



AutoCAD Level 3

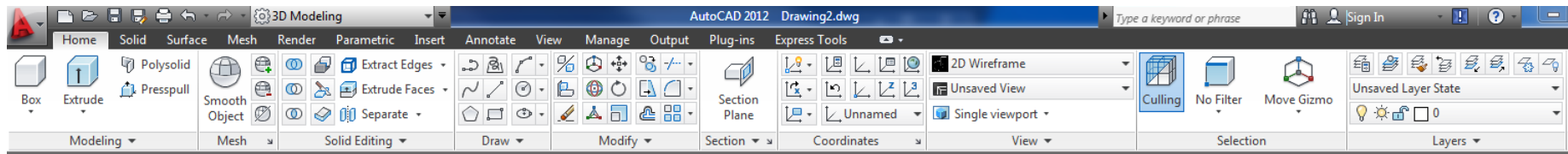
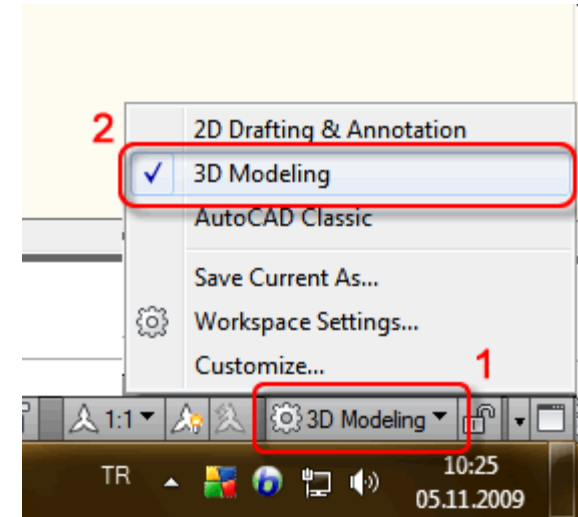
Session 01

AGENDA

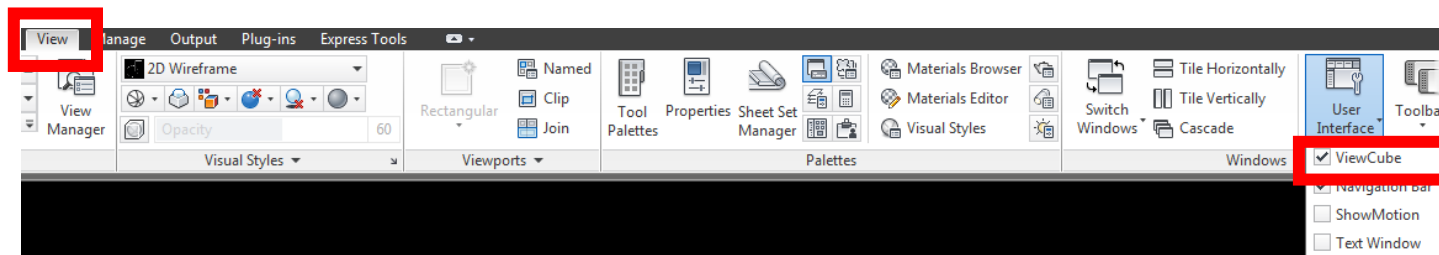
- THE 3D MODELING RIBBON
- THE 3D VIEWCUBE / THE NAVIGATION BAR
- VISUAL STYLES
- GIVING AN OBJECT HEIGHT and ELEVATION IN THE Z AXIS
- DRAWING ON DIFFERENT SURFACES
- EXERCISE ONE –THE 3D OCTAGON

