AutoCAD. 2009 2D Training Manual

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Chapter 1

Introduction

1.1 Launching AutoCAD

- 1. **Choose** Start from the Windows program manager.
- 2. Choose Programs, Autodesk ,AutoCAD 2009.
- 3. **Click** the AutoCAD 2009 for Windows icon.



1.2 Text and Graphics Screens

The graphics screen and the text screen are two different screens available in the drawing editor.

1. **Press** Function key **F2** on the keyboard.

	AutoCAD 2009 Drawing1.dwg	Type a keyword or phrase	
Home Blocks & References Annotate Tools View Output			
	Unsaved Layer State		
Draw 🖌 Modify 🖌	Layers 4 Annotation 4	Block 4 Properties	Utilities
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	🗿 AutoCAD Text Window - Drawing1.dwg		
	Edit		
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	Command: r REDRAW Command: r		
Command: r	REDRAW		
REDRAW Command: 106437.75443.0000			
🍊 Start 😸 😢 " 🔊 AutoCAD 2009 - [💾 AutoCAD2D_2008.d 🔌 Pa	Command:		



TIPS:

The Cursor must be in the drawing window in order to select objects.

Maximize the AutoCAD windows to be full screen. This will make the drawings bigger and easier to read.

Use ALT + TAB to move between Windows applications.

1.3 Cursor

Controls the size of the crosshair. The allowable range is from 1 to 100 percent of the total screen. At 100% the ends of the crosshair are never visible. When the size is decreased to 99% or below, the crosshairs have a finite size, and the crosshairs' ends are visible when moved to the edge of the graphics area. The default size is 5%.

- 1. Choose **Tools**, **Options**...
- 2. Click the Display TAB.
- 3. Drag the slider bar in under crosshair size to set the cursor size.

🎉 Options	×
Current profile: < <unnamed profile="">></unnamed>	🦄 Current drawing: Drawing1.dwg
Files Display Open and Save Plot and Publish System	User Preferences Drafting 3D Modeling Selection Profiles
Window Elements Color scheme: Dark Display gcroll bars in drawing window Display Drawing status bar Display screen menu Use large buttons for Toolbars Show IoolTips Show shortcut keys in ToolTips Show extended ToolTips Show rollover ToolTips Display payout and Model tabs Display paper background Display paper shadow Show Page Setup Manager for new layouts	Display resolution Display resolution B B Contour lines per surface Display performance Pan and zoom with raster & OLE Pan and zoom with raster & OLE Contour lines per surface Display performance Pan and zoom with raster & OLE Contour lines per surface Display performance Pan and zoom with raster & OLE Display performance Display performance Pan and zoom with raster & OLE Display performance Display performance Display performance Pan and zoom with raster & OLE Display performance Display performance Pan and zoom with raster & OLE Display performance Display performance Display performance Display performance Display performance Display performance Pan and zoom with raster & OLE Display performance Display performa
	OK Cancel <u>Apply</u> <u>H</u> elp

1.4 Canceling a Command

1. Press the **ESCAPE (ESC)** key on the keyboard.



TIP: Pressing ESC twice clears nested commands.

1.5 Menus and Colors

Menu Browser

- 1. Click on the A icon in the upper left corner of the drawing area.
- 2. Click the desired pulldown menu.
- 3. Click on the command to be executed from the pulldown.

	rich (
P	Search menu	Q
File Edit View Insert Format Tools Draw Dimension Modify Express Window Help	New New Sheet Set Open Open Sheet Set Load Markup Set Close Partial Load Import Save Save As Publish to Web Export Page Setup Manager Plotter Manager Plot Style Manager Plot Preview	Ctrl+N Ctrl+O rl+O) isting drawing file 1 for more help Ctrl+S Ctrl+Shift+S
<u> R</u> ecent Documents Open Documents	Plot	Ctrl+P
Recent <u>A</u> ctions	l⇔ Publis <u>h</u> ∭ Export to <u>I</u> mpression	-
Coptions	(C Exit AutoCAD

Quick Access Toolbar

1. Click on one of the following icons for quick access to commands QNEW, OPEN, SAVE, PLOT, and UNDO/REDO.



Right-click the Quick Access toolbar and click Customize Quick Access Toolbar. The Customize User Interface dialog opens and displays the list of commands available.

Drag commands you want to add from the command list pane in the Customize User Interface dialog box to the Quick Access toolbar.

Info Center

Quickly search for a variety of information sources, access product updates and announcements, and save topics with InfoCenter.



Ribbon

The ribbon provides a single, compact placement for operations that are relevant to the current workspace. It eliminates the need to display multiple toolbars, reducing clutter in the application window. The ribbon maximizes the area available for work using a single compact interface.

The ribbon can be displayed horizontally, vertically, or as a floating palette. The horizontal ribbon is displayed at the top of the drawing window by default when you create or open a drawing.

You can create your own panels to display on the ribbon; you can also modify the commands and controls on existing ribbon panels.

P,	Home Blo	ks & Referer	ices Annotate Tools	View	Output 🖬						?
Line	° / •	Move	, °30 [] = @ A [] 	•	Layer B O O O O O O O O O O O O O O O O O O	Multiline Text	•		ByLayer E ByLay ByLay	8	D • № 4 , D • X 5
	Draw	4	Modify	4	Layers 🖌	Annotation	4	Block 🔺	Properties		Utilities

1.6 Workspaces

You can switch between the workspaces from the menu browser.

1. Click the Workspace switching icon in the lower left corner of the screen.



2. Click on one of the following workspace options



AutoCAD classic workspace



1.7 AutoCAD ClassicToolbars

Toolbars can be docked on the screen or they can float about the screen.

To Float a Toolbar:

- 1. Choose the gray border surrounding each tool.
- 2. Drag the toolbar to any area on the screen.

To Dock a Toolbar:

- 1. Choose the title or gray border of the toolbar.
- 2. Drag the toolbar to the top, bottom, left, or right area of the graphics display.





-Holding the CTRL key while dragging will prevent docking.

Loading Toolbars

Right-clicking on an icon in any toolbar

This will show a list of all available toolbars.

3D Navigation CAD Standards Camera Adjustment Dimension ✓ Draw Draw Order Inquiry Insert Layers Layers II Layouts Lights Mapping Modeling Modify Modify II Object Snap Orbit ✓ Properties Refedit Reference Render Solid Editing Standard Styles Text UCS UCS II View Viewports Visual Styles Walk and Fly Web Workspaces Zoom Lock Location ۲ Customize...

Help Tooltips

1. Move the mouse to the toolbar but do not pick the button.



1.8 Status Bar and Command Prompt

The Status Bar is the area below the command line that shows messages as well as coordinates, modes, and the current time.

To activate SNAP, GRID, ORTHO, OSNAP, MSPACE, PSPACE, and TILE, you must double-click on the mode to change.



TIP:

• Right click on the blank area of the status bar to see the tools to turn off/on.

Status Toggles
Lavout/Model
Ouick View Lavouts
Quick View Drawings
Quick now or dwings Anne Pan
4 700m
 SteeringWheel
 Appendix Coole
 Annotation Scale Association Unitable
 Annotation Visibility Annotation Visibility
✓ workspaces
 Display Locking
✓ Clean Screen (Ctrl+0)
Drawing Status Bar
Tray Settings

1.9 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.
- 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.

1.10 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.

1.11 Undo and Redo

Reverses the last action.

1. Choose Edit, Undo.

or

- 2. Click the Undo icon.
- 3. Press CTRL + Z.
- 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

F1	Displays Help
F2	Toggles Text Window
F3	Toggles OSNAP
F4	Toggles TABMODE
F5	Toggles ISOPLANE
F6	Toggles UCSDETECT
F7	Toggles GRIDMODE
F8	Toggles ORTHOMODE
F9	Toggles SNAPMODE
F10	Toggles Polar Tracking
F11	Toggles Object Snap Tracking
F12	Toggles Dynamic Input

ALT+F11	Displays the Visual Basic Editor
ALT+F8	Displays the Macros dialog box
CTRL+0	Toggles Clean Screen
CTRL+1	Toggles Properties palette
CTRL+2	Toggles DesignCenter
CTRL+3	Toggles the Tool Palettes Window
CTRL+4	Toggles Sheet Set Manager
CTRL+5	Toggles Info Palette
CTRL+6	Toggles dbConnect Manager
CTRL+7	Toggles Markup Set Manager
CTRL+8	Toggles the QuickCalc calculator palette
CTRL+9	Toggles the command window
CTRL+A	Selects objects in drawing
CTRL+SHITF+A	Toggles Groups
CTRL+B	Toggles Snap
CTRL+C	Copies objects to Clipboard
CTRL+SHIFT+C	Copies objects to Clipboard with Base Point
CTRL+D	Toggles Dynamic UCS
CTRL+E	Cycles through isometric planes
CTRL+F	Toggles running object snaps
CTRL+G	Toggles Grid
CTRL+H	Toggles PICKSTYLE
CTRL+I	Toggles COORDS

CTRL+J	Repeats last command
CTRL+L	Toggles Ortho mode
CTRL+M	Repeats last command
CTRL+N	Creates a new drawing
CTRL+0	Opens existing drawing
CTRL+P	Prints current drawing
CTRL+R	Cycles layout viewports
CTRL+S	Saves current drawing
CTRL+SHIFT+S	Brings up the Save As dialog box
CTRL+T	Toggles Tablet mode
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
CTRL+[Cancels current command
CTRL+\	Cancels current command
CTRL+PAGE UP	Moves to the next layout tab to the left of the current tab
CTRL+PAGE DOWN	Moves to the next layout tab to the right of the current tab

1.13 On-Line Help

1. Choose Help, AutoCAD Help.

or

- 2. Click the Help icon.
- 3. Type HELP at the command prompt

Command: HELP

or

4. Press Function Key F1



Chapter 2

Introduction to Commands

2.1 Open Existing Drawings

1.	Choose	File, OPEN.
		or
2.	Press	CTRL + O.
		or
3.	Click	the OPEN icon.
		or
4.	Туре	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.

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	. Туре	NEW at the 0	Command _I	prompt.		
		Command: N	IEW			
5	. Choose	One of the op	ptions for c	reating a	new drawing.	
6	. Click	The OK butto	on.			
7	. Save	the drawing a	as another	name.		
7	Select template	the drawing a	as another	name.	×	
7	. Save Select template	the drawing a	as another	name. Q 🗙 🕵	× ⊻iews ▼ Tooļs ▼	[
7	. Save	the drawing a	as another	name.	⊻iews ▼ Too!s ▼	
7	. Save	the drawing a	as another	name.	⊻iews ▼ Tooļs ▼	
7	. Save Select template Look in: Temp History	the drawing a	as another	name.	⊻iews ▼ Tooļs ▼	
7	. Save	the drawing a	as another	name.	⊻iews ▼ Tooļs ▼	
7	. Save	the drawing a late iemplates :Sets 3D.dwt -Named Plot Styles3D.dwt -Named Plot Styles.dwt dwt	as another	name.	⊻iews ▼ Tooļs ▼	
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7	. Save	the drawing a	as another	name.	¥ ⊻iews ▼ Tooļs ▼	
7	. Save Select template Look in: Look in: Thistory History Wy Documents Comparison Favorites Favorit	the drawing a	as another	name.	¥iews ▼ Toojs ▼	
7	. Save	the drawing a	as another	name.	¥iews ▼ Tooļs ▼	

TIP:

17

New drawings can also be created from Template Files.

acad.dwt

Drawing Template (*.dwt)

File name:

Files of type:

<u>O</u>pen

Cancel

•

•

2.3 Saving Drawings

Saves the most recent changes to a drawing. The first time an unnamed drawing is saved the "Save As" dialog box appears. AutoCAD saves its drawings as files with extensions ending in .DWG.

- 1. Choose File, Save or Saveas. or
- 2. **Type** SAVE or SAVEAS at the command prompt. Command: **SAVE** or **SAVEAS**
- 3. Press ENTER
- 4. **Type** A new drawing name or keep the existing drawing name.
- 5. **Click** The OK button.



TIP:

Clicking the dropdown list for File type changes the format that the drawing can be saved in.

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.



TIPS:

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

AutoSave settings under Tools, Options...

