BASIC COMMANDS FOR ISOMETRIC & ORTHOGRAPHIC DRAWINGS

1. ISOMETRIC DRAWING COMMANDS

Setting Isometric Snap in Drafting Settings Menu to provide Grid Points aligned to directions 30°, -30°, 150° & -150°:

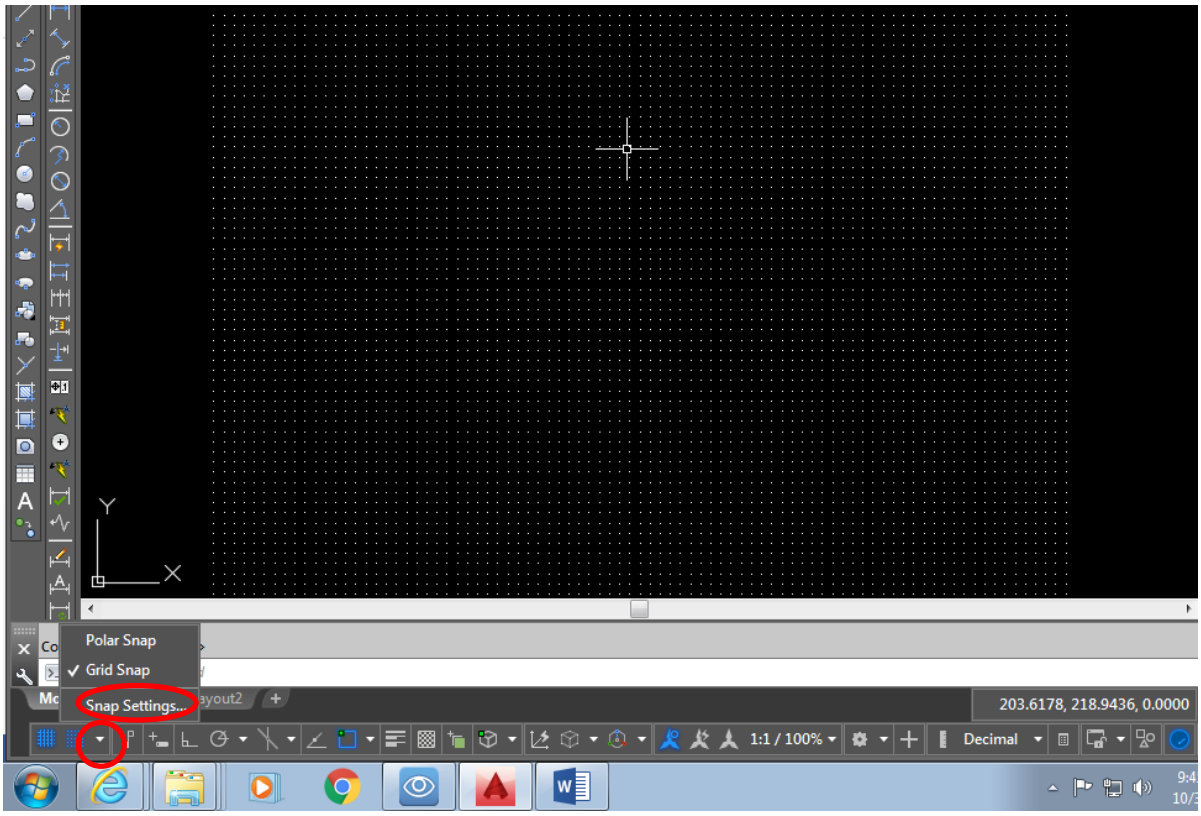

Fig1.1-Click Grid/Snap "arrow head down".

Next, click "Snap Settings".

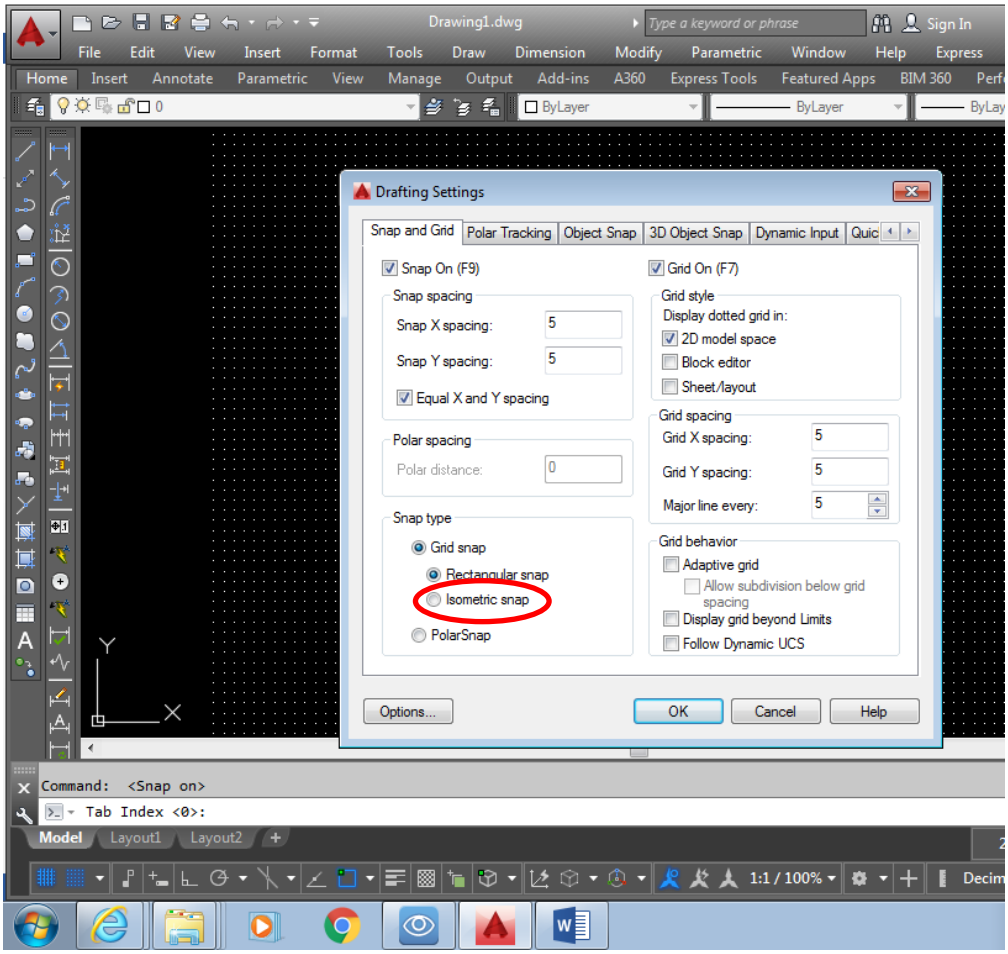

Fig 1.2-Drafting settings dialog appears. Defaulted Snap Type is rectangular snap. To change to Isometric Snap, click on the button "Isometric Snap" and click OK button.