Using the 3D Modelling Ribbon

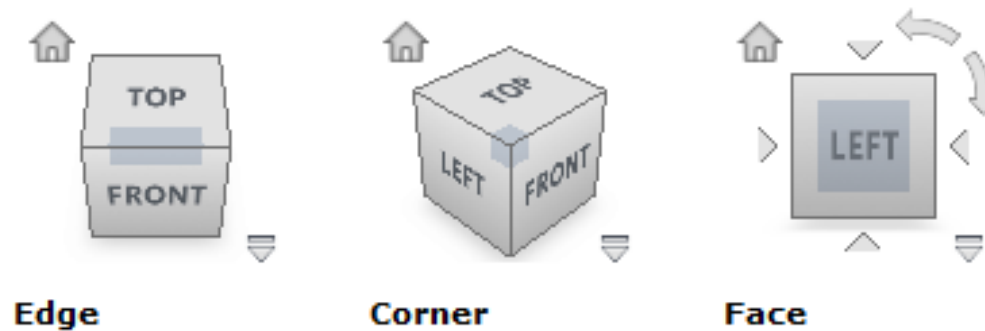
- Since we'll be focusing on 3D modelling, it'll be best just to adjust the workspace accordingly. Thankfully, by default, AutoCAD has a 3D workspace set up. You can choose it from the lower right corner of your display .



Navigating using the Viewcube

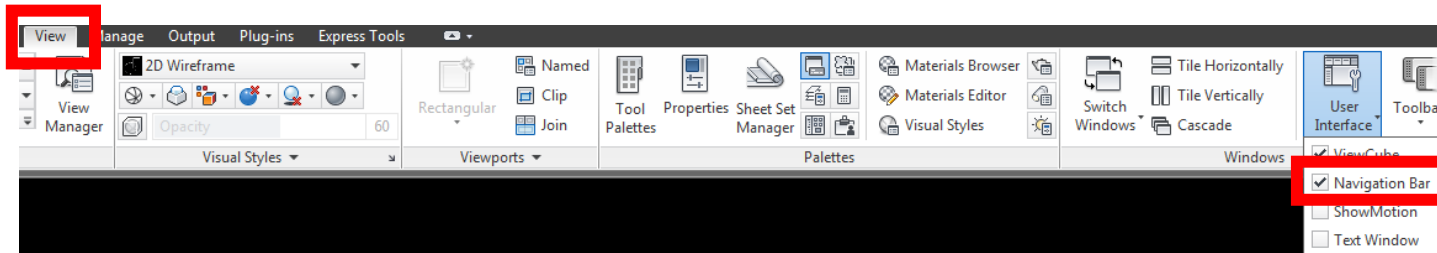


- When you work in 3D, you need ways to view your drawing quickly and effectively. This tool is a great way to quickly choose one of the standard viewpoints.

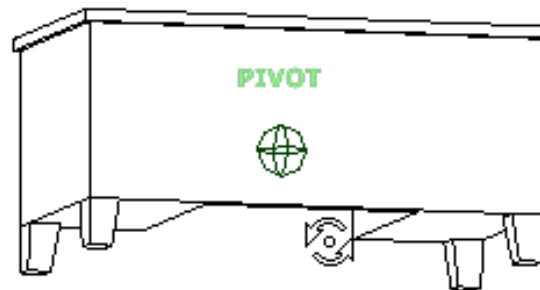
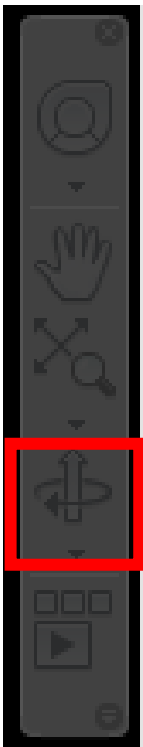


- When clicking on to an edge or corner, you will obtain a 3d perspective view. When selecting a face , you will obtain an elevation view or the top view.
- You can also drag points to orbit around the drawing
- Selecting the home icon will bring you back to the original 3d view.

Navigating using the Navigation bar



- The Orbit tool rotates the current view around a model based on a fixed pivot point.
- You use the Orbit tool to change the orientation of a model. The cursor changes to the Orbit cursor. As you drag the cursor, the model rotates around a pivot point while the view remains fixed.



Orbit Tool

Visual Styles

- Visual styles control the display of edges and faces in a 3d modeled drawing.
- “**View**” panel under the “**Home**” tab reveals the visual styles.

