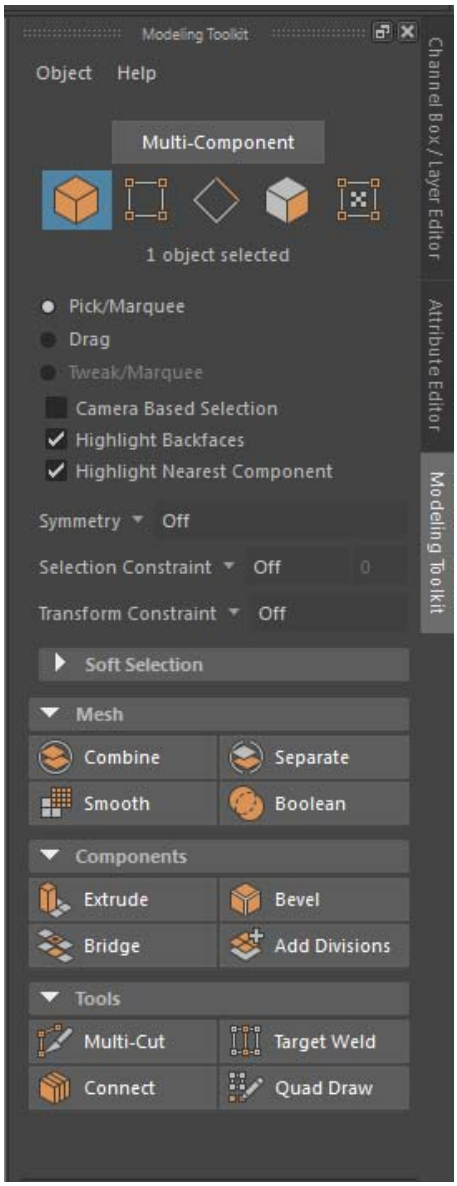
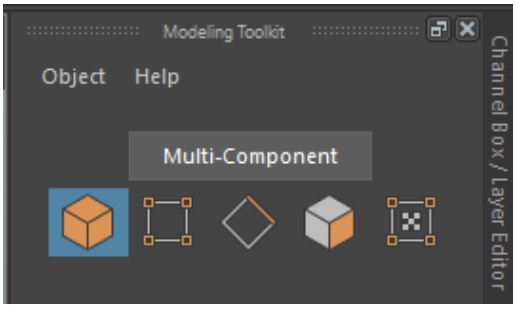
Modeling Toolkit Exercise

In the last couple of years, Maya has introduced a set of modeling tools that have become increasingly prominent. The Modeling Toolkit is extremely useful for polygonal modeling, and in this exercise we will go over its interface and main uses.

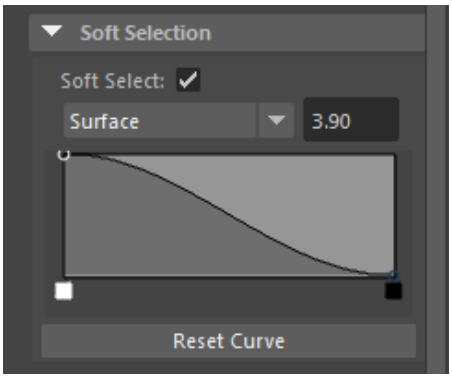


The top portion of the interface (under “Multi-Component”) is different selection methods. You are already familiar with this, so this is just another

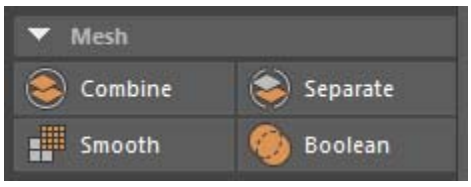
way to access those options. However, the **Multi-Component** button allows you to select vertices, faces, and edges all within the same tool. This can be useful when modeling. It is also accessible by pressing **F7** on your keyboard.



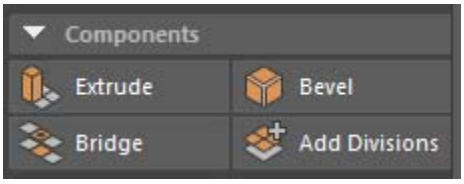
The Modeling Toolkit also has a **Soft Selection** tab, which gives you more abbreviated options than if you were to use the **Tool Settings**, but can still be useful for quick adjustments.



