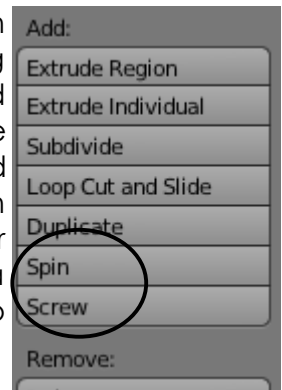


## Chapter 20- Springs, Screws and Gears

So far, we see that Blender has many features that are found in almost all 3D computer programs like the ability to extrude along paths, subtract and add meshes through Boolean expressions and now we will examine **revolving-type, or spinning** commands. The commands used for these effects are found in the *Tool Shelf* and are visible when in *Edit Mode*. The Spin and Screw commands can be used to revolve around a center point with duplicate objects or smooth spinning. You can also provide an offset that will create a spiral. The process to get them to work can be confusing to beginners so we'll create some basic shapes.

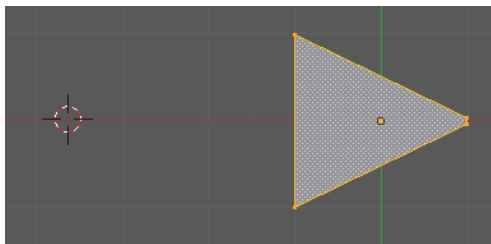


### Creating Screws and Gears

There are actually mesh add-on tools that can create both of these items easily that will be discussed later in the chapter, but for now, we will look at the traditional way to create these items.

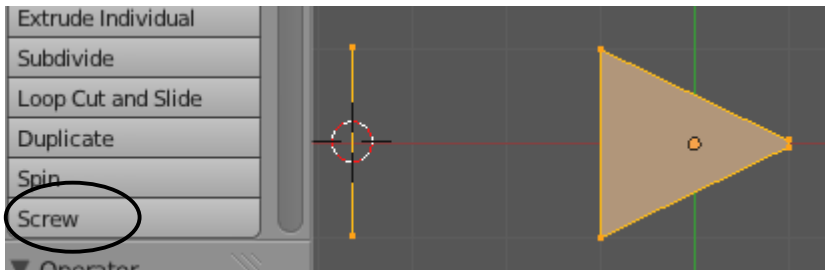
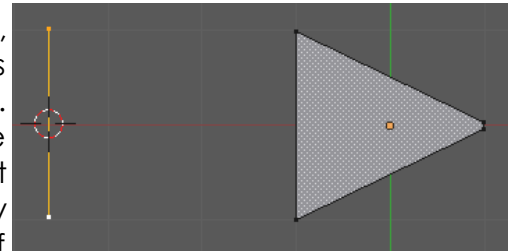
#### Screws and Springs:

In order to make these items, you need a closed shape for the profile (ex. circle or triangle) and a 2-vertex line that controls the spacing from one coil to the next. We'll



make a screw form for our first example. Start by adding a *Plane*. In *Edit* mode, select the 2 right side vertices and scale them down to make a triangle form that will represent the triangle thread. Move the 3D cursor to the left side and place it where you want the center of the screw to be.

Now add another plane (while still in edit mode), delete the 2 right side vertices so that all you have is a line, and place those 2 vertices on the 3D cursor. These 2 vertices control the distance between the coils and must be part of the 1<sup>st</sup> mesh. If they are not joined together, use "Ctrl-J" to join them. My example has the line the same size as the edge of the triangle. This means that the threads created will be tight together. If you want space between the threads, make the line longer. I place these 2 point on the 3D cursor so it is easier to delete them later. Stay in *Edit* mode.



Now, use the "A" key to select All vertices. The line and triangle vertices should all be selected. Make sure you are in a principle view since the spinning will occur related to your view. Select the Screw command.