The following predefined visual styles are supplied with the product:

2D Wireframe. Displays objects using lines and curves to represent the boundaries. Note Raster images, OLE objects, linetypes, and lineweights are visible.

Conceptual. Displays objects using smooth shading and the Gooch face style. The Gooch face style transitions between cool and warm colors, rather than dark and light. The effect is less realistic, but it can make the details of the model easier to see.

Hidden. Displays objects using wireframe representation and hides lines representing back faces.

Realistic. Displays objects using smooth shading and materials.

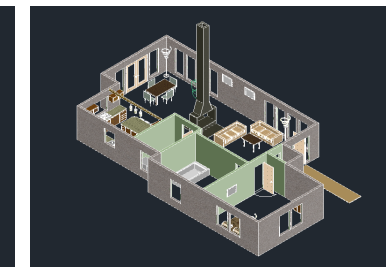
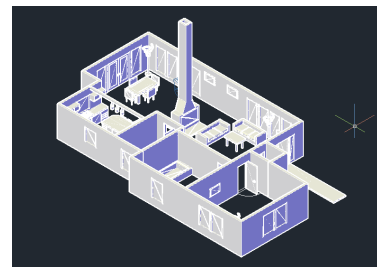
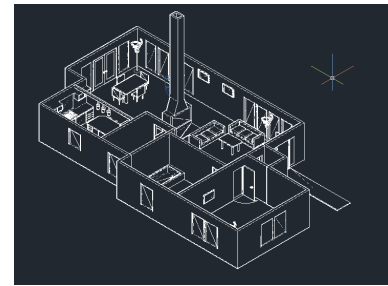
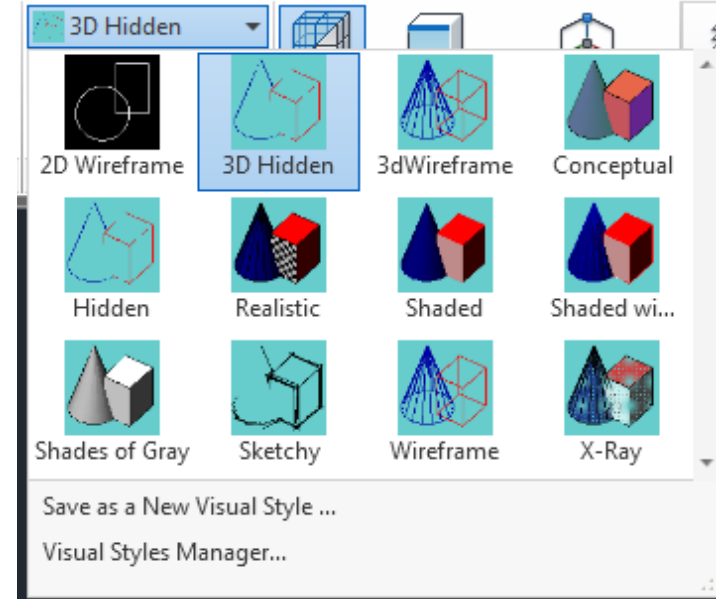
Shaded. Displays objects using smooth shading.

Shaded with Edges. Displays objects using smooth shading and visible edges.

Shades of Gray. Displays objects using smooth shading and monochromatic shades of gray.