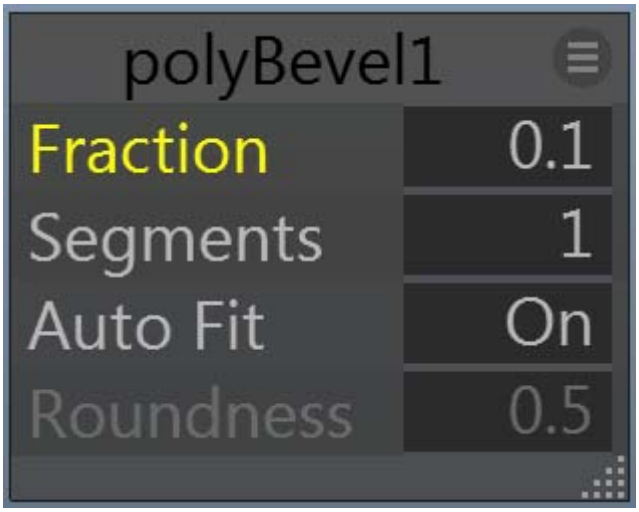
Under the **Mesh** tab, there are four buttons. **Combine, Separate, Smooth, and Boolean** are all also accessible using the Shift + Right-Click menu with a Polygon mesh selected. **Combine** joins the selected polygon objects into one. **Separate** divides the selected polygon back into its original shells. **Smooth** subdivides a polygon object, and provides options for you to control the number of divisions it adds. **Boolean** has several options within it, including union, difference, and intersection. You can experiment with these and see what each operation does. You must have at least two polygon objects selected for it to work.



Under the **Components** tab, we have **Extrude, Bevel, Bridge and Add Divisions**. Again, these are all accessible using the Shift + Right - Click menu. **Extrude** pulls out new polygons from the existing selected one. **Bevel** expands the selected polygon components (edges or faces) into new faces. **Bridge** creates bridging faces between existed edges or faces. **Add Divisions** is similar to the Smooth tool, in that it adds divisions to the selected edges or faces.



You'll notice that once you activate a lot of these tools, a little window that looks like this pops up:



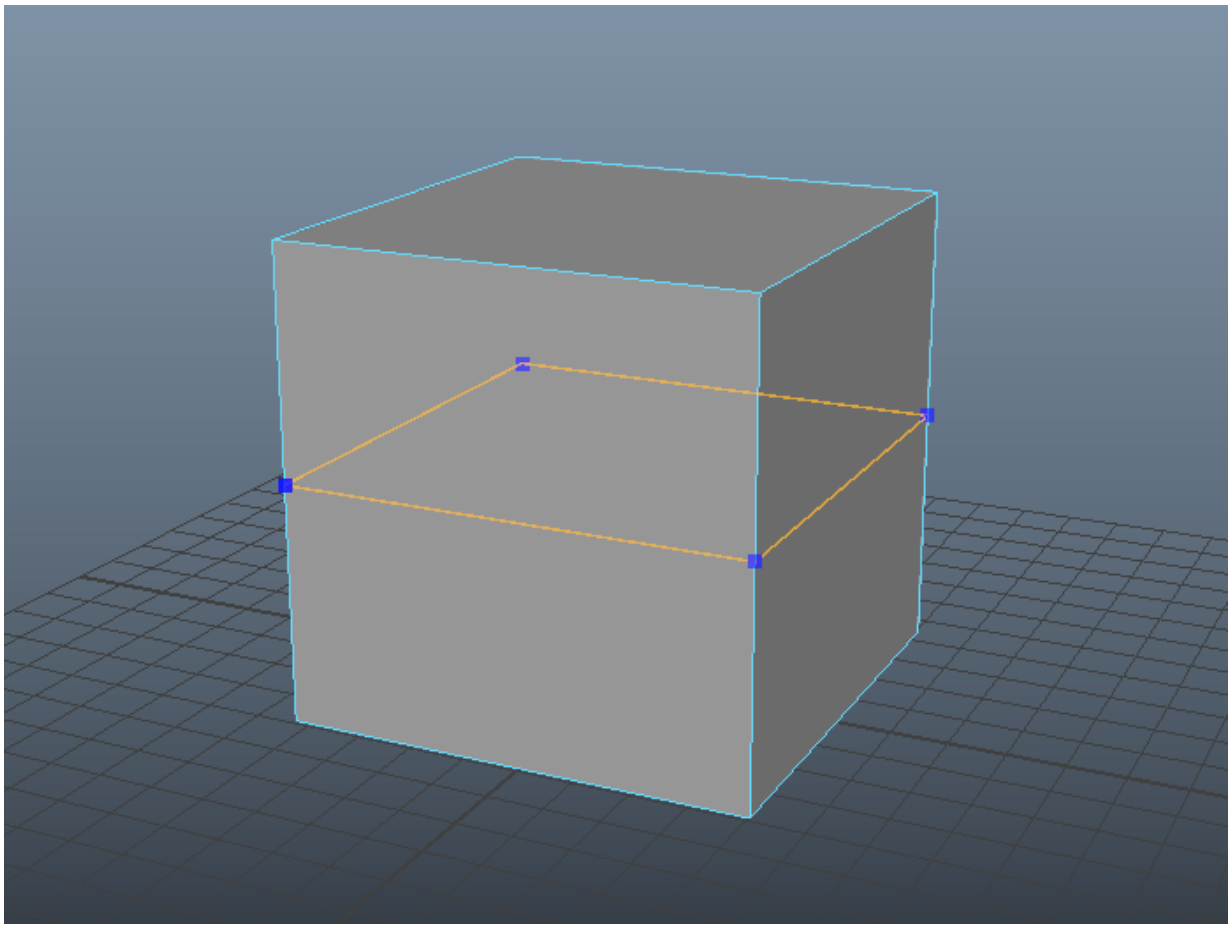
This is an **in-view editor**, or **IVE**. It contains lots of options specific to the tool you've just activated. Try doing one of the operations above and playing with the settings within the IVE and seeing what they do.

