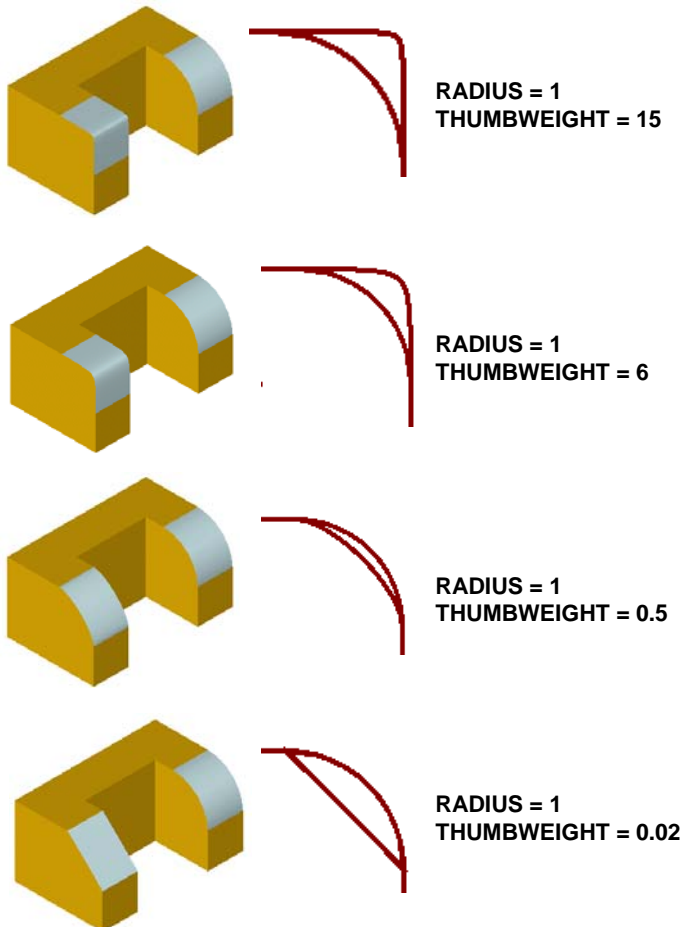
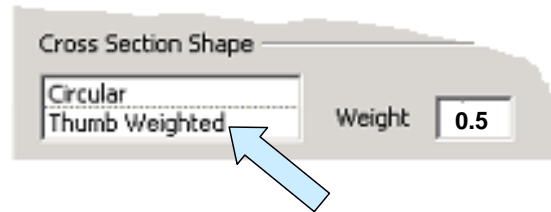


We'll work with the Thumb Weighted blends first.



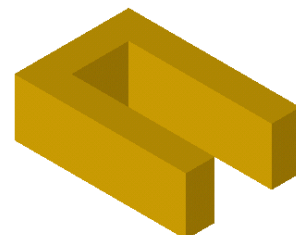
Each of the blends to the left is Thumb Weighted and has a 1 inch Radius. (I've foreshortened the block in these pictures to conserve page space. I've also face colored the blend surface.)

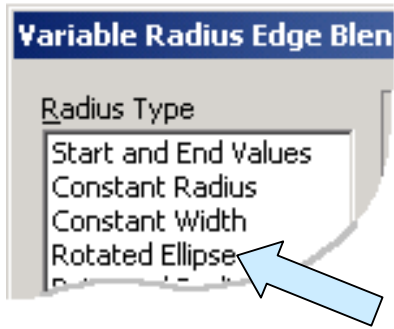
You can use Thumb Weights from 1×10^{-6} to 1×10^6 with a weight of 1 equal to a standard constant radius blend.

Notice that as the thumb weight gets larger, the blend approaches a sharp corner.

As the thumb weight gets smaller, the blend approaches a chamfer.

When you are done experimented with the thumb weighting, click the UNDO Icon to revert to a sharp corner on the top, right edge of the front leg.