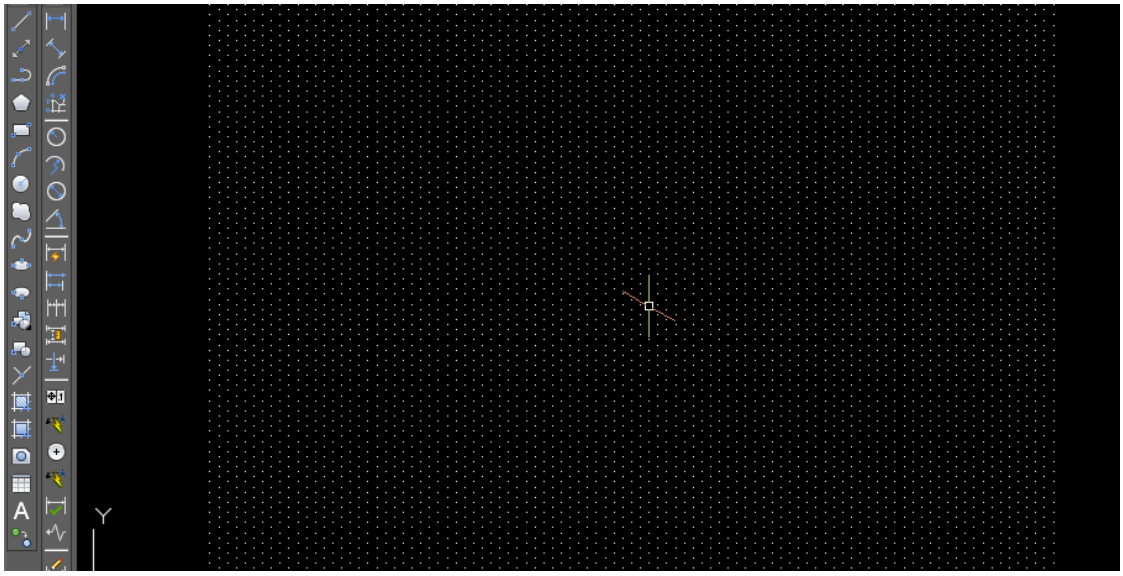

Fig 1.3- Isometric snap grids appears aligning to directions 30°, -30°, 150° & -150°.

