

⇒ MODIFY COMMANDS II

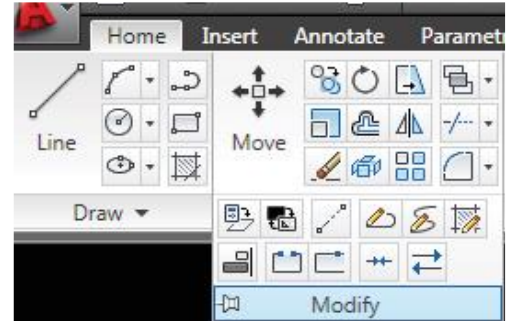
1. CONCEPTS

Modify commands use existing objects.

The *Modify* commands listed below are used to create new and similar objects:

Copy, Mirror, Offset, Array, Fillet, and Chamfer

For example, the *copy* command prompts you to select an object (or set of objects), then creates an identical object (or set).



Modify commands can be invoked by any of the three command entry methods:

- ⇒ Tabs Select the command or dialog box by PICKing an icon (tool) from a tab.
- ⇒ Panels Select the command or dialog box from a panel.
- ⇒ Keyboard Type the command name, command alias, or accelerator (Ctrl) keys at the keyboard.¹

Since all modify commands affect or use existing geometry, the first step in using any modify command is to construct a selection set. This can be done by one of two methods:

- a. Invoking the desired command and then creating the selection set in response to the "Select Objects" prompt using any of the select object options.
- b. Selecting the desired set of objects with pickbox or *Auto Window* or *Crossing Window* before invoking the edit command.

¹) A command alias is a one- or two-letter shortcut. Accelerator keys use the Ctrl key plus another key and are used for utility operations.

2. COMMANDS

a. COPY



Tab-panel	Command (type)	ALIAS (type)	Short-cut
Home – Modify	<i>COPY</i>	<i>CO or CP</i>	-----

- ↪ *Copy* creates a duplicate set of the selected objects and allows placement of those copies.
- ↪ The *Copy* operation is like the *Move* command, except with *Copy* the original set of objects remains in its original location.
- ↪ You specify a “Base point:” (point to copy from) and a “Second point of displacement:” (point to copy to).
- ↪ The command syntax for Copy is as follows:

Command: **copy**

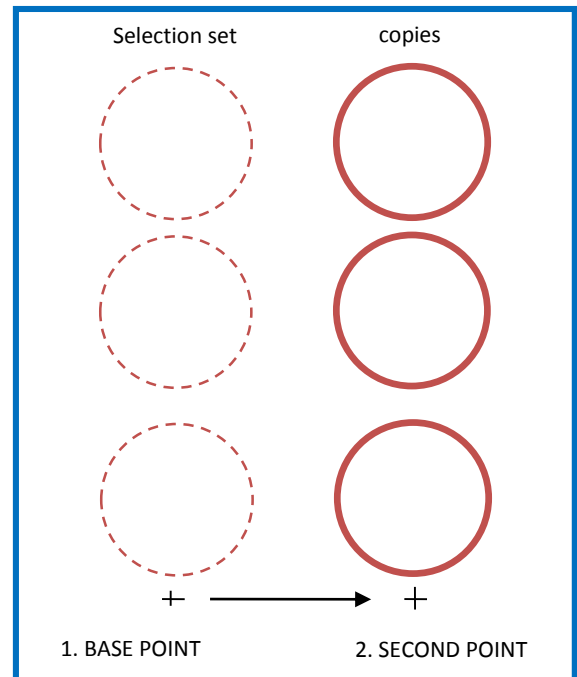
Select objects: **PICK** (Select the objects to be copied.)

Select Objects:**Enter**(Indicates completion of the selection set.)

