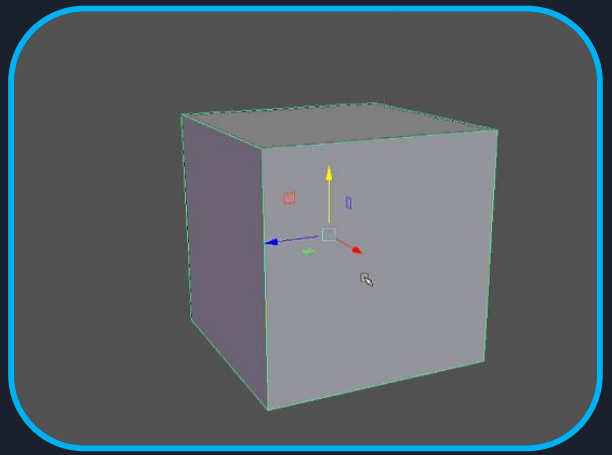
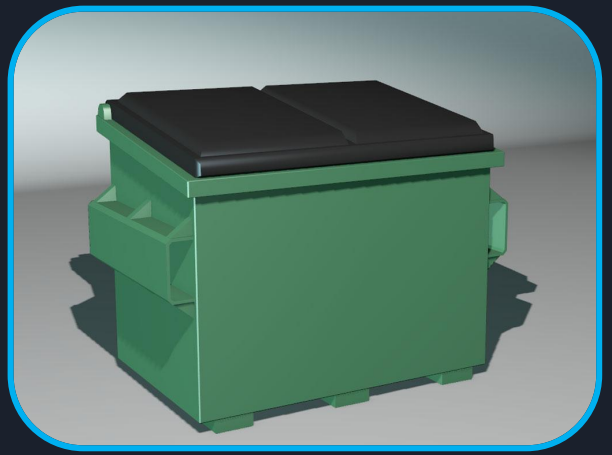
Polygon Modelling 1

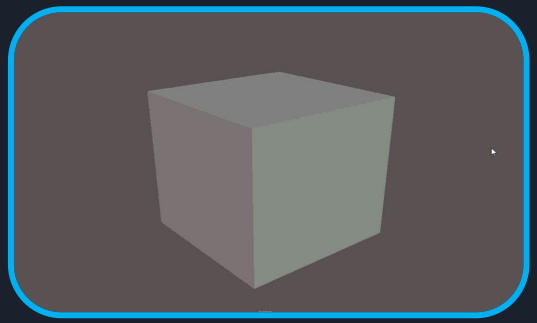
In this lesson, you will learn how to use polygon modelling tools to help you build a simple dumpster.



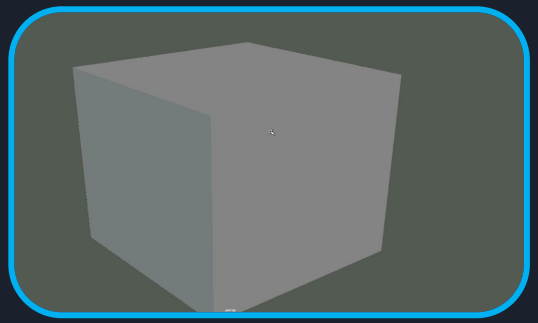


Poly1|Contents

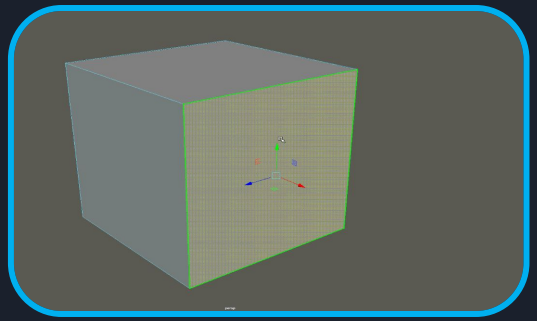
Multi-cut Tool



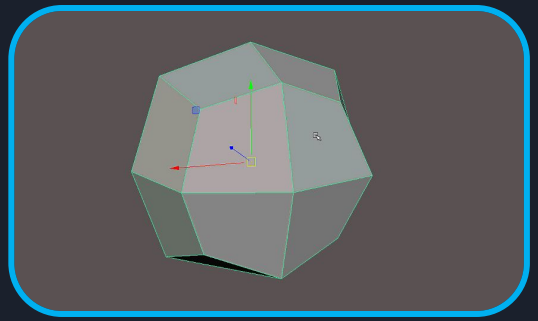
Bevel Tool



Extrude Tool



Soft/Hard Edge



This lesson will introduce you to some important modelling tools that will allow you to make complex models.

Topics will be:

1. Multi-cut Tool
2. Extrude Tool
3. Basic Materials
4. Bevel Tool
5. Soften/Harden Edge

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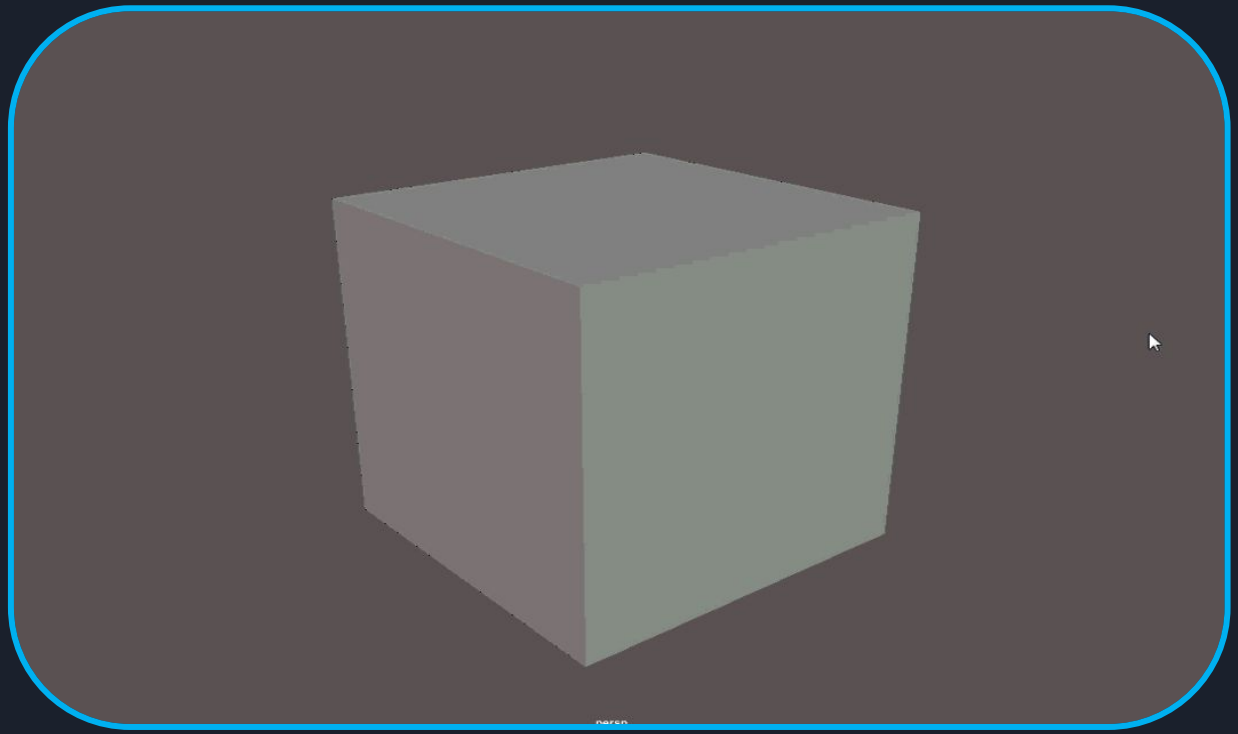
Poly1|Multi-Cut Tool



The Multi-Cut tool is an essential tool for modelling complex object from primitives. It allows you to cut up your geometry in a variety of ways.