1. Use F5 key in keyboard to change to Isometric Top, Isometric Left & Isometric Right:

Press F5 key→ Isoplane Top

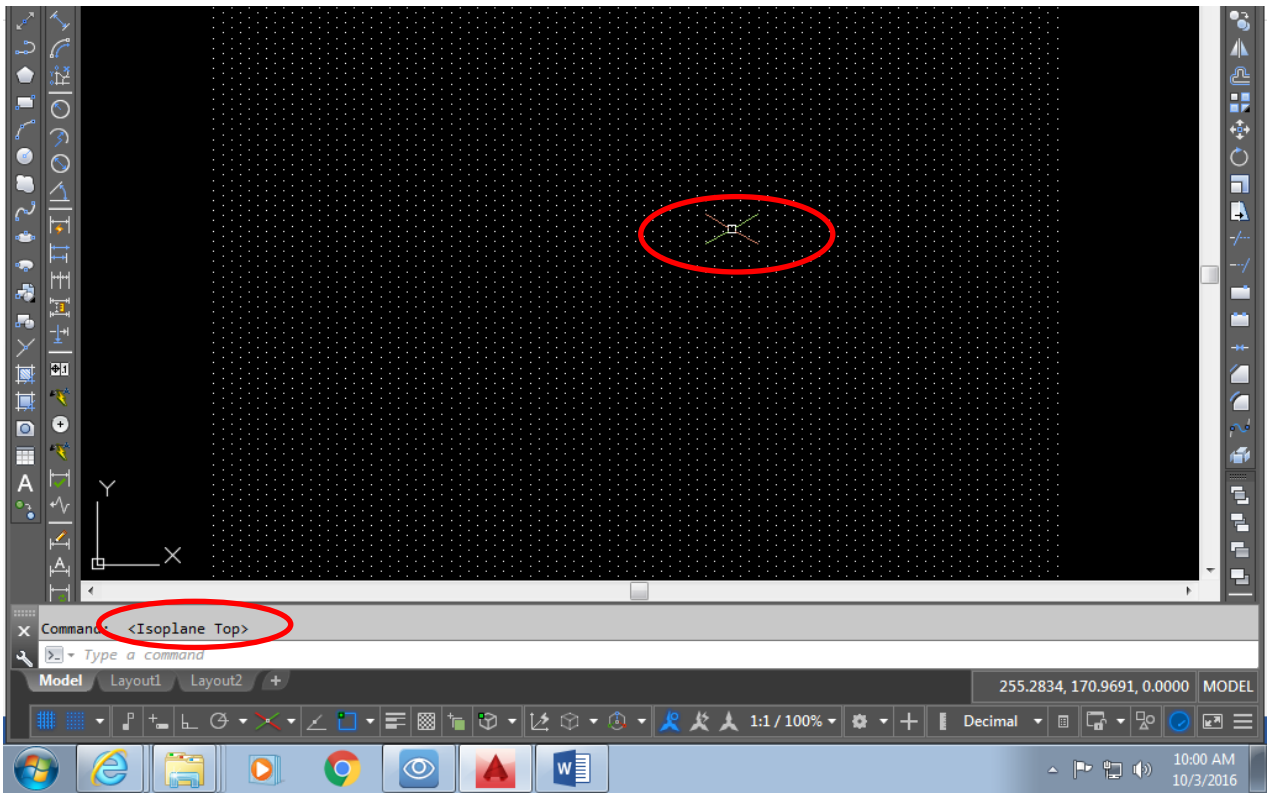

Fig 2.1-Display cursor Isoplane Top

Press F5 key again→ Isoplane Right

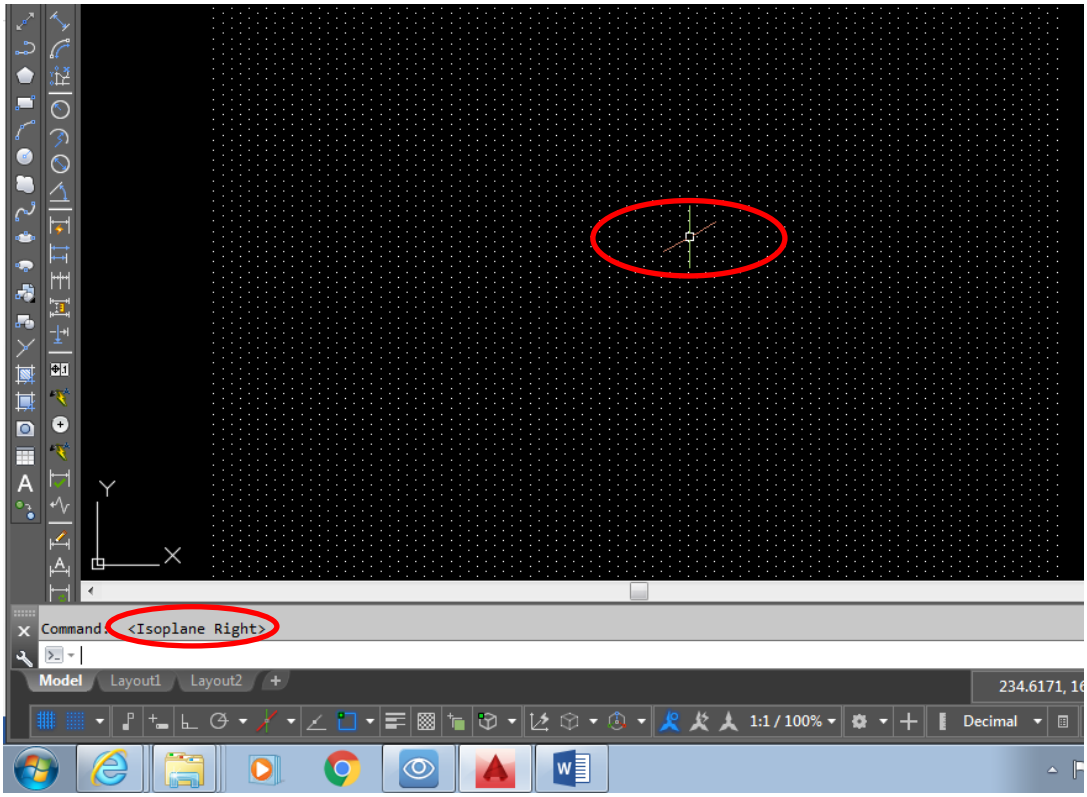

Fig 2.2- Display cursor Isoplane Right

Press F5 key again→ Isoplane Left

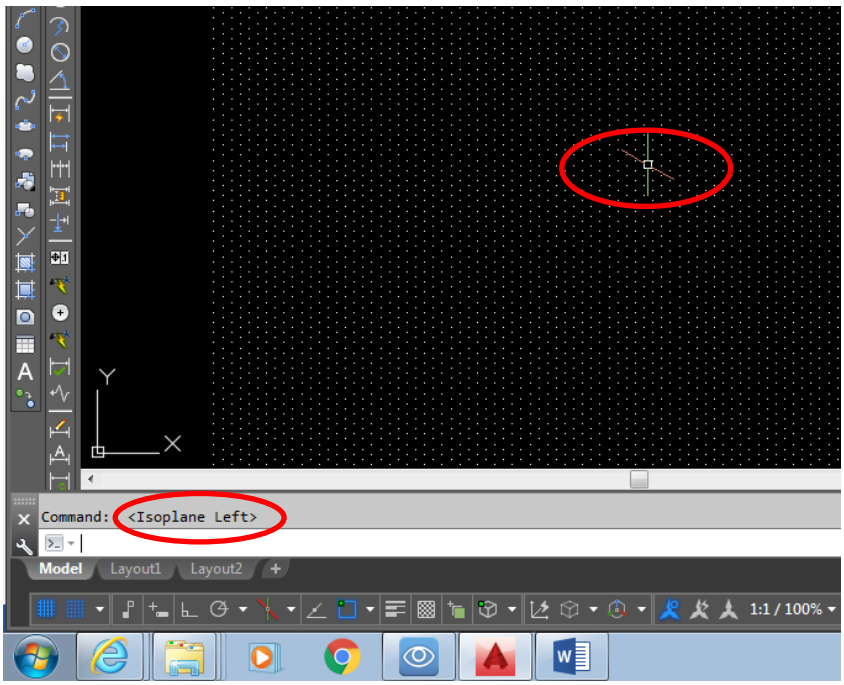

Fig 2.3- Display cursor Isoplane Left

2. Draw Iso-Circles:

To draw Iso-circles, Isometric Snap must be set first.

Steps to follow:

Ellipse→Iso-circles→Centre of circle→Radius of circle→ Enter

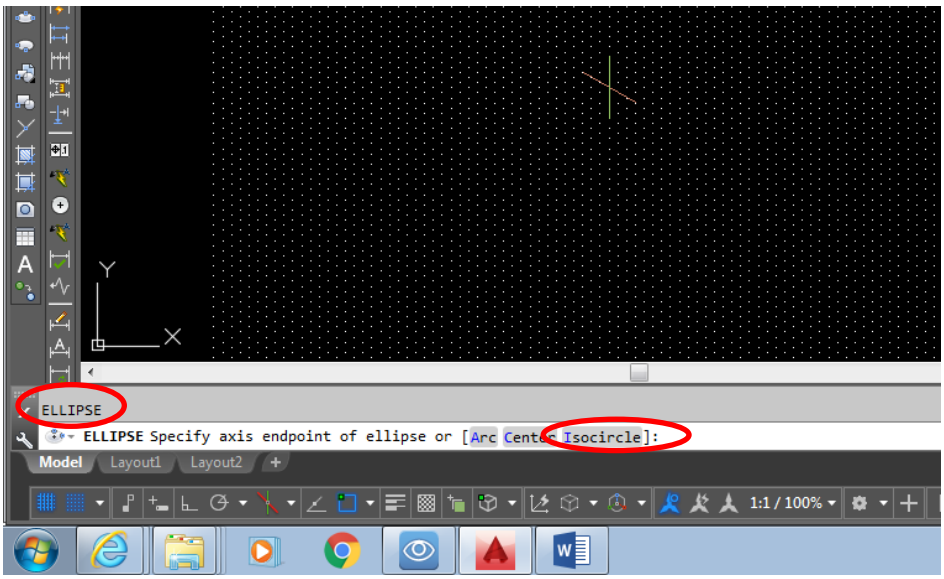

Fig 3.1-Type Ellipse and click Isocircle

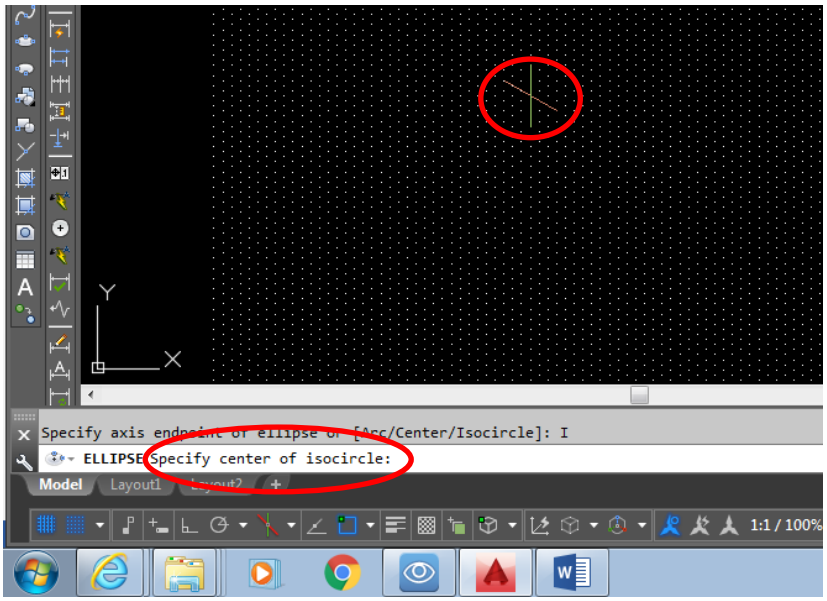

Fig 3.2-Click anywhere using the cursor on the drawing space as shown

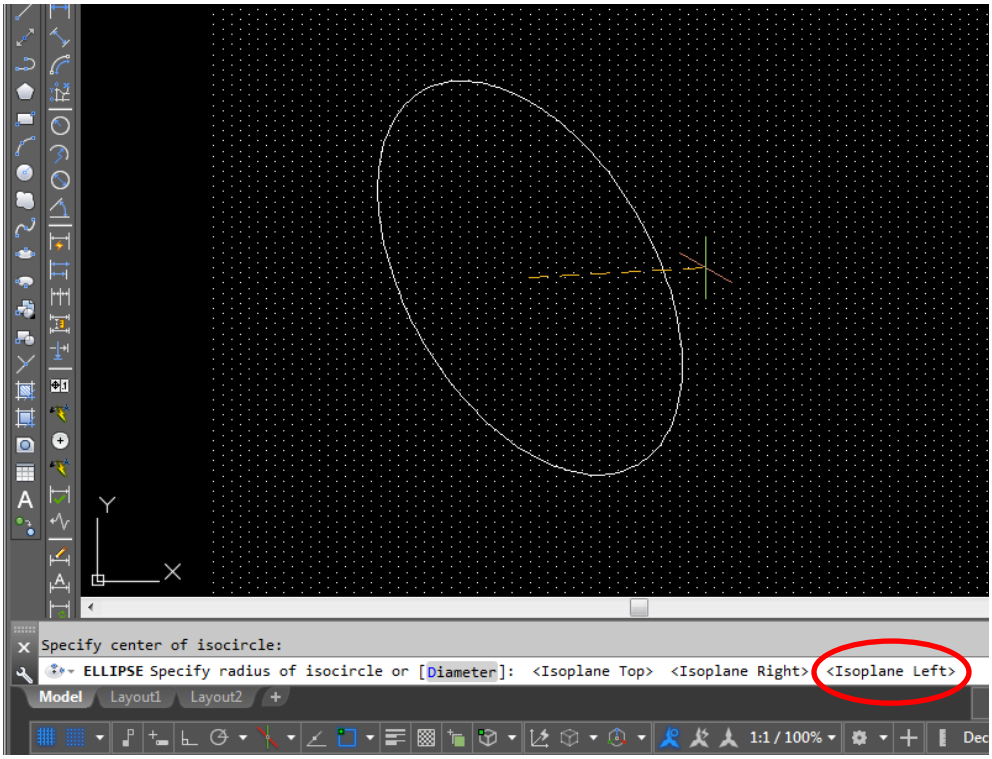

Fig 3.3- To specify radius of Isocircle, type the radius required or drag the cursor and an elliptical Isocircle image is seen (Isoplane left) and click on the drawing space to confirm it. Press F5 if you want to display Isocircle displaying from Isoplane Top or Isoplane Right as shown in the Figures 3.4 & 3.5 respectively.

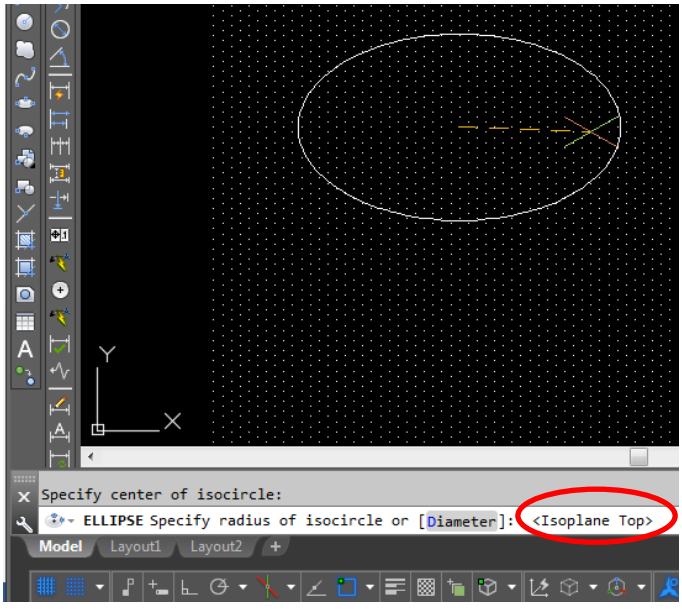

Fig 3.4-Isocircle image from Isoplane Top

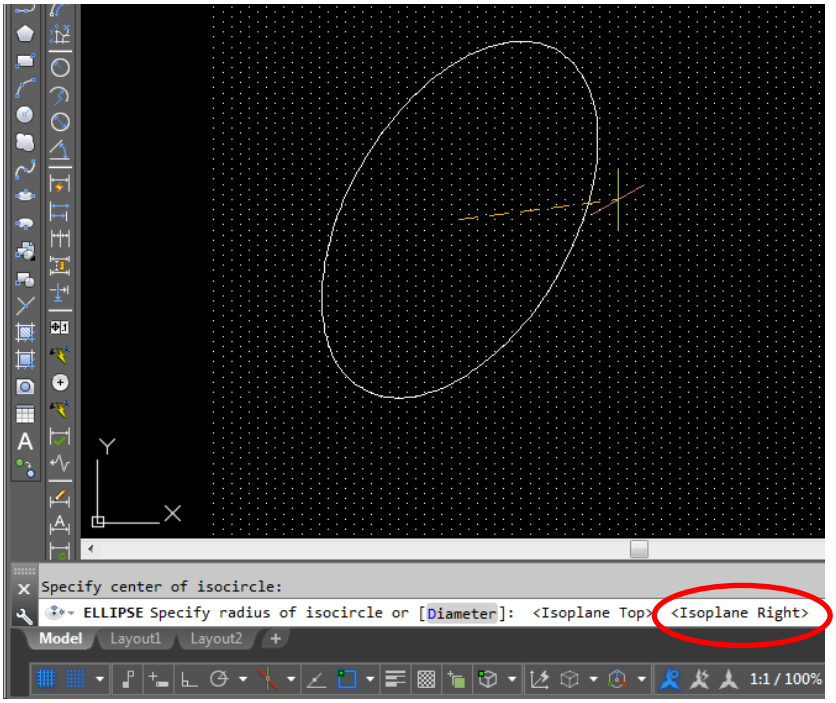

Fig 3.5-Isocicle image from Isoplane Right

3. **Draw Iso-Arc:**

   Remember: Arc is drawn in anti-clockwise direction.