Options	×
Current profile: < <unnamed profile="">></unnamed>	🛅 Current drawing: Drawing1.dwg
Files Display Open and Save Plot and Publish System	m User Preferences Drafting 3D Modeling Selection Profiles
File Save Save as: AutoCAD 2007 Drawing (*.dwg) AutoCAD 2007/Drawing (*.dwg) AutoCAD 2007/Drawing (*.dwg) AutoCAD 2007/LT2000 Drawing (*.dwg) AutoCAD 2007/LT2000 Drawing (*.dwg) AutoCAD Drawing Template (*.dwt) AutoCAD 2007 Drawing (*.dwg) AutoCAD 2007/LT2000 Drawing (*.dwg) AutoCAD 2007 Drawing (*.dwg) File Safety Precautions ✓ Create backup copy with each save Full-time CRC validation Maintain a log file ac\$ File extension for temporary files Security Options Øisplay digital signaturg information	File Open 9 Number of recently-used files Display full path in title Menu Browser 9 Number of recently-used files 9 Number of recently-used menu actions External References (Xrefs) Demand load Xrefs: Enabled with copy Image: Copy files Image: Tensoled with copy Image: Copy files
	OK Cancel Apply Help

2.4 File Safety Precautions

Autosave

AutoCAD automatically saves information in .SV\$ files; however, users should save their drawings to .DWG files every 10 minutes. A value of zero (0) disables autosave.

Temporary Files

These files have the extensions .ac\$ (temporary drawing file).

After a system failure, if you are on a network, you should not delete temporary files until you have verified that they are not part of an active editing session.

Other temporary files may be left in the drawing directory or the temporary file directory.

🛓 Options	×
Current profile: < <unnamed profile="">></unnamed>	🍋 Current drawing: Drawing1.dwg
Files Display Open and Save Plot and Publish System	m User Preferences Drafting 3D Modeling Selection Profiles
File Save Save as: AutoCAD 2007 Drawing (".dwg) AutoCAD 2007/LT2004 Drawing (".dwg) AutoCAD 2004/LT2004 Drawing (".dwg) AutoCAD 2004/LT2004 Drawing (".dwg) AutoCAD 2000/LT2000 Drawing (".dwg) AutoCAD 2007 Drawing (".dwg) AutoCAD 2007/LT2000 Drawing (".dwg) AutoCAD Drawing Template (".dwt) AutoCAD Drawing Template (".dwt) AutoCAD 2007 DXF (".dwt) AutoCAD 2007 DXF (".dwt) AutoCAD 2007 DXF (".dwt) Source: Image: Safety Precautions AutoCAD 2007 DXF (".dwt) Safety Precautions Image: Safety Precautions<	File Open 3 Number of recently-used files Display full path in title Menu Browser 9 Number of recently-used files 9 Number of recently-used files 9 Number of recently-used menu actions External References (Xrefs) Demand load Xrefs: Enabled with copy Image: Comparison of the system

AutoSave and SV\$ under Tools, Options...., Open and Save

Security Options

Specifies security settings to be used when your drawing is saved. The Password option adds a password to a drawing when it is saved.

🛓 Options	×
Current profile: < <unnamed profile="">></unnamed>	🍋 Current drawing: Drawing1.dwg
Files Display Open and Save Plot and Publish System	User Preferences Drafting 3D Modeling Selection Profiles
File Save Save as: AutoCAD 2007 Drawing (*.dwg) AutoCAD 2007 Drawing (*.dwg) AutoCAD 2000/LT2000 Drawing (*.dwg) AutoCAD R14/LT98/LT97 Drawing (*.dwg) AutoCAD Praving Template (*.dwt) AutoCAD 2007 Drawing Template (*.dwt) File Safety Precautions Full-time CRC validation Maintain a log file act\$ File extension for temporary files Security Options V Display digital signature information	File Open 9 Number of recently-used files Display full path in title Menu Browser 9 Number of recently-used files 9 Number of recently-used menu actions External References (Xrefs) Demand load Xrefs: Enabled with copy Image: Comparison of the second secon
	OK Cancel Apply Help

Security Options		
Password Digital Signature		
Password or phrase to open this drawing:		
	Encrypt drawing properties	
Current encryption type:		
Microsoft Base Cryptographic Provider v1.0		
Advanced Options		
	OK Cancel Help	

2.5 Exiting AutoCAD

or

- 2. **Type** QUIT at the command prompt. Command: **QUIT**
- 3. **Press** ENTER
- 4. **Click** Yes to save changes or No to discard changes.

Chapter 3

Draw Commands

3.1 Line Command

Creates single straight line segments

1.	Choose	Draw, Line.
		or
2.	Click	the Line icon. 🖊
		or
3.	Туре	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.	Туре	U to undo the last segment
		To point: U (undo)
		or
10.	Туре	C to create a closed polygon
		To point : C (close)
		POINT
		PICK 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

Enter	
Cancel	
Recent Input	•
Undo	
Snap O <u>v</u> errides	•
💐 <u>P</u> an	
<u> </u>	
🖬 QuickCalc	

POINT

3.2 Cartesian Coordinate System

AutoCAD provides the user with an infinite two dimensional area to work with. Any entities place on the working two dimensional plane can be defined relative to the Cartesian coordinate system.

The Cartesian coordinate system divides a two dimensional plane with two perpendicular axis. The X axis runs horizontal across the bottom of the screen. The Y axis runs vertically along the left side of the screen. These two axis intersect at the bottom left corner of the screen.

Each of these axis is further divided into segments. Each segment is given a value. The X axis segments increase in value to the right. The positive X values are to the right of the intersection of the two axis. The negative X values are to the left. The positive Y values are above the intersection and increase up. The negative Y values are below.



Absolute Coordinates

1. **Type** x,y coordinate when AutoCAD asks for a point.



NOTE: If dynamic input (F12) is on, you must type the **#** sign before entering absolute coordinates (e.g.#1,1).

Relative Coordinates

1. **Type** @deltax,deltay when AutoCAD asks for a point.

From point pick point To point: @1,0 To point: @0,1 To point: @-1,0 To point: @0,-1



Polar Coordinates

1. **Type** @distance<angle when AutoCAD asks for a point. From point: pick point

> To point:@1<0 To point:@1<90 To point:@1<180 To point:@1<270



3.3 Dynamic Input

Dynamic Input provides a command interface near the cursor to help you keep your focus in the drafting area.

When Dynamic Input is on, tooltips display information near the cursor that is dynamically updated as the cursor moves. When a command is active, the tooltips provide a place for user entry.

Turning Dynamic Input ON/OFF

1. Click **Dyn** on the status bar

or

2. Press **F12**

Tip: Right-click Dyn and click Settings to control what is displayed by each component when Dynamic Input is on.



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.



3.5 Polar Tracking

Polar Snaps work independently from snaps. With Polar Snaps on, AutoCAD shows the distances and angles being displayed as the cursor moves.

1.	Choose	Tools, Drafting Settings	
		or	
2.	Туре	DDSETTINGS at the command prompt.	
		Command : DDESTTINGS	

3. **Choose** the Polar trackingTAB from the dialog box.

4.	Select	the desired incremental angle from the
		dropdown list (or create a new angle).

Drafting Settings	<u>? ×</u>
Snap and Grid Polar Tracking Object Snap Polar Tracking On (F10) Polar Angle Settings Increment angle: 30 Additional angles New Delete	Dynamic Input Object Snap Tracking Settings
Options	OK Cancel Help

- **Pick** OK to exit the dialog box.
- 6. **Draw**

5.

a LINE using the Polar Snap references.



3.6 Circles

Circle Command

Circle, Center Radius

1.	Choose	Draw, Circle.	
		or	
2.	Click	the Circle icon. 🥑	
		or	
3.	Туре	CIRCLE at the command prom	pt.
		Command: CIRCLE	Circle, Center I
4.	Туре	One of the following options: 3P/2P/TTR/< <center point="">>:</center>	
		or	
5.	Pick	A center point.	
6.	Туре	A radius or diameter.	
		or	
7.	Pick	A radius or diameter	Circle, Tangent, Tange
		Diameter/< <radius>>:</radius>	



Diameter



nt Radius



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



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



Start ,center, chord length



start, center, end



Start, end, radius



Start, center, included angle



Start, end, direction



Chapter 4

Erase and Selection Sets

4.1 Erase and Selection Sets

Erasing Objects

1.	Choose	Modify, Erase.
		or
2.	Click	the Erase icon. 📝
		or
3.	Туре	ERASE at the command prompt.
		Command : ERASE or E
4.	Pick	Object at the select object prompt.
		Select objects: (pick object)
5.	Press	ENTER when you are done choosing objects.
		Select objects: ENTER



TIP:

• If the cursor is not touching an object, AutoCAD will create a crossing or window selection as defined on the following pages.
4.2 Selection Set Options

Type one of the following options at the Select objects: prompt: (point)One object.

ALL	All objects within the drawing are selected unless they are on frozen or locked layers.
Multiple	Multiple objects selected without high lighting (faster edits).
Last	Last object.
Previous	All objects in the previous selection-set.
Group	Objects in a named group.
AUto	Automatic BOX (if pick in empty area).
Single	One selection (any type).
Add	Add mode: adds following objects to selection-set
Remove	Remove mode: removes following objects from selection-set.

Window and Crossing

Window

Objects fully enclosed within Window.



Crossing

Objects within or Crossing a window.



WPolygon

All entities within the boundaries of a polygon created by inputted points.



CPolygon

All entities within or touching the boundaries of a polygon created by input.



Fence

Objects that are crossed by a temporary line.



Remove from Selection Set

1. **Press SHIFT** and select entities to remove them from the selection set.

4.3 **OOPS**

Reinserts the last erased set of objects or block even if it was not the last command issued. Otherwise Oops acts like UNDO.

1. **Type** OOPS at the command prompt to reinsert erased objects Command: **OOPS**

4.4 Selection Preview

SELECTIONPREVIEW

Controls the display of selection previewing

Chapter 5

Basic Display Commands

5.1 ZOOM

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

1. Choose View, Zoom. or Zoom × 2. Click a Zoom icon. Q Q Q & Q Q + Q Q & or Туре 3. ZOOM at the command prompt. Command: Zoom or Z One of the following zoom options: Туре 4.

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.



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

5.3 Redraw and Regen

Redraw refreshes the current view.

1. **Type** Redraw at the command prompt Command: **Redraw** or **R**

REGEN regenerates the entire drawing and recomputes the screen coordinates for all objects. It also re-indexes the drawing database for optimum display and object selection performance.

1. TypeREGEN at the command prompt.Command: REGEN or RE

TIP: When BLIPMODE is on, marker blips left by editing commands are removed from the current viewport

Blips showing



Blips removed after redraw



5.4 Blipmode

Controls the display of marker blips. When Blip mode is on, a temporary mark in the shape of a plus sign (+) appears where points are specified. BLIPMODE is off by default.

 Type
 BLIPMODE at the command prompt.

Command: **BLIPMODE**

Chapter 6 Drawing Aids

6.1 SNAP Command

 Choose Tools, Drafting Settings... or
 Type SNAP at the command prompt. Command: SNAP or SN
 Type One of the following options: Snap spacing or

[ON/OFF/Aspect/Style/Type]:

🛓 Drafting Settings	×
Snap and Grid Polar Tracking Object Snap	Dynamic Input Quick Properties
 ✓ Snap On (F9) Snap spacing Snap X spacing: 0.5000 Snap Y spacing: 0.5000 ✓ Equal X and Y spacing 	Grid On (F7) Grid spacing Grid X spacing: D.0000 Grid Y spacing: 0.5000 Major line every: 5
Polar spacing Polar distance: 0.0000 Snap type Grid snap Rectangular snap Isometric snap PolarSnap	Grid behavior ✓ Adaptive grid ↑ Allow subdivision below grid spacing ↑ Display grid beyond Limits ↑ Follow Dynamic UCS
Options	OK Cancel Help

Turn Snap On/OFF

- 1. **Press** Function Key **F9** to turn the snap ON/OFF.
- 2. Double Click SNAP on the Status Bar. 3. Press CTRL + B.

_	•		
	L	μ	•
	L		

Click with the right mouse button on the SNAP option from the status bar as a shortcut to changing the snap settings.

ng						PolarSnap On Grid Snap On Off
		Command:	<snap< td=""><td>off></td><td></td><td>✓ Use Icons</td></snap<>	off>		✓ Use Icons
		command:	<>nap	on>	-	Settings
	_	Command:			_	Display 🕨 🕨
		11.0000, 0.0000	, 0.0000		12	

6.2 Grid Command

1.	Choose	Tools, Drafting Settings
		or
2.	Туре	DSETTINGS at the command prompt.
		Command : DSETTINGS (DS)
		or
3.	Туре	GRID at the command prompt.
		Command: GRID
4.	Туре	One of the following options:
		Grid spacing(X) or ON/OFF/Snap/Aspect <0000>:

Drafting Settings	<u>></u>
Snap and Grid Polar Tracking Object Sna	p Dynamic Input Quick Properties
🔽 Snap On (F9)	🔲 Grid On (F7)
Snap spacing Snap X spacing: 0.5000	Grid spacing Grid X spacing: 0.5000
Snap Y spacing: 0.5000	Grid Y spacing: 0.5000
☑ Equal X and Y spacing	Major line every: 5
Polar spacing	Grid behavior
Polar distance: 0.0000	Adaptive grid
Snap type	Allow subdivision below grid spacing
 Grid snap Rectangular snap Isometric snap 	 Display grid beyond Limits Follow Dynamic UCS
C PolarSnap	
Options	OK Cancel Help

Turn Grid Onyom

- 1. Press Function Key F7 to turn the grid ON/OFF. or
- 2. **Double Click** GRID on the Status Bar.

or

3. **Press** CTRL + G.