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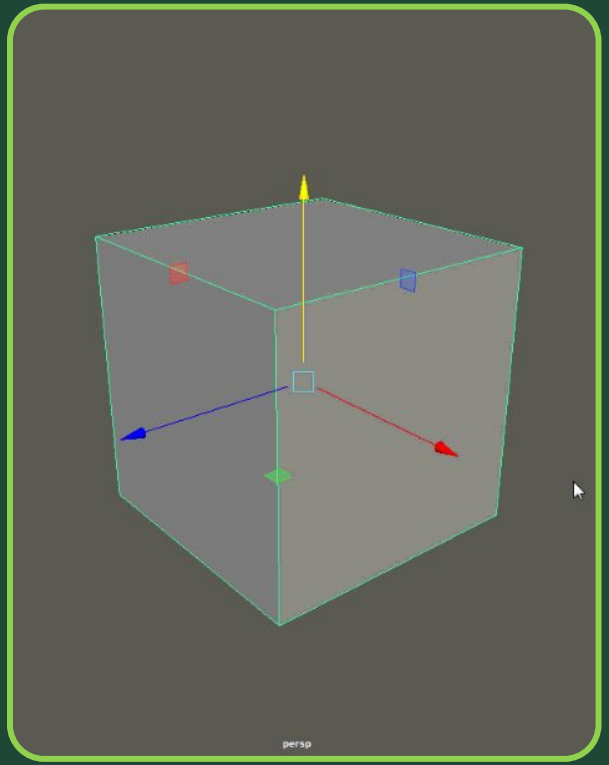
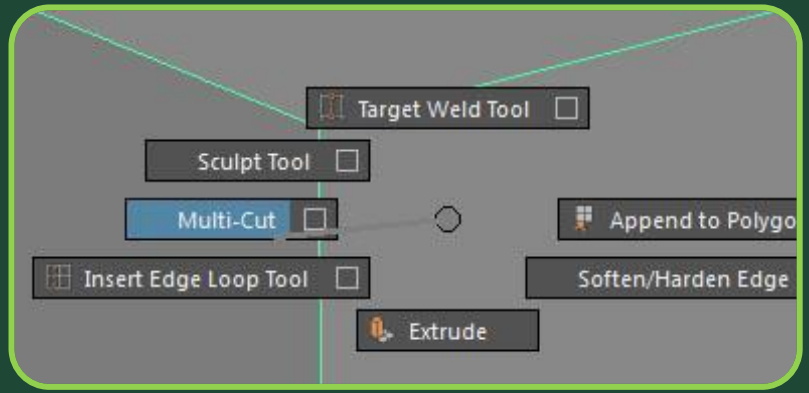
Poly1 | Multi-cut Tool

Using marking menu to select Multi-cut Tool





Multi-Cut Tool

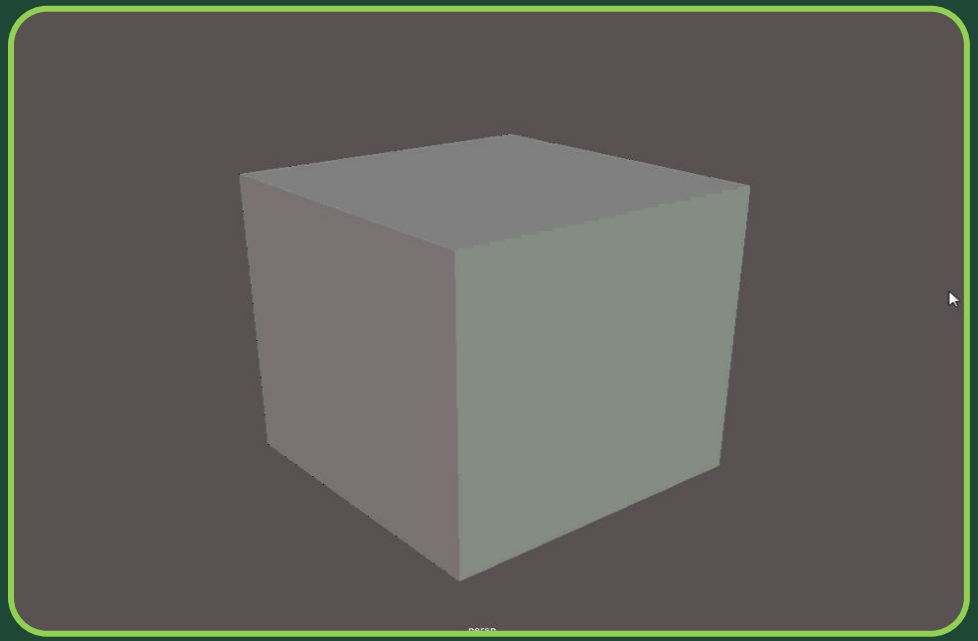
To access the Multi-Cut tool from the Marking menu, follow the steps below.

1. Select an object.
2. In object mode, hold down Shift + Right Click to enter the Marking menu.
3. Select Multi-cut Tool.
4. The Multi-cut Tool has a few different modes to help you split up your geometry.

TIP: Selecting the Tool Options box next to the word Multi-Cut will open up the tool Options menu. Here you can edit a bunch of settings.

Poly1 | Multi-cut Tool

Multi-cut Tool - Placing points



= Finish cut

Multi-Cut - Points

To cut your geometry by placing points, follow the steps below.

1. Enter the Multi-cut Tool.
2. Place your first point by left clicking on an edge or vertex.
3. Left click where you want the next point of your cut to be placed.
4. Place your final point on a vertex or edge.
5. Right Click to complete the cut.

TIP: Shift + LMB.
Allows you to snap your cutting points along edge midpoints. If you then drag MMB you can snap in 10% increments

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Exercise|Point to Point - Cube

1. Copy the Project folder called “Project-PolyModelling01” To your desktop and Set project
2. Open the scene, “Lesson_Poly1_Multi-Cut”.
3. Select the Cube under the heading “Point to Point Cube”.
4. Use the Point cutting method to cut the cube along the coloured lines by following the number sequence.
5. Cut along the coloured lines in the following order.

- Red
- Yellow
- Blue
- Green
- Purple

You have 10 minutes

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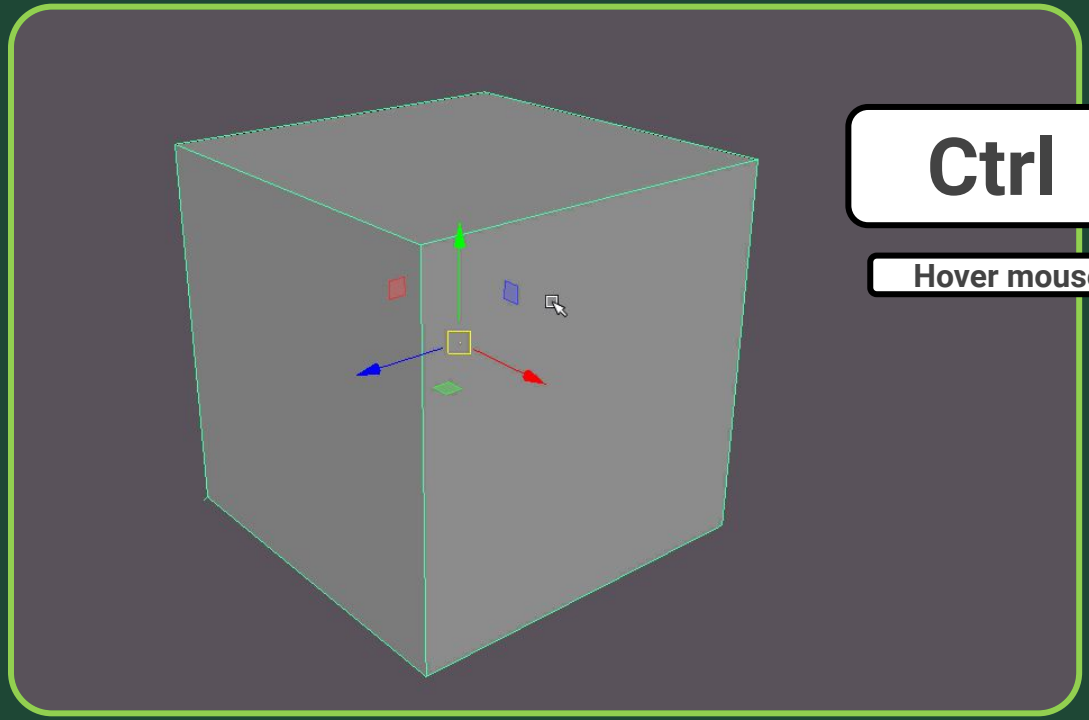
Poly1 | Multi-cut Tool