   Steps to follow:

   Ellipse→Arc→Iso-circle→Centre of Iso-circle→Radius of Circle→ Start Angle→ End Angle→Enter

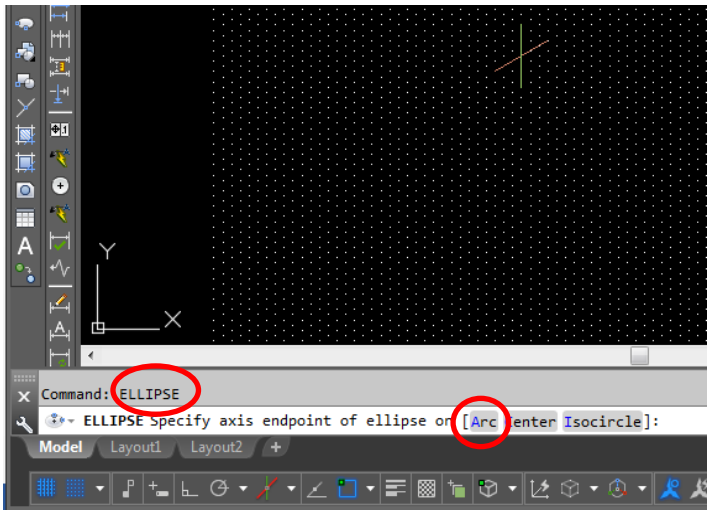

Fig 4.1-Type Ellipse and click Arc

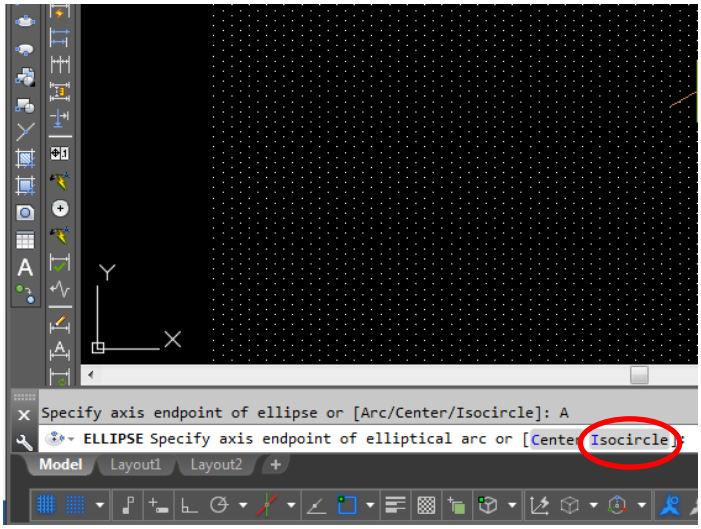

Fig 4.2-Click Isocircle

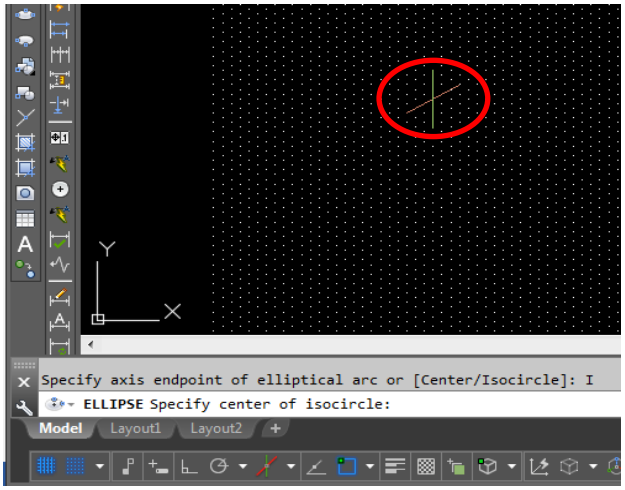

Fig 4.3-Click anywhere on drawing space to specify center of Isocircle

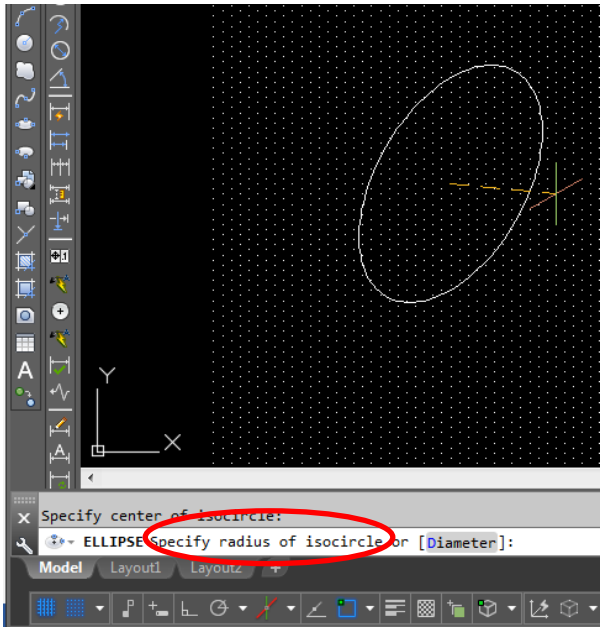

Fig 4.4-Type the radius required or drag cursor to form an isocircle image and click on drawing space to confirm

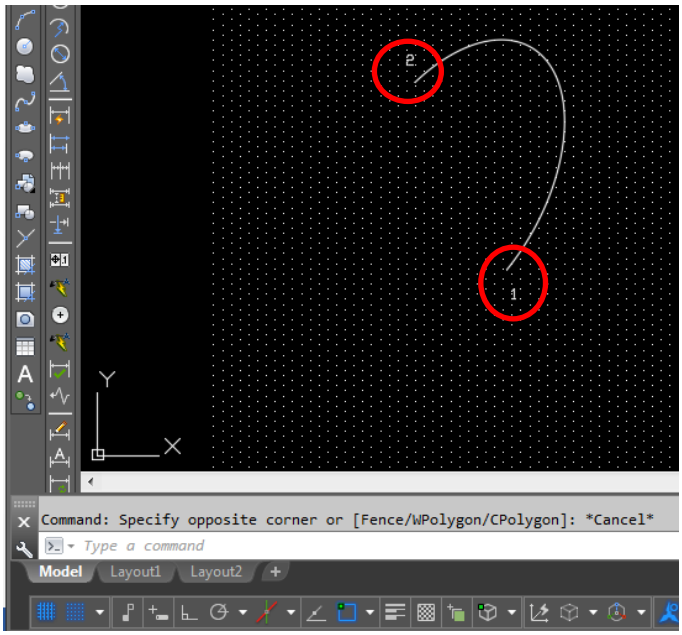

Fig 4.5-Click on position 1 to "specify start angle" and drag cursor and click on position 2 to "specify end angle". Notice positive arc rotation is always anti-clockwise.

Notice **Iso-circle direction** appears **different** for the **three Isoplanes** as shown in Fig 4.5A. Isometric shortcut **F5 key** in keyboard shall determine the **direction of the Iso-circles for each isoplane.**

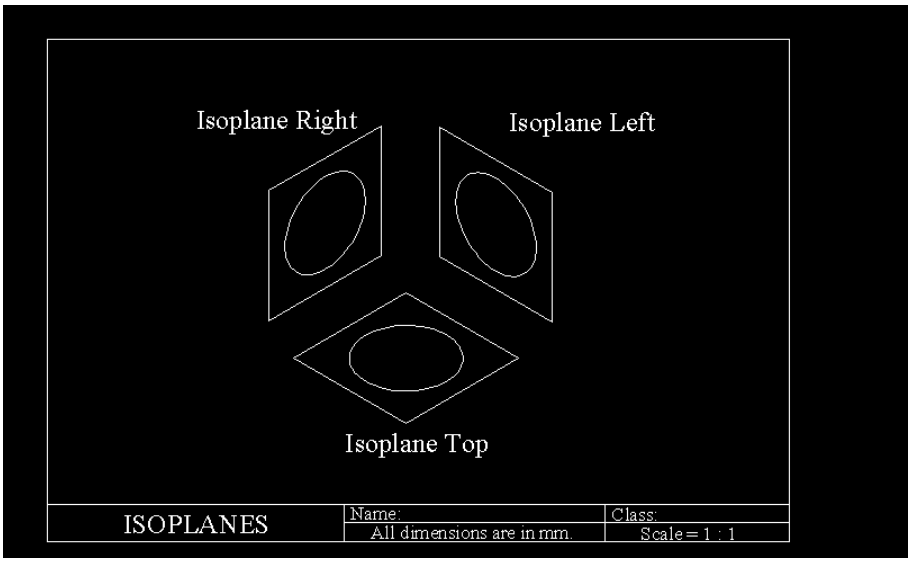

Figure 4-5A: Isoplanes with iso-circles drawn

4. Dimension Oblique:

First dimension the object using Draw→Dimesion→Aligned.

Next dimension the object using Draw→Dimension→Oblique→ Select object to dimension→Select the existing Aligned dimension earlier→Enter→Enter Obliquing Angle→Enter

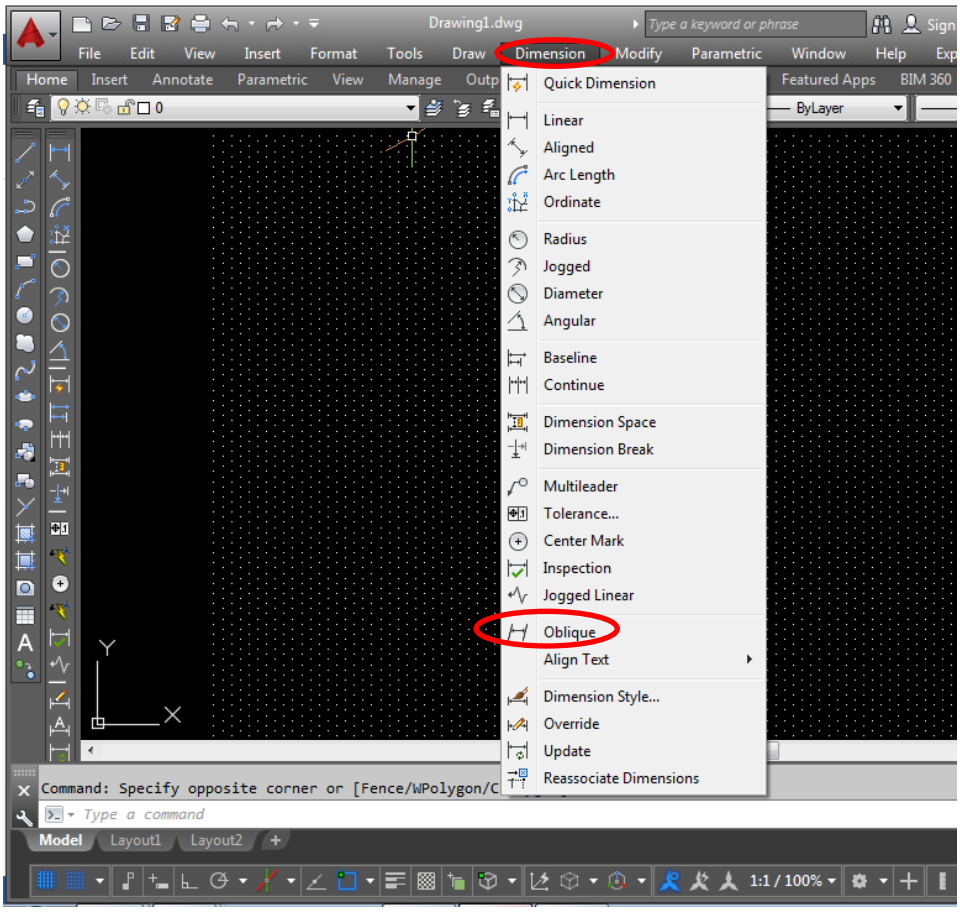

Fig 5.1-Specify Dimension Oblique for isometric drawings.

The figures below show how to dimension an Isometric drawing using Oblique.

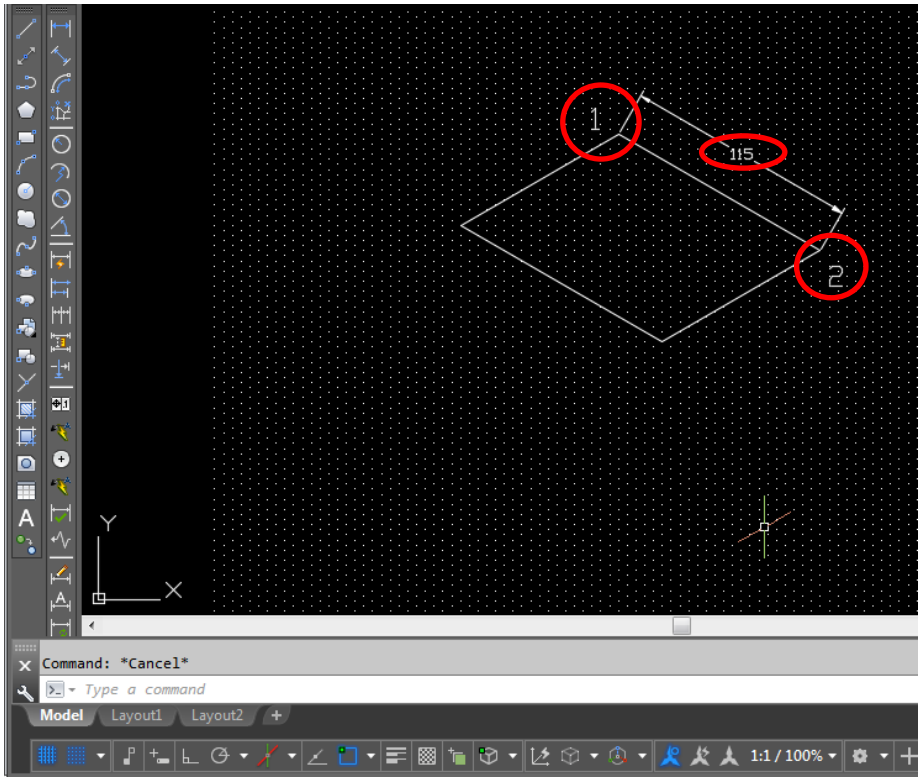

Fig 5.2- Click the edge 1 and next click edge 2 of an isometric object. Drag cursor to position the dimension text 115 and click at the location required. The dimension is as shown in drawing.