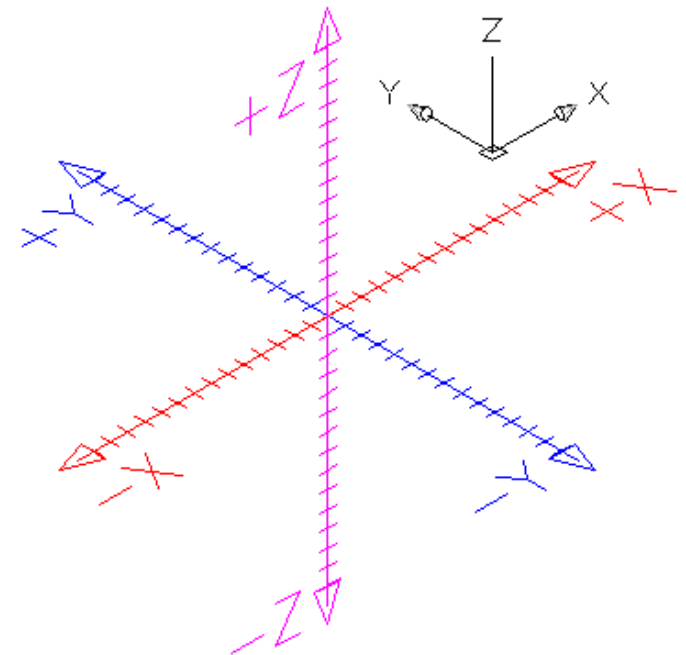
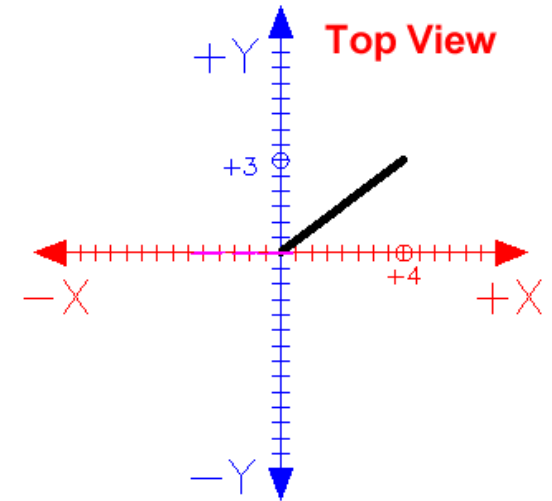
Sketchy. Displays objects with a hand-sketched effect by using the Line Extensions and Jitter edge modifiers.

Wireframe. Displays objects using lines and curves to represent the boundaries.



Introduction to the Z axis

- The Z-axis has always been there, *lurking in the background*, waiting for you.
- When you entered points previously, you would enter them in the format: X,Y. By doing this, you let AutoCAD know that in these cases, Z was equal to zero.
- This new axis is called the Z-axis. Imagine that the positive Z-axis is coming towards you out of the monitor.



Thickness and Elevation- Change command

- Thickness is an object property that gives the object a 3D effect. If you apply thickness to lines, circles, ellipses, arcs, polylines, solid fills, and traces they will acquire some height.
- Elevation is the default distance from XY plane along Z axis Distance of the “ground”.
- Use the CHANGE command to specify an objects Thickness and elevation.

Command: CHANGE

Select objects: Specify opposite corner: 2 found

Select objects:

Specify change point or [Properties]: p

Enter property to change

[Color/Elev/LAyer/LType/ItScale/LWeight/Thickness/TRansparency/Material/Annotative]: t

Specify new thickness <0.0000>: 5

Command: CHANGE

Select objects: Specify opposite corner: 1 found

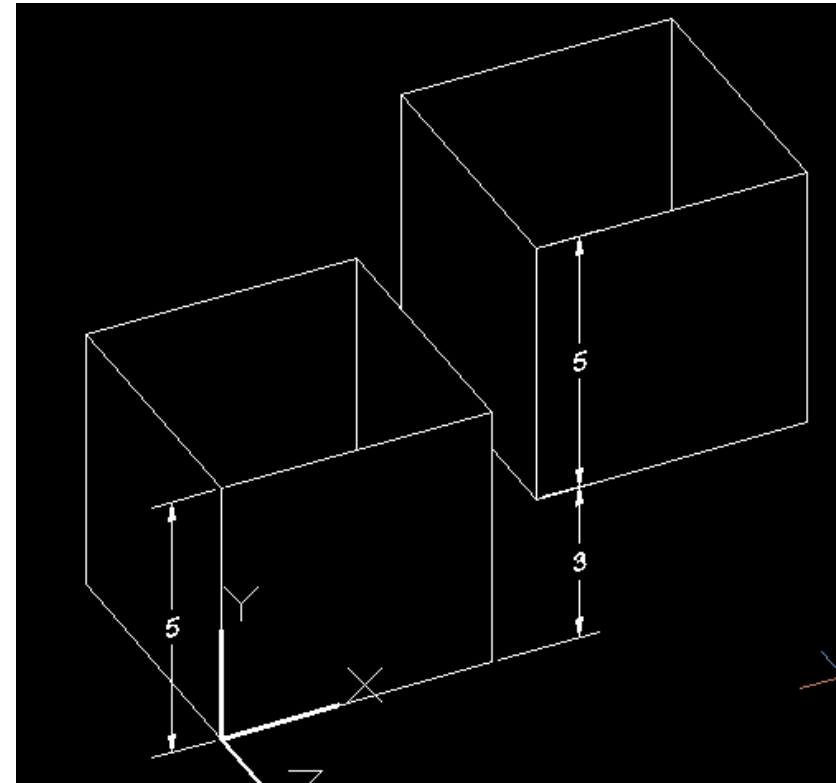
Select objects:

