Class: 4th Stage
Subject: Computer Applications 4
Asst.Lecturer: Hawraa Tayyeh
E-mail: hawraa.tayyeh@mustaqbal-college.edu.iq

Lecture Two

Typing Commands

Typing a Command

All AutoCAD commands can be typed in at the command line. Many commands also have one or two letter aliases that can also be typed as shortcuts to the commands.

1 .Type the desired command at the command prompt.

Command: **LINE**

or

2 .Type the command's alias. Command: **L**

3 .Press **ENTER**/Space to end.

4 .Type an option at the command prompt.

TIP: Many AutoCAD commands require you to press ENTER to complete the command. You know you are no longer in an AutoCAD command when you see a blank command line.

Reissuing the Last Command

The last used AutoCAD command can be re-entered by one of the following three methods of ENTER. The ENTER key on the keyboard will always act as ENTER, the SPACEBAR and RIGHT MOUSE will act as enter most of the time (exceptions include placing TEXT).

1 .Press the ENTER key on the keyboard

or

2 .Press the Space bar on the keyboard.

or

3. Click the right mouse button.

Pointing Device (Mouse)

AutoCAD uses either a mouse or digitizing tablet to select objects in a drawing**.**

Left Mouse Button

Used to pick or select objects

1 **.**Click the left mouse button to select an object area in the drawing**.**

2 **.**Press ESC twice to deselect an object (or to cancel a command)**.**

Right Mouse Button

Used to enter a command, repeat last command, or access shortcut menus**.**

1. Click the right mouse button.

TIPS :

- **SHIFT** + the right mouse button brings up the object snap menus**.**
- Various screen locations for the mouse brings up different menus.• menus.

5.2 PAN

Shifts the location of a view.

1. **Choose** View, Pan.

or

2. **Click** the Pan icon. 

or

3. **Type** PAN from the command prompt.

Command: **PAN** or **P**

TIPS:

- While in the PAN command, click with the right mouse button to see the following menu.

- Panning can also be done by using the window scroll bars

5.1 ZOOM

Increases or decreases the apparent size of objects in the current viewport

1 **.Choose** View, Zoom**.**

or

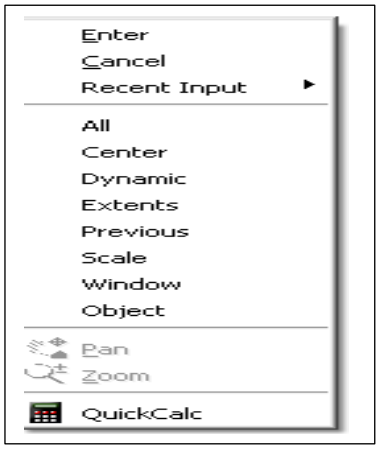
2 **.Click** a Zoom icon**.**

or

3 **.Type** **ZOOM** at the command prompt**.**

Command: Zoom or Z

4. **Type** One of the following zoom options:



The following are basic zoom options:

All Places entire drawing (all visible layers) on display at once. Forces a regeneration.

Extents Displays current drawing content as large as possible.

Previous Restores previous view.

Window Designates rectangular area to be drawn as large as possible.

Number Magnification relative to ZOOM All display

Number X Magnification relative to current display (1X)

Center Specifies center point and new display height.

Dynamic Permits you to pan a box representing the viewing screen around the entire generated portion of the drawing and enlarge or shrink it.

TIPS: While in the ZOOM command, click with the right mouse button to see the menu to the right.

2.2 Creating a New Drawing

NEW Command

Creates a new drawing file.

1 . **Choose** File, New.

Or

2 . **Press** CTRL + N

Or

3 . **Click** the New icon.

Or

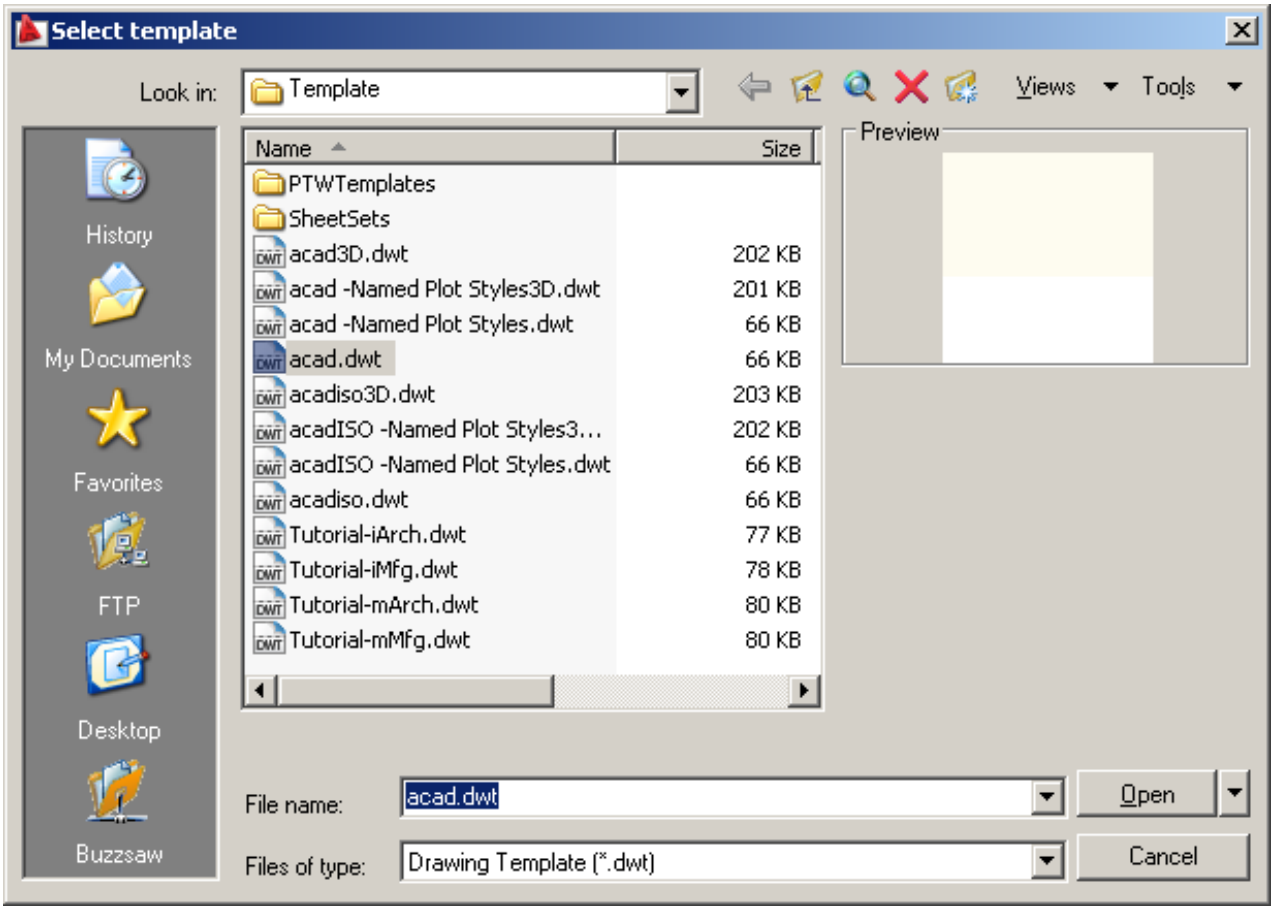
4 .**Type** NEW at the Command prompt.

Command: **NEW**

5. **Choose** One of the options for creating a new drawing.

6. **Click** The **OK** button.

7. **Save** the drawing as another name.



TIP:

New drawings can also be created from Template Files.

1.11 Undo and Redo

Reverses the last action.

1 . **Choose** **Edit, Undo**.

Or

2 . **Click** the Undo icon. 

Or

3 . **Press** **CTRL + Z**.

