the difference between Delete and Dissolve?

Learning Targets

- Student can use the Bevel tool to create fillets and chamfered corners.
- Student can use the Inset tool to create inset faces on a mesh surfaces.
- Student can use the Knife tool to cut new edges on a mesh surfaces.
- Student can use the Delete and Dissolve to modify mesh surfaces.

Extended Learning Activity

- Have students research the difference between Using Bevel tools and the Bevel Modifier. Give examples of when they would each be used.

Rubric

	Beginning	Developing	Accomplished	Exemplary
Beveling	Student has received demonstration on the bevel command.	Student demonstrates use of bevel tool with assistance.	Student demonstrates use of the bevel tool without assistance.	Student demonstrates use of bevel and can explain to others.
Insetting	Student has received demonstration on inseting.	Student demonstrates use of the inset tool with assistance.	Student demonstrates uses of the inset command without assistance.	Student demonstrates use of inset commands and can explain to others.
Cutting Surfaces	Student has received a demonstration on using the knife tool for cutting surfaces.	Student demonstrates use of the knife tool with assistance.	Student demonstrates use of the knife tool without assistance.	Student demonstrates excellent use the knife tool without assistance and can explain it use to others
Delete And Dissolve	Student has received a demonstration on deleting and dissolving mesh geometry.	Student demonstrates use of the delete and dissolve tools with assistance.	Student demonstrates use of the delete and dissolve tools without assistance.	Student demonstrates use of the delete and dissolve tools and explain to others.

Aligned Standards

Standard 2: Modeling 3D Objects

- **Objective 1: Use and manipulate 3D graphics and primitives**
 - o Indicator 1: Use 3D primitives
 - o Indicator 2: Manipulate 3D models and primitives
- **Objective 2: Create, use and manipulate shapes**
 - o Indicator 3: Manipulate 3D shapes
- **Objective 3: Edit Models**
 - o Indicator 1: Modify edges, faces, vertices
 - o Indicator 6: Use Insetting
 - o Indicator 7: Use Beveling
 - o Indicator 8: Deleting and duplicating edges, faces, vertices