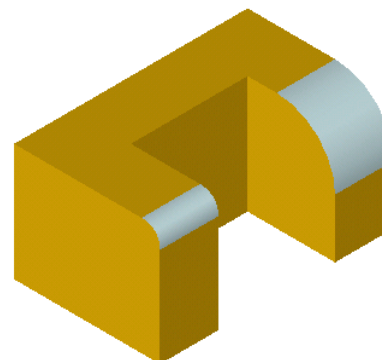
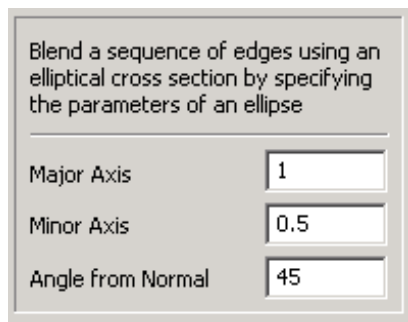
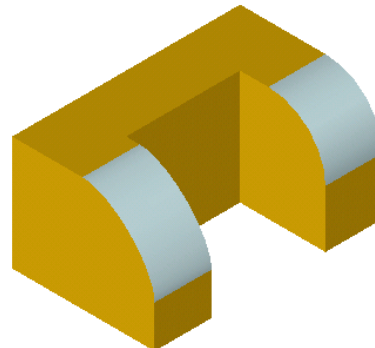
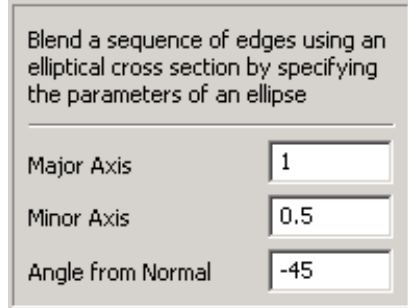
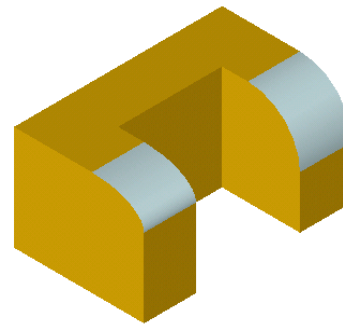
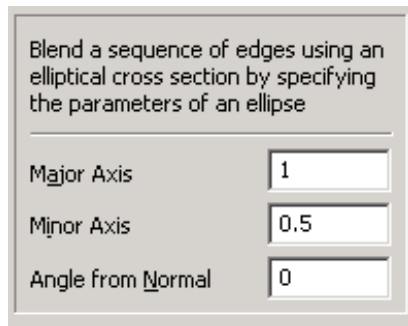


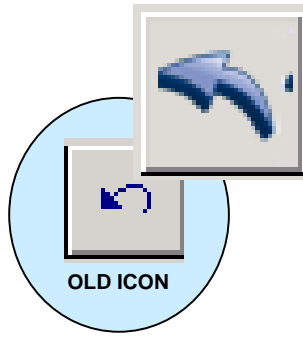
Next, let's work with the Rotated Ellipse Blends.

We'll use the same approach as before. Apply a blend on the top, right edge of the front leg.

Switch to the Front View to compare the blend to the standard circular blend.

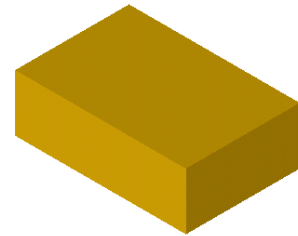
Then switch to the Isometric View and undo the blend. I've illustrated three variations below.





When you are done experimenting with the rotated ellipse blends, click the UNDO Icon until you revert to the original block.