4 .**Type** **U** at the command prompt to undo the last command.

Command: **U**

Redo

Reverses the effects of a single **UNDO** or **U** command.

1 .**Choose** **Edit, Redo**.

Or

2 . **Click** the Redo icon. 

Or

3 .**Type** **REDO** at the command prompt to redo the last undo command.

Command: **REDO**

TIPS:

- **UNDO** has no effect on some commands and system variables, including those that open, close, or save a window or a drawing, display information, change the graphics display, regenerate the drawing, or export the drawing in a different format.

-REDO must immediately follow the **U** or **UNDO** command.

1.12 Function Keys and Accelerator Keys

F8	Toggles ORTHOMODE

CTRL+A	Selects objects in drawing

CTRL+C	Copies objects to Clipboard
CTRL+SHIFT+C	Copies objects to Clipboard with Base Point

CTRL+J	Repeats last command
CTRL+L	Toggles Ortho mode
CTRL+M	Repeats last command
CTRL+N	Creates a new drawing
CTRL+O	Opens existing drawing
CTRL+P	Prints current drawing
CTRL+S	Saves current drawing
CTRL+SHIFT+S	Brings up the Save As dialog box
CTRL+V	Pastes data from Clipboard
CTRL+SHIFT+V	Pastes data from Clipboard as a Block
CTRL+X	Cuts objects to Clipboard
CTRL+Y	Cancels the preceding Undo action
CTRL+Z	Reverses last action

2.1 Open Existing Drawings

1 .Choose **File, OPEN**.

Or

2 .Press **CTRL + O**.

Or

3 .Click the **OPEN** icon. 

Or

4 .Type **OPEN** at the command prompt.

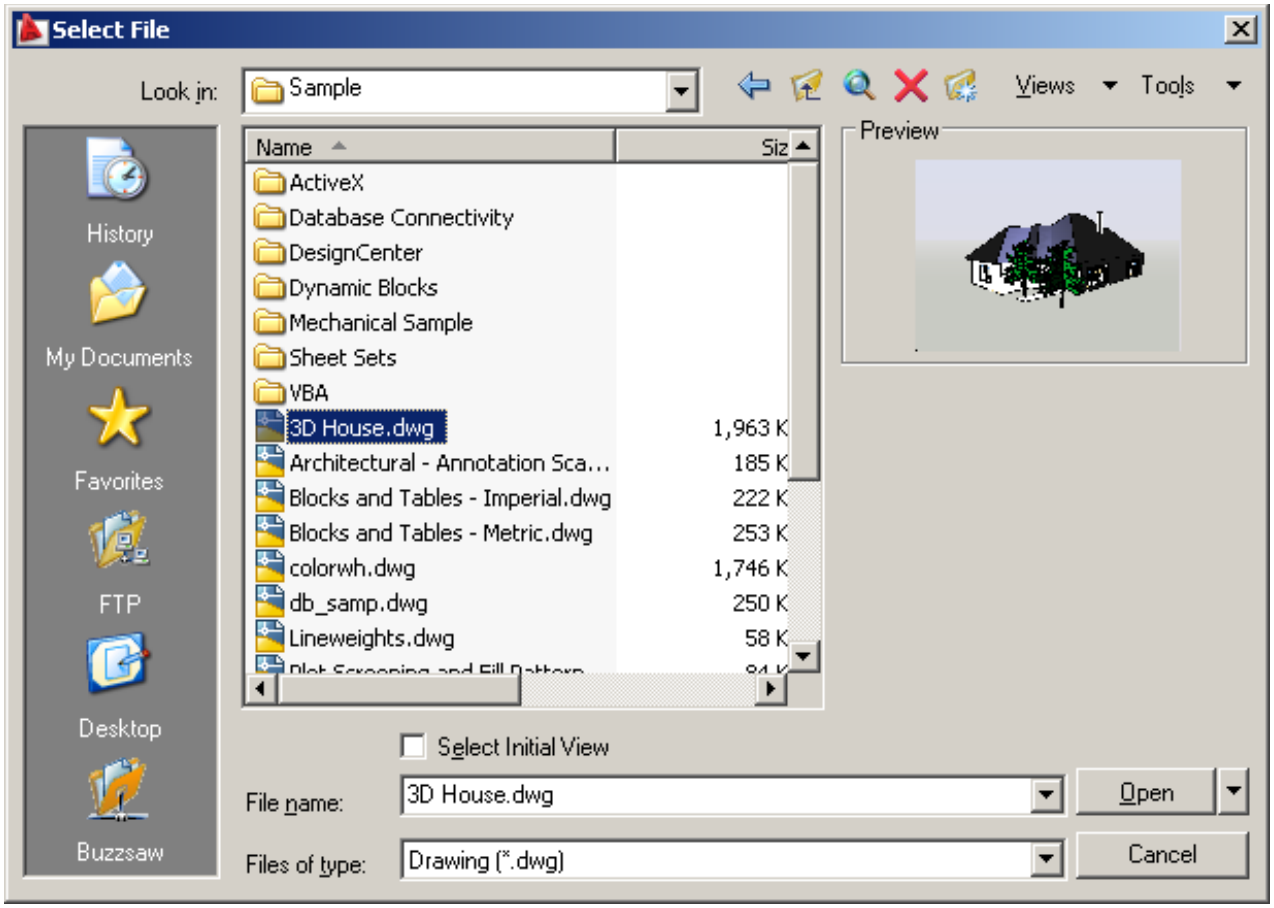
Command: **OPEN**

5 .Press ENTER

6 . Double Click the desired directory to find the drawing to open.

7 .Click the drawing name to open.

8. Click The OK button**.**



-Preview shows a bitmap image of the drawing selected. This image is the view that was last saved in the drawing. It will not show a preview of drawings saved before R13 AutoCAD.

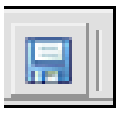
Quick Save

The QSAVE command is equivalent to clicking Save on the File menu. If the drawing is named, AutoCAD saves the drawing using the file format specified on the Open and

Save tab of the Options dialog box and does not request a file name. If the drawing is unnamed, AutoCAD displays the Save Drawing As dialog box (see SAVEAS) and saves the drawing with the file name and format you specify.

1. **Press** CTRL + S.

Or

2. **Click** the Save icon. 

Or

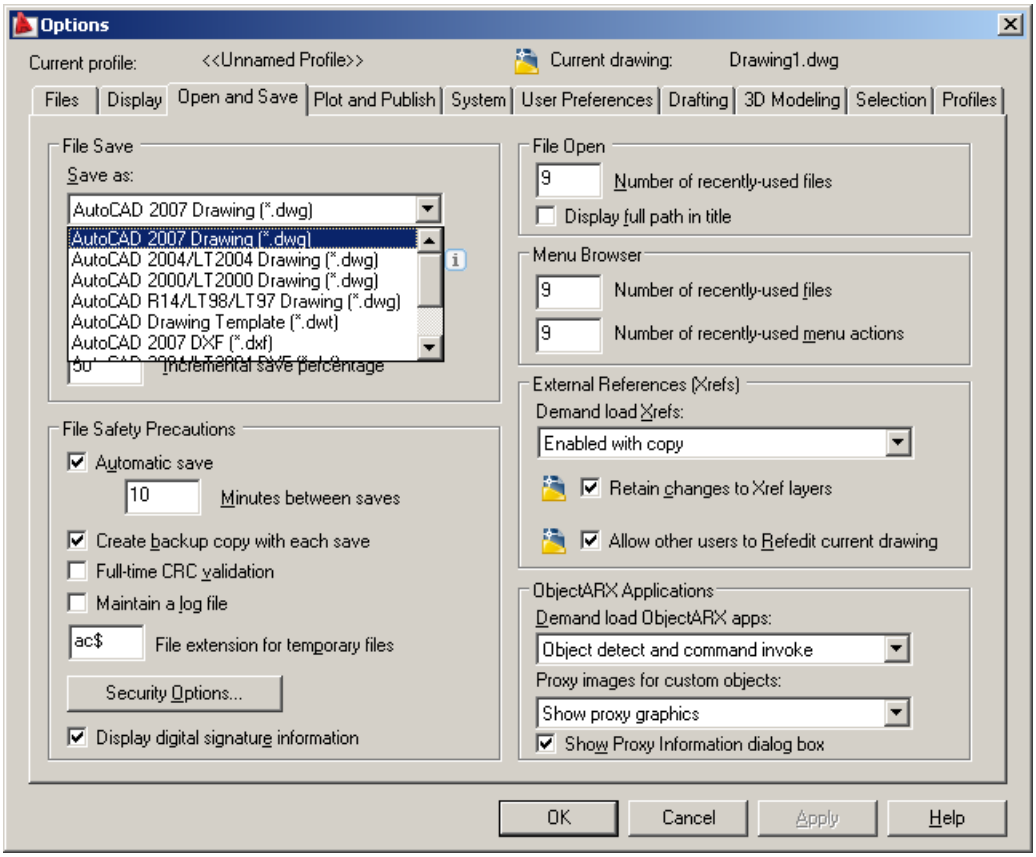
3. **Type** QSAVE at the command prompt,

