Learning VectorWorks Chapter 8

Working With 3-D Objects

VectorWorks allows extensive three dimensional objects to be created. The changing of a 2-D shape to a 3-D shape is called EXTRUDING.

3-D shapes created in VectorWorks can be converted into detailed 3-D models using a support program, called RENDERWORKS.

Extruding

To illustrate the conversion of a 2-D object to a 3-D object a circle will be converted to a cylinder.

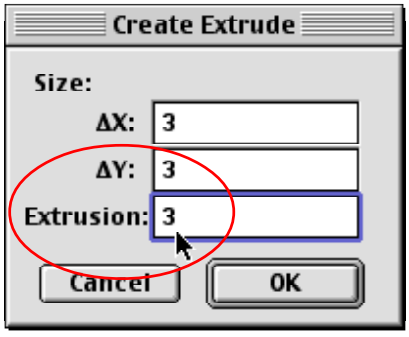
1 Load VectorWorks, or close the current file then select NEW from the FILE menu and select CREATE BLANK DOCUMENT followed by OK.

2 Set the units to CENTIMETRES using UNITS from the PAGE menu.

3 Draw a circle about 3 cm in diameter near the top left of the screen.

4 Display the MODEL menu and select EXTRUDE.

5 You should receive the CREATE EXTRUDE dialogue box that shows the x and y distanced of your circle (they should be the same value if you have drawn the circle correctly.

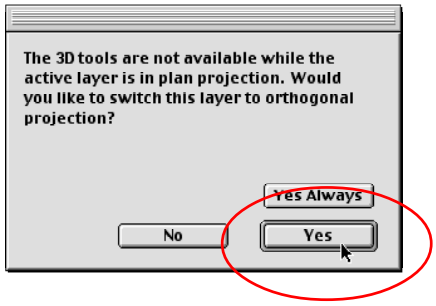


6 Enter the same value in the EXTRUSION box.

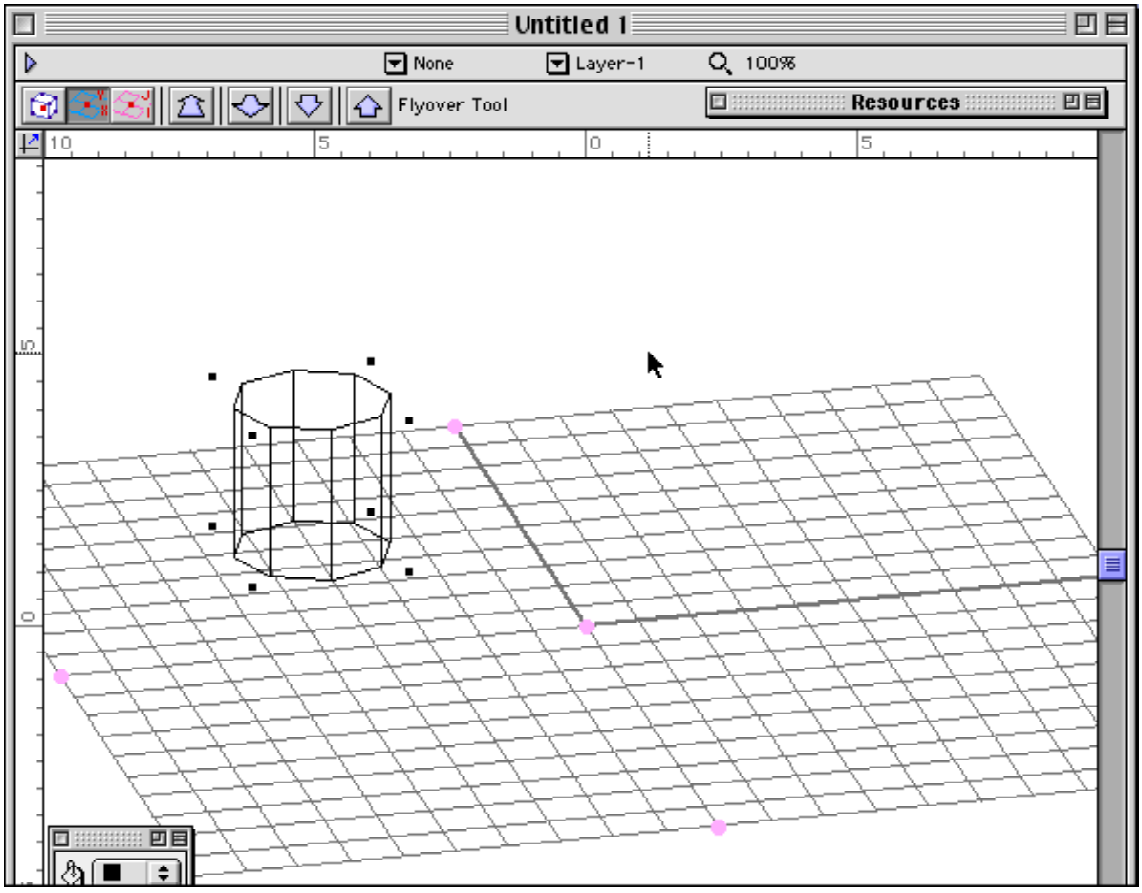
7 Select OK.