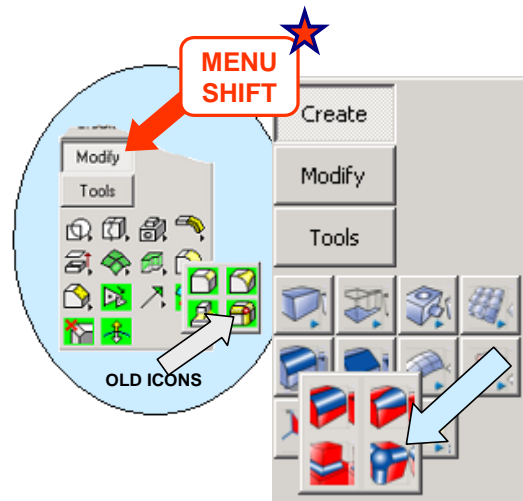
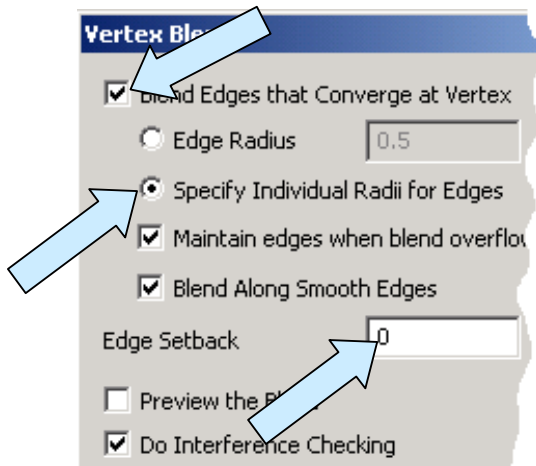
Your screen should look like this:



Vertex Blending

Click on the BLEND VERTICES AND EDGES Icon.

A Dialog Box appears.



Click on the Blend Edges Option.

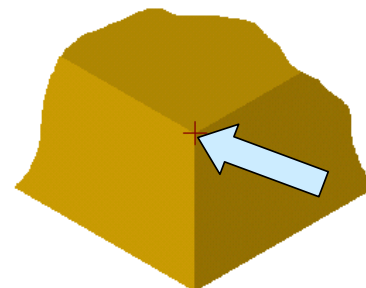
Select the Specify Individual Radii Option.

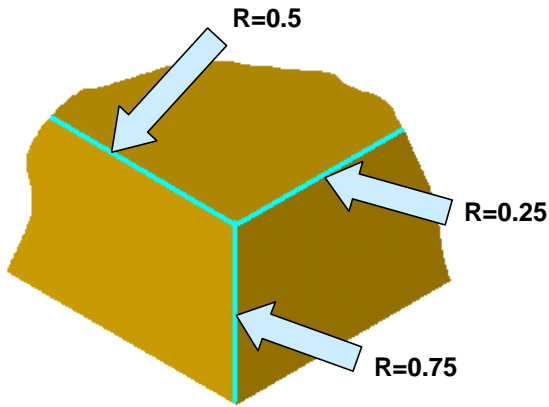
Type 0 for the Edge Setback and click on the OK Button.

Click on the block.

You are prompted to select the vertices that will be blended. Using the EndEnt Option, click on the top, right, front corner of the block.

Then, click on the DONE Button on the Conversation Bar.

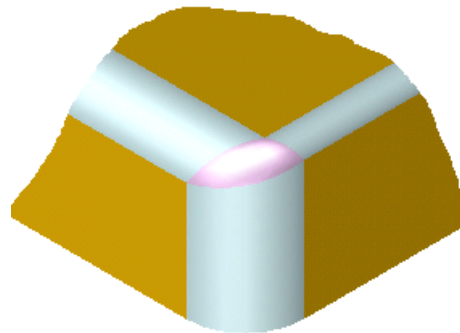
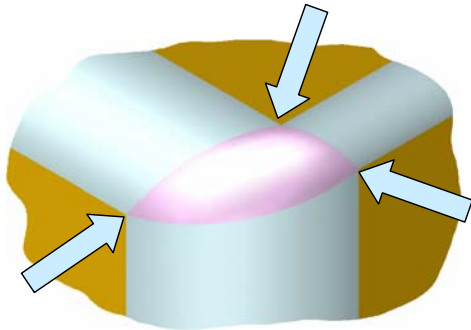




Notice that a marker appears on one of the edges connected to this vertex. You are prompted for a Radius Value. You will get three prompts like this since in this example we only selected one vertex and there are three edges leading into it.