Multi-cut Tool - Insert Edge Loop



Multi-Cut - Insert Edge Loop

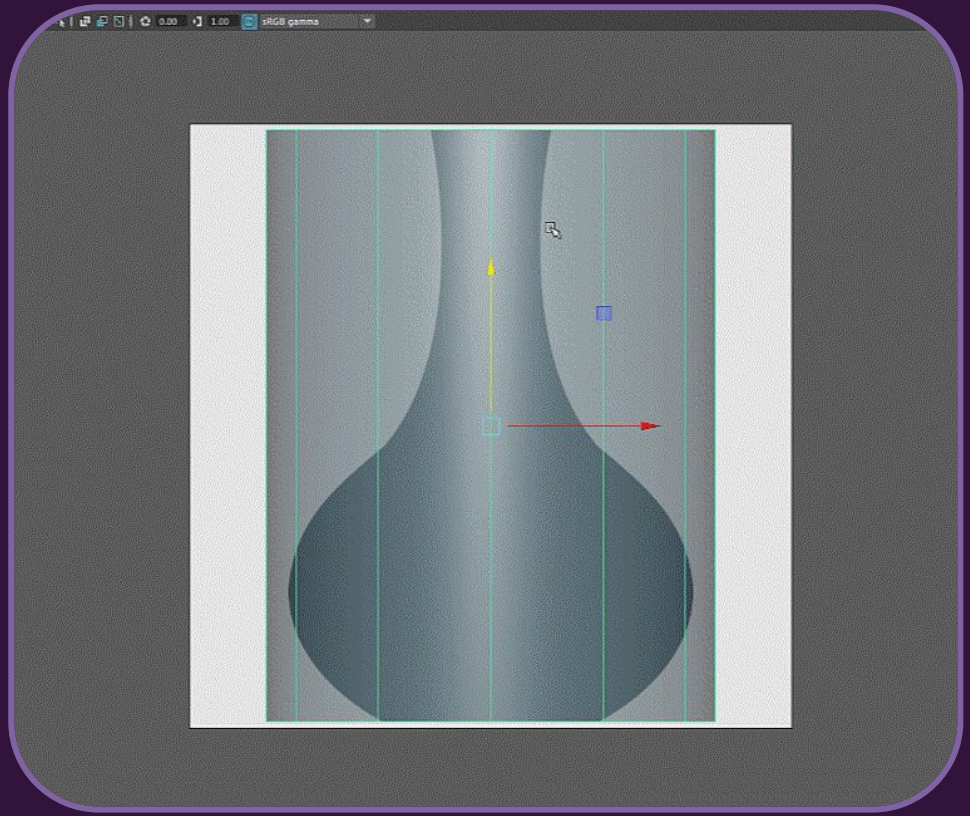
To insert an Edge Loop, follow the steps below.

1. Enter the Multi-cut Tool.
2. Hold down Ctrl and hover the mouse over the faces you want to add an edge loop.
3. Left click to make the cut.

TIP: Ctrl + Shift.
Allows you to place the cuts at 10% steps.

TIP: Ctrl + MMB.
Allows you to place the cuts at the center of an edge.

Exercise|Insert Edge Loop - Vase

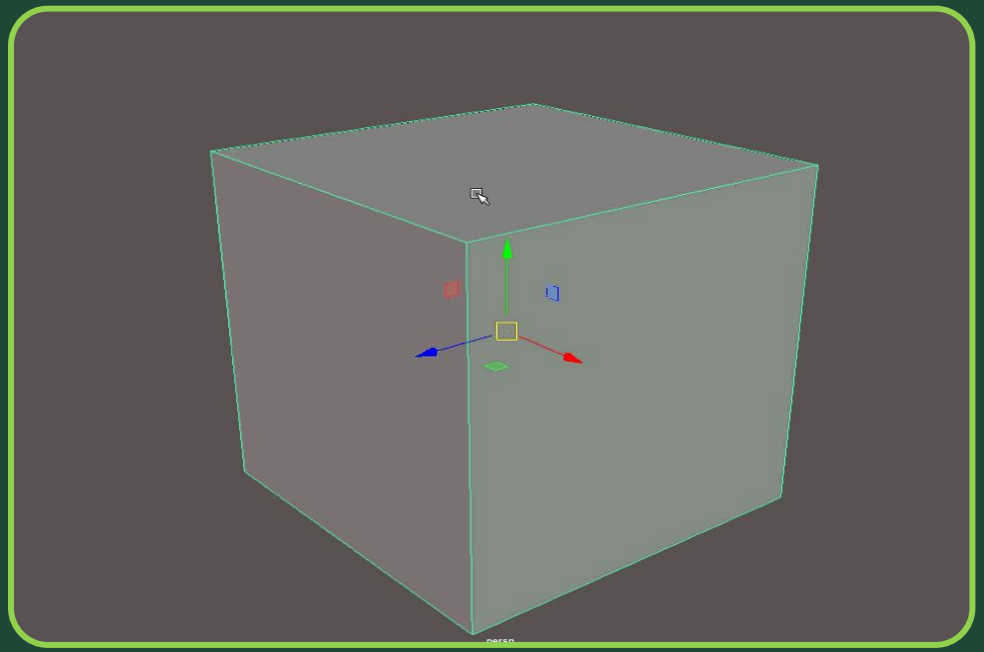


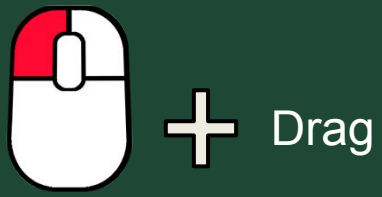
1. Select the Cylinder under the heading “Edge Loop Vase”.
2. Use the Insert Edge Loop method to cut divisions along cylinder.
3. Place the edge loops at intervals to allow you to shape the cylinder to match the vase template.

You have 10 minutes

Poly1 | Multi-cut Tool

Multi-cut Tool - Slice





Multi-Cut - Slice

To slice an Object or face, follow the steps below.

1. Enter the Multi-cut Tool.
2. Left mouse click and hold outside of the object.
3. Holding down left mouse button, drag across the object at the desired angle to cut a slice across it.

TIP: LMB + Shift.
Allows you to place the Slice at 10° steps. You can also change the step amount in the Multi-Cut tool options.

TIP: You can also slice selected faces in face mode.