Specify change point or [Properties]: p

Enter property to change

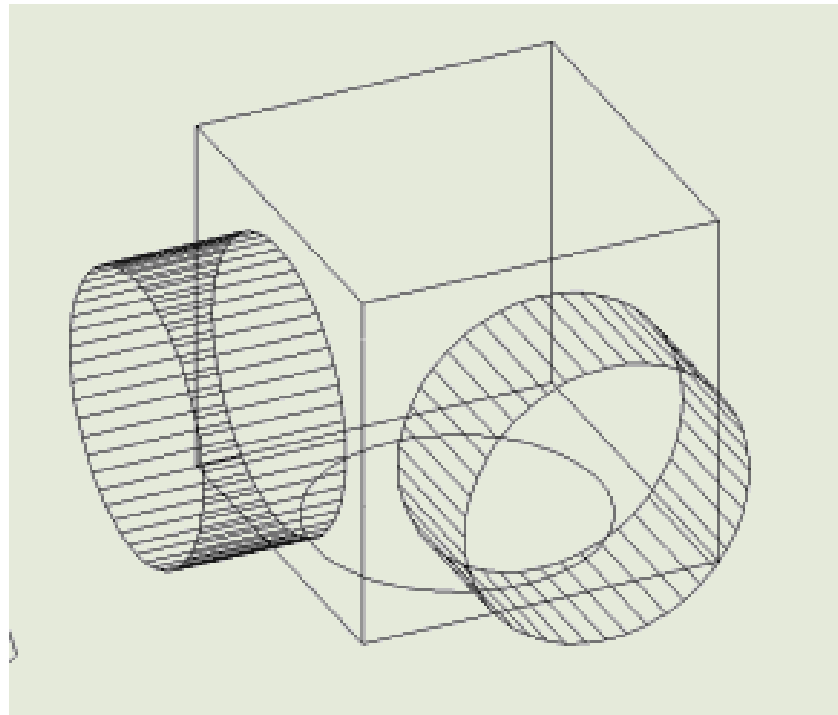
[Color/Elev/LAyer/LType/ItScale/LWeight/Thickness/TRansparency/Material/Annotative]: E

Specify new thickness <0.0000>: 3



Drawing on a different plane- UCS

- The correct use of UCSs with AutoCAD is the key to producing good 3D models .
- To draw on a surface that is not parallel to the “ground” you will need to adjust your UCS.