8 The screen can now be rotated to view the sphere. Select the FLY OVER tool  from the DRAWING TOOLS.

9 You will be asked change the screen projection to ORTHOGONAL view. This is the 3-D view. Click on YES.



10 Hold down the mouse button and drag up and to the left or right. You should be able to see the 3-D view of the cylinder. Refer to the diagram at the top of the next page.



11 To return to the 2-D screen view highlight the STANDARD menu and select TOP/PLAN (or press ⌘5 or CTRL+5).

12 Delete the circle and draw a square. Try extruding it then flyover the shape. It should produce a cube.

The Sweep Command

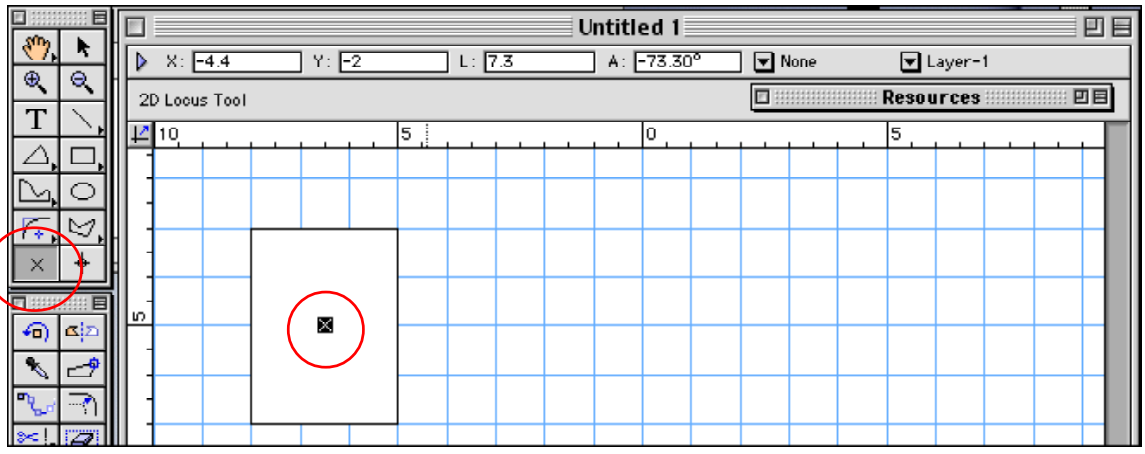
The SWEEP COMMAND allows you to convert a 2-D object to a 3-D object by setting a point that the extrusion should start. In this way cones or pyramids can be created. Only single objects or several selected objects can be converted in this way. Grouped objects cannot be converted.

1 Return the screen to TOP/PLAN view by pressing ⌘5 or CTRL+5

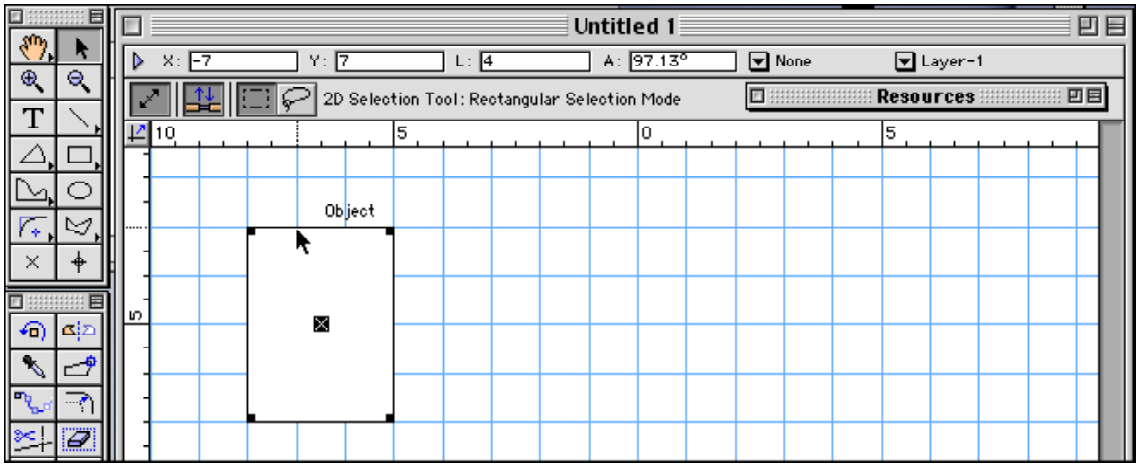
2 Delete the square and draw a rectangle near the top left of the screen.