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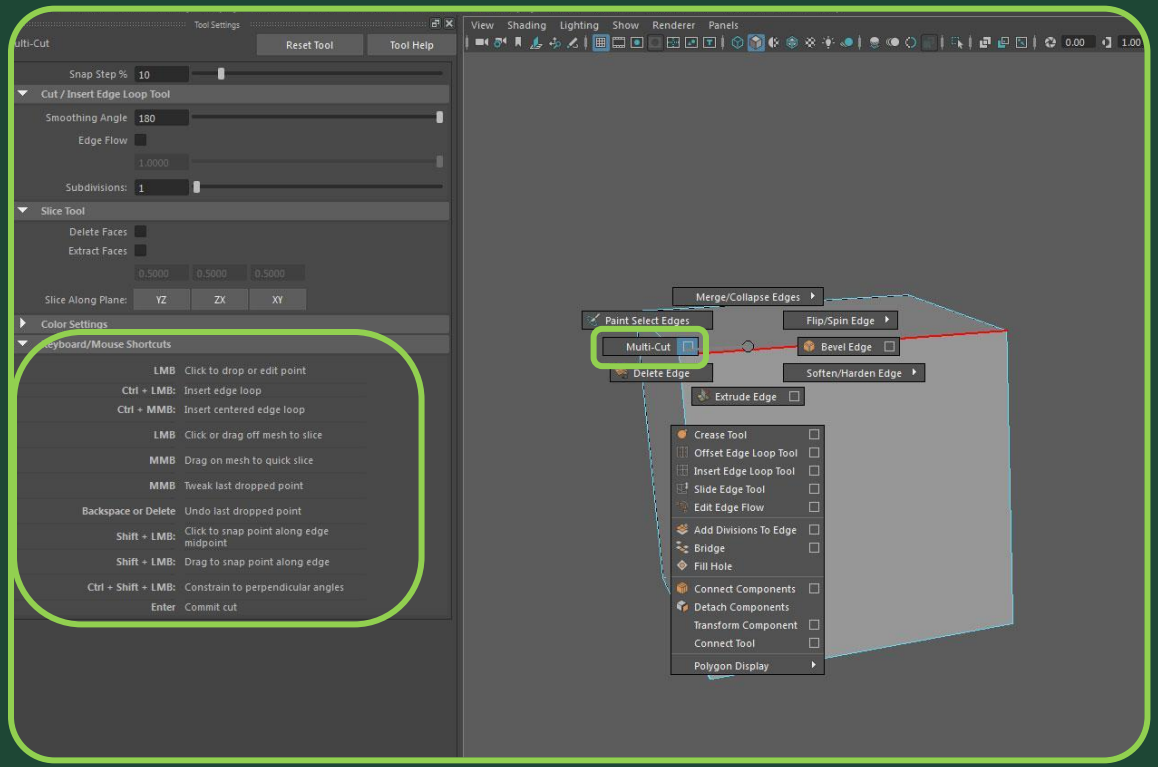
Exercise|Slice - Skirting Board

1. Select the two intersecting meshes under the heading “Slice Skirting”.
2. It will be easier to cut by changing the Snap Step angle to 45. (This will allow you to slice at a 45° angle.
3. In the Top viewport, slice both meshes at 45° to allow for a clean corner join.
4. You may need to snap the two sections together.

You have 10 minutes

Poly1 | Multi-cut Tool

Multi-cut Tool - Other Shortcuts



Multi-Cut - Other Shortcuts

A list of all Keyboard/Mouse Shortcuts is listed under the Multi-Cut Tool Settings.

1. In object mode, hold down Right Click + Shift to enter the Marking menu.
2. Select Multi-cut Tool options box.
3. This will open up the Multi-Cut Tool options panel.
4. At the bottom, you can access a drop down menu that list all Keyboard/Mouse shortcuts for the Multi-Cut Tool.

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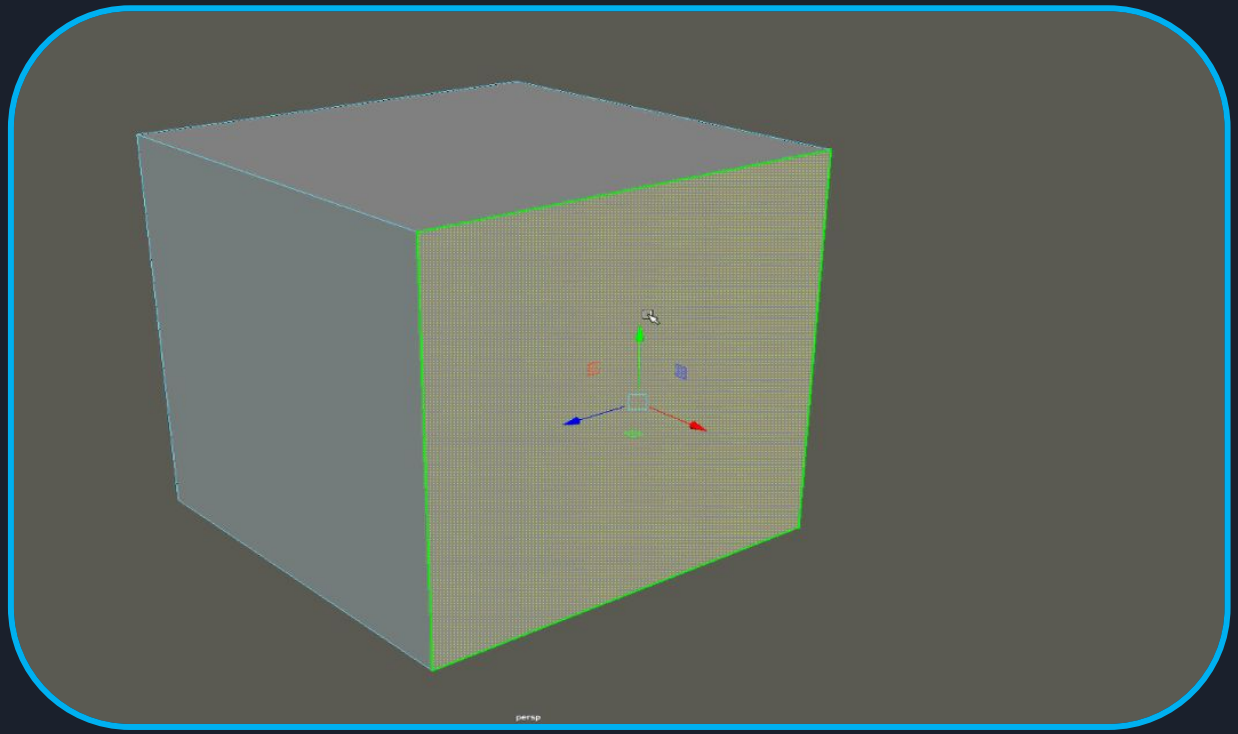
Poly1|ExtrudeTool