Drawing on a different plane- UCS

- To use the UCS command to change your drawing plane:

Command: **UCS**

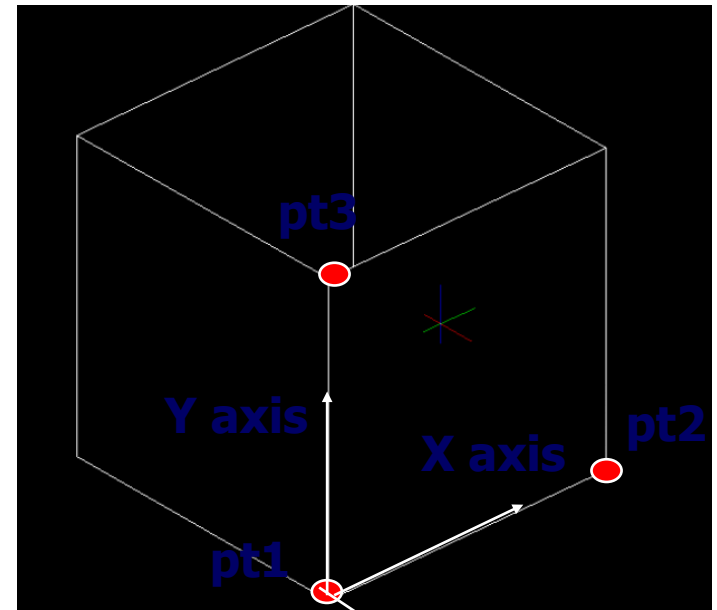
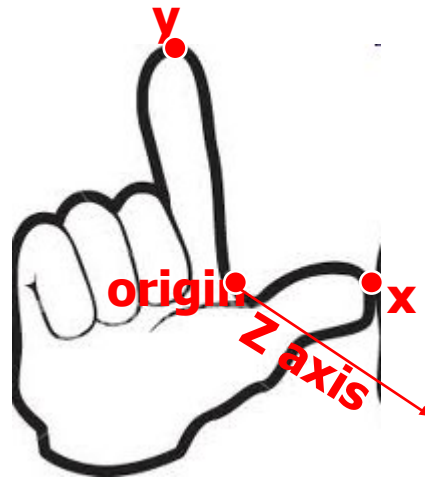
Current ucs name: *WORLD*

Specify origin of UCS or [Face/NAmed/OBject/Previous/View/World/X/Y/Z/ZAxis] <World>: **3** (for three point)

Specify new origin point : **pt1**

Specify point on positive portion of X-axis : **pt2**

Specify point on positive-Y portion of the UCS XY plane : **pt3**



- ☐ Note: It is very important to use your object snap endpoint to pick these 3 pts.

More UCS commands

- To Save a UCS drawing plane:

Command: **UCS**

Current ucs name: *NO NAME*

Specify origin of UCS or [Face/NAmed/OBject/Previous/View/World/X/Y/Z/ZAxis]

<World>: **S** (for save)

Enter name to save current UCS or [?]: **Type a name.**

- How to get back to original UCS “ground”:

Command: **UCS**

Current ucs name: *NO NAME*

Specify origin of UCS or [Face/NAmed/OBject/Previous/View/World/X/Y/Z/ZAxis]

<World>: **W** (for world)

- To Restore a UCS drawing plane:

Command: **UCS**

Current ucs name: *NO NAME*

Specify origin of UCS or [Face/NAmed/OBject/Previous/View/World/X/Y/Z/ZAxis]