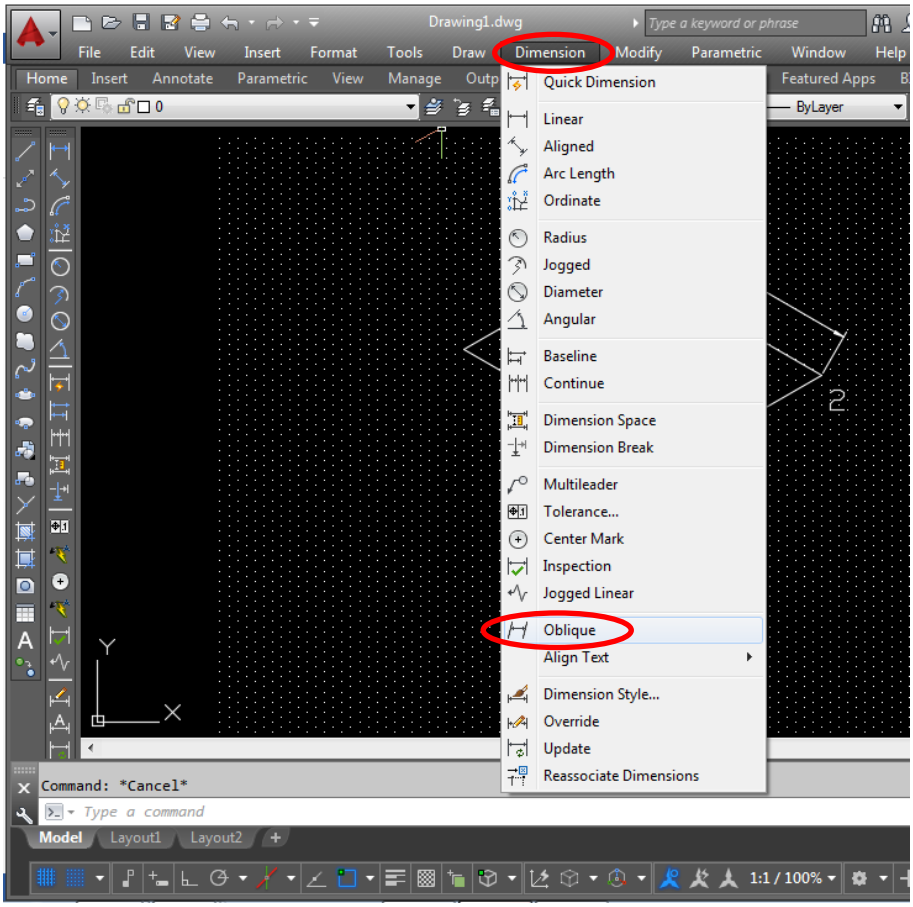

Fig 5.3-Next, click Dimension & Oblique

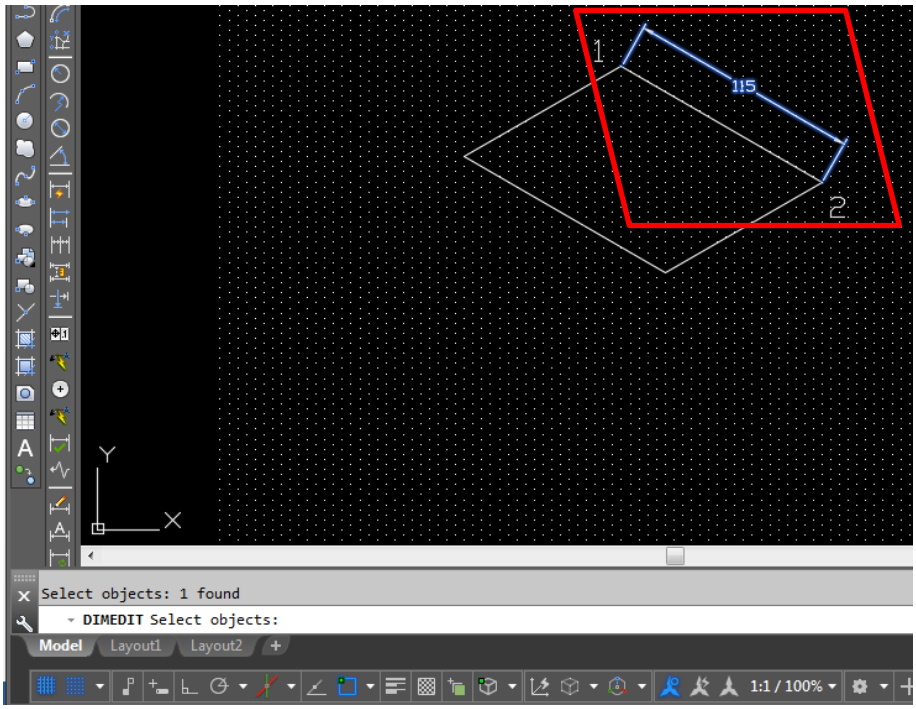

Fig 5.4-Click the dimension 115 and Enter.

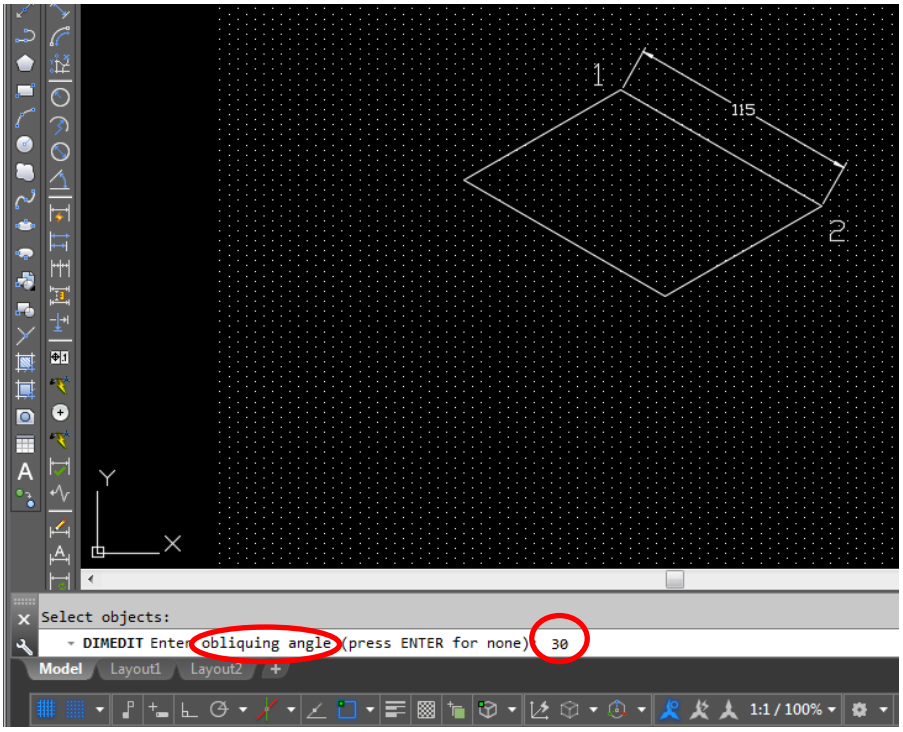

Fig 5.5: Specify Obliquing angle by typing 30 (to represent 30 degrees)