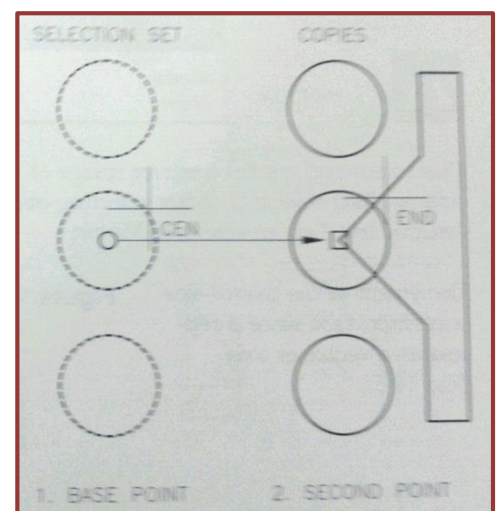
<Base point or displacement>Multiple: PICK or (coordinates) (this is the point to copy from. Select a point, usually on the object, to use as a “handle” or reference point OSNAPs can be used. Coordinates in any format can also be entered.)

Second point of displacement: **PICK** or (**coordinates**) (this is the point to copy to. OSNAPs can be used. Coordinates in any format can also be entered.)

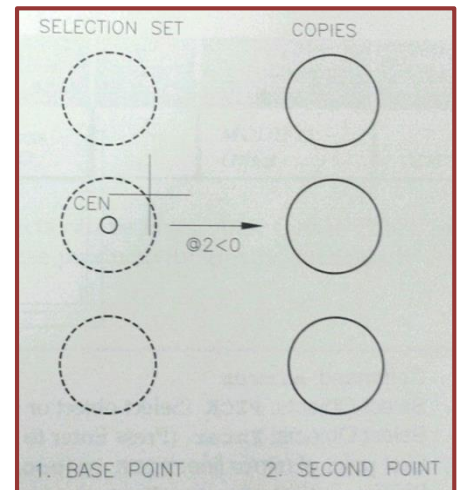
Command:



- ↪ In many application it is desirable to use oSNAP options to PICK the “Base point:” and the “Second point of displacement:”

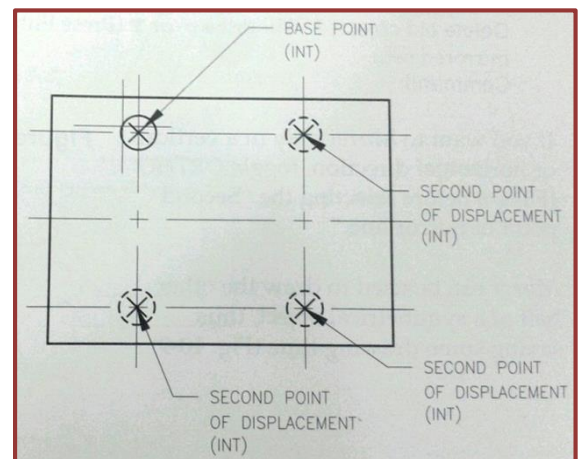


- ↪ Alternately, you PICK the “Base point:” and enter relative rectangular coordinates, relative polar coordinates, or direct distance entry to specify the “Second point of displacement:”.



- ↪ The copy command has a *Multiple* option.
- ↪ The *Multiple* option allows creating and placing multiple copies of the selection set.

Command: **copy**
Select objects: **PICK**
Select Objects: **Enter**
<Base point or displacement>Multiple: **m**
Base point: PICK
Second point of displacement: PICK
Second point of displacement: PICK
Second point of displacement: Enter
Command:



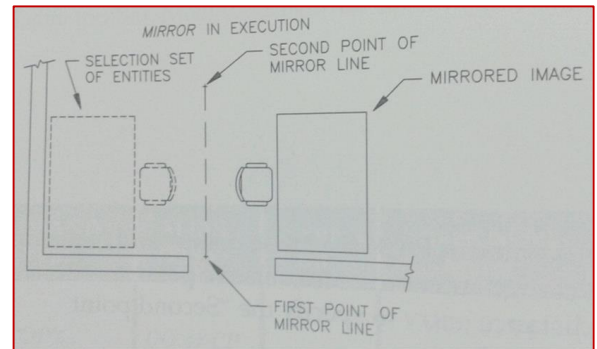
b. MIRROR



Tab-panel	Command (type)	ALIAS (type)	Short-cut
Home – Modify	MIRROR	MI	-----

↪ This command creates a mirror image of selected existing objects. You can retain or delete the original objects (“old objects”). After selecting objects, you create two points specifying a “mirror line”, about which to mirror.