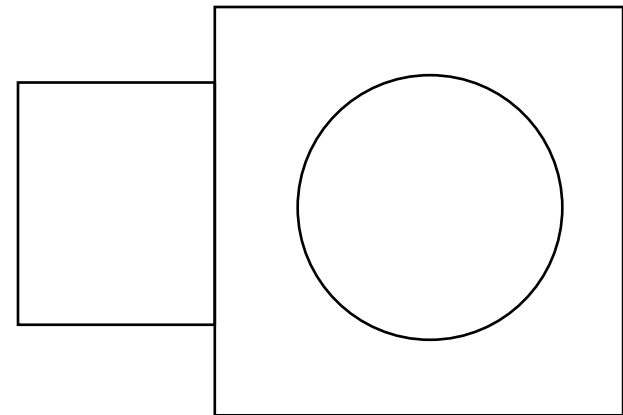
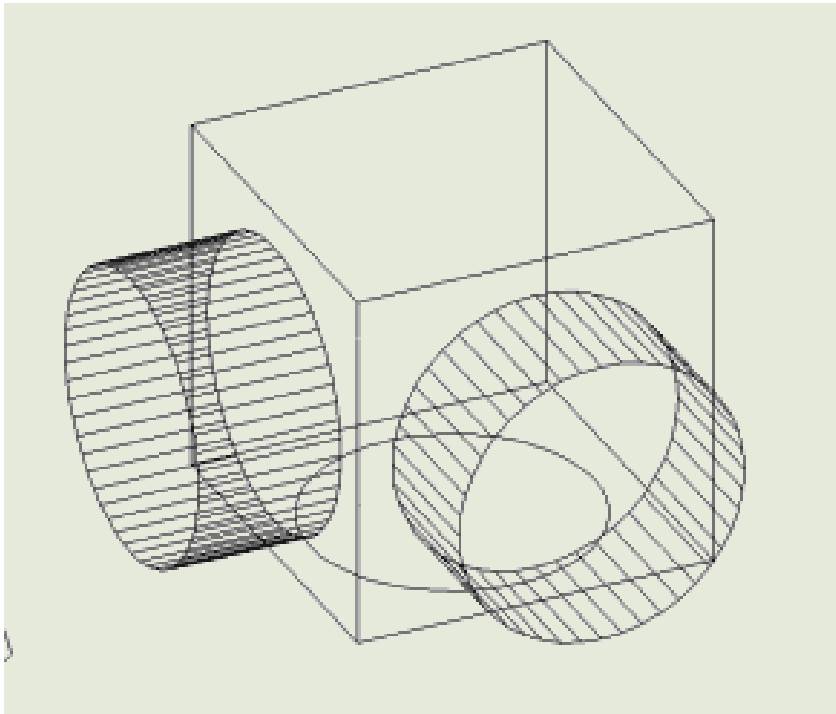
<World>: **R** (for restore)

Enter name to save current UCS or [?]: **Type the name that was previously saved.**



Viewing a UCS straight on

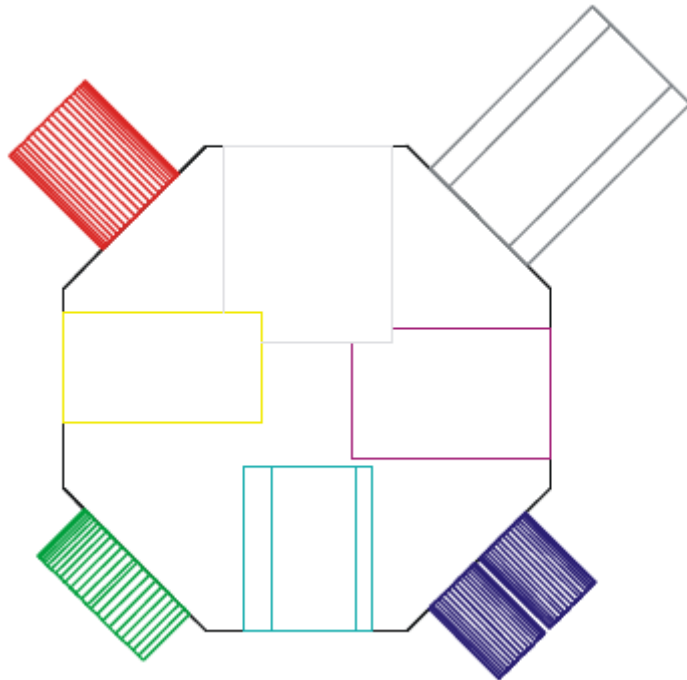
- Plan command : Controls what drawing plane you are viewing.
 - World- Top view
 - Current- view the current ucs straight on (elevation)
 - Named view- can view a saved usc straight on.



Exercise 1.dwg (the 3D octagon)

- Start a new file using the ACAD.dwt
- Draw an octagon with a radius of 10mm
- Give the Octagon a height of 10mm
- On each side of the octagon draw a shape and give it a thickness. Setup different layers
- Don't forget to save each UCS as side 1, side 2, Etc.

Figure 1.1



Completed top view

Figure 1.2
Completed isometric 3D view