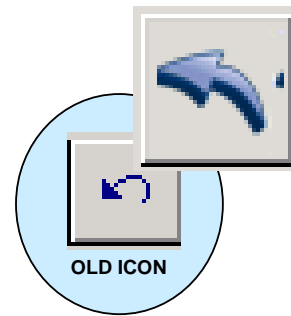
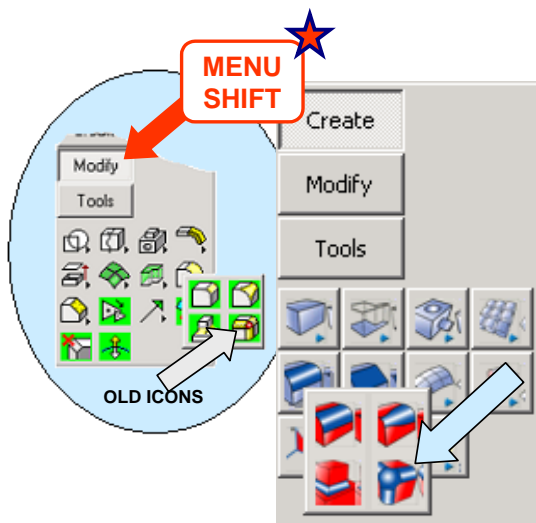
Enter the values indicated in the illustration to the left for each of the edges.

Your completed blends should look like this.

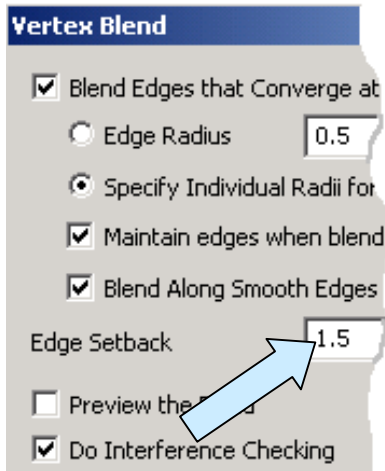


Now in most cases, you would probably want to soften the blend transition so that the sharp corners at the patch boundaries disappear.

This is easy to do. Click on the UNDO Icon to revert to the original block.



Click again on the BLEND VERTICES AND EDGES Icon.

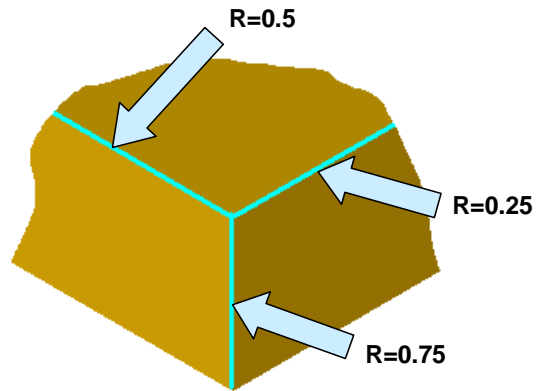


A Dialog Box appears.

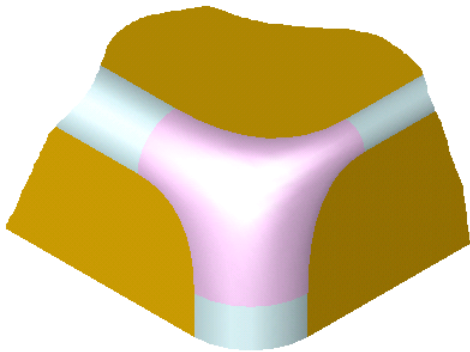
This time, type 1.5 for the Setback Value and click on the OK Button.

Select the block and then, using the EndEnt Option, click on the top, right, front corner of the block.

Click on the DONE Button.



