AUTO-CAD

INTRODUCTION TO AUTO-CAD

- AUTOCAD is a drawing package software developed by the company “AUTODESK” in USA .
- It is one of the widely used software for creating drawing easily.
- Generation of geometric modeling along with the Engineering analyze and evaluate the design and produce drawing for manufacturing with the help of computer.
- The first name of this software is “MICROCAD”. Which is evaluated in 1982.
- AutoCad is a command base, non-parametric and low end software. It is the best drawing software.

FILE	EDIT	MODIFY
UCS : User Co-ordinate System		

FUNCTION OF MOUSE BOTTOM:

MB1 – Left Click

- It Drags or Move the icons.

MB2 – Middle Scroll

- It is used for Zoom-In Or Zoom-out of the Object.

MB3 – Right Click

- It is used for select the icon. It is also shows the Menu option.

EXPERIMENT NO -01

AIM OF THE EXPERIMENT

To create a rectangle by using 2D drafting

THEORY-

A rectangle in a two dimensional plane has 4 corner points which are specified by coordinates. By knowing all coordinates we can construct/ create rectangles in a two dimensional plane by using Auto CAD.

APPARATUS/SOFTWARE REQUIRED –

1. Auto-Desk-2010

LIMIT COMMAND :

1) Limits ↵
2) Specify the lower left corner : 0,0 ↵
3) Specify the upper right corner : 297,210 ↵
4) Z ↵
5) A↵

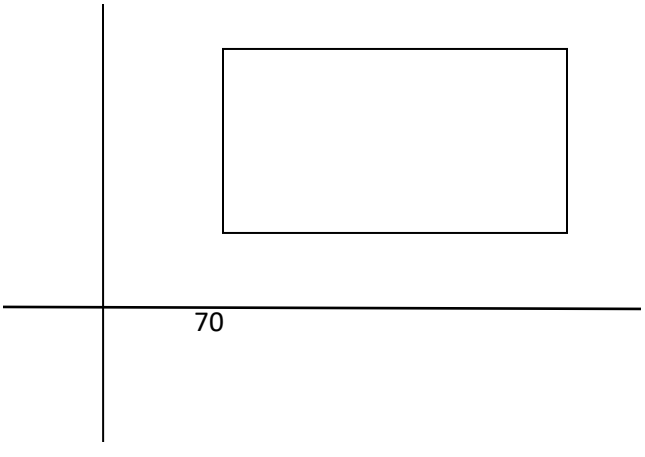
COMMAND FOR LINE :

1. Line/ L ↵
2. Specify the first point : (,) ↵
3. Specify the next point : (,) ↵
4. ESC ↵

PROBLEM -3 (To create a rectangle of size-30 ' x 40')

PROCEDURE-80

1. Line ↵
2. 30, 50 ↵
3. 70, 50 ↵50
4. 70, 80 ↵
5. 30, 80 ↵30
6. 30, 50 ↵



CONCLUSION -

We successfully draw a rectangle by using 2D drafting where the co-ordinates of the rectangles are (30, 50), (70, 50), (70, 80) and (30, 80).One can take other co-ordinates and draw the rectangle also.

EXPERIMENT NO -02

AIM OF THE EXPERIMENT

Create a Circle by using 2D drafting

THEORY-

A Circle in a two dimensional plane has a fixed radius/diameter and its centre has specified by coordinates. By knowing its centre coordinates and radius/diameter we can construct/create Circle in a two dimensional plane by using Auto CAD.

APPARATUS/SOFTWARE REQUIRED –

1. Auto-Desk-2010

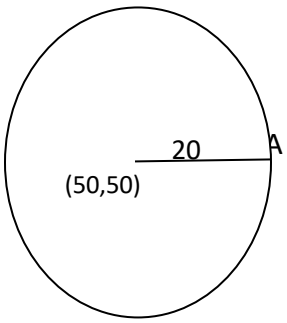
COMMAND FOR CIRCLE :

1) Circle / C ↵
2) Specify the center of circle ↵
3) Specify the radius or Diameter of the circle ↵
4) Specify the value of R / D of the circle ↵

PROBLEM :(Create a Circle/draw a circle of ϕ 40)

PROCEDURE –

1. C ↵
2. 50, 50↵
3. 20 ↵

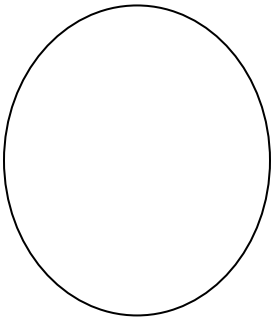


COMMAND FOR 2P (P = Point) CIRCLE :

1) Circle / C ↵
2) Specify the circle center (2P, 3P, TTR) ↵
3) 2P)↵
4) Specify the first point ↵
5) Specify the second point ↵