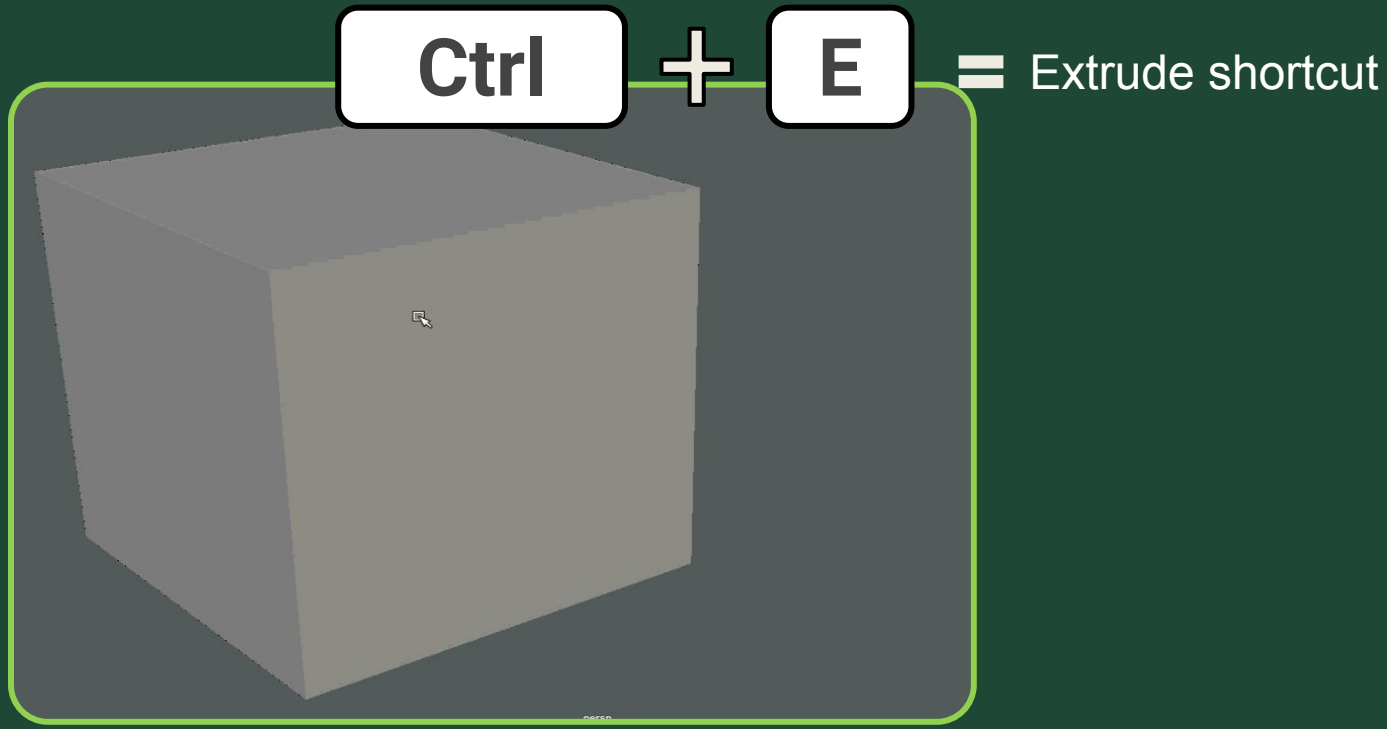
Extrude allows you to pull out or push in faces and edges on your geometry.

There are a number of functions in the Extrude Tool.

Lets try them out!

Poly1 | Extrude Tool

Extrude a polygon face - Offset



Extrude - Offset

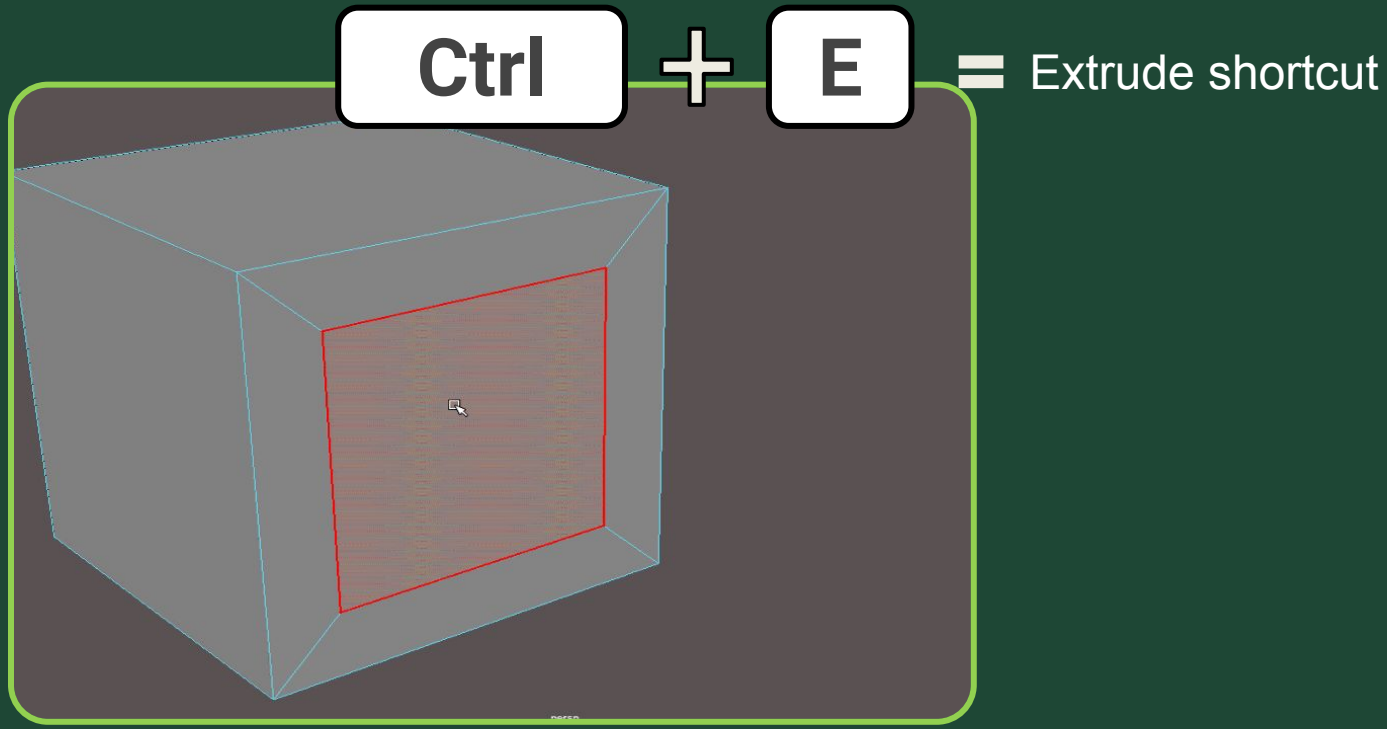
To use the Offset mode in the Extrude tool, follow the steps below.

1. Go into face mode.
2. Select a face or faces.
3. Press Ctrl + E to enter extrude tool.
4. Click and drag left or right on word, “Offset” in the dialogue box.
5. Click outside of the object to finalise the Offset.

TIP: Holding down Ctrl while dragging left or right will give you finer control.