↪ The length of the mirror line is unimportant since it represents a vector or axis.



Command: **mirror**

Select objects: **PICK** or (**coordinates**) (Select the objects to mirror.)

Select Objects:

Enter (Indicate completion of the object selection.)

First point of mirror line: **PICK** or

(**coordinates**)

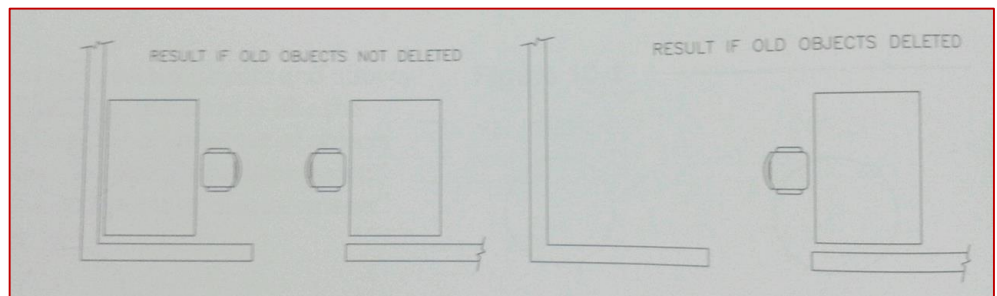
(Draw first endpoint of line to represent mirror axis by

PICKing or entering coordinates).

Second point of mirror line: **PICK** or (**coordinates**) (select second point of mirror line by PICKing or entering coordinates).

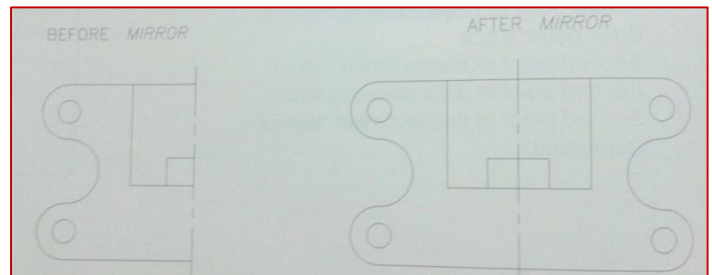
Delete old objects? <N>**Enter** or **Y** (Press Enter to yield both sets of objects or enter Y to keep only the mirrored set.)

Command:



↪ If you want to Mirror only in a vertical or horizontal direction, toggle **ORTHO (F8)** On before selecting the “Second point of mirror line.”

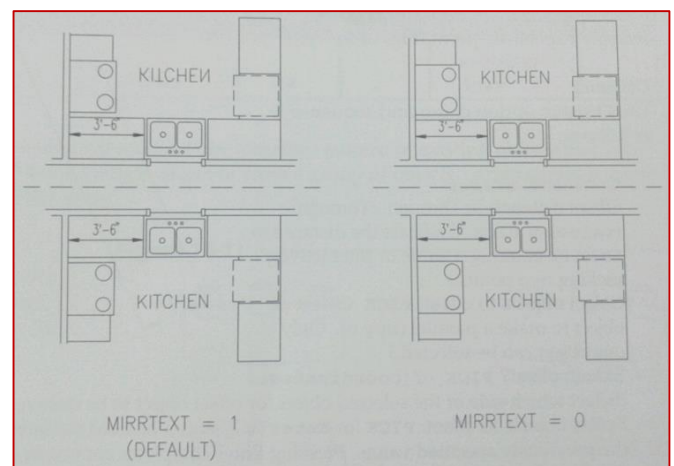
↪ **Mirror** can be used to draw the other half of a symmetrical object, thus saving some drawing time.



↪ You can control whether text to mirrored by using the **MIRR-TEXT** variable.

↪ Type **MIRR-TEXT** at the command prompt and change the value to 0 if you do not want the text to be reflected; otherwise, the default setting of 1 mirrors text along with other selected objects.

↪ Dimensions are not affected by the **MIRR-TEXT** variable and therefore are not reflected (that is, if the dimensions are associative).

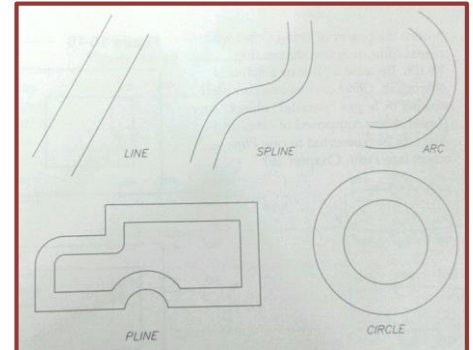


c. OFFSET



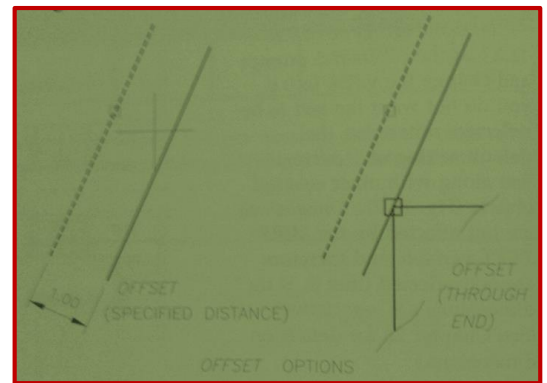
Tab-panel	Command (type)	ALIAS (type)	Short-cut
Home – Modify	OFFSET	O	-----

- ↪ Offset create a parallel copy of selected objects.
- ↪ Selected objects can be *Lines, Arcs, circles, Plines, or other objects.*
- ↪ Depending on the object selected the resulting *Offset* is drawn differently.
- ↪ Offset creates a parallel copy of a *Line* equal in length and perpendicular to the original.
- ↪ *Arcs and Circles* have a concentric *Offset*.
- ↪ *Offsetting closed Plines or Splines* results in complete parallel shape.
- ↪ *Offsetting closed Plines or Splines* results in a complete parallel shape.
- ↪ Two options are available with *Offset*:
 1. *Offset* a specific *distance*.
 2. *Offset* *through* a specific point.



Distance

- ↪ The Distance option command sequence is as follows:
 Command: **offset**
 Offset distance or through <Through>: (**value**) or **PICK**
 (indicate the distance to picking two points.)
 Select objects to offset: **PICK** (Select an object to make a parallel copy of. Only one object can be selected.)
 Side to offset? **PICK** or (coordinates) (select which side of the selected object for offset object to be drawn.)
 Select objects to offset: **PICK** or **ENTER** (*Offset* can be used repeatedly to offset at the same distance as the previously specified value. Pressing Enter completes command.)



Through

- ↪ The command sequence for Offset through is as follows:
 Command: **offset**
 Offset distance or through <Through>: **T**
 Select objects to offset: **PICK** (Select an object to make a parallel copy of. Only one object can be selected.)
 Through point: **PICK** or (**coordinates**) (Select a point for offset object to be drawn through. Coordinates can be entered or point can be selected with or without OSNAPS.)
 Select objects to offset: **PICK** or **ENTER** (*Offset* can be used repeatedly to specify a different through point. Pressing Enter completes command.)

- ↪ Notice the power of using offset with closed *Pline* or *Spline* shapes. Because a Pline or a Spline is one object, offset creates one complete smaller or larger “parallel” object.