7.1 Running Object Snaps

An object snap mode specifies a snap point at an exact location on an object. OSNAP specifies running object snap modes, which remain active until you turn them off.

 Choose Tools, Drafting Settings... or
 Type DDOSNAP at the command prompt Command: DDOSNAP

or

- 3. **Click** OSNAP on the Status Bar.
- 4. **Right Click** the Object Snap TAB.
- 5. **Choose** an object snap to turn ON/OFF from the dialog box.

🏂 Drafting Settings				×	
Snap and Grid Polar Tracking Object	: Snap	Dynamic Input Quick P	roperties	_	
🔽 Object Snap On (F3)		🔽 Object Snap Tracking	g On (F11)		
Object Snap modes					
🗆 🔽 Endpoint	Ֆ	Insertion	Select All		
🛆 🗖 Midpoint	上	Perpendicular	Clear All		
🔿 🗹 Center	σ	🔲 Tangent			
🔯 🗖 Node	X	🔲 Nearest			
🔷 🗖 Quadrant	\boxtimes	Apparent intersection			
$ imes$ $ar{ullet}$ Intersection	-17	Parallel			
🔽 Extension					
To track from an Osnap point, pause over the point while in a command. A tracking vector appears when you move the cursor. To stop tracking, pause over the point again.					
Options		OK Cance	I Help		

7.2 Case by Case (Temporary Mode) Temporary track point From Mid Between 2 Points 1. Press SHIFT + the RIGHT MOUSE BUTTON. Poin<u>t</u> Filters ۲ 🥜 Endpoint 💉 <u>M</u>idpoint \mathbf{X} Intersection 🔀 Apparent Intersect ---- Extension O ⊆enter 🕸 Quadrant Ó Tangent 👃 Perpendicular 🥢 Paraļļel • No<u>d</u>e 褐 In<u>s</u>ert ≁ Nea<u>r</u>est 📈 <u>N</u>one 👖 Osnap Settings... or 2. Click one of the object snaps located Object Snap toolbar icon. Object Snap × Π. or 3. The object snap at the prompt line. Туре Command: Line From pt: ENDP To pt: MID To pt: CEN

TIP:

Case by Case objects snaps will override running mode object snaps

7.3 Osnap Settings

When you use any of the object snap settings, AutoSnap displays a marker and a Snap tip when you move the cursor over a snap point.

- 1. **Choose** Tools, Options...
- 2. **Select** the Drafting tab in the Options dialog box.
- 3. **Change** settings and choose OK.

🛃 Options	<u>? × </u>
Current profile: <> Files Display Open and Save Plot and Publish System	Current drawing: Drawing3.dwg User Preferences: Drafting Selection Profiles AutoTrack.Settings
Marker Magnet Magnet Display AutoSnap tooltip Display AutoSnap aperture box AutoSnap marker color:	Display polar tracking vector Display full-screen tracking vector Display AutoTrack toollip Alignment Point Acquisition
AutoSnap Marker Size	C Automatic C Shift to acquire Aperture Size
Object Snap Options ✓ Ignore hatch objects ✓ Replace Z value with current elevation	Drahing Toolkip Appearance Settings
[OK Cancel Apply Help

The following are object snap modes:

CENter	Center of Arc or Circle
END point	Closest endpoint of Line/Arc
INS ertion	Insertion point of Text/Block/Shape/ Attribute
INT ersection	Intersection of Lines/Arcs/Circles
MID point	Midpoint of a line/Arc or midpoint
NEAerst	Nearest point on a Line/Arc/Circle/Point
APParent Int	Finds where two entities would intersect
NODe	Nearest point entity (or Dimension defini tion point)
NONe	None (off)
PER pendicular	Perpendicular to a Line/Arc/Circle
QUA drant	Quadrant point on an Arc/Circle
QUIck	Quick mode (first find, not closest)
TAN gent	Tangent to Arc or Circle

7.4 Aperture

Controls the size and appearance of the pickbox used for object snap selection.

- Type
 APERTURE at the command prompt

 Command: APERTURE
- 2. **Type** The size of the target box (3-8 is a good size) Size of target box in pixels (1-50): (**number**)



Chapter 8 Setting Up a Drawing

List Command 8.1

1.	Choose	Tools, Inquiry, List.
		or
2.	Click	the List icon from the Inquiry Toolbar.
		or
3.	Туре	LIST at the command prompt.
		Command: LIST or LI
4.	Pick	The object or objects to list.
		Select objects: (select)
5.	Press	ENTER when you are finished choosing objects:

📰 AutoCAD Text Window - Drawing1.dwg	_ 🗆 🗙
Edit	
Command: Specify opposite corner: Command: list 1 found	<u> </u>
CIRCLE Layer: "0" Space: Model space Handle = 8b center point, X= 31.2984 Y= 16.1192 Z= 0.0000 radius 3.9230 circumference 24.6487 area 48.3478	-
Command:	

Measuring Distances 8.2

1.	Choose	Tools, Inquiry, Distance.	
		or	
2.	Click	the Distance icon from the Inquiry Toolbar.	
		or	
3.	Туре	DIST at the command prompt	
		Command: DIST	
4.	Pick	The first point to measure from	
		First point: pick point	
5.	Pick	The second point to measure to	
		Second point: pick point	

Distance Between Circle Centers



TIP:

Be sure to use Object Snaps with the MEASURE command.

Calculating Areas 8.3

1.	Choose	Tools, Inquiry, Area.
		or
2.	Click	the Area icon. 🔚
		or
3.	Туре	AREA at the command prompt
		Command: AREA
4.	Pick	The first point for area calculation
		<first point="">/Object/Add/Subtract: pick</first>
5.	Pick	Next point: pick
6.	Pick	Next point: pick
7.	Press	ENTER when you are finished choosing points.
		Area of Rectangle



Object	Allows user to pick an object to calculate area (circle or polyline).
Add	Adds separate areas for a total area calculation
Subtract	Subtracts areas from each other.

TIPS:

Be sure to use Object Snaps with the MEASURE command

To subtract an area, you must first be in "add" mode to add the first area.

ID Command 8.4

1.	Choose	Edit, Inquiry, Locate Point.
		or
2.	Click	the Locate Point Icon from the Inquiry Toolbar.
		or
3.	Туре	ID at the command prompt.
		Command: ID
4.	Pick	A point to identity
		Point : pick point
		×
at the corn	ner	

Using ID at the corner of the box rests the "0,0" origin for relative coordinates

TIP:

AutoCAD returns the X,Y, and Z coordinates as well as making this the last point entered in the drawing (to move relative from)

Be sure to use Object Snaps with the ID command.

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.

崖 Drawing Units		×
Length <u>Type:</u> Decimal Architectural Decimal Engineering Fractional Scientific	Angle Type: Decimal Degree Precisio <u>n</u> : 0 Clockwise	25
Insertion scale Units to scale inserted content: Inches		
1.5000,2.0039,0.0000 3.0000<45,0.0000		
Lighting Units for specifying the intensity International	of lighting:	
OK Cancel	Direction	<u>H</u> elp

Drawing Limits 8.6

The drawing limits are two-dimensional points in the World Coordinate System that represent a lower-left limit and an upper-right limit.

The drawing limits also govern the portion of the drawing covered by the visible grid and determine the minimum area a ZOOM All displays.

1.	Choose	Format, Drawing Limits.
		or
2.	Туре	LIMITS at the command prompt
		Command: LIMITS
3.	Туре	One of the following options On/Off/Lower left corner <.000,0.000>: 0,0
4.	Туре	One of the following options for the upper right limit:
		Upper right corner <12.0000,9.0000>: 36,24

Drawing with lower left limit of 0,0 and upper right limit of 36,24



TIP S:

You can also pick points to define the limits.

The limcheck variable controls whether or not you can draw outside the limits that are set. A setting of 0 (off) indicates that you can draw outside the limits and a setting of 1(on) indicates that you cannot.

Plot Scales and Paper Sizes 8.7

The following is an example of setting up an AutoCAD drawing for a D size sheet of paper (36 x24) with a scale of 1/16=1').

1.	Size	the object you're drawing.
2.	Border Size	36 x 24 plotted, 576' x 384' drawn.
		For some plotters, deduct a 1/2 margin on top, bottom, and left,and a 1 margin on the right.
3.	Limits	Lower left limit 0,0.
		Upper right limit 576', 384'.
4.	Text Height	for 1/8 notes, multiply by 192 which is the reciprocal of the plot scale.
		1/8 plotted, 24" drawn.
5.	Hatch Scale	for patterns other than architectural.
		Hatch Scale = 192
6.	Dimension Scale	Dimscale = 192
7.	Ltscale	Ltscale = 96

Determine your object size



Decide Border (Paper) Size



Decide the Scale Factor for Object which is at least 212', 212'. To do this, multiply the scale factor x paper size. (i.e.: 1/16"=1'-0' has scale factor 192)



Set Drawing Limits



Determine Dim Scale, Hatch Scale, Ltscale, and Text Height



Chapter 9 Plotting

Plot Command 9.1

1.	Choose	File, Plot.
		or
2.	Click	the Plotter icon. 💊
		or
3.	Туре	PLOT at the command prompt.
		Command: PLOT or PRINT
		or
4.	Press	CTRL + P

膨 Plot - Model				×
			i 4	earn about Plotting
Page setup —				
Name:	<none></none>		-	Add
Printer/plotter				1
Name:	HP Color LaserJet 2600n		-	Properties
Plotter:	HP Color LaserJet 2600n - Win	dows System	Driver - by	k— 8,5″→
Where:	USB001			
Description:				11.0
🔲 Plot to file				
Paper size —			N	umber of copies
Letter			•	1 -
∟ ⊤Plot area			Plot scale	
What to plot:			🔽 Fit to paper	
Display	T		Scale: Custom	
□ □ Plot_offset (ori	nin set to printable area)		1	inches 💌 =
v. [0.00000	0 inch Center H	e plot] -	
		io pioc	2.061	units
Y: 0.00000	00 inch		🗖 Scale	lineweights
Preview	Apply to Layout	ОК	Cancel	Help 🕥

Plot Settings

- 1. **Choose** the Plot Settings tab.
- 2. **Choose** the appropriate paper size based on the chosen plotter.
- 3. **Choose** the paper units (inches or mm).
- 4. **Choose** the drawing orientation (Portrait, Landscape, Upside down).
- 5. **Choose** the plotting area.
- 6. **Choose** the plot scale.
- 7. **Choose** plot to center or specify an x or y offset.
- 8. Click OK.

Page sebup				Plot style table	Learn about Picts s (pan eesignments)	ina I
Name	dimes	-	Add	nonochron	e.cth 💌	10
Printerpipilotte	s			Shadad vienp	ort aptions	
Nane:	🕼 ha deckjet 960o		Properties	Shade plot	As displayed	1
Plotter:	hp daskjet 960r - Windows System Drive	- by Autodask	k-a.5°→	Quality	Normal	
Wherei	US9001			Int	(30	
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					krigtooria .	
Paper son			dumber of copies		al al chailes	
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Plot area		Plot scale		E twister	anana chanta	
What to pla	B	Fit to paper		F Plot star	n an	
Deplay	•	Scala:	e 🔄	T Save cha	inges to layout	
Plot offset (a	righiset to printable area)	0.25	nches 💌 =	Drawing orient	takion	
XI 0.000	000 inch T Center the plot	12	Links	C Portrait		
	TTO inch	1.		👎 Landscap	20	Þ
20 10,000		E 24	000100000	F Plot upsk	de-down	-

Adding a Plotter 9.2

Plotter Manager Wizard

1. Choose

File, Plotter Manager

2. Double-Click

the Add a Plotter Wizard icon.



AutoCAD adds a plotter configuration to a saved plot file called ?.PC3. You can then load from this file later.

- 3. Click Next >
- 4. Choose

My Computer.

My Computer will configure a plotter using Autodesk Drivers. *System Printer* will configure AutoCAD using Window's printer drivers that are already installed.



5. Click

Next >

Choosing a Plotter Driver

6. **Choose** one of the Autodesk Plotter options.

Your purchased plotter should be listed here. If it is not, you can choose "Have Disk..." and specify a location for a plotter driver.