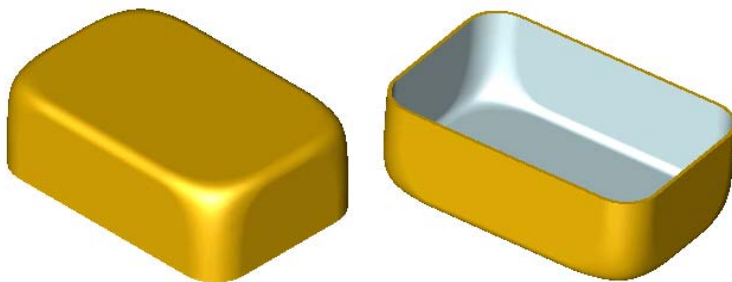
We'll use the same radius values again.



Notice the difference in the final blending surfaces.

Now we've applied the vertex blending at one corner of this part. In the illustration below, you can see the end result when four vertices are selected on a part.

It would be difficult to construct this part without the vertex blending tool.



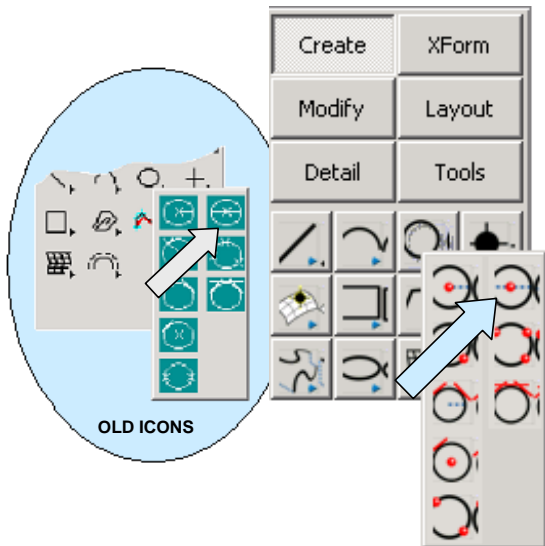
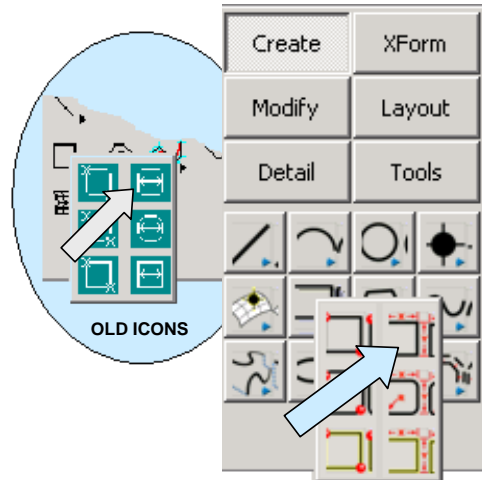
Face Blending

For our last blending exercise, let's create a simple face blend to show you how this powerful tool works.

We'll start with a new file in View 1.
Click on the CREATE RECTANGLE WIDTH HEIGHT Icon.

Use the MidCtr Anchoring Option.

Type 4 for dXC and 2 for dYC.
Click on the KEYIN Option and hit the ENTER Key three times to center the rectangle on the origin.

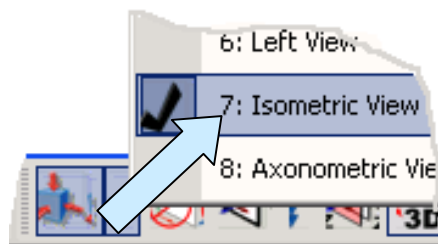
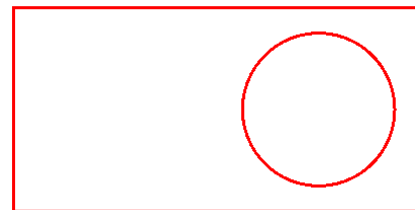


Click on the CREATE CIRCLE BY DIAMETER Icon.

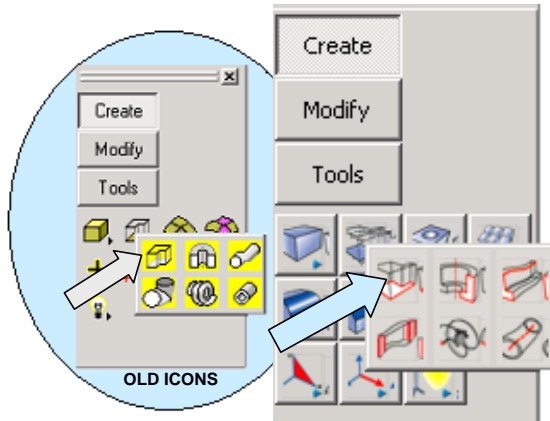
Type 1.5 for the Diameter and hit the ENTER Key.

Using the KEYIN Option, type 1 for the XC Value and hit the ENTER Key three times to place the circle.

Your screen should look like this:



Switch to the Isometric View.



Now, click on the EXTRUDE Icon.

A Dialog Box appears. Type 0.5 for the Length.

Use 0 for the Draft Angle and click on the OK Button.

Select the rectangle and hit the ENTER Key. Click on the downward-facing vector.

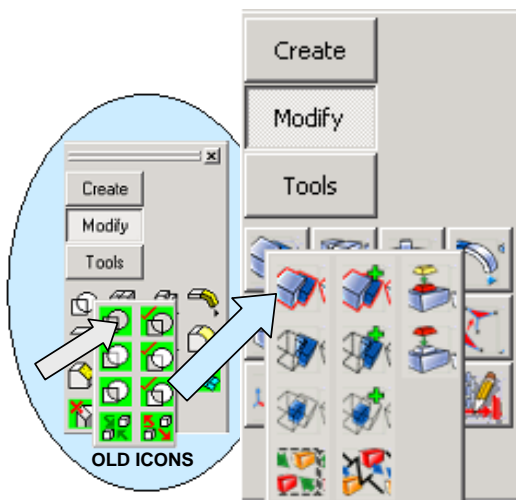
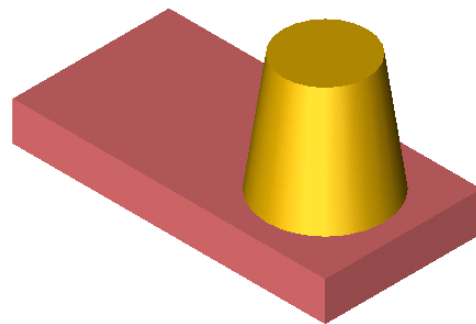
Hit the BACKUP Key.
The Dialog Box reappears.

Type 1.5 for the Length. Type 8 for the Draft Angle and use the Inward Option.
Click on the OK Button.

Click on the circle and hit the ENTER Key.

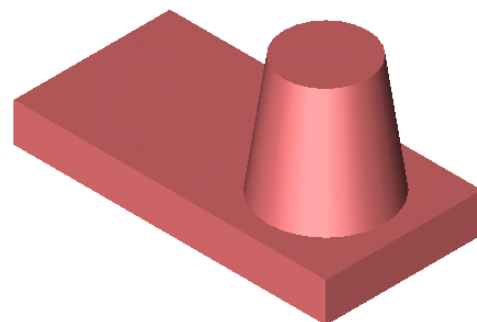
Click on the upward-facing vector.

Your screen should look like this:

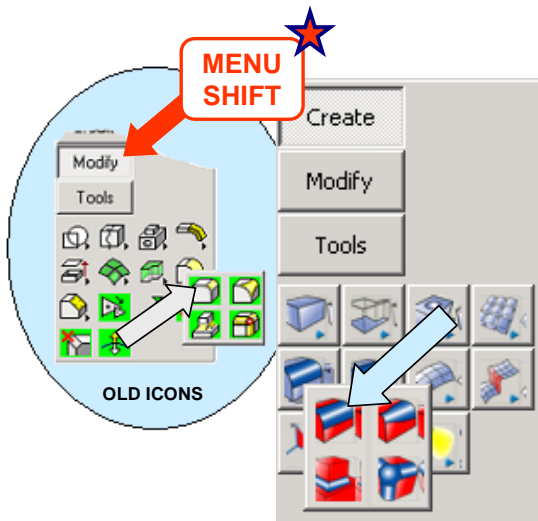


Click on the BOOLEAN UNION Icon.