Command: **QSAVE**

TIPS:

Drawings can be saved as different versions of AutoCAD (e.g. R13, R14, R 2000, etc.)

AutoSave settings under Tools, Options…



Useful Commands

UNITS Command 8.5

1. **Choose** Format, Units...

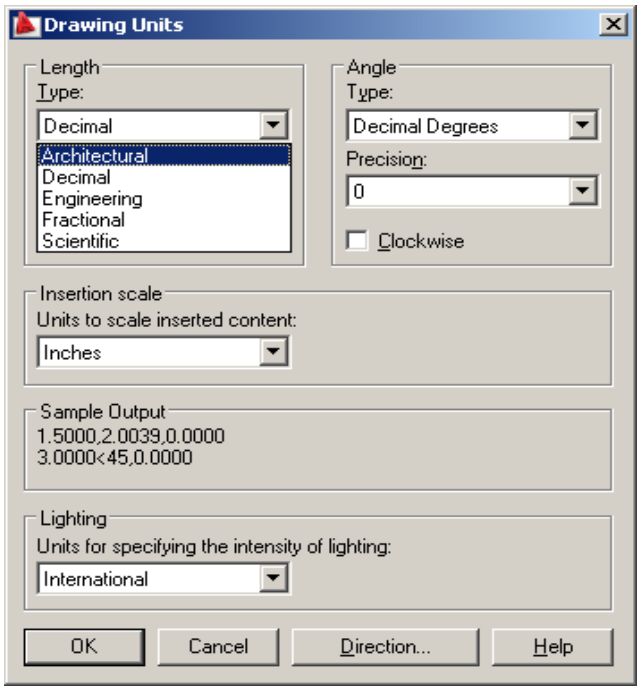
or

2. **Type** DDUNITS at the command prompt.

Command: **DDUNITS or UN**

3. **Choose** a units and angle setting.

4. **Choose** a precision setting.



3.1 Line Command

Creates single straight line segments

1. **Choose** Draw, Line.

Or

2. **Click** the Line icon.

Or

3. **Type** LINE from the command prompt

Command: **LINE** or **L**

4. **Press** ENTER

5. **Pick** From point: (**point**)

6. **Pick** Specify next point or [Close/Undo]:(**point**)

7. **Pick** Specify next point or [Close/Undo]:(**point**)

8. **Press** ENTER to end line sequence

Or

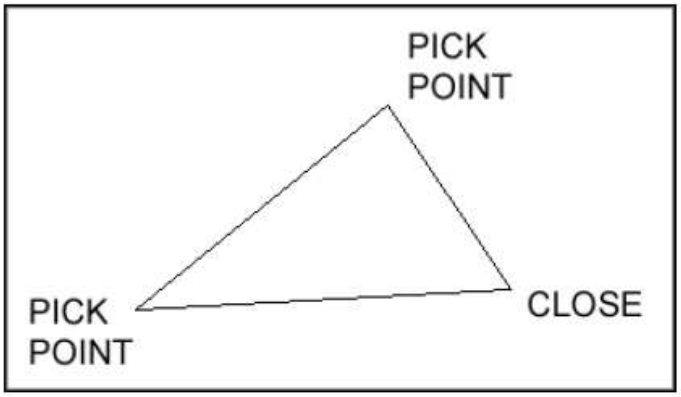
9. **Type** U to undo the last segment

To point: **U** (undo)

Or

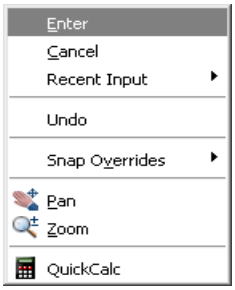
10. **Type** C to create a closed polygon

To point: **C** (close)



: **TIPS**

•You can continue the previous line or arc by responding to the From point: prompt with a space or ENTER. Choose the right mouse button for the line pop-up menu to appear while in the line command



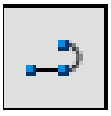
Pline Command 15.1

A polyline is a connected sequence of line segments created as a single object. You can create straight line segments, arc segments, or a combination of the two.

1 .Choose Draw, Polyline.

Or

2 .Pick the Pline icon.



3 .Type PLINE at the command prompt

Command: **PLINE or PL**

4 .Pick A point on the drawing to start the polyline

From point :(**select)**

5 .Type One of the following options

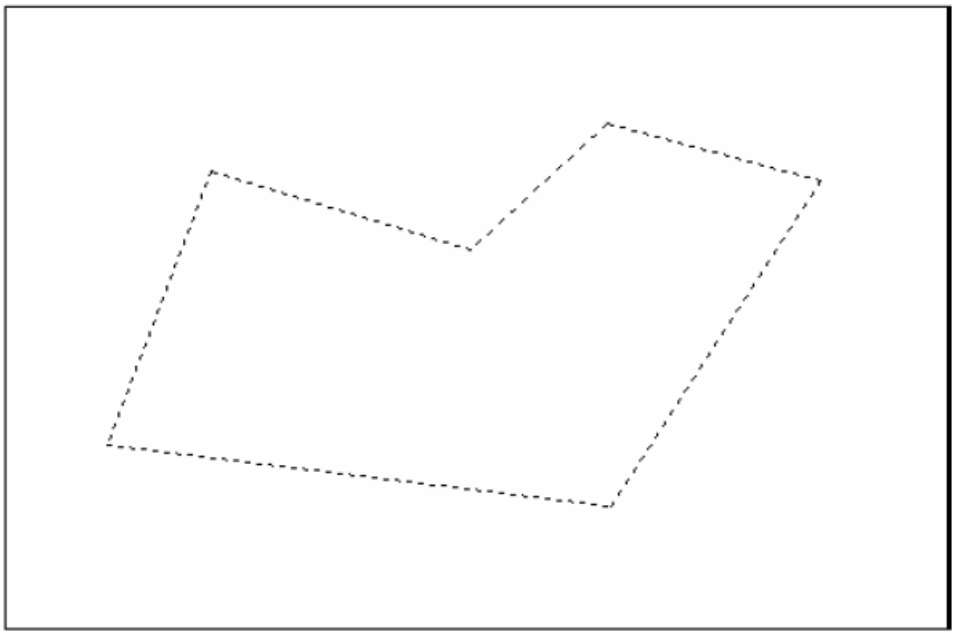
Arc/Close/Half width/Length/Undo/Width/<endpoint of line:<

Or

6 .Pick A point to continue drawing

Arc/Close/Half width/Length/Undo/Width/<endpoint of line>: (pick point)

Polyline as one segment



3.4 Orthogonal Lines

Controls lines from being drawn at various angles to straight lines. When the snap grid is rotated, ortho mode rotates accordingly.