3 Click on the 2-D LOCUS tool ⊗ in the DRAWING TOOLS. This allows you to set the point at which the 3-D effect is created.

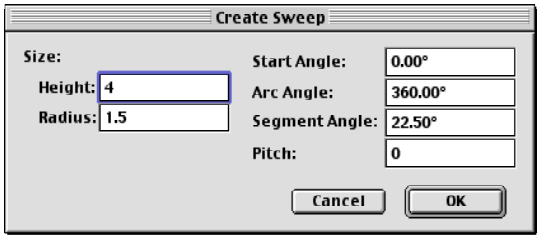
4 Click the LOCUS tool at the centre of the rectangle. Refer to the diagram at the top of the next page.



5 Select the POINTER tool and SHIFT CLICK on the rectangle so that both it and the LOCUS point are selected.



6 Display the MODEL menu, select SWEEP and the CREATE SWEEP dialogue box should be displayed. The settings in the dialogue box have the following meaning:

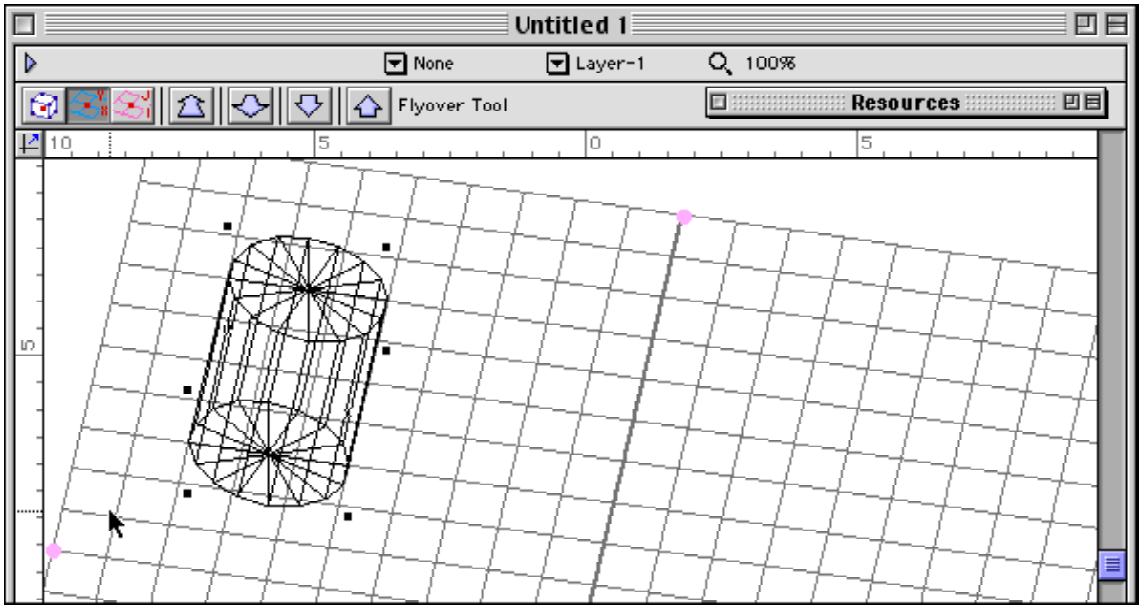


Command	Description
Arc Angle	The degree of the sweep. Objects are swept 360° unless you specify otherwise.
Segment Angle	The number of segments that make up a sweep. The default is 36 segments. That is, each segment is 36° from the next one on the arc. You can only enter positive angles.
Pitch	The degree to which the sweep spirals. For example, if the pitch is 1 cm, every resolution raises the object 1 cm.

7 Leave the default settings and click on OK.

8 Select the FLY OVER tool followed by YES.

9 Rotate your screen to see the effect. A cylinder should have been created.



10 Return the view to TOP/PLAN.

11 Draw a second rectangle with the locus point drawn outside the rectangle in line with its centre. Select the rectangle and its locus point then fly over the shapes. You should have an cylinder with a hole through it. Refer to the diagram at the top of the next page.