Under the **Tools** tab, we have some of the most useful tools in the Modeling Toolkit.

Multi-Cut

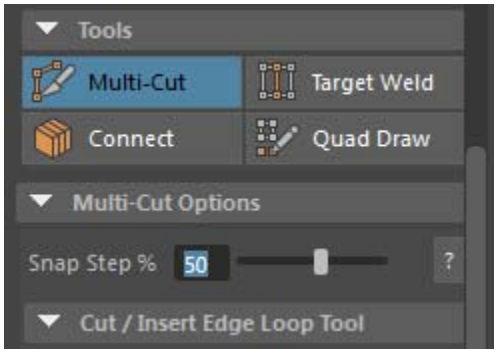
Multi-Cut is a multi-purpose tool that allows you to cut faces, insert edge loops, and draw on edge loops and vertices, all with a high level of control. You'll notice that when you select the tool, a bunch of options open up beneath it.

Cut/Insert Edge Loop Tool: Select a polygon, and in Face, Edge, or Vertex mode, click on the Multi-Cut Tool. Hold Ctrl and hover over a face or an edge. You'll see a preview of an edge follow your mouse. If you left click, the edge will be added to the surface.

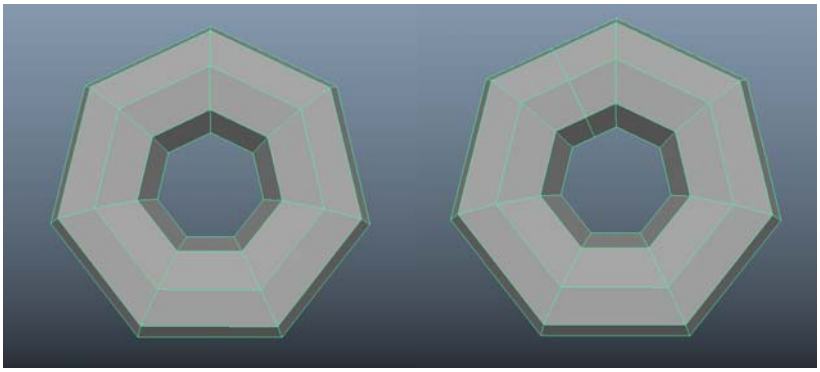


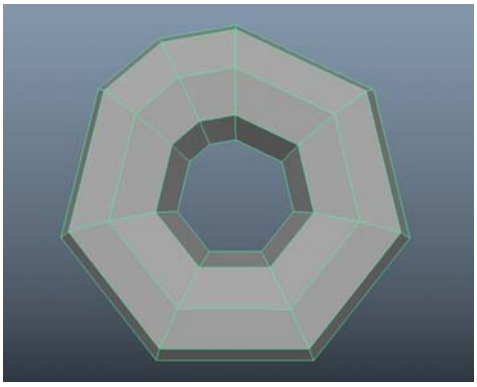
By holding Ctrl and Shift, the edge will snap to whatever value you've set in the **Snap Step** field. The Snap Step field will allow you to control what

values the tool snaps to, which is especially useful when inserting edge loops. For example, if you'd like an edge to be halfway across a face, set the snap step to 50% and the loop will snap to exactly halfway across whatever face you're hovering over.