Click on the rectangular solid and then on the conical solid. Hit the ENTER Key.

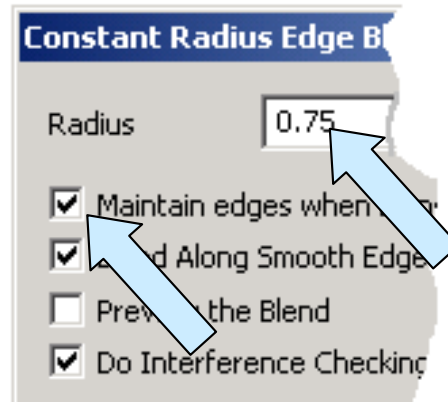


You now have a single solid on the screen.



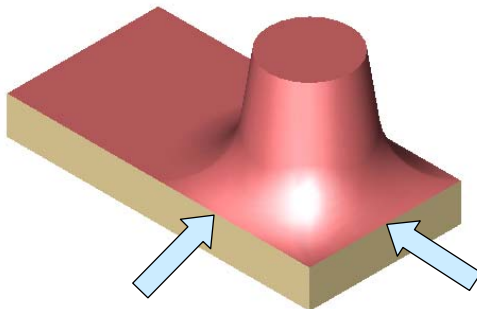
Now, click on the CONSTANT RADIUS BLEND Icon.

A Dialog Box appears.



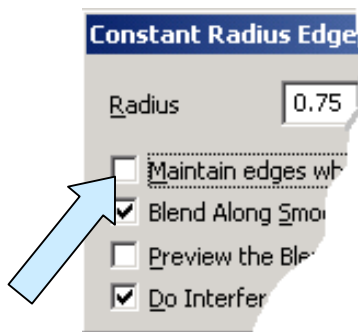
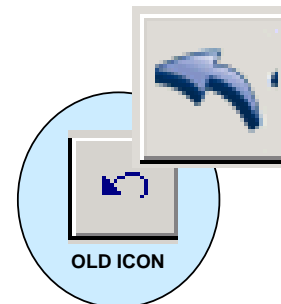
Type 0.75 for the Radius. Make sure that the Maintain Edges Option is checked and click on the OK Button.

Click on the circular edge at the intersection of the conical section and the rectangular base. Then, hit the ENTER Key.

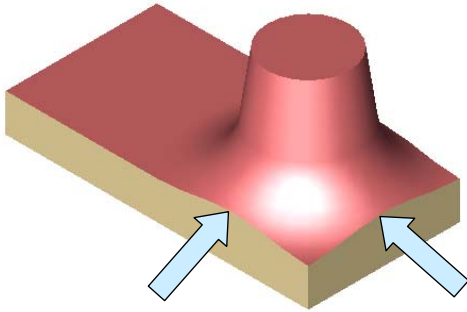


Notice that a blend is created and the top edges of the base remain level.

Click on the UNDO Icon.



Let's create the same blend again but this time, click to remove the check from the Maintain Edges Option.

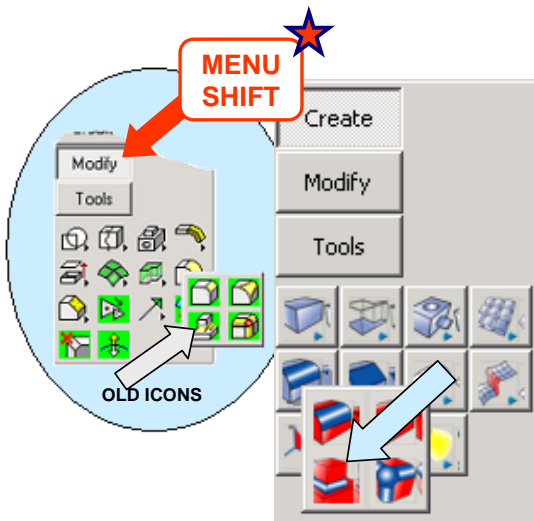
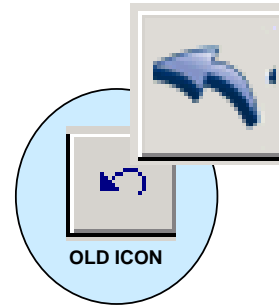