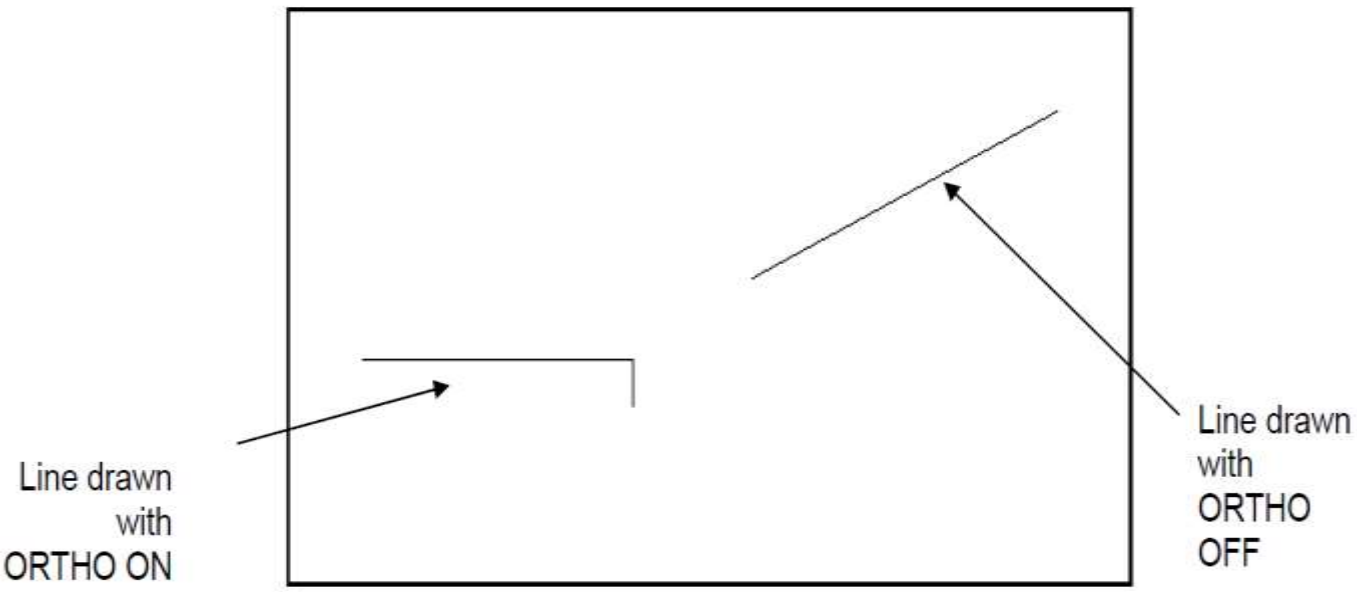
1. **Press** Function Key **F8**.

Or

2. **Double Click** ORTHO from the Status Bar.

Or

3. **Press** CTRL + L.



Rectangle 16.2

1. **Choose** Draw, Rectangle.

Or

2. **Click** the Rectangle icon.

Or

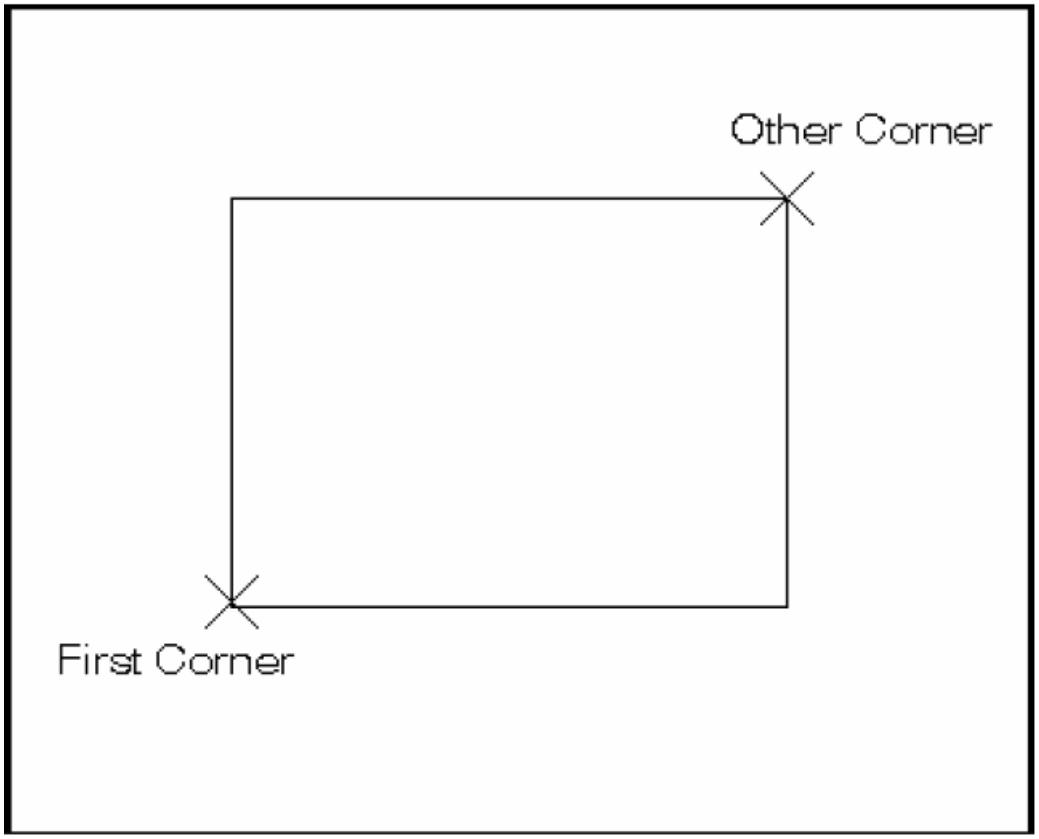
3. **Type** Rectang at the command prompt Command:

RECTANG Chamfer/Elevation/Fillet/Thickness/Width/

<First corner>:

4. **Pick** first corner.

5. **Pick** other corner or type coordinates **(i.e. @4,2)**.



3.6 Circles

Circle Command

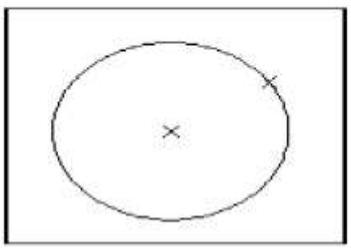
1. **Choose** Draw, Circle.

Or

2. **Click** the Circle icon.

Or

Circle, Center Radius



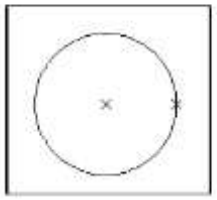
3. **Type** CIRCLE at the command prompt.

Command: **CIRCLE**

4. **Type** One of the following options:

3P/2P/TTR/<<center point>>:

Circle, Center Diameter

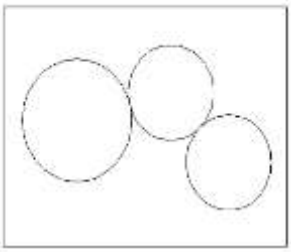


Or

5 .Pick A center point**.**

6 .Type A radius or diameter**.**

Circle, Tangent, Tangent Radius

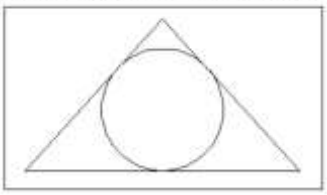


Or

7 .Pick A radius or diameter

Diameter/<<radius>>:

Circle, Tangent, Tangent, Tangent



:TIPS

-To create circles that are the same size, press ENTER when asked for the circle radius.

-When selecting a circle with a pickbox, be sure to select the circumference of the circle.

3.7 Arc Command

1. **Choose** Draw, Arc.

or

2. **Click** the Arc icon.