Poly1 | Extrude Tool

Extrude a polygon face - Thickness



Extrude - Thickness

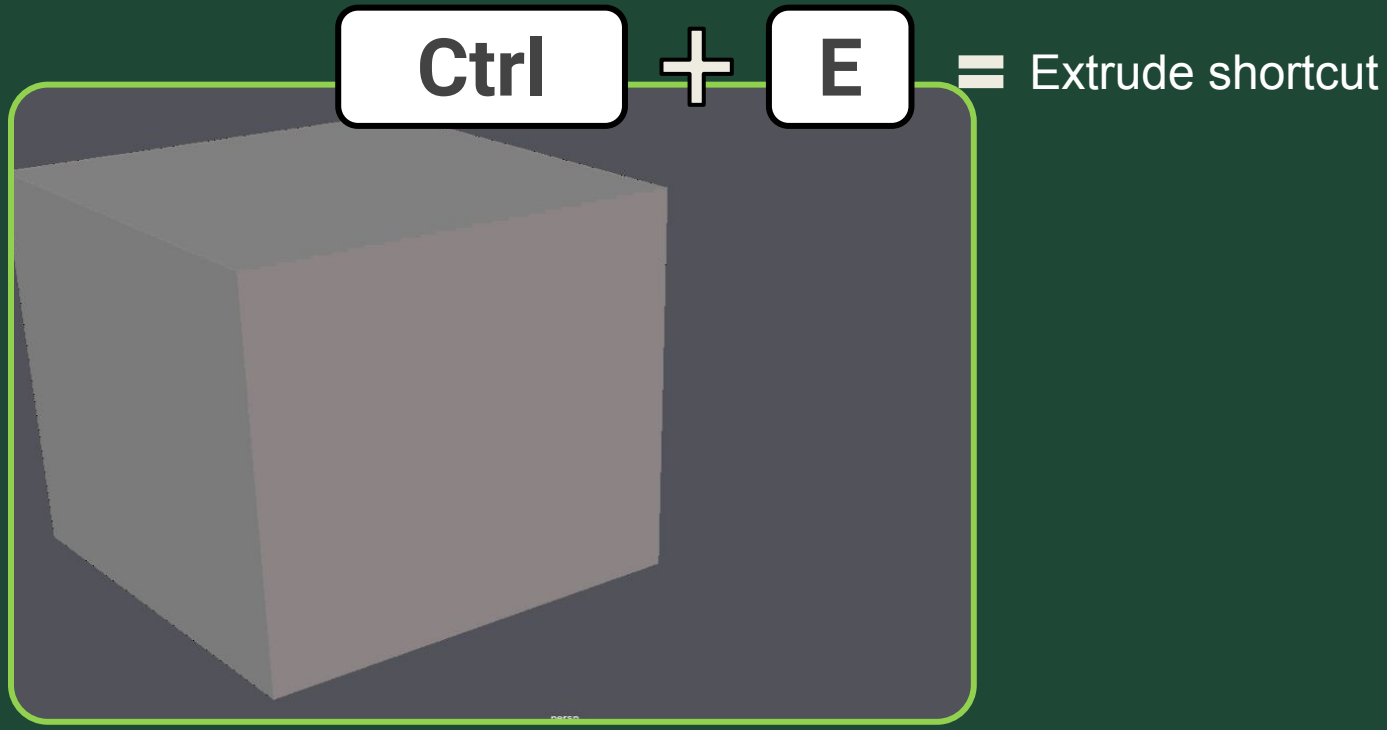
To use the Thickness mode in the Extrude tool, follow the steps below.

1. Go into face mode.
2. Select a face or faces.
3. Press Ctrl + E to enter extrude tool.
4. Click and drag left or right on word, “Thickness” in the dialogue box.
5. Click outside of the object to finalise the Offset.

TIP: Holding down Ctrl while dragging left or right will give you finer control.

Poly1 | Extrude Tool

Extrude a polygon face - Keep Faces Together



Extrude - Thickness

To use the Thickness mode in the Extrude tool, follow the steps below.

- Go into face mode.
- Select a face or faces.
- Press Ctrl + E.
- Click on “Keep Faces Together” box to turn it off.
- Click and drag left or right on word, “Offset” in the dialogue box.
- Click outside of the object to finalise the Offset.

TIP: Holding down Ctrl while dragging left or right will give you finer control.

Exercise|Model a Window

- Open the scene file, “Lesson_Poly1_ExampleMeshes”.
- Use the Multi-cut and Extrude tools to model a low polygon window.
- Assign materials and colour.
- Use the provided reference model as a guide

You have 15 minutes

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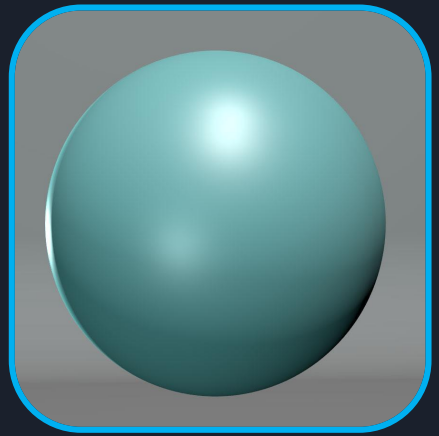
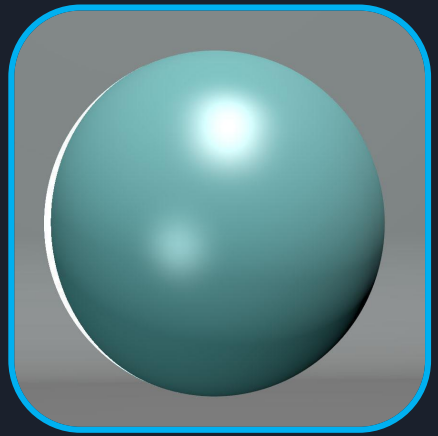
Poly1|Basic Materials

Lambert

Blinn



Phong



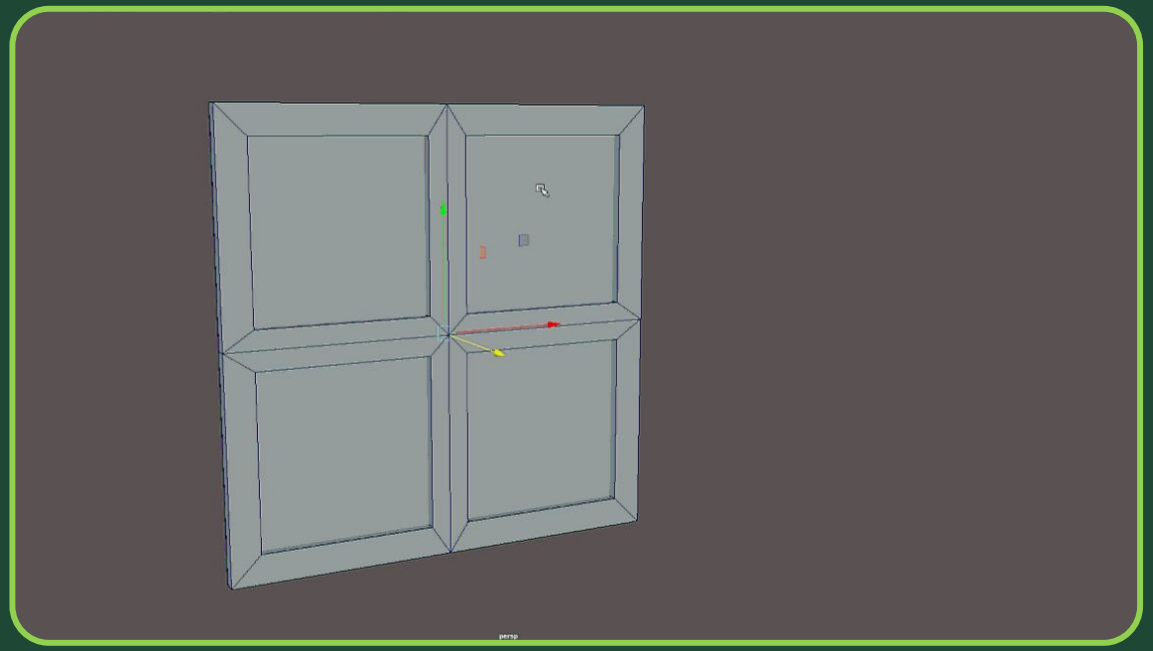
Basic Material - Types

Lambert
Standard Maya material. Has no specular component.

Blinn
Has specular and reflection properties. Good for plastic and metals.

Phong
A variation of the Blinn material but with more components to control the specular highlight.

Poly1 | Create Basic Glass



Basic Glass material

- Assign a new material to your glass geometry.
- Select the Blinn material from the list.
- Change the colour and transparency in the materials attributes to make it look like glass.

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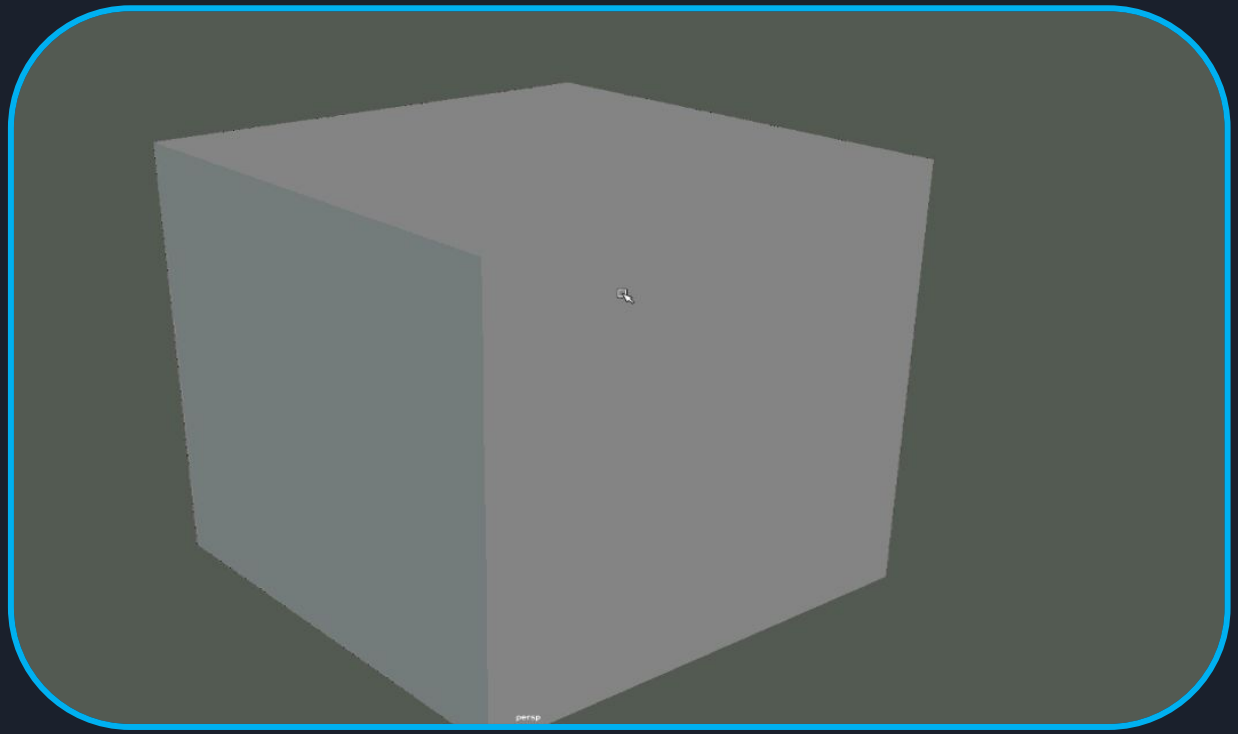
Poly1|Bevel Tool



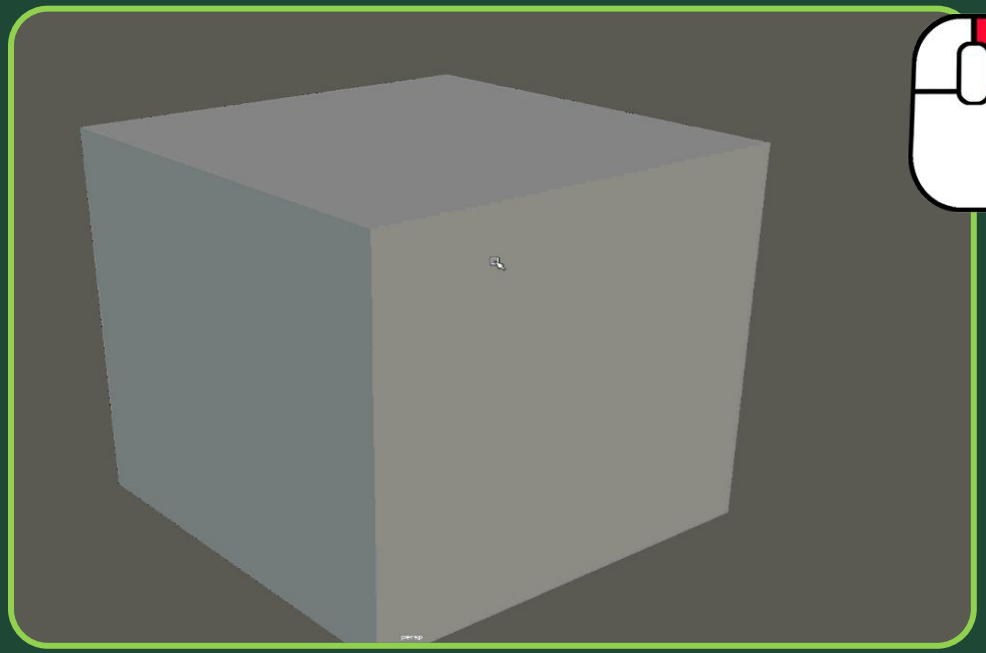
Nothing in the real world has a completely sharp edge.

The bevel tool allows you create chiseled or rounded edges on your geometry

Tip: Be sure to check for N-gons after using the bevel tool.

Poly1 | Bevel Tool

Bevel an edge - Fraction



- Hold down Right click on the object
- Select “Edge” From the menu
- Select an edge or edges.
- Hold down Shift and Right click to bring up the edge editing menu.
- Select Bevel from the list.
- Left click and drag mouse left or right on word, “Fraction” to adjust the bevel size.

TIP: Holding down Ctrl while dragging left or right will give you finer control.

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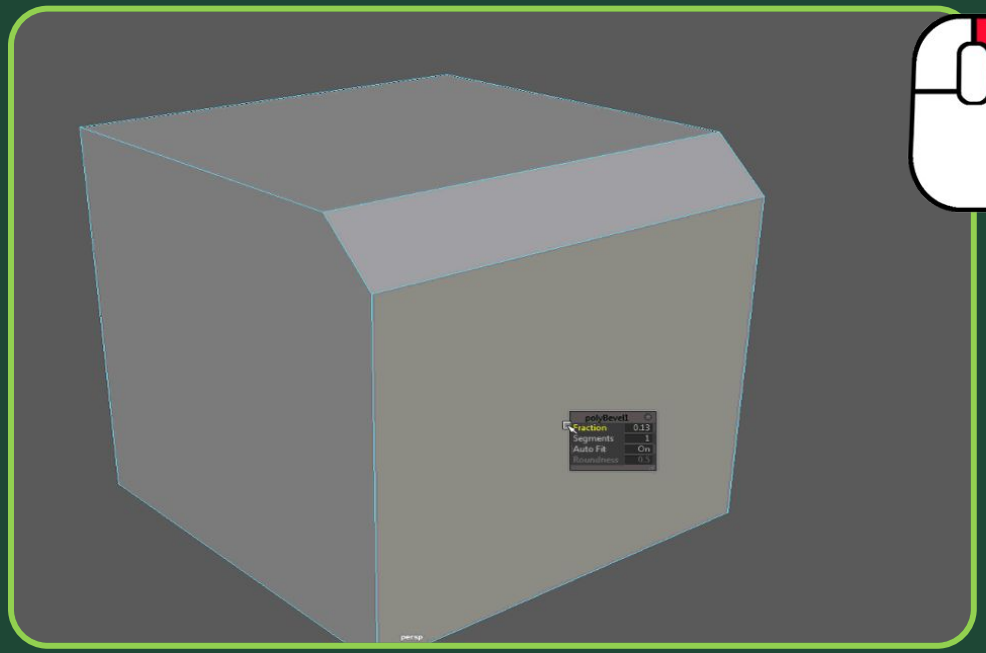
Poly1 | Bevel Tool

Bevel an edge - Segments



- Perform a bevel.
- Left click and drag mouse left or right on the word, “Segments” to change the number of segments in the bevel.