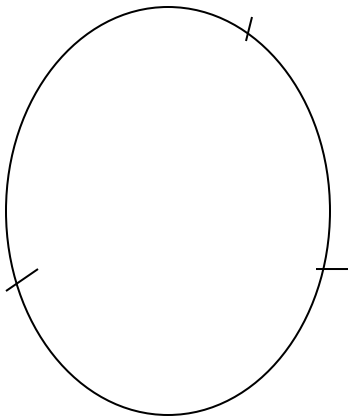
PROBLEM : To Create/draw2P Circle of ϕ60)

1. C↵
2. 2P↵(20,40) (80,40)
3. (20, 40)↵
4. (80, 40)↵



COMMAND FOR 3P (P = Point) CIRCLE :

1) Circle / C ↵
2) Specify the circle center (2P, 3P, TTR)↵(55,75)
3) 3P)↵
4) Specify the first point ↵
5) Specify the second point ↵
6) Specify the third point ↵



PROBLEM : To Create /draw a 3P circle of ϕ50)(30,50)(80,50)

1. C ↵
2. 3P ↵
3. (30, 50) ↵
4. (80, 50) ↵
5. (55, 75) ↵

COMMAND FOR TTR (Tangent, Tangent, Radius)

1) Circle/ C ↵
2) TTR ↵
3) Specify the first tangent on the circle ↵
4) Specify the second tangent on circle↵
5) Specify the radius on the circle ↵

PROBLEM : Create a Circle TTR (Tangent, Tangent, Radius)

1) C ↵
2) TTR ↵
3) Select the first tangent on the circle ↵
4) Select the second tangent on the circle↵
5) Radius found ↵

CONCLUSION –

We successfully draw a Circle by using 2D drafting where …

i. Radius and coordinate of centre are given.
ii. any arbitrary2 points on the circumference of the circle are given .
iii. any arbitrary3 points on the circumference of the circle are given .
iv. any 2 tangents are given and from it we can found the radius of the circle.

EXPERIMENT NO -03

AIM OF THE EXPERIMENT

Create a Polygon by using 2D drafting.

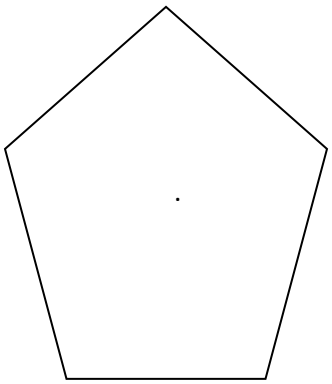
THEORY-

A Polygon of various no. of sides can be created /drawn if the centres of the polygon and no of sides are specified. We can also inscribe or circumscribe a circle in the polygon in a two dimensional plane by using Auto CAD.

APPARATUS/SOFTWARE REQUIRED –

1. Auto-Desk-2010

COMMAND FOR POLYGON



1. Polygon↵
2. Enter no of sides↵
3. Specify centre of polygon↵
4. Specify inscribed or circumscribed ↵
5. Specify radius of the circle ↵

PROBLEM-(To draw a Polygon of any size)

1. Polygon ↵
2. 5 ↵
3. 50,50 ↵
4. I or C ↵
5. 30 ↵

CONCLUSION –

We have successfully drawn a Polygon using 2D drafting where no. of sides is 5 and its centre coordinates (50, 50), having circle of radius 30 inscribed in the polygon.

EXPERIMENT NO -04

AIM OF THE EXPERIMENT

Dimensioning a rectangle / Circle/ Polygon

THEORY-

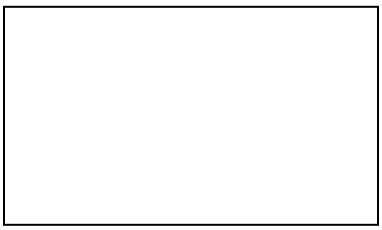
In this case **corner coordinates of any rectangle**,**centrecoordinates and radius of the circle**and **no of sides and circle inscribed or circumscribed on a polygon** are given then we can make necessary dimensioning of the side of the rectangle, centre, diameter / radius of a circle and the distance(dimension) of any sides of the polygon in a two dimensional plane by using Auto CAD.