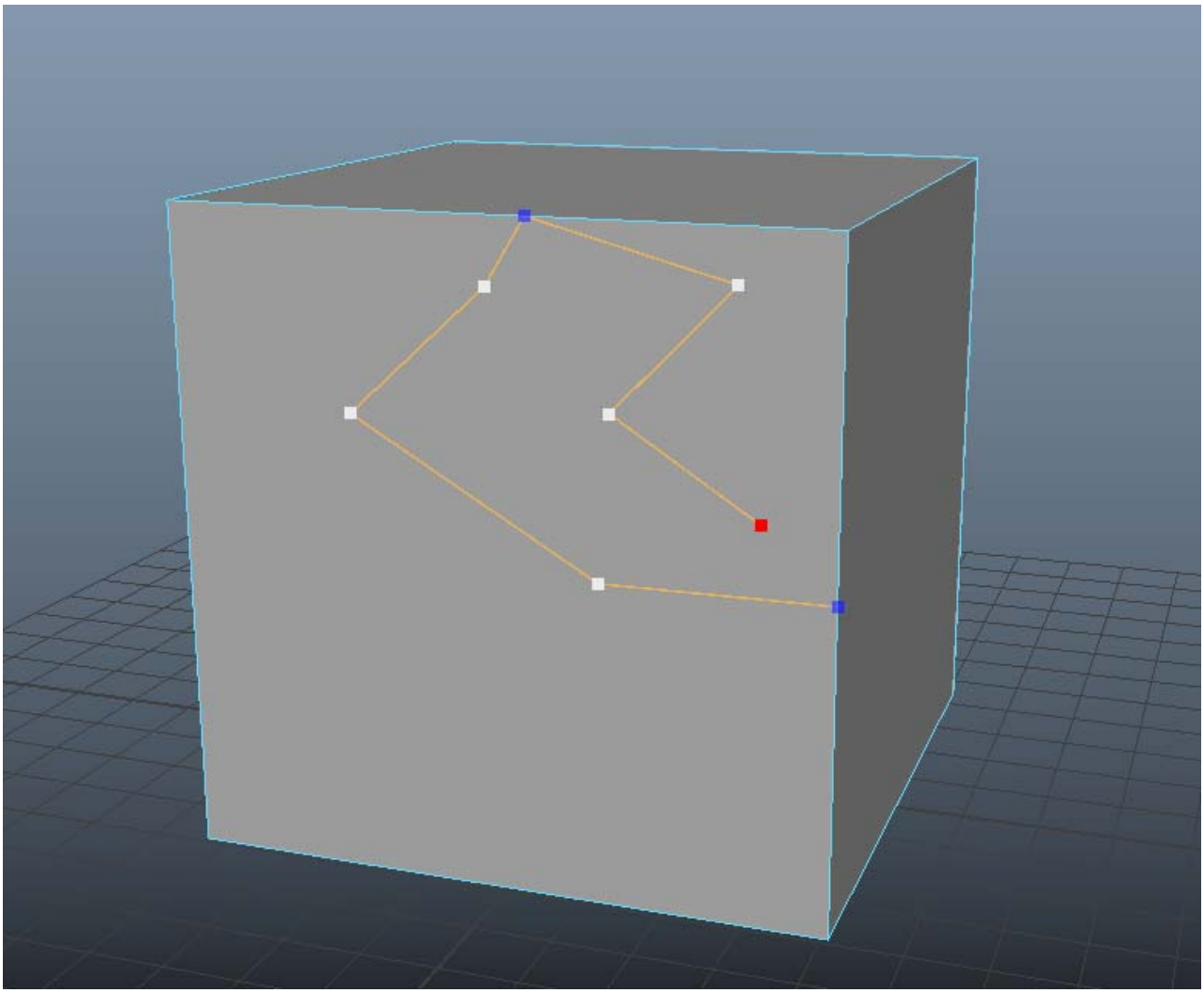


Additionally, if you have **Edge Flow** checked, Maya will attempt to imitate the shape of the surrounding edges, giving you a smoother shape instead of a flat edge. The third image below has an inserted edge created with edge flow checked.