Notice that the blend is created and the edges of the part grow upward to close the side surface.

This is because the blend radius is greater than the distance from the intersection to the edge of the part

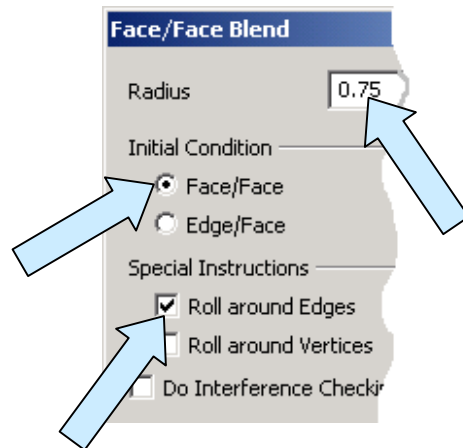
Click on the UNDO Icon.

Now let's suppose that we want to create this blend but we want to keep one edge linear and let the other two edges grow upward. The Constant Radius Blend does not provide us with this option.



Click on the FACE BLEND Icon.

A Dialog Box appears



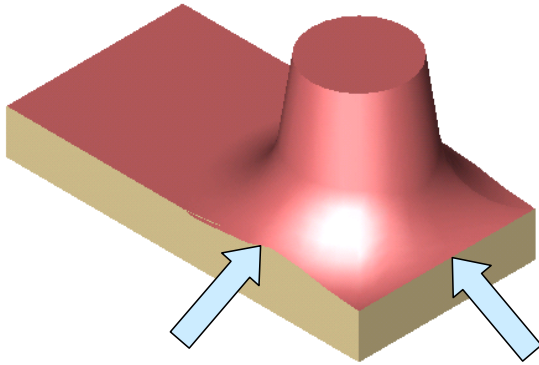
Type 0.75 for the Radius.
Click on the Face/Face Option.

Click on the Roll Around Edge Option and then on the OK Button.

Click on the sloped face of the cone and the top face of the rectangular base.

You are now prompted to select edges for the roll-on control.

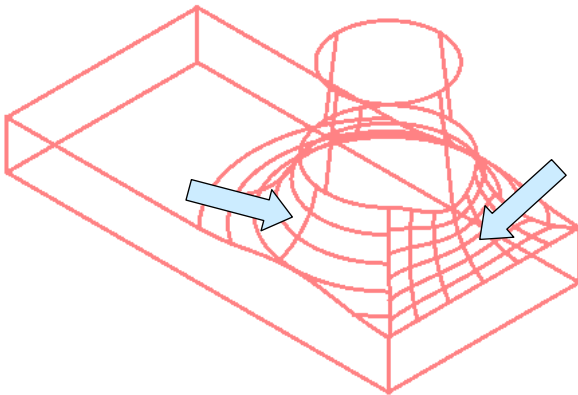
Click on the top, right edge of the rectangular base and hit the ENTER Key.



Your part should look like this:

Notice that the edge that you selected remained perfectly linear.

The front and back edges have grown upward with the blend.



If you look at the blend surfaces in wire mode, you'll see that the front blend is a perfect "rolling-ball" surface patch while the right side blend is a complex surface patch.

This is just one example of where using the Face Blend tool has an advantage over the Constant Radius Blend tool. There are some situations where you may not be able to get a Constant Radius Blend to work because of specific characteristics of the faces that you are trying to blend. Sometimes using the Face Blend Tool solves the problem, even though you may not need to do any special edge flow control.