APPARATUS/SOFTWARE REQUIRED –

1. Auto-Desk-2010

COMMAND FOR RECTANGLE

1. Rectangle
2. Specify 1st corner of the rectangle : (,) ↵
3. Specify the 2nd corner corner of the rectangle : (,) ↵
4. Select dimension linear : (,) ↵(150,125)

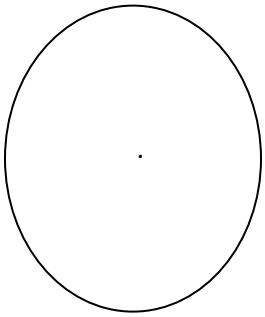


PROBLEM-

1. Rectangle↵
2. 50, 50↵
3. 150, 125↵(50,50)
4. Select dimension –Linear↵
5. Specify 1st selection line origin ↵selected
6. Specify 2nd extension line origin ↵

COMMAND FOR CIRCLE :

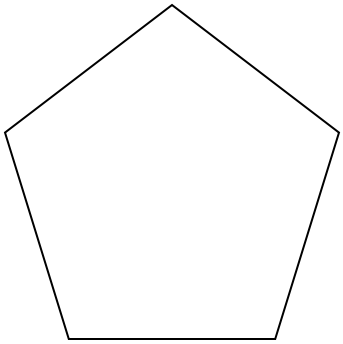
1) Circle / C ↵
2) Specify the center of circle ↵
3) Specify the radius or Diameter of the circle ↵
4) Specify the value of R / D of the circle ↵



PROBLEM :(Dimensioning of a circle)

1. C ↵
2. Specify the center and radius ↵
3. Select the dimension–radius ↵
4. Select Arc or circle ↵

COMMAND FOR POLYGON



1. Polygon ↵
2. Enter no of sides ↵
3. Specify centre of polygon ↵
4. Specify inscribed or circumscribed ↵
5. Specify radius of the circle ↵

PROBLEM-(To draw a Polygon of any size)

1. Polygon ↵
2. 5 ↵
3. Specify the centre of the polygon ↵
4. I or C ↵
5. 30 ↵
6. Specify the radius of the circle↵
7. Select dimension –Linear↵
8. Specify 1st selection line origin↵
9. Specify 2nd extension line origin↵

CONCLUSION –

We successfully dimensioning a rectangle , Circle and Polygon.

EXPERIMENT NO -05

AIM OF THE EXPERIMENT

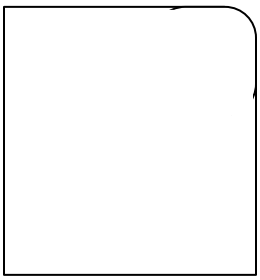
Commands essential for creating 2D drawing

THEORY-

In this case we are required to smoothening out one corner/edge of required radius of curvature by using 2D drawing of a Square/Rectangle. Further we can also draw an exact replica (mirror) of a given figure or an object. Similarly we can make/draw Ellipse and Chamfer of an Object etc. by using Auto CAD Command.

APPARATUS/SOFTWARE REQUIRED–-R-2

1. Auto-Desk-2010



COMMAND FOR FILLET :

1) Fillet / F ↵
2) Radius / R ↵
3) Specify the radius value ↵
4) Specify or select the first line of the first object ↵
5) Specify or select the second line of the first object ↵

PROBLEM:

Choose / make a rectangular whose one corner is smoothed/Fillet radius 2

1. F↵
2. R↵
3. 2↵
4. Specify or select the first line of the first object↵
5. Specify or select the second line of the first object↵

COMMAND FOR MIRROR(rectangle, circle etc) :

1) Mirror / MI ↵
2) Select the object ↵
3) Select the first end point of the mirror line ↵
4) Select the second end point of the mirror line ↵

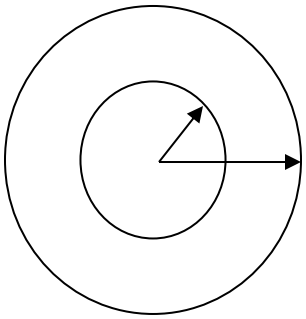
PROBLEM:(Choose an object)

Make an exact Replica of an Object/Figure.

1. Mirror↵
2. Select the object ↵
3. Select the first and point of the mirror↵
4. Select the second and point of the mirror↵

COMMAND FOR DONUT :

1) DONUT ↵
2) Specify the inside diameter : (,) ↵
3) Specify the outside diameter : (,) ↵
4) Select the position for Donut / Specify the center point of donut ↵

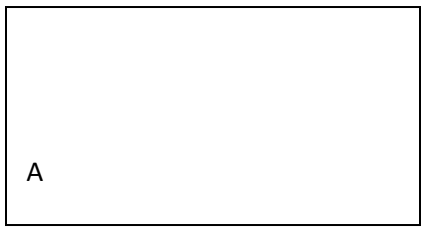


PROBLEM:

1. Do Nut↵
2. 40↵
3. 60↵
4. Select the position for Do nut↵

COMMAND FOR RECTANGLE :

1) Rectangle ↵
2) Specify the first corner of the rectangle : [(0,0)/ (x1, y1)]↵
3) Specify the second corner of the rectangle : [(x2,y2)/ (x3, y3)]↵
4) ESC ↵

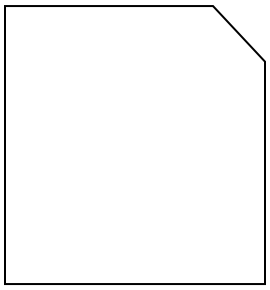


PROBLEM:(150,75)

1. Rectangle↵
2. (50,50)↵
3. (150, 75)↵
4. Esc ↵(50,50)

COMMAND FOR CHAMFER :

1) Chamfer / CHA ↵
2) Specify the chamfer distance i.e. D ↵
3) Specify the first chamfer distance (,)↵
4) Specify the second chamfer distance (,) ↵



PROBLEM:

Draw a Rectangle

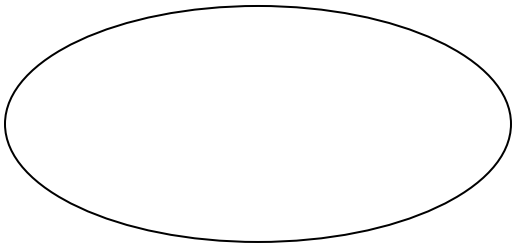
1. CHA↵
2. 6↵
3. 2↵
4. 4↵

COMMAND FOR ELLIPSE :

1) Ellipse ↵
2) Specify the center point of the ellipse (,) ↵
3) Specify the major axis of the ellipse (,) ↵
4) Specify the minor axis of the ellipse (,) ↵

OR

1. Toll bar >Ellipse > click over ellipse >
2. Define major axis (,) ↵
3. Define minor axis (,) ↵

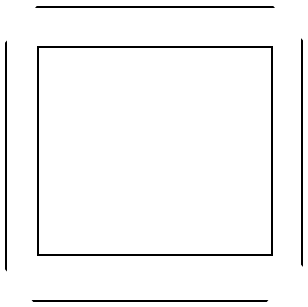


PROBLEM: Draw an Ellipse

1. Ellipse ↵
2. 50,50↵
3. 150,75↵
4. 100,25↵

COMMAND FOR OFFSET :

1. O ↵
2. Specify the offset distance : (,) ↵
3. Select the line ↵
4. Choose the side for offsetting the line and click here ↵

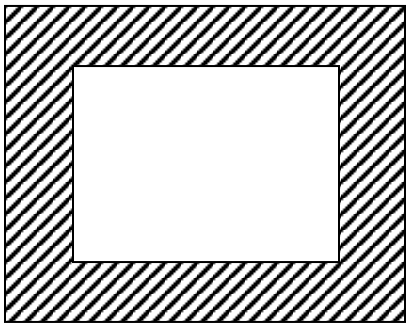


PROBLEM:

Make an offset for a rectangle

1. O ↵
2. 5 ↵
3. Select the line ↵
4. Choose the side of the offsetting ↵

COMMAND FOR HATCHING:



1. Hatch ↵
2. Click over add : pick a point ↵
3. Hatch type (Predefined) ↵
4. Select pattern of hatch ↵
5. Preview , OK↵

PROBLEM :

1. Hatch↵
2. Pick a point↵
3. Hatch type (select from table)↵
4. Select pattern of hatch↵
5. Preview OK↵

COMMAND FOR TEXT :

1. Text ↵
2. Specify the starting point of the text ↵
3. Specify the text height ↵
4. Specify the rotation angle of text ↵
5. Writing text ↵

PROBLEM:

1. Text ↵
2. Specify the starting point of ↵
3. Specify the text height ↵
4. Specify the rotation angle of text ↵
5. Writing text ↵

COMMAND FOR VERTICAL LINE :

1. XL ↵
2. V ↵
3. Place the vertical line ↵

PROBLEM:

1. XL ↵
2. V ↵
3. Selected the vertical line ↵

COMMAND FOR HORIZONTAL LINE:

1. XL ↵
2. H↵
3. Place the horizontal line ↵

PROBLEM:

1. XL ↵
2. H ↵
3. Selected the horizontal line↵

CONCLUSION –

We successfully know the various essential commands for creating 2D drawing.

EXPERIMENT NO -06

AIM OF THE EXPERIMENT

Create/draw a Screw Jack by using 2D drafting

THEORY-COMMANDS USED

APPARATUS/SOFTWARE REQUIRED –

1. Auto-Desk-2010

COMMAND USED FOR MAKING A SCREW JACK:

1. Line command ↵
2. Circle command ↵
3. Hatching command ↵
4. OSNAP command ↵
5. ORTHO command ↵
6. OFFSET command ↵
7. Method of increment ↵
8. Fillet command ↵

PROBLEM:

CONCLUSION –

We successfully draw a screw jack using 2D drafting.