Introduction

AutoCAD 2010 introduces a new kind of 3D object, called "3D mesh objects" or "surface meshes." These new objects act quite differently from AutoCAD's other 3D objects, because they are meant for conceptual modeling. Their surfaces can be pushed and pulled in unusual ways.

In this tutorial, you are introduced to 3D mesh objects.

Tutorial: Mesh Modeling

2. If necessary, switch to the 3D Modeling workspace.
3. Click on the Mesh Modeling tab -- an entire tab just for creating and editing 3D mesh objects.
4. Draw a mesh box, as follows:
   a. Click the Mesh Box button.
   b. In the command prompt area, AutoCAD asks you to specify the corners and height of the box. Ignore them. Instead, just pick points in the perspective 3D drawing area:
      - Pick two points for the base.
And then pick another point for the height.

Three picks, and the box is drawn!

Once a 3D mesh model is drawn, there are a number of operations you can perform. We'll look at one in this tutorial, push and pull; we'll look at some of the others in the next tutorial.

5. Pass the cursor over the box. Notice that all the vertices are highlighted. If you were to click now, the entire box is selected. However...
...instead, hold down the Ctrl key. Now when you move the cursor around the box, individual faces are highlighted. This is how you can edit parts of 3D mesh models.

**TIP** While the Ctrl key is held down, you can select additional faces.
6. Click on the face. Notice the local UCS icon.

7. Move the cursor around the icon until the blue Z axis bar turns to gold.

**TIP** The local USC icon is called the "triad." It is used to move, rotate, and scale faces. Right-click the triad, and then choose an editing mode from the shortcut menu.
8. Now drag the axis up and down. Notice how the mesh surface reacts.

3D mesh objects are unique in AutoCAD, because adjacent faces partially drag along with the selected one.
9. You can use the X and Y axes to drag the surface sideways, as illustrated by the figure.

10. This ends the tutorial. You will use the drawing in the next tutorial, so save it as
Test Yourself

1. How do 3D mesh objects differ from AutoCAD's other 3D objects?
   a. They are hollow.
   b. When a face is moved, the entire model moves along.
   c. When a face is moved, adjacent faces partially move along.
   d. They come in nice colors.

2. What effect does the Ctrl key have on selecting 3D mesh objects?
   a. No effect.
   b. The entire model is selected.
   c. The inside of the model is selected.
   d. Individual faces are selected.

3. The local UCS icon is known as the Triad. True/False.

4. Faces can be dragged in any direction. True/False

5. In addition to moving faces, how else can the triad be used?
   a. Rotating faces.
   b. Scaling faces.
   c. Both of the above.
   d. None of the above.

Answers:

1. c. When a face is moved, adjacent faces partially move along.
2. d. Individual faces are selected.
3. True
4. True
5. c. Both of the above.