You can also plot to a file by choosing the DXB, Autodesk ePlot, or Raster File options.

Network Plotter System Printer	plotter documentation for a compatible plotter.	onsult your
Plotter Model Select Driver Import Pcp or Pc2 Ports	Optionally, if you have an installation disk containing an HDI driver, ch Disk. A Browse for HIF File dialog box is displayed for you to locate an HIF file attached to the HDI driver.	oose Have d install the
Plotter Name	Manufacturers Models	
Finish	Adobe AutoCAD DXB File AutoCAD DXB File Autodesk ePlot (DWF) CalComp Hewlett-Packard	
		•
	This model is supported by Adobe PostScript by Autodesk Have	Disk

Importing a .PCP or .PC2 file

7. Choose

Import File...if you wish to import a previously saved plot configuration file.

8. Click Next >

Begin Network Plotter System Printer Plotter Model Select Driver	To import plotter specific information from a previously save PCP or PC2 file, choose Import File. Paper size, plot optimization level, network share names, and port names ca be imported into the new PC3 file.	ป มา
▶Import Pcp or Pc2 Ports Plotter Name Finish	Import File NOTE: Use the Add Plot Style Table wizard to import pen assignment information. Use the Import PCP/PC2 Settings wizard to import PCP or PC2 page setup information.	

Define a Port

- 9. Choose an available port.
 NOTE: You can plot to a specific file name or "Autospool" to a file which can be automatically sent to the plotter at a later date.
- 10. Choose Next >

Begin Network Plotter System Printer Plotter Model	Plot to a port The following is a l configured device. you select.	Plot to File list of all ports av All documents	e C AutoSpool railable for the currently will be plotted to the por	rt
Select Driver	Port	Description	Printer	
Ports Plotter Name Finish	USB003 USB002 USB001 Microsoft D COM1 COM2	Local Port Local Port Local Port Local Port Local Port Local Port	EPSON Stylus Canon PIXMA hp deskjet 960c Microsoft Offic	•
	Configure P	ort	What is AutoSpool	
	Show all system	m ports and disa	ble I/O port validation	

Saving a Plot Configuration Name

- 11. **Type** the file name you wish to save.
- 12. Choose Next >
- 13. Click Finish



Plot Styles 9.3

Add a Plot Style

A plot style controls how an object or layer is plotted by determining plotted properties such as lineweight, color, and fill style. Plot style tables collect groups of plot styles. The Plot Style Table Manager is a window that shows all the plot style tables available in AutoCAD.

There are two plot style types: color-dependent and named. A drawing can only use one type of plot style table. You can convert a plot style table from one type to the other. You can also change the type of plot style table a drawing uses once it has been set.

- 1. **Choose** File, Plot Style Manager.
- 2. **Double-Click** Add a Plot Style Table Wizard icon.



- 3. Click Next >
- 4. Choose

Start from Scratch to create a new Plot Style.

You can also use a previously configured plot style, import a style from a previous release of AutoCAD, or import a pen table.

- 5. Click
- Next >

Begin	Start from scratch
	Create a new plot style table from scratch.
File name	Use an existing plot style table
Finish	Create a new plot style table based on an existing plot style table.
Ň	Use My R14 Plotter Configuration (CFG)
<u>^</u>	Import the pen table properties from a R14 CFG file.
	C Use a PCP or PC2 file
	Import the pen table properties from an existing PCP or PC2 file.

- 6. Choose Col
- 7. Click
- Color-Dependent Plot Style Table
- Next > Add Plot Style Table - Pick Plot Style Table



8. **Type** a name for the plot style table.

Next>

9. Click

Begin Table Type Browse File	Enter a file name for the new plot style table you are identify this as a plot style table file, a CTB extension appended.	creating. T will be
File name Finish	File name : ColorPlotStyle	

10. Choose

"Plot Style Table Editor..."



11. **Pick** an AutoCAD color and assign properties to it.

For example, if you want all RED objects to be plotted with a pen width of .25 mm, choose that lineweight.

- 12. **Choose** Save and Close
- 13. Choose Finish III Plot Style Table Editor - ColorPlotStyle.ctb ? × General Table View Form View Plot styles: Properties Color 1 Color 2 Color: Use object color -• Dither: Color 3 On • Grayscale: Off • Color 5 Color 6 Pen #: Automatic + Color 7 Color 8 Virtual pen #: Automatic + 🔲 Color 9 Screening: 100 + Color 10 Color 10 Color 11 Color 12 Color 13 Color 13 Linetype: Use object linetype • Adaptive: On • Color 15 Lineweight: Use object lineweight -• Line end style: Use object end style Description: -. Line join style: Use object join style • Fill style: Use object fill style • -Edit Lineweights... Save As... Add Style Delete Style

Save & Close

Cancel

Help

AutoCAD will save the file called COLORPLOTSTYLE.CBT

Named Plot Styles 9.4

1.	Choose	File, Plot Style Manager.
----	--------	---------------------------

- 2. **Double-Click** Add a Plot Style Table Wizard icon.
- 3. Click Next >
- 4. **Choose** Start from Scratch to create a new Plot Style.
- 5. Click Next >
- 6. Choose Named Plot Style Table
- 7. Click Next >
- 8. **Type** a name for the plot style table.
- 9. Click Next>
- 10. **Choose** "Plot Style Table Editor..."
- 11. **Create** names for various styles.
- 12. **Choose** Save and Close.

Name	A-Walting 🛨	AWalter	1
Description		N. 199253	
Calor	Black.	Elack	1
Enable differing	0n	0n	C
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Use assigned pen #	Automatic	Automatic	A
Virtual pen #	Automatic	Automatic	A
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CADA Thick	Screening	75		-
	Linetype.	Use object	stinetype	*
	24	daptive	Do.	*
	Lineweight	0.05	900 mm	*
Description	Line and style:	Use objec	t end style	-
	Line join style:	lise object	st join style	
	Fill style:	Use objec	z fill zkyle	•
Add Style Delete	Style Edit Linewei	gia.	Save A	ć.
	and the second se			

Chapter 10 Edit Commands

Move Command 10.1

1.	Choose	Modify, Move.
		or
2.	Click	the Move icon. 💠
		or
3.	Туре	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)



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. 3
		or
3.	Туре	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.
		Second point of displacement: (pick point) or
7.	Туре	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.

Previous Selection 10.3

Places selected objects in the Previous selection set

1.	Choose	Modify, Move.	
		or	
2.	Click	the Move icon.	
		or	
3.	Туре	MOVE at the command prompt	
		Command: MOVE or M	
4.	Pick	Objects to move.	
		Select objects: (P)	

Previous Selection Set Highlighted



TIP:

AutoCAD requires that objects be selected in order to be processed. The Select Objects prompt occurs after many commands, including the SELECT command itself.

Offset Command 10.4

Offset Distance

To offset a specified distance:

1.	Choose	Modify, Offset.
		or
2.	Choose	the Offset icon. 🖉
		or
3.	Туре	OFFSET at the command prompt.
		Command: OFFSET or O
4.	Туре	The distance to offset.
		Offset distance or <through point="">: (number)</through>
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



Offset Through Point

To offset through point :

1. Type		OFFSET at the command prompt	
		Command: OFFSET	
2.	Туре	T to specify a through point	
		Offset distance or <through point="">: (T)</through>	
3.	Pick	A point to offset through (HINT: use object snaps) Select object to offset: (pick) Through point: (select object)	

Offset through a point



EXTEND 10.5

1.	Choose	Modify, Extend.	
		or	
2.	Click	the Extend icon.	
		or	
3.	Туре	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 extend="" object="" to=""> / Project / Edge / Undo: Select an object, enter an option, or press enter : (select)</select>	
7.	Press	ENTER when you are done choosing object	S
			Lines Extended to an Arc (Arc is boundary edge)

TIP:

- Use the object selection option FENCE to choose multiple objects

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.	Туре	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 / Uno Select an object, enter an option, or press er</select>	do: nter
7.	Press	ENTER when you are done choosing objects	3
		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.

Edgemode

Controls how the TRIM and EXTEND commands determine cutting and boundary edges.

0 Uses the selected edge without an extension.

1 Extends the selected edge to its natural boundary.

MIRROR 10.7

1.	Choose	Modify, Mirror.	
		or	
2.	Click	the Mirror icon.	
		or	
3.	Туре	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.	Туре	Yes to delete the original objects and No to keep them.	
		Delete old objects? Y or N	



Mirrtext 10.8

Mirror reflects (mirrors) text if 1, retains text direction if 0.

- 1. **Type** MIRRTEXT at the command prompt. Command: **MIRRTEXT**
- 2. Type 1 to reflect the text and 0 to retain the text.Current value <0> New value: 1 or 0



AutoCAD 2D Tutorial

ROTATE 10.9

1.	Choose	Modify, Rotate.
		or
2.	Click	the Modify icon. 💍
		or
3.	Туре	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.	Туре	A rotation angle <rotation angle="">/Reference: (number)</rotation>
		or

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



Reference Angle Rotation

A positive angle causes counterclockwise rotation, and a negative angle produces clockwise rotation. If you respond to the last prompt with r, you can specify the current rotation and the new rotation you want. AutoCAD prompts:

 Type R for a rotation angle<Rotation angle>/Reference: (R)
 Choose An existing rotation angle Rotation angle: (number or points)
 Choose A new rotation angle New angle: (number or points)

TIP:

You can show AutoCAD the reference angle (by pointing to the two endpoints of a line to be rotated), and then specify the new angle. You can specify the new angle by pointing or by dragging the object.

SCALE 10.10

1.	Choose	Modify, Scale.
		or
2.	Click	the Scale icon.
		or
3.	Туре	SCALE at the command prompt
		Command: SCALE
		Select objects: (select objects)
4.	Pick	A pivot point to scale about Base point: (point)
5.	Туре	A rotation angle <scale factor="">/Reference:(number)</scale>
		or
6.	Pick	A scale factor <scale factor="">/Reference: (point)</scale>

Scale factor/Reference: (points)



Scale by Specifying Length

You can show AutoCAD the reference length (by pointing to the two endpoints of a line to be scaled), and then specify the new length. You can specify the new length by pointing, or by dragging the object.

 Type R to define a reference length Scale factor/Reference: (R)
 Choose A reference scale factor Reference length : (number or points)
 Choose A new scale factor New length: (number or points)

Chapter 11 Text

AutoCAD 2D Tutorial

Text Command 11.1

Text

Creates a single-line text object

1.	Туре	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)</start>	
		or	
4.	Туре	J to change the justification or S to change the text style.	
5.	Туре	A text height	
		Height <default>: (type value or pick two points)</default>	
6.	Туре	A rotation angle	
		Rotation angle <default>: (angle or point)</default>	
7.	Туре	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.

Text Justification 11.2

1. **Type** JUSTIFYTEXT at the command prompt

Command: JUSTIFYTEXT

or

2. **Pick** the Justify Text icon from the Text Toolbar.





Text Justifications

- A Aligns text between two designated endpoints (height and angle are not requested in this case).
- **C** Centers the text around a specified point.
- **F** Aligns the text between two designated endpoints with a specified height that varies only in its X scale factor.
- **M** Centers the text both horizontally and vertically around a specified point.
- **R** Right justifies the text at a designated endpoint.
- **S** Selects a different text style.
- TL Starts the top left portion of text at a given point.
- **TC** Centers the top center of the text at a given point.
- **TR** Ends the top of text at a given point.
- ML Starts the middle left portion of the text at a given point.
- **MC** Centers the middle of text at a given point.
- **MR** Ends the text at the middle right portion at a given point.
- **BL** Starts the bottom left portion of the text at a given point.
- **BC** Centers the bottom center portion of the text at a given point.
- **BR** Ends the bottom of text at a given point.

Text Styles 11.3

Style Command

1.	Choose	Format, Text Style	
		or	
2.	Туре	STYLE at the command prompt.	
		Command: STYLE	
3.	Pick	the Text Style icon from the Text Toolbar.	
4.	Choose	a style from the menu or create a NEW style.	
5.	Choose	a font file.	
6.	Туре	a height for the text (set to zero to vary heights)	
7.	Туре	a width factor for each character.	
		Width factor <1>: (enter)	
8.	Туре	an obliquing (slant) angle.	
		Obliquing angle <0>: (angle or enter)	
9.	Туре	Yes or No to place characters backwards. Backwards? (Y or N)	
10.	Туре	Yes or No to draw characters upside down. Upside down? (Y or N)	
11.	Туре	Yes or No to draw characters vertically	
		Style ? × Style Name Apply Standard New Rename Delete Font Cancel Help Help Font Name: Font Style: Help Up for the style	

Font Name:	Font Style:	Height:
ी∰r Swis721 LtEx BT	Light	▼ 0'-0''
📕 Use Big Font		
Effects		Preview
🔲 Upside down	Width Factor: 1.0000	
🖵 Backwards	Oblique Angle: 0	AaBbCcD
		AaBbCcD Preview

Font Files

AutoCAD supports the following font types:

.SHX	AutoCAD Fonts	
.PFB	Adobe Type I Fonts	
.PFA		
.TTF	Windows True Type Fonts	

TIP:

To replace the font globally in a drawing, type style at the command prompt and keep the same style name but replace the font file with the new font. When AutoCAD regenerates, it will replace all text drawn with that style with the new font.

Multiline Text 11.4

Mtext Command

1.	Choose	Draw, Text, Multiline Text	
		or	
2.	Pick	the Mtext icon.	
		or	
3.	Туре	MTEXT at the command prompt.	
		Command: MTEXT	
4.	Туре	One of the following options	
		Height/Justify/Rotation/Style/Width:	
		or	
5.	Pick	2Points to define the text window.	



6. **Type** text or change an MTEXT setting.

MTEXT options:

Rotation Style Height	Controls the rotation angle of the text boundary. Specifies the text style to use in paragraph text. Specifies the height of uppercase text
Direction	Specifies whether text is vertical or horizontal.
Width	Specifies the width of the text boundary.

MTEXT Editor

Text Formatting	
Standard 🛛 🔽 Swis721 LtE	xBT 🔽 2' 💌 B I 🗓 🗠 🖓 🏯 🖌 🔟 🛛 OK 📀
	i≡ a= ≥ aA Aa o @ 0/ 0.0000 ÷ a+b 1.0000 ÷ • 1.0000 ÷
	This is AutoCAD MTEXT.

Editing Text 11.5

DDEDIT

1.	Choose	Modify, Text	
		or	
2.	Click	the Edit Text icon from the Text toolbar.	Ŕ
		or	
3.	Туре	DDEDIT at the command prompt.	
		Command: DDEDIT or ED	
4.	Pick	The text to edit.	
		Select objects: (pick text)	
5.	Pick	Additional text or ENTER to end the command.	
		Select objects: ENTER	

Text Edit Dialog Box for TEXT and DTEXT Commands



Text Edit for MTEXT command

Text Formatting	
Standard 🗾 🕆 Swis	721 LIEx BT 💽 3'-4 1/8'' 💌 🖪 🗾 😰 🕫 🖙 🛱 🔽 📔 🔽 🛛 🕅 🛛 OK 🛛 📀
	1 = 1 = 1 = 2 = 3 A A3 0 @ 0/ 0.0000 ÷ a+b 1.0000 ÷ ○ 1.0000 ÷
	<u> </u>

Special Control Codes 11.6

1.

AutoCAD provides special control codes to return drafting symbols when using text.

Туре	The following characters to return equival symbol:	
	%%d	degree symbol (°)
	%%c	diameter symbol (Ø)
	%%p	plus minus symbol (±)
	%%u %%o	to start and stop underlining (<u>NOTE</u>) to start and stop overscoring
		(NUTE)

The MTEXT command has additional symbols that can be accessed by right-clicking in the MText Editor for more Special Symbols.

			Dogrees Plus/Minus Diameter	%%d %%p %%c
ext Formatting itandard ▼12 Sws721 UEx BT ▼ Z ▼ B Z U ↔ P + ■ ▼ M 0K ⊙ ■ IN 등I 〒 Ξ Ξ I= I= A= K= AA AA O @ 0/00000 ☆ a-b 1.0000 ☆ O 1.000 ▼			Almost Equal \U+ Angle \U+ Boundary Line \U+ Center Line \U+ Delta \U+ Electrical Phase \U+	\U+2248 \U+2220 \U+E100 \U+2104 \U+0394 \U+0278
This is AutoCAD MTEXT	Undo Redo	Qrl+Z Qrl+Y	Flow Une VU+E101 Identity VU+2261	
	Gut. Copy Paste	Ctrl+X Ctrl+C Ctrl+V	Initial Length Monument Line Not Equal	\U+E200 \U+E102 \U+2260 \U+2126
	Learn about MTE	XT	Omega	VU+03A9
	Show Toolber Show Toolber Show Cobins Show Cobins Show Ruler Cosaue Background		Property Line Subscript 2 Squared Cubed	\U+214A \U+2082 \U+0082 \U+0083
	Insert Field	Qtrl+F	Non-breaking Spec	e Otd+Shift+Space
	Symbol	1	Other	
	Import Text	1		

AutoCAD 2D Tutorial

Spell Check 11.7

1. Choose Tools, Spelling

or

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

Command: SPELL

3. **Pick** The text to spell check.

1

Select objects: (pick text)

4. **Choose** Change or Ignore to modify or accept the spelling of a word.

Current dictionary:	American English	i
Current word		Cance
MIEAI		<u>H</u> elp
uggestions:		
TEXT	<u>I</u> gnore	Ignore All
TEXT	<u>C</u> hange	Change All
	Add	Lookup
	Change <u>D</u> iction	naries
Context		
This is AutoCAD M1	EXT	

- 5. **Pick**
- Change Dictionaries to create your own dictionary.

Main dictionary	Apply & Clo
American English 📃	Cancel
	Help
Custom dictionary	
C:\Documents and Settings\Jennifer Bubna	
Browse	
Custom dictionary words	Add
Custom dictionary words	Add
ACAD	Add Delete
ACAD ACIS AutoCAD AutoCDM	Add Delete

Annotative Text

Use annotative text for notes and labels in your drawing. You create annotative text by using an annotative text style, which sets the height of the text on the paper.

The current annotation scale automatically determines the display size of the text in model space or paper space viewports.

For example, you want text to display at a height of 3/16" on the paper, so you can define a text style to have a paper height of 3/16". When you add text to a viewport that has a scale of 1/2"=1'0", the current annotation scale, which is set to the same scale as the viewport's, automatically scales the text to display appropriately at 4.5".

🕭 Text Style			×
Current text style: Notes Styles:	_		
	Font Font Name:	Font Style:	Set Current
STANDARD	🖗 romans.shx 💌	_	New
	Use Big Font		Delete
	Size Annotative 1	Paper Text Height	
	Match text orientation to layout	.25	
All styles	Effects		
	🔲 Upside down	Width Factor:	
AaBhCd	E Backwards	1.0000 Oblique Angle:	
	Vertical	0	
		Apply Close	Help

1. Create an Annotative text style using the **STYLE** command.

Annotative Hatch

Hatch and Gradient		×
Hatch Gradient		Boundaries
Type and pattern		Add: Pick points
Type:	edefined 💌	Add: Select objects
Pattern:	NSI31 👻	
Swatch:		Remove boundaries
Custo <u>m</u> pattern:	····	Recreate boundary
Angle and scale		Q ⊻iew Selections
Angle: <u>S</u> c	ale:	
0 96	.0000 🔽	
🗖 Double 🗖	Relative to paper space	
Spacing: 1.0	0000	Create separate <u>h</u> atches
ISO pen width:	V	Draw order:
Hatch origin		
Use current origin		Anherit Properties
O Specified origin		
Click to set new	origin	
Default to boundar	y e <u>x</u> tents	
Bottom left		
Store as default or	gin	
Preview	OK	, Cancel Help 🚺
		~

Scales

Add Scale

📐 Annotation Object Scale	×
Object Scale List	
$1/4^{\circ} = 1.0^{\circ}$	Add
1/8 = 1-0	Delete
0.25 paper units = 12 drawing units	
 List all scales for selected objects 	
C List scales common to all selected objects on	ly
	Usis 1
	нер

Change Scales





Chapter 12 Layers, Linetypes, Colors

AutoCAD 2D Tutorial

Introduction to Layers and Layer Dialog Box12.1

1.	Choose	Format, Layer.
		or
2.	Туре	LAYER at the command prompt.
		Command: LAYER (or LA)
		or
3.	Pick	the layers icon from the Layer Control box on the object properties toolbar.
		Layers ×

AutoCAD 2005

Layer Properties

	Stat Name	On	Freeze	Lock	Color	Linetype	Lineweight	Plot Style	Plot De:	scription
👾 🛫 All Used Layers	√ 0	0		2	white	Continuous	Default	Color_2	-	
		V	ŭ		white	Commous	Delaur	color_/		
arch for laver	-									1
	1									15

Layer Options 12.2

? Make Set	Lists layers, with states, colors and linetypes. Creates a new layer and makes it current. Sets current layer.
New	Creates new layers .
ON	Turns on specified layers.
OFF	Turns off specified layers.
Color	Assigns color to specified layers.
Ltype	Assigns linetype to specified layers.
Freeze	Completely ignores layers during regeneration.
Thaw	Unfreezes specified layers Ltype.
Lock	Makes a layer read only preventing entities from being edited but available visual reference and osnap functions.
Unlock	Places a layer in read write mode and available for edits.
Plot	Turns a Layer On for Plotting
No Plot	Turns a Layer Off for Plotting
LWeight	Controls the line weight for each layer

TIP:

Layers can be set using the command line prompts for layers. To use this, type –LAYER or -LA at the command prompt

- 1. Type Command: -LAYER or LA
- 2. **Type** One of the following layer options

?/Make/Set/New/ON/OFF/Color/Ltype/Freeze/Thaw:

Layer Shortcuts 12.3

Changing the Layer of an Object

- 1. **Click** Once on the object to change.
- 2. **Select** the desired layer from the Layer Control Box dropdown.

AutoCAD will move the object to the new layer.



Making a Layer Current

- 1. Click once on the Make Object's Layer Current icon.
- 2. **Select** object whose layer will become current:

Match Properties

1.	Choose	Modify, Match Properties.
		or
2.	Click	the Match Properties Icon from the Standard toolbar.
		or
3.	Туре	Command : MATCHPROP or MA
4.	Select	the object whose properties you want to copy (1).
5.	Select	the objects to which you want to apply the properties (2).

asic Properties			CTTOK
🗸 Color	ByLayer		<u>L</u>
7 Layar	A-EXTWALLS		Cancel
Z Linetype	CONTINUOUS		Help
🗸 Linetype Scale	1.0000		
Z Lineweight	ByLayer		
Thickness	0.0000		
7 PictStyle	llgsper		
pecial Properties			
Dimension	🔽 Test	P Hatch	
Polyline	☑ Viewport	🗹 Table	

Layer Previous 12.4

- 1. **Open** an AutoCAD drawing with layers.
- 2. **Turn** layers on/off.
- 3. **Zoom** or perform any AutoCAD Command.
- 4. **Type** LAYERP at the command prompt.

Command: LAYERP

or

5. Click the Layer Previous icon.



Layer States 12.5

- 1. **Choose** the layer icon.
- 2. Select various layers to be ON,OFF,FROZEN,LOCKED, etc.
- 3. **Choose** the Save State button.
- 4. **Choose** Restore State to restore the layer settings.

Layer Properties Manager								?)
<u>3</u>	🌜 🗙 🖌 Currei	nt layer: 0						
All Used Layers	Stat Name A-DOORS A-EX_ALLS A-GLAZ A-INTWALLS A-GLAZ A-INTWALLS E-FA_ATES EQUIPMENT FURNITURE PLANTS ROO_TEXT S-COLUMNS TEXT	On Freeze Image: Constraint of the second sec	Lock Color Part Mitte Part M	Linetype CON_OUS CON_OUS CON_OUS CON_OUS CON_OUS CON_OUS CON_OUS CON_OUS CON_OUS CON_OUS CON_OUS CON_OUS	Lineweight Default	Plot Style Color_1 Color_7 Color_5 Color_6 Color_6 Color_6 Color_5 Color_7 Color_5 Color_7 Color_7 Color_7 Color_7	Plot Description	
Search for layer	-							•
All: 13 layers displayed of 13 total layer	8							
Invert filter ☐ Indicate layer ✓ Apply to layers toolbar	s in use			OK	Cancel	A	pply He	lp

lame	Space	Description		New
richitectural alectrical	Model Model			Delete
				Import.
				Export
ayer settings to restr	re			
🔽 0n/011		🔽 Color		Select All
Frozen / Thew	be	🔽 Linetype	• 17	Class MI
🕅 Locked / Unio	ked	🔽 Linevei	ah —	LicarAll
🕅 Plot / No Plot		🔽 Plat styl	e	
Current VP Fro.	en / Thawed	T New VF	Prozen / The	Med
Turn off layers i	iot found in layer stab			
		Restore	Close	Help

Color Command 12.6

1. **Choose** Format, Color.

or

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

Command: DDCOLOR or COL

or

3. **Choose** Color on the Object Properties toolbar and then select a color from the list or select Other to display the Select Color dialog box.



TIP:

These settings ignore the current layer settings for color.

By Layer

If you enter bylayer, new objects assume the color of the layer upon which they are drawn.

By Block

If you enter byblock, AutoCAD draws new objects in the default color (white or black, depending on your configuration) until they are grouped into a block. When the block is inserted in the drawing, the objects in the block inherit the current setting of the COLOR command.
Linetypes 12.7

Loading and Changing Linetypes

1. **Choose** Format, Linetype...

or

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

Command: DDLTYPE or LT

3. **Choose** Load... to see a list of available linetypes.

Linelypetites		Load. Delete
Show all inetypes	•	(methiker Quient Hide getails
Summit Linetype: ByLa	yw:	
Livespe	Appearance	Description
ByGlock DONTINUOUS	8	 Conten sur-
DASHED		Doshed

- 4. Choose
- the desired linetype to assign.

File acad.lin		
Available Linetypes	Description	
ACAD IS002w100	ISO dash	
ACAD ISO03W100	ISO dash space	
ACAD ISO04W100	ISO long-dash dot	
ACAD ISO05W100	ISO long-dash double-dot	
ACAD ISO06W100	ISO long-dash triple-dot	·
ACAD ISO07W100	ISO dot	1 1 2
ACAD ISO08W100	ISO long-dash short-dash	
ACAD ISO09W100	ISO long-dash double-short-dash	
ACAD ISO10W100	ISO dash dot	
ACAD IS011W100	ISO double-dash dot	
4CAN IS012W100	ISO dash double-dot	
4		•

5. Click OK.

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Lineweights 12.8

Loading and Changing Lineweights

1. **Choose** Format, Lineweight...

or

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

Command: LINEWEIGHT or LWEIGHT

or

4. **Pick** a lineweight to make current from the Object Properties menu.

ieweignts	
—— ByLayer	A Millimeters (mm) C Inches (in)
—— ByBlock	
—— Default	🚽 🖪 🗖 Display Lineweight
0.00 mm	
0.05 mm	Default 0.25 mm
0.09.mm	– Adjust Display Scale
0.13 mm	
0.15 100	Max
	, , , , , , , , , , , , ,
Current Lineweight	- Bullauer
Carron Cinomolyn	. byEdyci

TIPS:

- Lineweights can also be assigned to layers.
- The Display Lineweights feature can be turned on/off on the status bar to show or not show lineweights in the drawing, thus making regenerations faster.

SNAP GRID ORTHO POLAR OSNAP OTRACK DYN LWT MODEL

- Lineweights are displayed using a pixel width in proportion to the realworld unit value at which they plot. If you are using a high-resolution monitor, you can adjust the lineweight display scale to better display different lineweight widths.

Object Properties 12.9

1.	Choose	Modify, Properties. or
2.	Click	the Properties icon.
		or
3.	Туре	DDCHPROP or DDMODIFY at the command prompt.
		Command: DDCHPROP (CH) or DDMODIFY (MO)
4.	Pick	Objects whose properties you want to change Pick a window for DDCHPROP, single object for DDMODIFY.
		Select objects:(select)
5.	Press	ENTER to accept objects.
		Select objects: (press enter)

6. **Choose** One of the following properties to change.

00000	0	🗈 👛 🔳 Bilarei	2	- Bullaver	Bilavei	- Th.C.M.	-
m		- x1 70			/	\sim	-
in the second		a			1		
Color	ByLaver			1.	1	1	
Lover	0						
Linatope			100		1	12	
Linetype scale	1.6303				1	1	
Plot style	ByColor		2000		1	1	
Linevelatio	Bulaver		-		100		
Hopelink							
Thechecos	D*						
and approximation		ED.					
RatX	277-0 316*						
Skart Y	157-5 318"						
Ret 7	0*						
End X	247-9 316"	1					
10011	142-27116						
End Z	D ^a						
DeltaX	-21-31	3					
CellaY	-17-2 15/16"						
CetaZ	0*	1					
Length	31-47/0*	Y	24				
Angle	217			1			
		T	· · · · ·	/			
		d b x					
		H 4 P PI Madel /La	goul (Legal)		19		21
aword prop	erties						
assid: Speci	iy opposite corner						
anazd			- 10 - 10				4 2
	water and a second second second	and managers and compared some	a part manual an application				10 10

Chapter 13 More Edit Commands

Break 13.1

1.	Choose	Modify, Break. or
2.	Click	the Breakicon.
		or
3.	Туре	$BREAK$ at the command prompt. Command: \mathbf{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**)

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- 7. **Pick** The firstbreak pointon the object Enterfirstpoint: (**point**)
- 8. **Pick** A second break point



TIP:

You can also type coordinates instead of picking a break point. Enter second point (or F for first point): **@3'<0**

If you break a circle, it changes to an arc by deleting the portion from the first point to the second, going counterclockwise.

Breaking a Polyline with nonzero width will cause the ends to be cut square.

Stretch 13.2

1.	Choose	Modify, Stretch. or
2.	Click	the Stretch icon.
3.	Туре	STRETCHat the command prompt.
		Command : STRETCH Select
		objects to stretchby window
4.	Туре	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 corpor: (noint)

Othercorner: (**point**)



- 7. **Press** ENTER to accept objects to stretch.
- 8. **Pick** A base point to stretch from Base point: (point)

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9. Pick A point to stretch to Newpoint: (point) or
 10. Type A distance to stretch. Newpoint: @1<0

TIP:

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

Fillet 13.3

1.	Choose	Modify, Fillet. or
2.	Click	the Filleticon.
3.	Туре	FILLET at the command prompt. Command: FILLET
4.	Pick	Firstobject to fillet. Polyline/Radius/Trim <select objects="" two="">: select firstobject.</select>
5.	Pick	Second object to fillet.
		Select second object: select second object.
		or
6.	Туре	One of the following options:

- **P** Fillets anentire Polyline.
- **R** Sets the filletradius.
- T Sets the trimmode (trim cuts the fillet corner and no trim keeps the fillet corner).



TIP:

- You can also fillet PARALLEL lines as well as PLINES with LINES
- Type a radius of zero (0) to create a clean 90 degree corner.

Chamfer 13.4

1.	Choose	Modify	y, Chamfer. or
2.	Click	the Ch	namfer icon.
			or
3.	Туре	CHAN	IFER at the command prompt.
		Com	nand: CHAMFER
4.	Pick	First o Polylir line>:	bject to chamfer. ne/Distance/Angle/Trim/Method <select first<br="">select firstobject</select>
5.	Pick	Secor	nd object to chamfer.
		Selec	t second object: select second object.
			or
6.	Туре	One o	f the following options:
		Р	Chamfers entire Polyline.
		D	Sets chamfer distances.
		Α	Uses a distance and angle method instead of two distances.
		т	Sets the trimmode
		М	Sets the method to distance or angle.

Chamfer with equal distances



Chamfer with different distances



Array 13.5

Rectangular Array

To draw rectangular array:

•	-
Choose	Modify, Array.
	or
Click	the Arrayicon.
	or
Туре	ARRAY at the command prompt. Command : ARRAY
Pick	Objects to array. Select
	objects : (select)
Туре	<i>The number of rows top to bottom.</i> Number of rows() <1>: (number)
Туре	The number of columns left to right. Number of columns ()<1>: (number)
Туре	The unit cell distance between items in each row. Distance between rows: (+ number=up, -number =down)
Туре	The unit cell distance between items in each column. Distance between columns: (+number=right, - number = left)
	Choose Click Type Pick Type Type Type



Unit Cell Distance Between Rows



Unit Cell Distance Between Columns

Polar Array

To draw a polar array:

1.	Choose	Modify, ARRAY.	
		or	
2.	Click	the Arrayicon.	
		or	
3.	Туре	ARRAY at the command prompt. Command: ARRAY	
4.	Pick	Objects to array. Select	
		objects:(select)	
5.	Туре	P to drawa polar array. Rectangular or Polar array (R/P): P	
6.	Pick	A center point for the array. Center point of array: pick point	
7.	Туре	The TOTAL number of items in the array. <i>Number of items</i> : number	
8.	Туре	The number of degrees to rotate the objects. Degrees to fill (+=CCW, -+CW)<360>: number	

9. **Type**

Yes or No to rotate objects.

Rotate objects as they are copied?<y> Y or N





Lengthen 13.6

1.	Choose	Modify, LENGTHEN.
		o r
2.	Туре	LENGTHEN at the command
		prompt. Command: _lengthen
		Select an object or [DElta /Percent/Total/
		Enter delta lengthor [Angle] < 0.0000>:2
		Select an object to change or [Undo]: pick object

Object before lengthen



Object after lengthen



Chapter 14 Advanced Display Commands

Transparent Commands 14.1

Transparent commands are those started while another is in progress. Precede transparent commands with an apostrophe.

1. **Type** LINE at the command prompt. Command: LINE

Specify first point: (pick point)

Specify next point or [Undo]: 'zoom

>>Specify corner of window, enter a scale factor

(nX or nXP), or

[All/Center/Dynamic/Extents/Previous/Scale/ Window] <real time>: (pick corner)

>>>Specify opposite corner: (pick other corner)



TIP:

Commands that do not select objects, create new objects, or end the drawing session usuallycan be used transparently.

Multiple Command 14.2

Multiple repeats the specified command until canceled

If you want to repeat a command that you have just used, press ENTER or SPACEBAR, or right-click your pointing device at the Command prompt.

You also can repeat a command by entering multiple, a space, and the command name, as shown in the following example:

1. Type MULTIPLE before each command



Command: multiple circle

Calculator (CAL Command) 14.3

Evaluates mathematicaland geometric expressions

1.	Туре	CAL at the command prompt. Command: cal
		(or 'cal) Initializing>>
		Expression: 1+1

2

Numeric operators

- () Groups expressions
- Indicates exponentiation
- *,/ Multiplies, divides
- +,- Adds, subtracts

Vector operators

- () Groups expressions
- & Determines the vector product of vectors (as a vector)

 $[a,b,c]\&[x,y,z] = [\ (b^*z)\ -\ (c^*y)\ ,\ (c^*x)\ -\ (a^*z)\ ,\ (a^*y)\ -\ (b^*x)\]$

- Determines the scalar product of vectors (as a real number)
 [a,b,c]*[x,y,z] = ax + by + cz
- *, / Multiplies, divides a vector by a real number a*
 [x,y,z] = [a*x,a*y,a*z]
- +,- Adds, subtracts vectors (points)

[a,b,c] + [x,y,z] = [a+x,b+y,c+z]

Converts units of measure

1. **Type** CAL at the command prompt. Command: **cal(or 'cal)**

Initializing...>> Expression: cvunit(1,inch,cm)

2.54



Determines Angles

 1. Type
 CAL at the command prompt. Command: cal (or 'cal)

 Initializing...>> Expression: ang(end,end,end)

 45

Chapter 15 Polylines

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.	Туре	PLINE at the command prompt
		Command : PLINE or PL
4.	Pick	A point on the drawing to start the polyline
		From point:(select)
5.	Туре	One of the following options Arc/Close/Halfwidth/Length/Undo/Width/ <endpoint of<br="">line>:</endpoint>
		or
6.	Pick	A point to continue drawing Arc/Close/Halfwidth/Length/Undo/Width/ <endpointof line>: (pick point)</endpointof

Polyline as one segment



PLINE options:

Arc	Toggles to arc mode and you receive the follow ing:Angle/CEnter/CLose/Direction/Halfwidth/
	Line/ Radius /Second Pt/Undo/Width/ <endpt arc="" of="">:</endpt>
Close	Closes a polyline as it does in the line command.
Halfwidth	Specifies the halfwidth of the next polyline seg ments. Can be tapered.
Length	Specifies the length to be added to the polyline in the current direction.
Undo	Undoes the previous pline segment as with the line command.
Width	Specifies the width of the next polyline segments. Can be tapered.

Polyline with arcs



Polyline with width .125



Tapered width polyline





Editing Polylines 15.2

1.	Choose	Modify, Polyline.
		or
2.	Pick	the Pediticon from the ModifyII toolbar.
3.	Туре	PEDIT at the command prompt
		Command: PEDIT
4.	Pick	Pick a polyline to edit
		SelectPolyline:(pick)
5.	Туре	One of the following options:Close/Join/ Width/Edit vertex/FitCurve/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:





PLINEGEN

Sets how linetype patterns are generated around the vertices of a twodimensional polyline. Does not apply to polylines with tapered segments.

0	Polylines are generated to start and end with a dash at each vertex
1	Generates the linetype in a continuous pattern around the vertices of the polyline.

Edit Vertex Options

1.

Туре	One of the following vertexoptions: Next/Previous/Break/Insert/Move/Regen/Straighten/ Tangent/Width/eXit <n>:</n>
Next	Moves the X to the next vertex
Previous	Moves the X to the previous vertex
Break	Remembers the currently marked vertex and allows you to move to another vertex. You can then remove the segments between these vertices. Closed plines will open.
Insert	Adds a new vertex after the currently marked vertex.
Move	Moves the location of the currently marked vertex.
Regen	Regenerates the pline. Used with the width option.
Straighten	Remembers the currently marked vertex and allows you to move to another vertex. You can then replace the segments between these vertices with a straight one.
Tangent	Attaches a tangent direction to the current vertex for later use in curve fitting.
Width	Changes starting and ending widths for the segment following the marked vertex.
eXit	Exits from editing vertices.

Editing Multiple Polylines 15.3

1. **Type**

the PEDIT at the command prompt. Command: **PEDIT**

Select polyline or [Multiple]:M

Pick multiple polylines to edit.



Explode Command 15.4



Turning Lines into Polylines 15.5

Use the PEDIT command to pick lines. AutoCAD will ask if you want to turn these lines into polylines. You can then use the JOIN option under PEDIT to join additional lines to the polyline.

1. Command: **pedit**

Select polyline or [Multiple]: **pick line** Object selected is not a polyline Do you want to turn it into one? <Y> Enter an option [Close/Join/Width/Edit vertex/Fit/Spline/Decurve/Ltype gen/Undo]: j

TIP:

• Lines and Arcs must have a common endpoint to join them together.

Chapter 16 More Draw Commands

Polygon 16.1

1.	Choose	Draw, Polygon.
		or
2.	Click	the Polygonicon. 🕜
		or
3.	Туре	Polygon at the command prompt.
		Command: POLYGON
4.	Туре	The number of sides for the polygon (3-1024)
		Number of sides < default>: number
5.	Pick	The center of the polygon. Edge/ <center of="" polygon="">: pick</center>
		or
6.	Туре	E to define the polygon by two edges.
7.	Туре	I or C to place the polygon inside or outside of an imaginarycircle. Inscribed in circle/Circumscribed about circle (I/C):

Polygon Inscribed in an imaginary circle

Polygon drawn with Edge



Polygon circumscribed around an imaginary circle





Rectangle 16.2

1.	Choose	Draw, Rectangle.
		or
2.	Click	the Rectangle icon.
		or
3.	Туре	Rectang at the command prompt Command: RECTANG Chamfer/Elevation/Fillet/Thickness/Width/
		<first corner="">:</first>
4.	Pick	first corner.
5.	Pick	other corner or type coordinates (i.e. @4,2).



Spline 16.3

The SPLINE command creates a particular type of spline known as a nonuniform 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.	Туре	SPLINE at the command prompt
		Command: SPLINE
4.	Pick	A start point for the spline
		Object / <enter first="" point="">: (pick point)</enter>
5.	Pick	Points until youare done drawing splines
		Enterpoint:(pick points)
6.	Press	Enter or close to complete the spline
7.	Pick	Starting tangentpointfor the spline
		Enterstart tangent (pick point)
8.	Pick	Ending tangent point for the spline
		Enterend tangent: (pick point)



AutoCAD 2D Tutorial

Spline options:

Object	Converts 2D or 3D spline-fit polylines to equivalent Splines
Points	Points that define the spline
Close	Closes a spline.
Fit Tolerance	Allows you to set a tolerance value that creates a smooth spline.

TIP: Refer to AutoCAD online help topic for more information on spline options.

Editing Splines 16.4



1. **Choose** Modify, Object, Spline.

TIP: Drawings containing splines use less memory and disk space than those containing spline-fit polylines of similar shape.

Covert PLINE to Spline 16.5

- 1. **Draw** a PLINE.
- 2. **Type** PEDIT to edit the polyline as a spline.
- 3. **Choose** Draw, Spline.
- 4. **Type** Object at the command prompt.
- 5. **Click** once on the polyline to turn it into a spline.



TIP: Use the LIST command to determine if an object is a PLINE or SPLINE.

Donut 16.6

Donuts are filled rings or solid-filled circles that actually are closed polylines with width.

1.	Choose	Draw, Donut.
		or
2.	Туре	Donutat the command prompt.
		Command: DONUT
3.	Туре	A value for the inside diameter.
		Inside diameter <last>: .5</last>
4.	Туре	A value for the outside diameter.
		Outside diameter < last>: 1
5.	Pick	A point for the center of the donut.
		Centerofdoughnut: (point)



Ellipse 16.7

Creates an ellipse or an elliptical arc.

1.	Choose	Draw,Ellipse.
		or
2.	Choose	the Ellipse or Partial Ellipse icon. 💿 🧿
		or
3.	Туре	ELLIPSE at the command prompt
		Command: ELLIPSE
4.	Туре	One of the following options: Arc/Center/Isocircle/ <axis 1="" endpoint="">:</axis>

Ellipse options:

Axis endpoint 1	Defines the first axis by two specified endpoints. The angle of the first axis determines the angle of the ellipse. The first axis can define either the major or the minor axis of the ellipse.
Axis endpoint 2:	<other axis="" distance=""> / Rotation: Specify a point or enter a distance</other>
Arc	Creates an elliptical arc. The angle of the first axis determines the angle of the elliptical arc. The first axis can define either the major or the minor axis of the elliptical arc.
Center	Creates the ellipse by a specified center point.
Isocircle	Creates an isometric circle in the current isometric drawing plane.
Rotation	The major axis is now treated as the diameter of a circle that will be rotated a specified amount around the axis. You enter an angle between 0 and 89.4 degrees.


Axis, Eccentricity (Axis Endpoint, Axis Endpoint, Other Axis Distance)











Multilines 16.8

MLINE Command

Creates multiple parallel lines.

1.	Choose	Draw, Multiline.
		or
2.	Туре	MLINE at the command prompt.
		Command: MLINE
3.	Pick	A point to start the multiline.
		Justification/Scale/STyle/ <from point="">: pick point</from>
4.	Pick	A second point to continue the multiline.
		<to point="">: pick point</to>
5.	Pick	The next point to continue drawing multilines. Undo/ <to point="">: pick point</to>
6.	Press	ENTER to end the mulitline
		Close/Undo/ <to point="">: press enter or</to>
7.	Туре	C to close the multiline back to the first point. Close/Undo/ <to point="">: c</to>



AutoCAD 2D Tutorial

Multiline Justifications



Multiline Styles 16.9

1.	Choose	Format, Multiline Style
		or
2.	Туре	MLSTYLE at the command prompt.
		Command: MLSTYLE
3.	Rename	The existing style called STANDARD to your newstyle.
4.	Choose	ElementProperties to change the appearance of the multilines.
5.	Choose	ADD to create the new multiline.

STANDARD WALLS	Set Current
	New
	Nodify
	Rename
Description	Delete
	Load
Descine of MALLO	Save

Description:						
Caps			Elements			
	Start	End	Offset	Color	Linetype	
Line:	Г	Г	4	BYLAYER	ByLayer	
Outer arc:	Г	Г	-4	RYLAYER	ByLayer Bul ager	
Inner arcs:	Г	Г		branch	Dycayo,	
Angle:	90.00	90.00	Add	Dele	te	
Fill			Offset:	-4.000	_	
Fill color:	None None	-	Color:	🔳 Byl	ayer	•
						-

Editing Multilines 16.10

1. **Choose** Modify, Multiline...

or

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

Command: MLEDIT

3. **Choose** From one of the mledit options:





Construction Line 16.11

Creates an infinite line.

1.	Choose	Draw, ConstructionLine or
2.	Choose	the XLINE icon.
		or
3.	Туре	XLINE at the command prompt.
		Command: XLINE
		Specifyapointor[Hor/Ver/Ang/Bisect/Offset]:

XLINE Options

- **HOR** Creates a horizontal xline passing throug haspecified point.
- **VER** Creates a vertical xline passing throug h aspecified point **ANG** Creates an xline at a specified angle.
- ANG Creates an xine at a specified angle.
- **BISECT** Creates an xline that passes through the selected angle vertex and bisects the angle between the first and second line
- **OFFSET** Creates an xline parallelto another object.



Ray Command 16.12

Creates an infinite line in one direction.

	1.	Choose	Draw, RA
--	----	--------	----------

or

2. **Type** RAYat the command

prompt.

Command: RAY

Specify a point : (pick through point)



Chapter 17 Crosshatching

BHATCH Command 17.1

1. **Choose** Draw, Hatch...

or

☆

2. **Click** the Hatchicon.

or	

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

Tupe and nattern		Add: Pick points
Туре:	Predefined	
Pattern:	ANSI31 👻	Add: Select objects
Swatch:	7777777	Remove boundaries
Custom pattern:		Recreate boundary
Angle and scale		View Selections
Angle:	Scale:	
0 💌	1.0000 💌	
C Double	Belative to paper space	Associative
		Create separate hatches
Spacing:	1.0000	Draw order:
ISO pen width:		Send behind boundary
Hatch origin		Inherit Properties
Use current orig	ji n	
C Specified origin	į.	
Click to :	set new origin	
Default to t	oundary extents	
Rottom	left 👻	

AutoCAD 2D Tutorial

BHATCHoptions:

Pattern Type	Sets the current pattern type by using
	AutoCAD's predefined patterns or user defined patterns.
Pattern Properties	Sets the current pattern, scale, angle, and spacing. Controls if hatch is double spaced or exploded.
Pick Points	Constructs a boundary from existing objects that form an enclosed area.
Select Objects	Selects specific objects for hatching. The Boundary Hatch dialog box disappears and AutoCAD prompts for object selection.
Inherit Properties	Applies the properties of an existing associative hatch to the current Pattern Type and Pattern Properties options.
Preview Hatch	Displays the hatching before applying it. AutoCAD removes the dialog box and hatches the selected areas.
Associative	Controls associative hatching.
Apply	Creates the crosshatching in the boundary.

Advanced Hatch Options 17.2

- 1. **Choose** the **Advanced...** TAB from the BHATCH dialog.
- 2. **Choose** one of the following advanced options:

Define Boundary Set

Defines the set of objects AutoCAD analyzes when defining a boundary from a specified pick point.

Hatchstyle

Specifies the method used to hatch objects within the outermost hatch bound- ary. If there are no internal objects selected, specifying a hatching style has no effect.

Boundary Options

Specifies whether or not the temporary boundary objects will be added to the drawing.

Gradient Hatch 17.3

1.

- **Choose** the **Gradient...** TAB from the BHATCH dialog.
- 2. **Choose** one of the following advanced options:





HATCHEDIT 17.4

1.	Choose	Modify, Hatch	
		or	
2.	Click	the Hatch Editicon from the Modify II toolbar.	
		or	
3.	Туре	HATCHEDIT at the command prompt.	
		Command : HATCHEDIT	
4.	Choose	One of the BHATCHoptions to modify.	
5.	Pick	The OK button.	
		Hatch Edit	

12		1.11
ch [Gredient]		Boundaries
ype and pattern-	Networks and the second	Add Pick points
ype:	Predefined 💌	Add Select objects
attern	SOLID 👻	
watch:	ByLayer V	Remove boundaries
Laton-pattern		Recreate boundary
ngle and scale		Q Vew Selections
nglé	Scale:	
· ·	1.0000	Uptore .
Ucable	🗖 fieletye lopacet space	E Sanarala batcher
in the second	1.0000	P Separation in action
per alla		Da not change T
SQ pen vidh	-	
latch origin		📃 🥒 Inheiit Properties
Use current ori	pin .	
Specified origin		
Click to	set new origin	
E Default to I	boundary extents	
Boltum	ei *	
🗐 Store as di	stault origin	

Inherit Hatch 17.5

1.	Choose	Draw, Hatch
		or
2.	Click	the Hatchicon.
		or
3.	Туре	BHATCH at the command prompt
		Command: BHATCH
4.	Choose	InheritProperties.
5.	Pick	the crosshatchofanexisting associative hatchto make the current Pattern Type and Pattern Properties options. Preview Hatch Displays the hatching before applying it.

atch Gradient		Boundari	es
Type and pattern		— 🗿 A	dd: Pick points
Туре:	Predefined 💌	A	dd: Select objects
Pattern: Swatch:	ANSI31 <u> </u>	B	emove boun <u>d</u> aries
Custo <u>m</u> pattern:		<u>7</u>	ecreate boundary
Angle and scale		<u> </u>	iew Selections
Angle:	<u>S</u> cale:	- Daliana a	
	1.0000		cistive
🗖 Doyble	Relative to paper space		te cenarate hatchec
Spa <u>c</u> ing;	1.0000	Draw ord	ler:
IS <u>O</u> pen width:	<u>_</u>	Send be	ehind boundary 🔄
Hatch origin			herit Properties
Use current origin			
C Specified origin			
Click to set n	ew origin		
Default to boun	dary extents		
Bottom left			
┍ Store as de <u>f</u> ault	origin		
-	01/		1

Chapter 18 Regions and Boundaries

Boundary Command 18.1

Defines the object type, boundary set, and island detection method for defining boundaries from points you specify.

Draw, Boundary 1. Choose or 2. Туре BOUNDARY at the command prompt. Command: BOUNDARY Boundary Creation ? × Pick Points ✓ Island detection Boundary retention 🔽 Retain boundaries Polyline -Object type: Boundary set -1 Current viewport New

0K

Cancel

Help





Region Command 18.2

Regions are two-dimensional areas you create from closed shapes or loops. Closed polylines, lines, and curves are valid selections. Curves include circular arcs, circles, elliptical arcs, ellipses, and splines.

- 1. **Choose** Draw, Region
- 2. **Type**

REGION at the command prompt.
Command: REGION
Select objects: (pick boundary)
Select objects:1 found
1 loop extracted.
1 Regioncreated.

Object created as a region



Mass Properties 18.3

Calculates the mass properties of regions or solids.

1.	Choose	Tools, Inquiry, Region/Mass Properties
2.	Туре	MASSPROP at the command prompt.
		Command: MASSPROP
		Select objects: (pick region)

REGIONS		
Area:	11.1328	
Perimeter:	16.3734	
Bounding box:	X: 3.1508 7.1352	
-	Y: 2.8950 6.8942	
Centroid:	X: 5.1508	
	Y: 4.8946	
Moments of inertia:	X: 276.6983	
	Y: 305.3510	
Product of inertia:	XY: 280.6701	
Radii of gyration:	X: 4.9854	
	Y: 5.2372	

Principal moments and X-Y directions about centroid: I: 9.9891 along [1.0000 0.0000] J: 9.9891 along [0.0000 1.0000]

Write analysis to a file? [Yes/No] <N>:

Chapter 19 Blocks and Attributes

Creating Local Blocks (BMAKE) 19.1

1.	Choose	Draw, Block, Make.
		or
2.	Click	the Make Block icon.
		or
3.	Туре	BMAKE at the command prompt.
		Command: BMAKE or BLOCK
4.	Туре	the name of the block.
5.	Pick	an insertion point.
6.	Select	objects to be included in the block definition.
7.	Click	OK.





Note You cannot use DIRECT, LIGHT, AVE_RENDER, RM_SDB, SH_SPOT, and OVERHEAD as valid block names.

Inserting Blocks 19.2

1.	Choose	Insert, InsertBlock or	
2.	Click	the Inserticon from the INSERT toolbar.	A
3.	Туре	INSERT at the command prompt.	Ŭ
		Command: INSERT	
4.	Choose	the name to insert a localblock and Brow	seto insert a
	Wbl	lock.	

5. **Choose** the insertion point, scale, and rotation of the block.

Insert		<u>?</u> ×
Name: COMPUTER	<u>B</u> rows	e
Path:		
Insertion point	Scale	Rotation
⊻ 0.0000	≚ 1.0000	Angle: 0
Y 0.0000	또 1.0000	Block Unit
≧ 0.0000	≅: 1.0000	Eactor: 1 0000
	☐ <u>U</u> niform Scale	
Explode	ОК	Cancel <u>H</u> elp

Block Inserted with a zero degree rotation angle



Block Inserted with a ninety degree rotation angle



Typing Insert (-INSERT)

1.	Туре	- INSERT at the command prompt. Command: -INSERT
2.	Туре	Block name to insert.
		Insert block name or (?) type name
3.	Pick	Aninsertion
		point. Insertion
		point: pick point
4.	Press	ENTER to keep the same x scale factor as the originalblock. X scale factor <1>Corner / XYZ:
5.	Press	ENTER to keep the same x scale factor as the originalblock.
		Yscale factor (default=X):
6.	Press	ENTER to keep a rotation
		angle of zero. Rotationangle
		<0>:
		or
7.	Pick	A rotationangle.

Control the Color and Linetype of Blocks 19.3

The objects in an inserted block can retain their original properties, can inherit properties from the layer on which they are inserted, or can inherit the properties set as current in the drawing.

You have three choices for how the color, linetype, and lineweight properties of objects are treated when a block reference is inserted.

- Objects in the block do not inherit color, linetype, and lineweight properties from the current settings. The properties of objects in the block do not change regardless of the current settings.
- For this choice, it is recommended that you set the color, linetype, and lineweight properties individually for each object in the block definition: do not use BYBLOCK or BYLAYER color, linetype, and lineweight settings when creating these objects.
- Objects in the block inherit color, linetype, and lineweight properties from the color, linetype, and lineweight assigned to the current layer only.
- For this choice, before you create objects to be included in the block definition, set the current layer to 0, and set the current color, linetype, and lineweight to BYLAYER.
- Objects inherit color, linetype, and lineweight properties from the current color, linetype, and lineweight that you have set explicitly, that is, that you have set to override the color, linetype, or lineweight assigned to the current layer. If you have not explicitly set them, then these properties are inherited from the color, linetype, and lineweight assigned to the current layer.
- For this choice, before you create objects to be included in the block definition, set the current color or linetype to BYBLOCK.

If you want objects in a block to	Create objects on these layers	Create objects with these properties
Retain original properties	Any but 0 (zero)	Any but BYBLOCK or BYLAYER
Inherit properties from the current layer	0 (zero)	BYLAYER
Inherit individual properties first, then layer properties	Any	BYBLOCK

Wblock Command 19.4

Writes objects to a new drawing file.

1.	Туре	WBLOCK at the command prompt
		Command: WBLOCK
2.	Туре	A drawing name (and location).
3.	Туре	A block name if a local block already
		exists. Block name: name or
4.	Press	ENTER to create a block.
5.	Pick	An insertion point on the object
		Insertionbasepoint: pick a point
6.	Pick	Objects to create the block.
		Select objects: pick objects

7. **Press** ENTER to end the selectionset.

Write Block	? :
Source C Block: C Entire drawing C Dijects	<u></u>
Base point Image: Pick point X: 0.0000 Y: 0.0000 Y: 0.0000 2: 0.0000	Objects Image: Below objects Image: Betain Image: Delete from drawing Image: Delete from drawing Image: Delete from drawing
Destination Eile name and path: cuments and Settings\Jen	nifer Bubnash\My Documents\new block
Insert <u>u</u> nits: Inches	OK Cancel <u>H</u> elp

Purge 19.5

- 1. **Choose** File, Drawing Utilities, Purge. or
- 2. **Type** PURGE at the command prompt Command: **PURGE**
- 3. **Choose** One of the following purge options: Purge unused Blocks/Dimstyles/LAyers/ LTypes/ SHapes/STyles/Mlinestyles/All:

Purge	? :
View items you can purge	
Vie <u>w</u> items you cannot purge	
Items not used in drawing:	55
 □ ■ All items □ □ Blocks □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	
₩ Shapes Table styles ₩ Text styles	
I I Confirm each item to be purged I Purge <u>n</u> ested items	
Purge All Close	<u>H</u> elp

Defining Attributes 19.6

1.	Choose	Draw, Block, Define Attributes
		or
2.	Туре	ATTDEF at the command prompt. Command: ATTDEF
3.	Choose	TAG to specifyeach attribute occurrence in the drawing.
4.	Choose	Prompt to fill in the prompt that the user sees when placing the attribute.
5.	Choose	Value to fill in a default value.
6.	Pick	An insertion point for each attribute

7. **Create** A block which includes the new attributes.

Mode	Attribute	
🔲 <u>I</u> nvisible	<u>I</u> ag:	
🔲 <u>C</u> onstant	Prompt:	
☐ ⊻erify		
🗖 <u>P</u> reset	Value:	<u>e</u>
Insertion Point	Text Options	
Specify <u>O</u> n-screen	Justification:	Left
⊻: 0.0000	— Text <u>S</u> tyle:	Standard 💌
Y: 0.0000	H_eight <	0.2000
∠: 0.0000	<u>R</u> otation <	
Align below previous attr	ibute definition	
Lock position in block		

Toggle the following mode settings to on or off.

Invisible	Does notdisplay, but allows extraction.
Constant	All occurrences of this Attribute have the same value.
Verify	Issues extra prompts to verifya proper value.
Preset	Does not prompt for this Attribute during Block insertion.

Editing Attributes 19.7

1.	Choose	Modify, Object, Attribu	te,Single	
		or		
2.	Click	the Edit Attribute icon fr	omthe Modify II Toolbar.	1
3.	Туре	or ATTEDIT at the comm	and prompt	
		Command: ATTEDIT		
4.	Pick The block to edit			
		Select block: pick		
		Edit Attributes		<u>?×</u>
		Block name: phone		
		Phone Extension	8-4567	
		Employee Name	Joe Smith	
		Manufacturer	ATT	
		Purchase Price	30.00	
		OK Cancel	Previous Next	Help

Block Attribute Manager 19.8

4.

- 1. **Open** a drawing with attributes.
- 2. **Type** BATTMAN at the command prompt.

Command: BATTMAN

or

- 3. Choose Modify, Object, Attribute, Block Attribute Manager or
 - Click the Block Attribute Manager icon from the Modify II Toolbar



&

splay in list		
🖊 Tag	🔲 Justification	🖵 Layer
Prompt	🔲 Height	🗖 Linetype
🗸 Default	Rotation	Color
🗸 Modes	🔲 Width Factor	🗖 Lineweight
🗂 Style	🔲 Oblique Angle	F Plot style
Select All	Clear All	
🗸 Emphasize du	uplicate tags	
	e te quistine references	

Synchronize Attributes 19.9

Updates all instances of a specified block with the current attributes defined for the block

1.	Open	a drawing with attributes.
2.	Туре	ATTSYNC at the command prompt.
		Command: ATTSYNC
3.	Click	the Block Attribute Manager icon from the 🛛 🔊
		Modify Iltoolbar.
4.	Press	Enteranoption[?/Name/Select] < Select>:
		enter and select a block with attributes.
5.	Press	ATTSYNC block computer? [Yes/No] <yes>:</yes>
		enter to synchronies. ATTSYNC complete.

Enhanced Attribute Extract 19.10

The Editor enables you to edit the attributes in an individual block as opposed to the Block Manager which is used to Block Definitions.

- 1. **Open** a drawing with block attributes.
- 2. **Choose** Tools, Attribute Extraction...

or

- 3. **Click** the Attribute Extract icon from the Modify II toolbar.
- 4. Choose
- the Current Drawing radio button and Next.

>



- 5. **Click** Next to choose Xrefs and nested blocks from the Settings window.
- 6. **Click** Next to not choose an existing template.
- 7. **Choose** the Blocks and Attributes to extract and Next.

lock	a	t with the t	Prop	sties for check	ked blocks	
	Black Name +	Display Name phone		Property + COST EXT MFG Name NAME	Display Name COST EXT NEG Name NAME(1)	Type Altibut Attibut Attibut Genetic Altibut

8. **Choose** the View output.

Quantity #	DOST	EXT	MEG	Name	NAME(1)	
1	25.00	8-7890	AIT	phone	John Doe Jack Wilson	
8	30.00	8-4557	AIT	phone	Joe Smith	
Extract attrik	ute data to	,				
ixtract attrii 17 AutoCA	ute deta to Ditable	,				Full Preview

- 9. Click
- 10. **Save** the file phone.xls
- 11. **Open** the template in Excel.

Next.

🔠 Attribute Estre	ction - Table Style (Page 5 of 6)			Attribute Extraction	- Finish (Page 6 of 6)	_ D ×
Autodesk	Table Style settings Enter a title for your table Files Select table style Standard IP Deplay tray extituation when data	reads whiching		Autodesk	Click Finish to extract the block data. If you chose to extract to a table, you will be prompted for an insertion after you click finish. If you chose to extract to an external file, the file is created when you of Finish.	point Ids
	Tit	tle			Save template If you want to save your settings for future extraction use, click Save	2
	Header	Header			template.	
	Data	Data			Save template	
	Data	Data			1 <u></u>	
	Data	Data				
	Data	Data				
		<back next=""></back>	ance A		<back c<="" finish="" td=""><td>ancel</td></back>	ancel

Chapter 20 Design Center and Tool Palettes

Design Center Overview 20.1

The AutoCAD DesignCenter finds and tranfers blocks, text styles, layers, dimensionstyles, etc from drawings, WEB

1.	Choose	Tools, AutoCAD DesignCenter.
		or
2.	Press	CTL+2 on the keyboard.
		or
3.	Туре	ADCENTER at the command prompt
		Command: adcenter



Design Center Blocks 20.2

- 1. Choose Blocks Blocks from one of the Design Center menus.
- 2. **Drag** and drop a block from the Design Center into a drawing.



TIP:

• