

Chapter 20- Springs, Screws and Gears

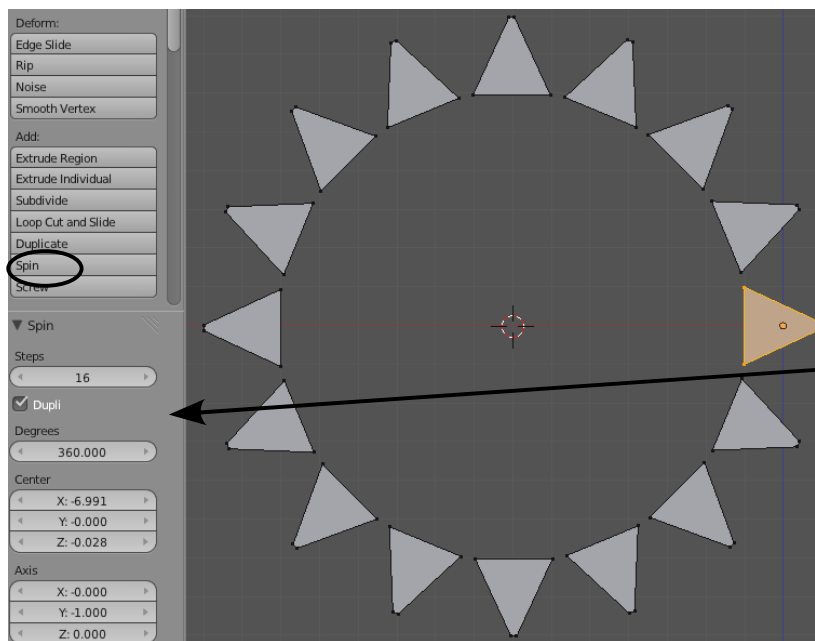
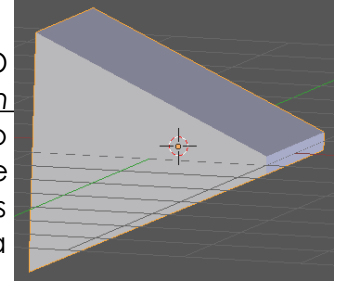


RoboDude Asks: How could I animate a spring stretching and compressing?

Remember how we made shape keys? Scale the shape along the axis and use the slider to animate it.

Gears:

Since a gear uses a 3D shape for the tooth and not just a 2D profile like screws and springs, we need to use the Spin command for that and duplicate the object as it is revolved. To start, add a cube, switch to a *front* view and shape the one edge to look like a wedge. I selected the 4 right edge vertices and hit "S" to scale and "Z" to scale on the Z axis only. This is a pretty simple gear tooth, but good for discussion.



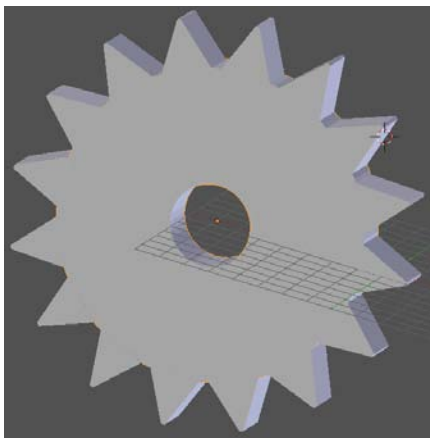
Now move the 3D Cursor to a location where you would like the center to be. (*still in the front view*). Enter *Edit* Mode and select all vertices. In the *Tool Shelf*, select the "Spin" command. You will need to adjust:

Steps to match the number of teeth.

Degrees to 360 (full circle).

Dupli may need to be checked to duplicate vertices rather than spin them.

RoboDude Says: After spinning an object, you will probably have a double set of vertices over the original tooth. Select all vertices and use the "Remove Doubles" command in the Tool Shelf.



To finish off the gear, add a cylinder to the center and shape/scale it to fit the teeth. You could also use Boolean modifiers to cut holes for more detail. Join the meshes together when finished.