Or

3. **Type** ARC at the command prompt

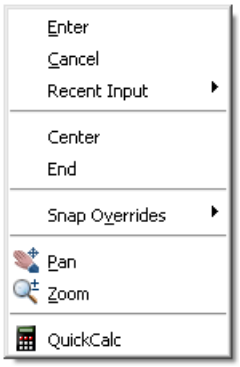
Command: **ARC**

4. **Draw** One of the arcs.

TIPS:

-Except for 3 point arcs, arcs are drawn in a COUNTERCLOCKWISE direction.

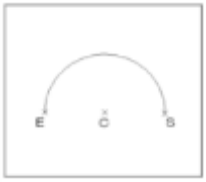
- While in the arc command, press the right mouse button to select the following options for arcs:

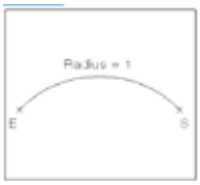


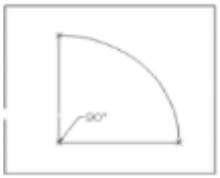
Arc Examples

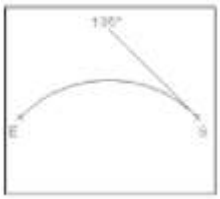
3 point arc 

Start, center, chord length 

Start, center, end 

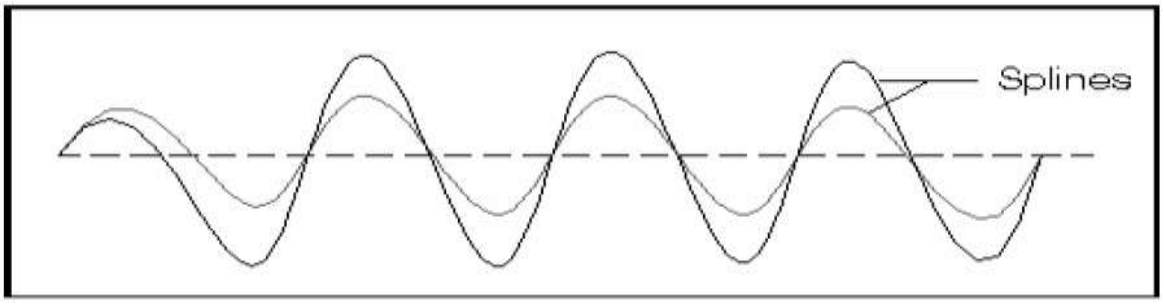
Start, end, radius 

Start, center, included angle 

Start, end, direction 

Spline 16.3

The SPLINE command creates a particular type of spline known as a non-uniform rational B-spline (NURBS) curve. A NURBS curve produces a smooth curve between control points



1. Choose Draw, Spline.

Or

2. Click the Spline icon. 

Or

3. Type SPLINE at the command prompt

Command: **SPLINE**

4. Pick A start point for the spline

Object / <Enter first point>: (**pick point**)

5. Pick Points until youare done drawing splines

Enter point: (**pick points**)

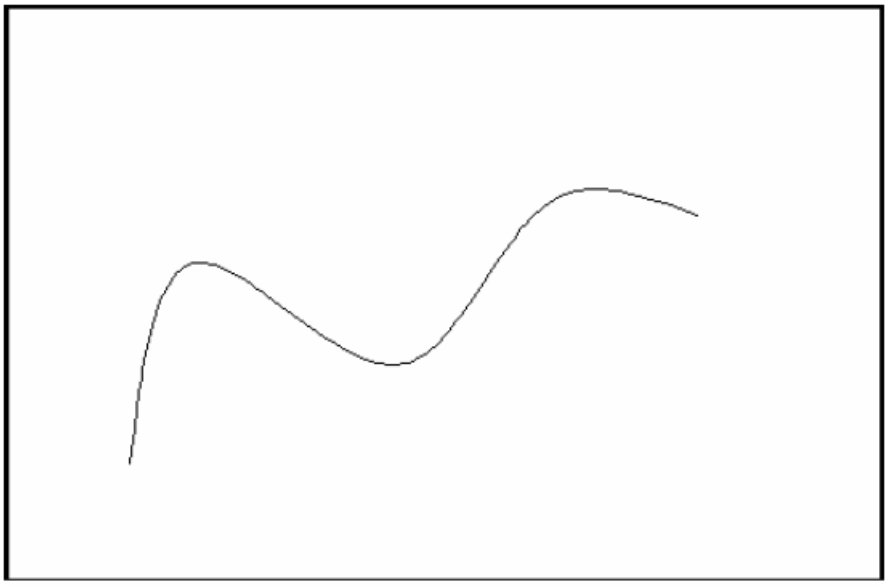
6. Press Enter or close to complete the spline

7. Pick Starting tangent point for the spline

Enter start tangent (**pick point**)

8. Pick Ending tangent point for the spline

Enter end tangent: (**pick point**)



Editing

Editing Polylines 15.2

1. **Choose** Modify, Polyline.

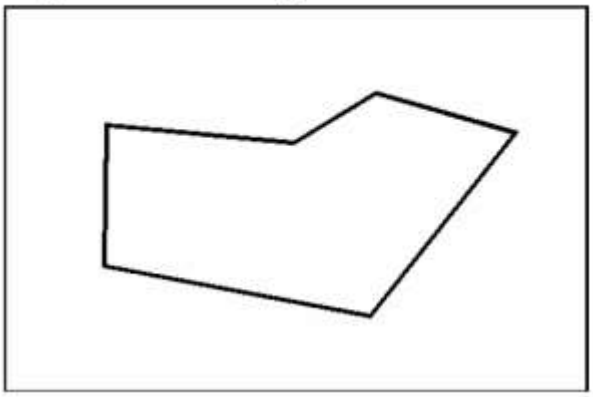
or

2. **Pick** the Pedit icon from the Modify II toolbar.
3. **Type** PEDIT at the command prompt
   Command: **PEDIT**
4. **Pick** Pick a polyline to edit
   Select Polyline: (**pick**)
5. **Type** One of the following options: Close/Join/ Width/Edit Vertex /Fit Curve/Spline/Curve/ Decurve /Undo/eXit

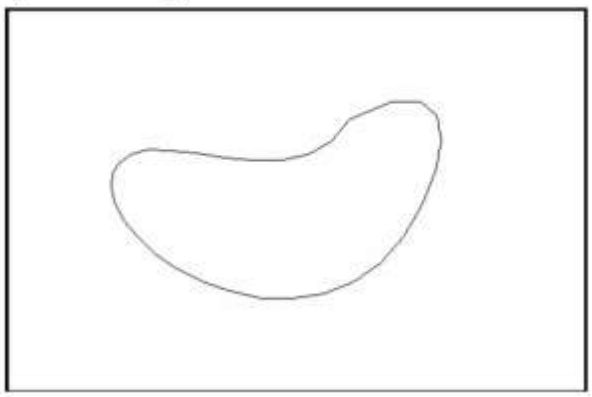
PEDIT options:

Close	Closes open polyline segments
Join	Connects polylines, lines, and arcs to existing polylines.
Width	Changes the width for all polyline segments.
Fit curve	Creates curved arc segments around pline vertices at the direction you specify.
Spline Curve	Creates a curve through control points on a polyline.
Decurve	Straightens curved segments.
Edit Vertex	Displays the following Edit Vertex Options:

Polyline width change



Splined Polyline



Move Command 10.1

1. **Choose** Modify, Move.

or

2. **Click** the Move icon. 

or

3. **Type** MOVE at the command prompt

   Command: **MOVE or M**

4. **Pick** Objects to move

   Select objects: (**select**)

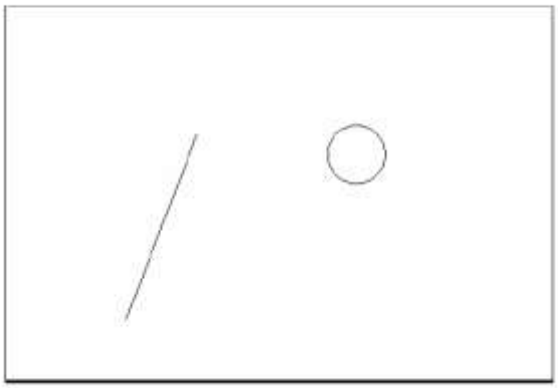
5. **Pick** A point to move from

   Base point or displacement: (**pick point**)

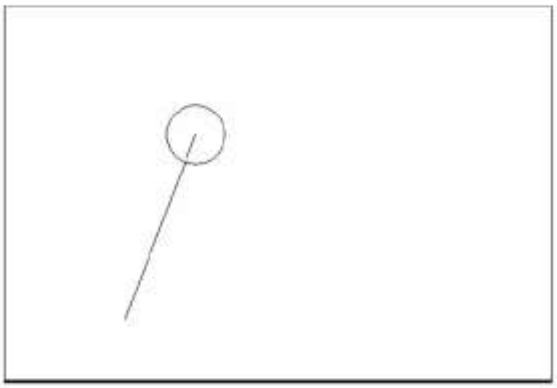
6. **Pick** A point to move to

   Second point of displacement: (**pick point**)

Circle before move



Circle after move



TIP:

To move an object a specified distance, type a distance at the second point of displacement prompt: **@1<0**

Copy Command 10.2

1. **Choose** Modify, Copy.

or

2. **Click** the Copy icon. 

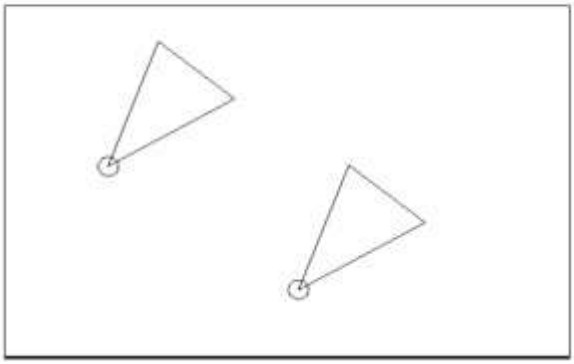
or

3. **Type** COPY at the command prompt.
   Command: **COPY or CP**
4. **Pick** Objects to copy.
   Select objects: (**select**)
5. **Pick** A point to move from.
   Base point or displacement/Multiple: (**pick point**).
6. **Pick** A point to copy to.

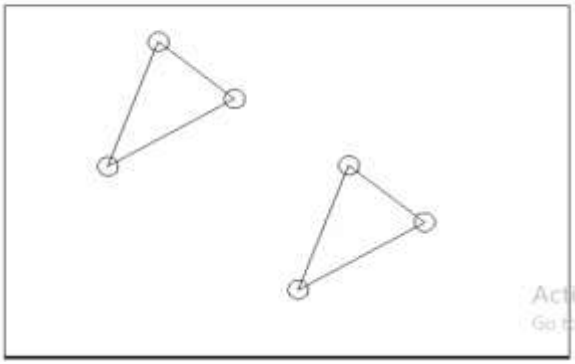
or

7. **Type** A point to copy to.
   Second point of displacement: **@ 1<0**

Duplicate objects copied



Multiple objects copied



TIP:

- To copy many objects in the same copy command, type M for Multiple at the "Base point or displacement/Multiple" option.

Offset Command 10.4

Offset Distance

To offset a specified distance:

1. **Choose** Modify, Offset.

or

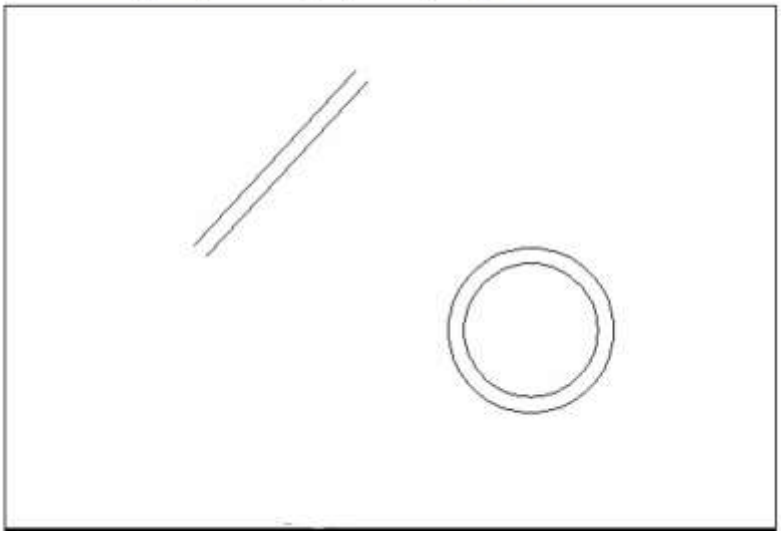
2. **Choose** the Offset icon. 

or

3. **Type** OFFSET at the command prompt.
   Command: **OFFSET or O**
4. **Type** The distance to offset.
   Offset distance or <Through point>: (**number**)
5. **Pick** The object to offset.
   Select object to offset: (**select object**)

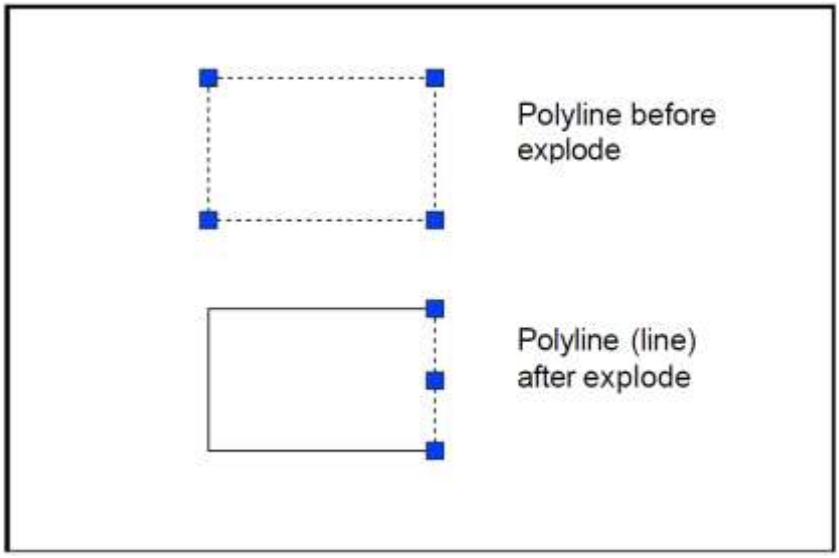
6. **Pick** A side to offset object to.
   Side to offset: (**pick side**)
7. **Pick** Another object to offset
   Select object to offset: (**pick side**)
   or
8. **Press** Enter to end the command.

Offsetting objects by specifying a distance



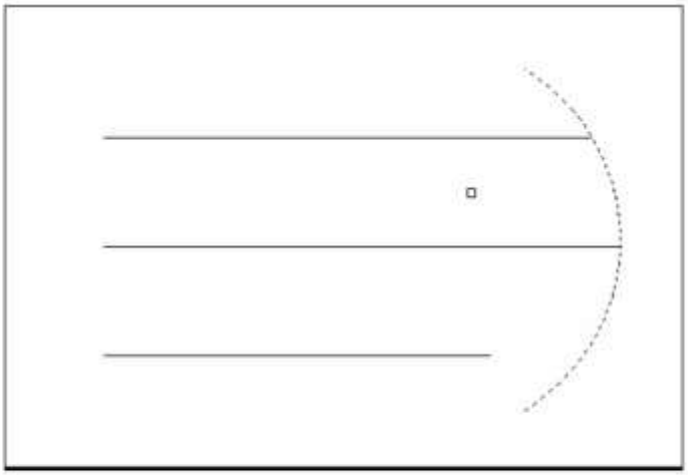
Explode Command 15.4

1. **Choose** *Modify,Explode.*
   or
2. **Pick** the Explode icon.
3. **Type** EXPLODE at the command prompt.
   Command: **EXPLODE**
   or
4. **Pick** The object to explode. Select objects: (**pick**)



EXTEND 10.5

1.	**Choose**	Modify, Extend.
		or
2.	**Click**	the Extend icon.
		or
3.	**Type**	EXTEND at the command prompt
		Command: **EXTEND** Select boundary edge(s)...
4.	**Pick**	The BOUNDARY edge to extend to
		Select objects: (**select**)
5.	**Press**	ENTER to accept the boundary edge
		Select objects: (**press enter**)
6.	**Pick**	The objects to extend
		<Select object to extend> / Project / Edge / Undo: Select an object, enter an option, or press enter : (**select**)
7.	**Press**	ENTER when you are done choosing objects



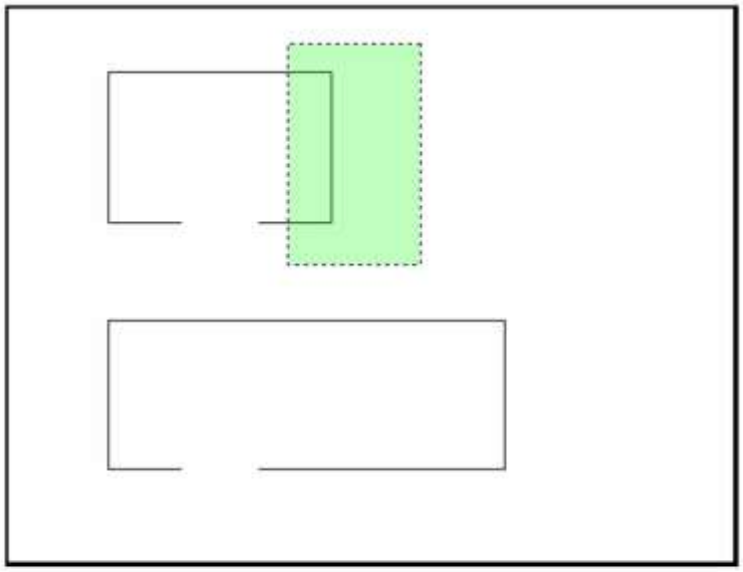
Lines Extended to an Arc (Arc is boundary edge)

TIP:

- Use the object selection option FENCE to choose multiple objects

Stretch 13.2

1.	**Choose**	Modify, Stretch. or
2.	**Click**	the Stretch icon.
3.	**Type**	STRETCHat the command prompt. Command : **STRETCH** Select objects to stretchby window...
4.	**Type**	C to choose CROSSING window Select objects: **C**
5.	**Pick**	A first corner to stretch. First corner: (**point**)
6.	**Pick**	The opposite corner to window the objects to stretch. Other corner: (**point**)



7.	**Press**	ENTER to accept objects to stretch.
8.	**Pick**	A base point to stretch from Base point: (**point**)
9.	**Pick**	A point to stretch to Newpoint: (**point**)
		or
10.	**Type**	A distance to stretch. New point: **@1<0**

TIP:

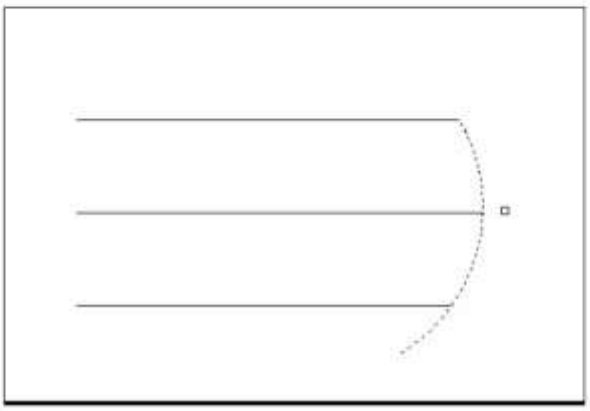
The Stretch command must use a CROSSING window or a CROSSING POLYGON window.

TRIM 10.6

The TRIM command allows you to trim objects in a drawing so they end precisely at a cutting edge defined by one or more other objects in the drawing.

1.	**Choose**	Modify, Trim.
		or
2.	**Click**	the Trim icon. 
3.	**Type**	TRIM at the command prompt
		Command: **TRIM**
		Select cutting edge(s)...

4. **Pick** The CUTTING edge to extend to
   Select objects: (**select**)
5. **Press** ENTER to accept the cutting edge
   Select objects: (**press enter**)
6. **Pick** Objects to trim
   <Select object to trim> / Project / Edge / Undo:
   Select an object, enter an option, or press enter
7. **Press** ENTER when you are done choosing objects
   Select object to trim/Undo: (**press enter**)

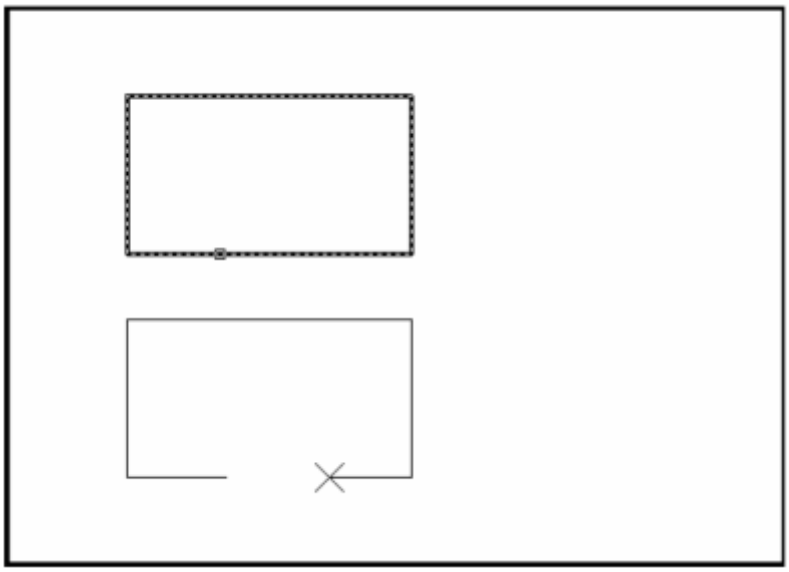


Lines Trimmed to an Arc (Arc is cutting edge)

TIP: Hold the SHIFT key to interactively extend instead of trim.

Break 13.1

1. **Choose** Modify, Break.
   or
2. **Click** the Break icon. 
   or
3. **Type** BREAK at the command prompt. Command: **BREAK**
4. **Pick** Object to break.
   Select object: (**select one object**)
5. **Pick** A second break point.
   Enter second point : (**point**)



or

6. **Type** **F** to choose a different break point
Enter second point (or F for first point):(**F**)

MIRROR 10.7

1. **Choose** Modify, Mirror.

or

2. **Click** the Mirror icon. 

or

3. **Type** MIRROR at the command prompt.

   Command: **MIRROR**

4. **Pick** Objects to mirror.

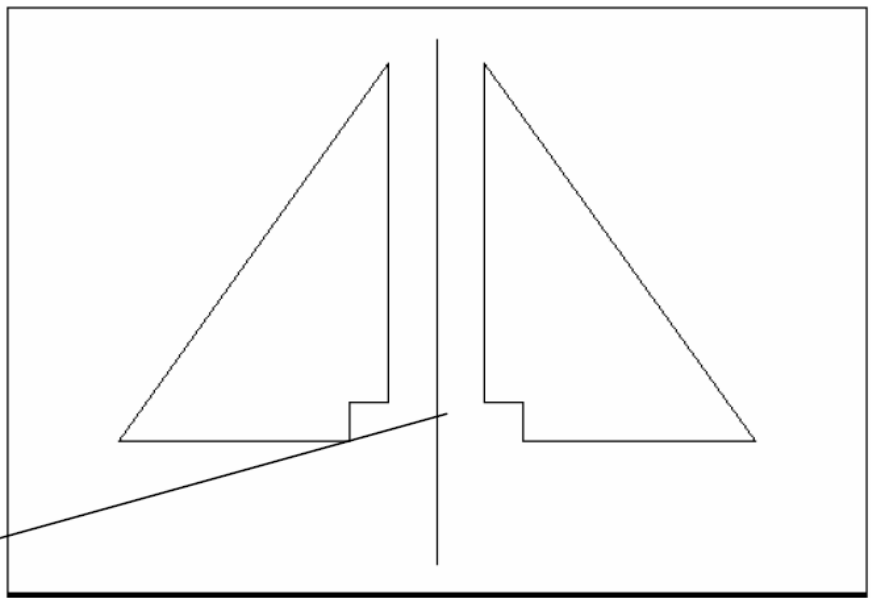
   Select objects:(**select**)

5. **Pick** First point of mirror line: (**point**)

6. **Pick** Second point: (**point**)

7. **Type** Yes to delete the original objects and No to keep them.

   Delete old objects? **Y** or **N**



ROTATE 10.9

1. **Choose** Modify, Rotate.

   or

2. **Click** the Modify icon. 

   or

3. **Type** ROTATE at the command prompt

   Command : **ROTATE**

4. **Pick** Objects to rotate:

   Select objects:(**select**)

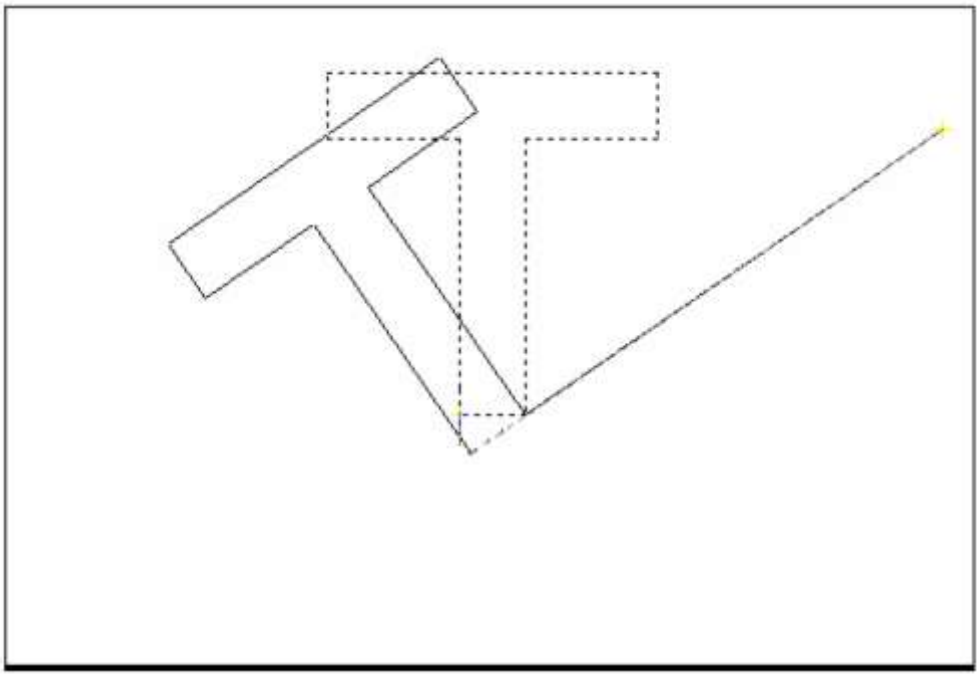
5. **Pick** A pivot point to rotate around

   Base point: (**point**)

6. **Type** A rotation angle<Rotation angle>/Reference: (**number**)

   or

7. **Pick** A rotation angle<Rotation angle>/Reference: (**point**)



SCALE 10.10

1. **Choose** Modify, Scale.

   or

2. **Click** the Scale icon. 

   or

3. **Type** SCALE at the command prompt

   Command: **SCALE**

   Select objects: (**select objects**)

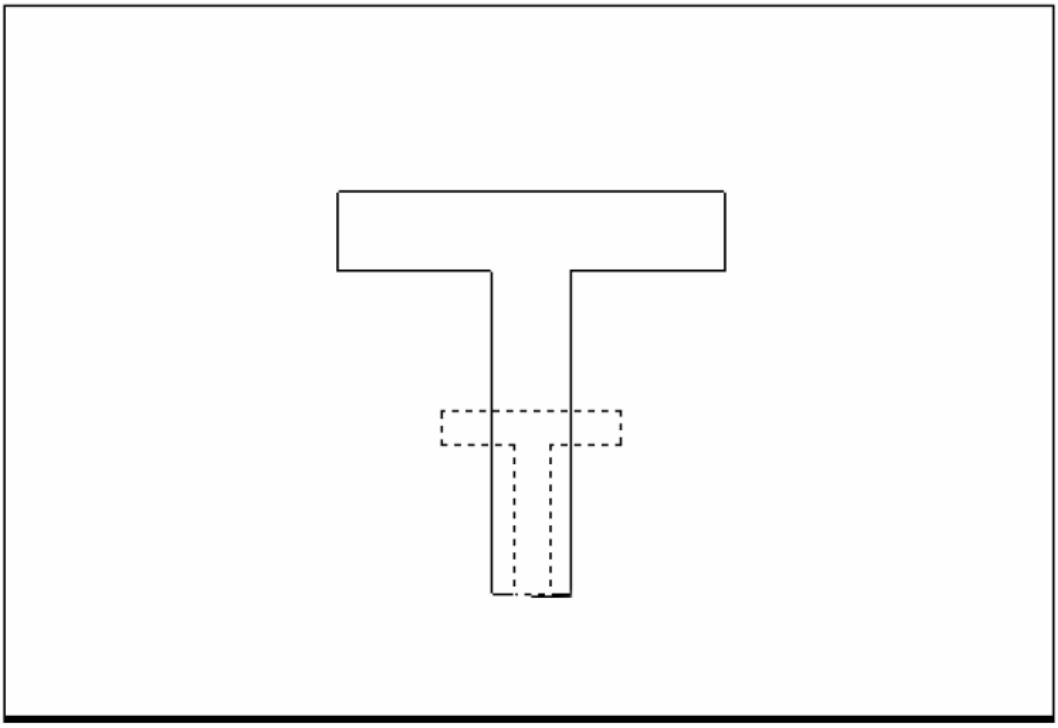
4. **Pick** A pivot point to scale about Base point: (**point**)

5. **Type** A rotation angle<Scale factor>/Reference:(**number**)

   or

6. **Pick** A scale factor<Scale factor>/Reference: (**point**)

   Scale factor/Reference: (**points**)



Text Command 11.1

Text

Creates a single-line text object

1. **Type** TEXT at the command prompt
   Command: **TEXT**
   or
2. **Pick** the Single Line Text icon from the Text Toolbar. 
3. **Pick** A start point
   Justify/Style/<Start Point>: (**point**)
   or
4. **Type** J to change the justification or S to change the text style.
5. **Type** A text height
   Height <default>: (**type value or pick two points**)
6. **Type** A rotation angle
   Rotation angle <default>: (**angle or point**)
7. **Type** A text string
   Text: (**type text string**)
8. **Press** enter to exit the Text: prompt.

DTEXT (Dynamic Text)

Creates a single-line text object, showing the text dynamically on the screen as it is entered.

1. **Choose** Draw, Text, Single Line Text.
   or
2. **Type** DTEXT at the command prompt
   Command : **DTEXT**
3. **Follow** the steps 3-8 from above.