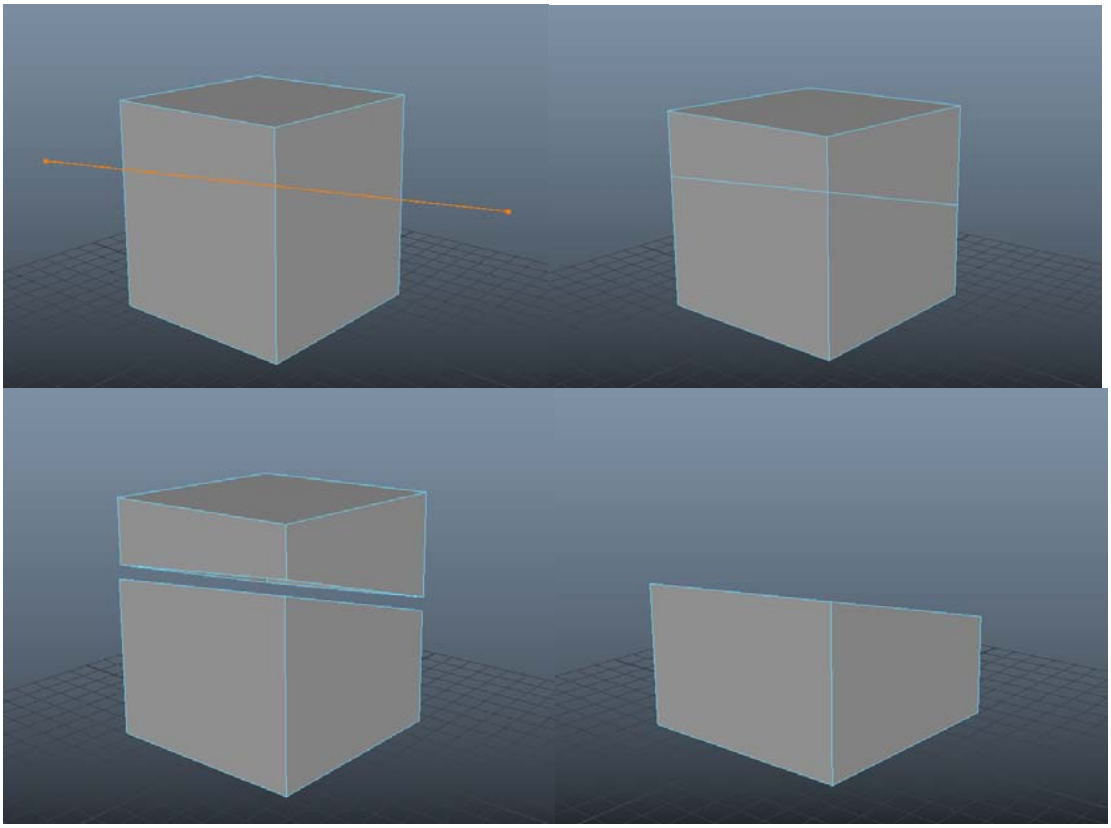




Using this tool, you can also left click on a face or edge and draw on vertices connected by edges manually. Pressing Enter will finish the tool.

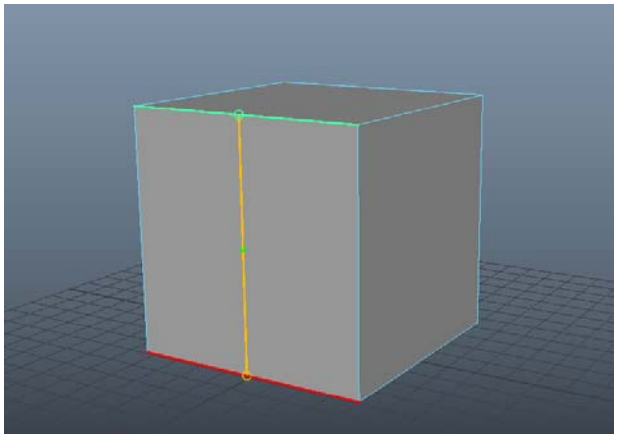


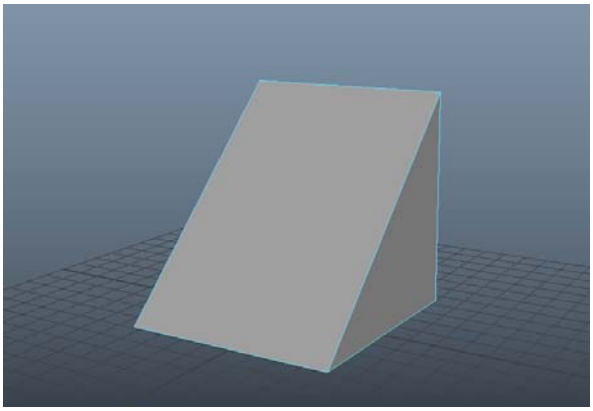
By middle-clicking and dragging over a polygon object, you can also cut a line across it. It will be drawn on the object based on the angle of the camera you're using. If you check **Delete Faces** in the Slice Tool tab, Maya will delete all the faces to the right or above the line you drag across the shape. If you check **Extract Faces**, instead of deleting the faces, Maya will extract them from the original polygon object.