TIP: Holding down Ctrl while dragging left or right will give you finer control.

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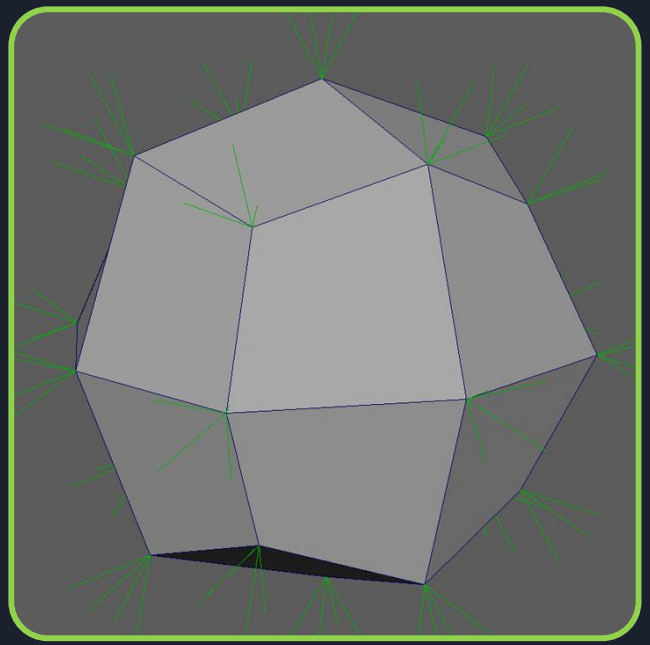
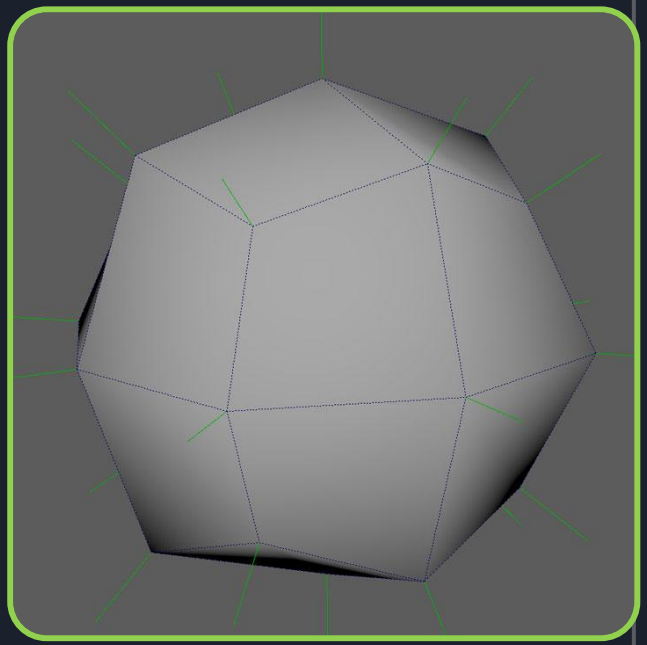
Poly1|Soften/Harden Edges

Edge Normals - Hard



Edge Normals - Soft



The Soften/Harden Edge tool allows you to control how polygons are shaded on an object.

Harden
When vertex normals are perpendicular to the face normal, the polygon will appear flat shaded.

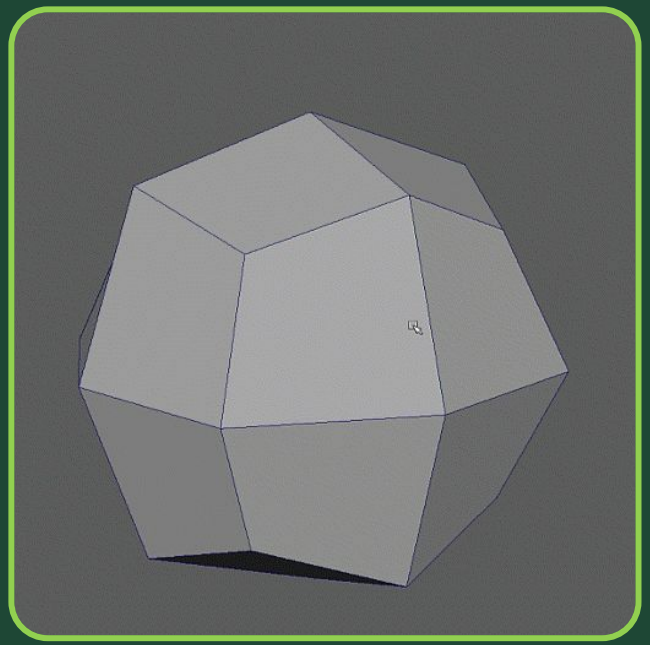
Soften
When the vertex normals angle is averaged between the shared faces, the object will appear soft.

By default, maya will automatically soften any geometry that is greater than 30 degrees.

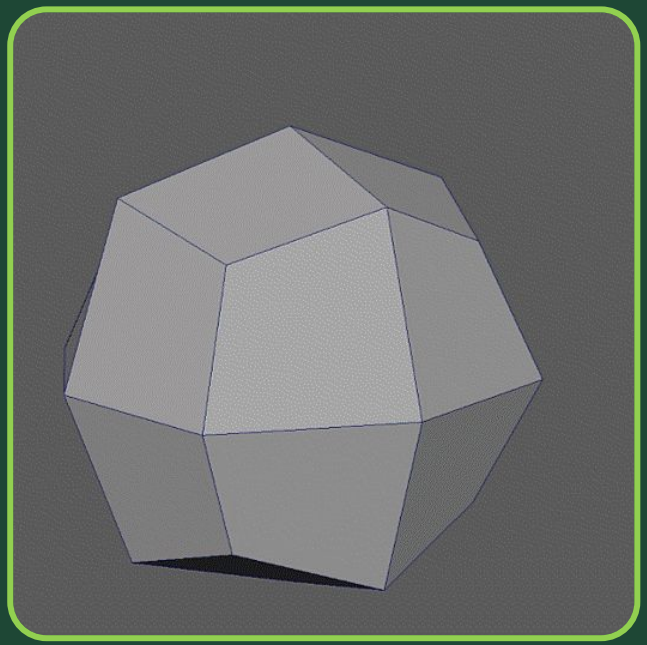
TIP: Toggle vertex normal display through the marking menu when in vertex or face mode.

Poly1 | Soften/Harden Edge

Soften/Harden Edge - By Object



Soften/Harden Edge - By Edge



Soft/Hard Edge - By Object

- Enter Object mode.
- Hold down Shift and Right click to enter the Object Marking Menu.
- Select Soften/Harden Edge.
- Choose either Soften Edge or Harden Edge.

Soft/Hard Edge - By Edge

- Enter Edge mode.
- Select an edge or edges.
- Hold down Shift and Right click to enter the Object Marking Menu.
- Select Soften/Harden Edge.
- Choose either Soften Edge or Harden Edge.

Exercise|Model a Drink Can

- In the scene file, “Lesson_Poly1_ExampleMeshes”.
- Model a low polygon drink can.
- Soften or harden edges where needed.
- Assign materials and colour.
- Use the provided reference model as a guide

You have 15 minutes

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Exercise|Model a Dumpster

- Use the tools from this lesson, in combination with skills learned in previous lessons to model a low polygon dumpster.
- Assign materials and colour.
- Use the provided reference model as a guide

You have 1 hour

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