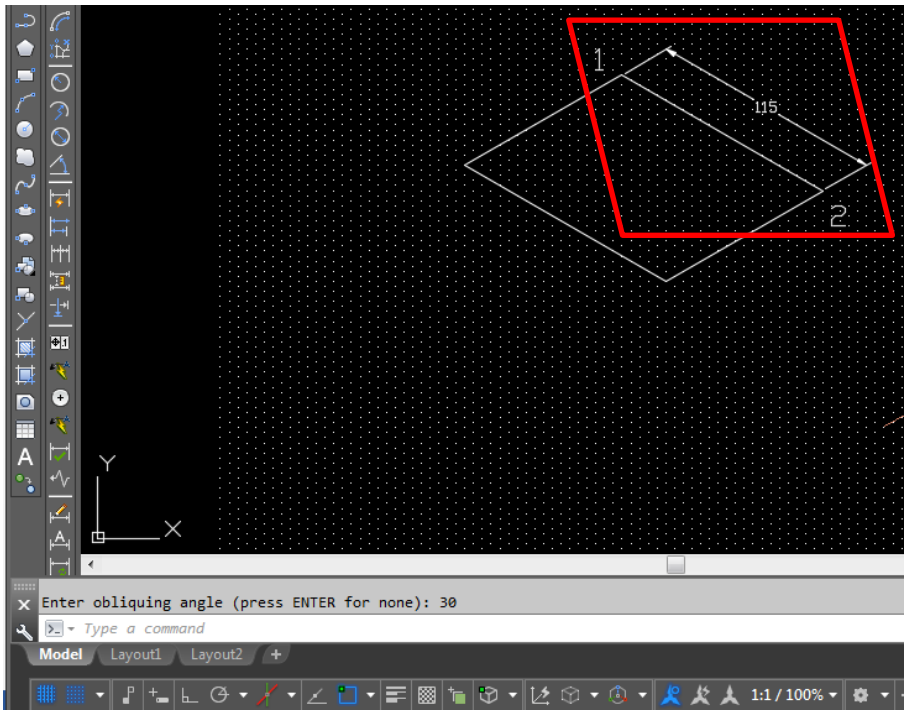

Fig 5.6- Notice the dimension extension lines are now aligned to 30 degrees after executing Dimension Oblique.

2. ORTHOGRAPHIC DRAWING PROJECTIONS (PLAN, FRONT & SIDE ELEVATION)

2.1 It is a method to show **three views of a 3 dimensional object** namely **Front View or elevation, Side View or elevation and Plan or Top View.**

2.2 Orthographic projection has two types namely **First Angle Projection** and **Third Angle Projection.**

2.3 **First Angle Projection is** basically drawn with the **Plan below the Front View.**

2.4 **Third Angle Projection** is basically drawn with **Plan above the Front View.**

2.5 Notice the **object edges** are properly **aligned on Plan, Front & Side Views.**

2.6 **Frequently use commands** for AutoCAD in **orthographic drawings** are **F8 (Orthogonal On/Off), hidden line, center line, dimension.**

2.7 **Below are two examples of the First & Third Angle projection examples.**

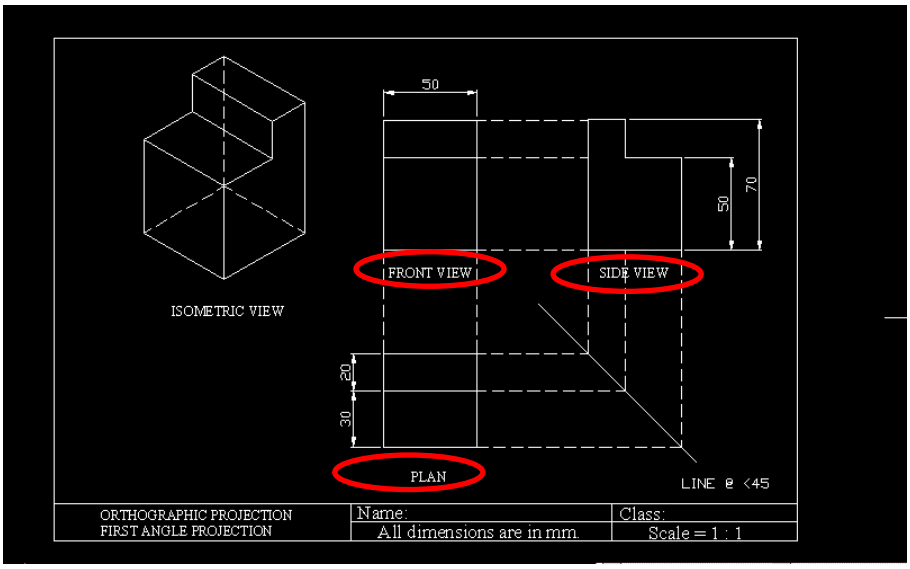

Fig 2.1: Orthographic Drawing (**1st Angle Projection**)

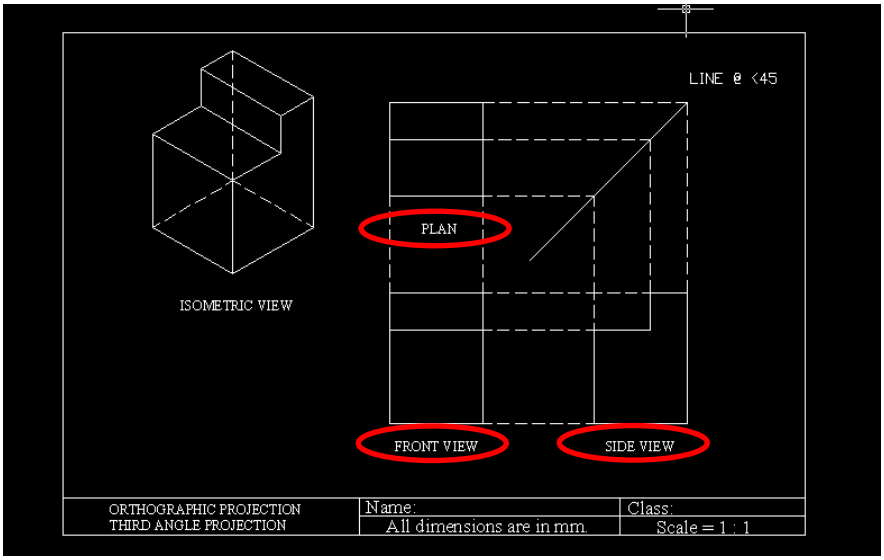

Fig 2.2: Orthographic Drawing (**3rd Angle Projection**)

THE END