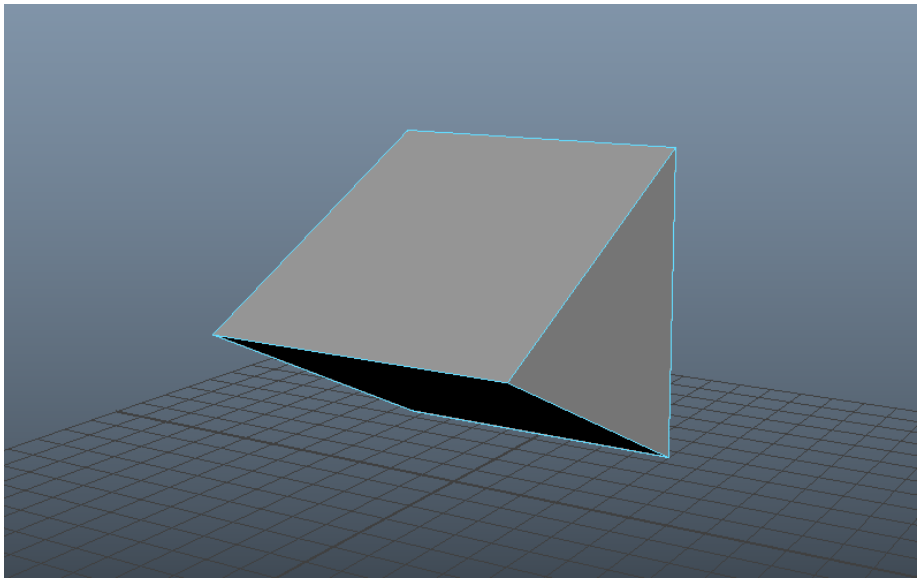
Target Weld

The **Target Weld** tool is used to merge edges and vertices together on a polygon object. By left-clicking and dragging, the tool will merge the first edge or vertex you select to the second. With the tool selected, there are a couple options that open up underneath it in the **Target Weld Options**. **"Target"** is checked by default, and that just means that the tool will merge the first component you select to the second's location.



