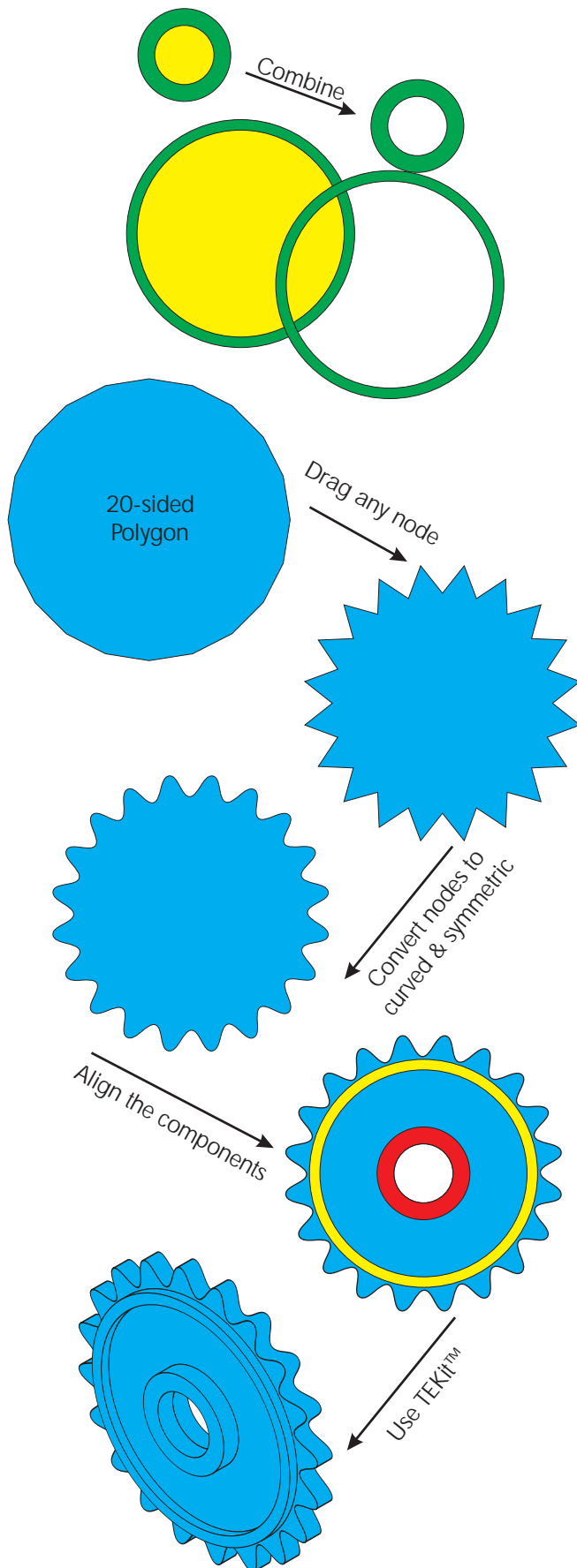


Using TEKit™ for Isometric Objects



TEKit is the easy part...

As the animated software demo shows, TEKit itself is quite easy to use. Most of the real work and creativity lies in creating the components to be used in the isometric view.

Creating the Components...

The gear that I've created using TEKit, began life as the three components shown at the left. Here's how each was created:

◆ The two circular hoops are done exactly the same way:

1. Draw a perfect circle, by holding down the [Ctrl] key while drawing with the ellipse tool.
2. Create a smaller circle, concentric with the first, by holding down the [Ctrl]+[Shift] keys, while resizing the original with one of the corner handles. *Tap the right mouse button before releasing the left button, to leave a copy of the original.*
3. Combine the two circles to create the hoop.

◆ The Gear shape is created using the polygon tool:

1. Draw a regular (equal-side) polygon, with the polygon tool, by holding down the [Ctrl] key as you draw.
2. Adjust the number of steps in the property bar to a large number (e.g. 20). *(Note: this can be done either before or after you draw the polygon)*
3. Switch to the shape tool and move any of the nodes on the polygon inward to create a star shape.
4. To round the star into a gear like shape, select two nodes on the polygon and convert them to symmetric curve nodes. Then, adjust the control points to get the shape you desire.

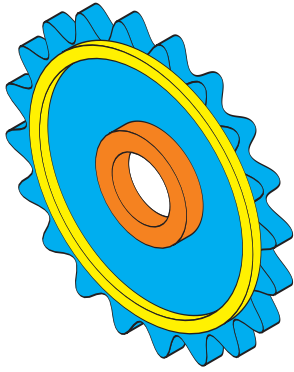
Node editing polygons gives you a surprising amount of flexibility. Not only can you reshape nodes, but you can add nodes. If you add a node, it is added uniformly on every "side" of your shape. You can thus create quite intricate shapes. (I'll show you a few on the next page.)

5. To create a hole in the gear shape that matches the hole in what will be the hub, the easiest way would be to duplicate the hub shape, break it apart and combine the smaller of the two resulting circular shapes with the gear shape.

Time to Tek-it...

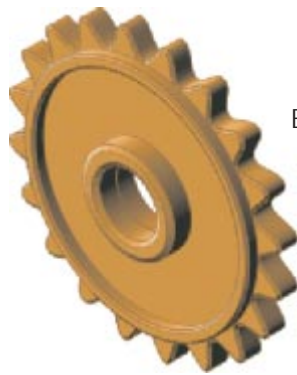
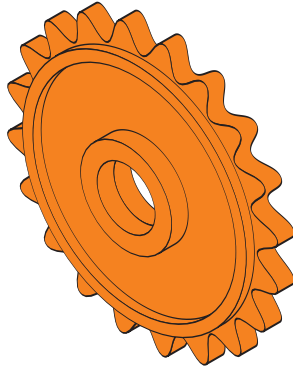
Now that we have the basic shapes, we center them to one another, and apply TEKit to create the resulting shape. We'll utilize different depth values for each of the three components. That is all we need to do, to get the result shown at left.

On the next page, I'll show you how to get a little more elaborate, using some of the features in the Extrude tool.



All components extruded in the same direction

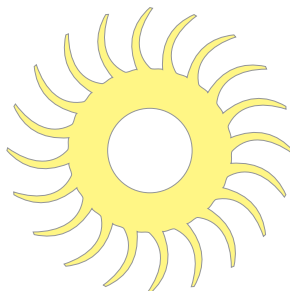
Components moved into proper position via TEKit™



Bevels and Lighting added via Extrude Tool



Conical fountain-fill applied to control faces



Beveling edges...

One way to improve the look of our gear, is to bevel the edges—making it look more like a machined metal part. The TEKit™ script creates parallel extrusions, so we can make use of the extrude tool to add bevels.

There is a trick to making this work correctly—to extrude in the correct direction. For the example on page 1, we extruded the gear shape away from the viewer, while extruding the hub towards the viewer.

The problem with this, is that bevels are applied only to the control face. For the hub, this is the back rather than front face, so you'd never see the bevel!

Ok, what's the solution? Extrude (via TEKit™) in the same direction as the gear shape, then use the TEKit™ position controls to move the object toward the viewer by the same amount as the object is deep. In other words, if the object is 0.2 inches deep, move it towards the viewer 0.2 inches.

Lighting and Shading...

One way to create a more realistic looking object is to use the lighting controls in the extrude tool. This can produce pretty nice effects, but you can take it a step further. By using a conical fountain-fill for the control-faces, instead of a uniform fill, along with the extrude lighting effects; we get a pretty good simulation of reflective metal.

Note that if we apply the conical fill to the entire extrusion along with lighting effects, it can take forever to redraw. So, we set the extrude faces to use a solid fill. The quality isn't quite as good, but it is very close.

An alternative, is to use custom fountain-fills. To apply these, and get the results you want, you will have to separate and ungroup the extrusions, so you can fill each component independently. This is more work, but can result in even better realism.

More Polygon-Generated Shapes

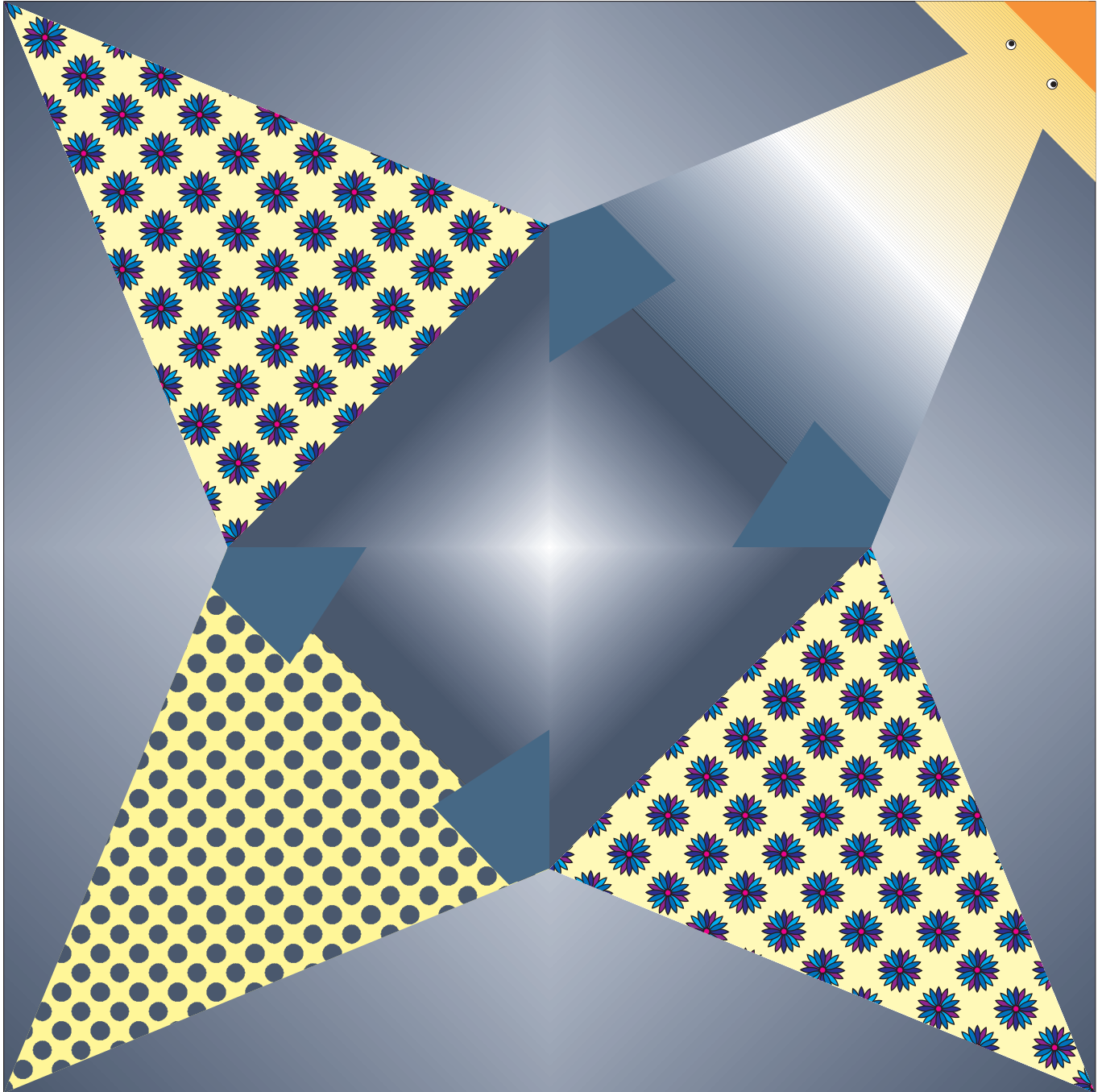
As promised, I've created a couple more objects using the polygon tool and TEKit™. The saw blade was created simply by changing the nodes to curves and shaping them. After creating the basic shape and using TEKit™, I used the Extrude tool to add a bevel, and applied a conical custom fountain-fill to it. (There are no lighting effects on this one.) To get a more interesting metallic look, I turned off "drape fill" in the color portion of the Extrude Roll-up.

The blade teeth looked better with no outline, but then the hole in the center lost its definition. So, I duplicated the control face of the extrusion and applied an outline to it.

The plastic turbine blade was also created starting with the same polygon. This time, I added two nodes and converted them to curves, in order to get the shape I wanted.

The hub with the flat was created as before, except that I trimmed the hoop with a rectangle before running it through TEKit™.

Origami Crane



Origami Crane