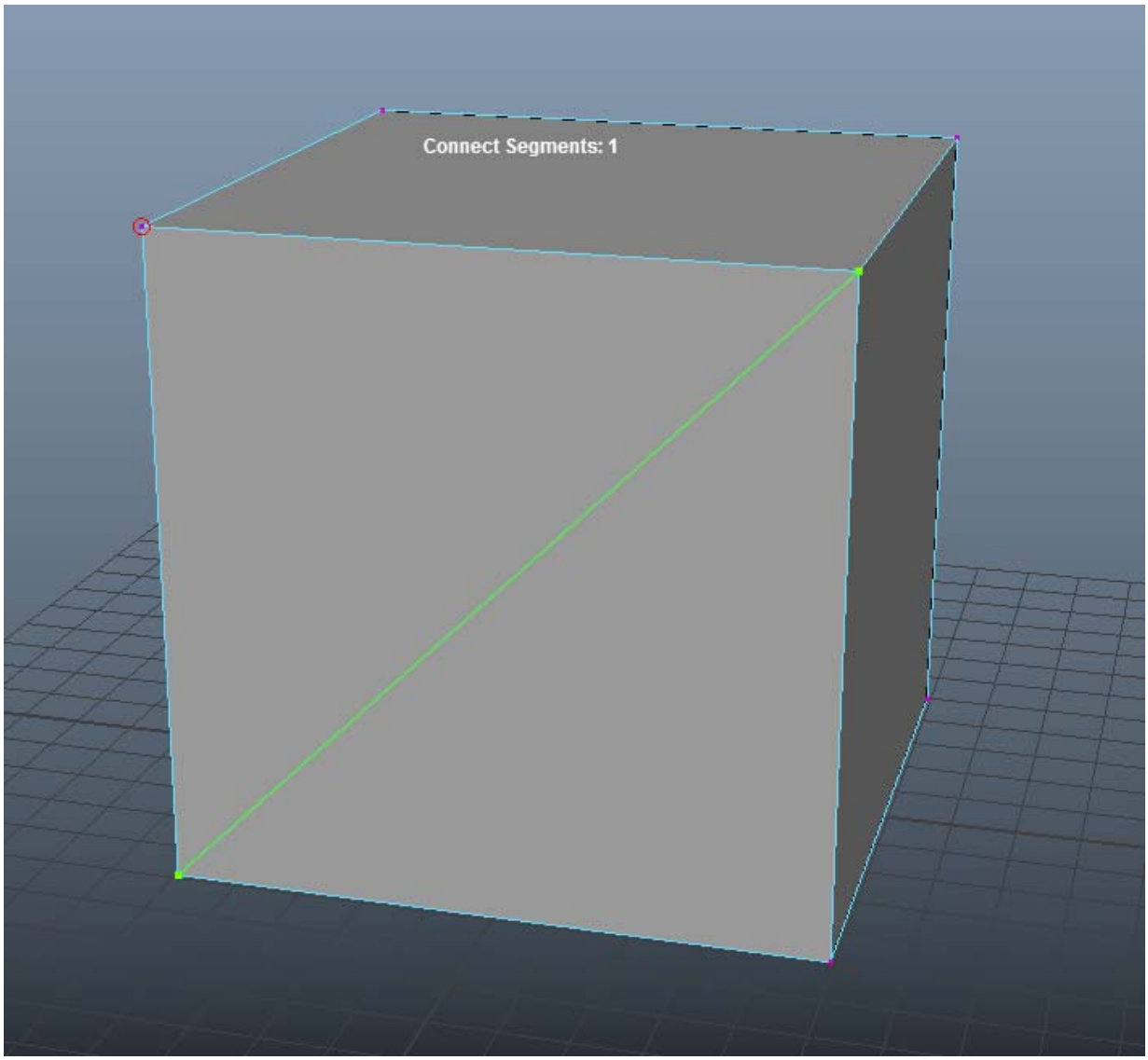


If you check **"Center"** instead, the tool will merge the two together in the center, which can be handy.

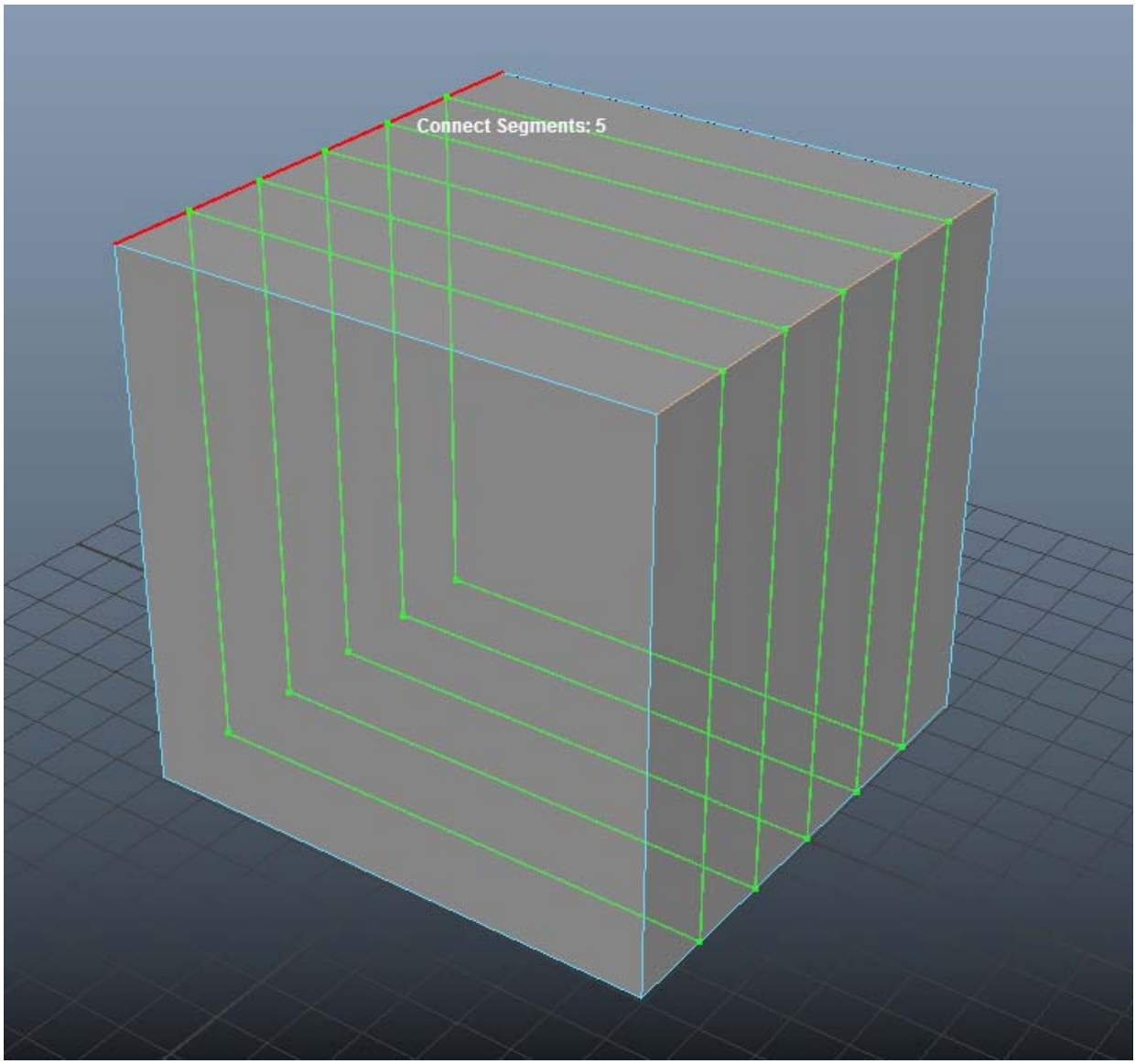


Connect

Connect connects selected polygon components by inserting an edge between them. For instance, if you select one vertex, and then shift select another, the tool will highlight an edge connecting the two. Press Enter to insert it.

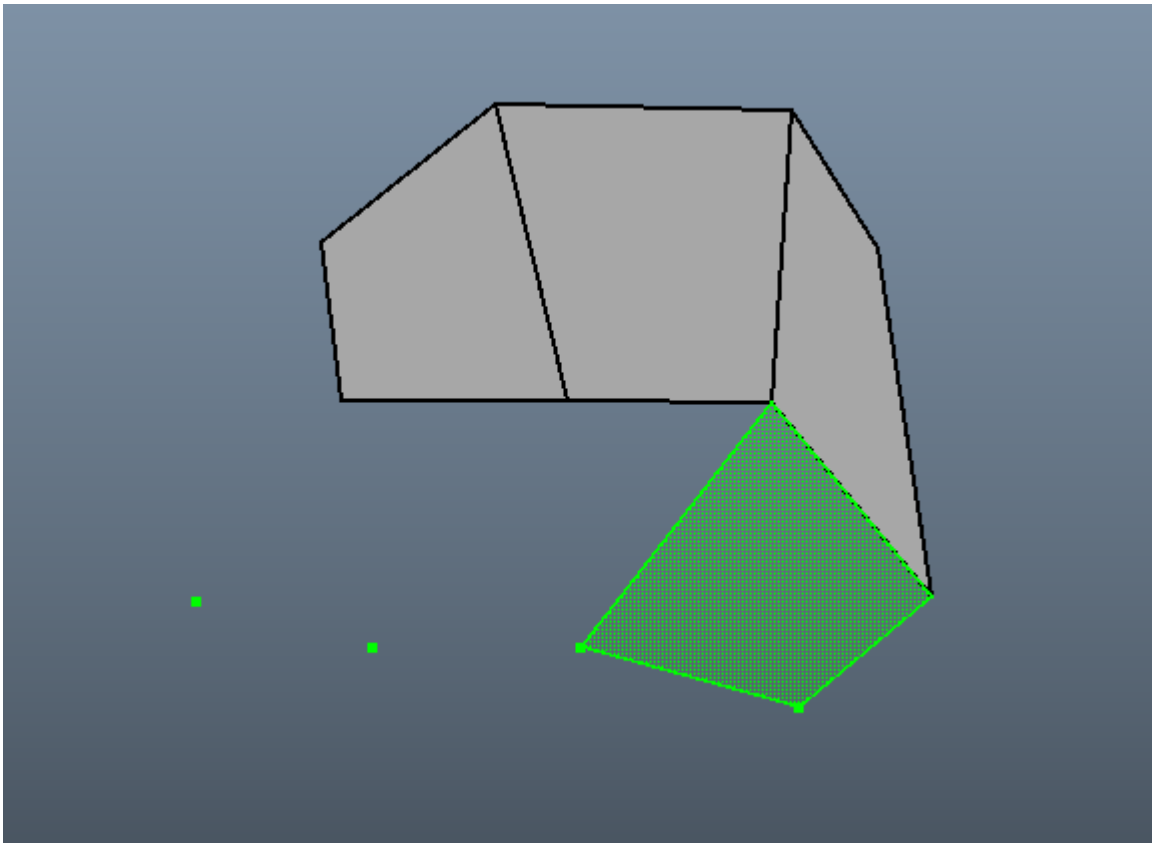


When used with edges, Connect can insert a specified number of edge loops inside a previously existing edge loop which can be useful. Down in the **Connect Options**, if you increase the number in the Segments field to 5 for example, and then select an edge, Connect will insert 5 edge loops intersecting the selected edge



Quad Draw

Quad Draw does just what it sounds like, it lets you create a mesh by drawing quads, or draw onto an existing mesh in quads. By left-clicking in the scene, you can draw vertices wherever you like. To connect them with faces, hold Shift with the tool selected and it will highlight potential quads to connect the existing dots you drew. To insert one, left-click.



Now that we've gone over most everything in the Modeling Toolkit, feel free to play around with it and try things out to see how they work. You are allowed to use whichever tools and workflow works best for you when modeling, but make sure to try out these tools before you pick what works best for you.

A much more detailed video talking about some of the more advanced features of the Modeling Toolkit can be found here.

Back to Exercises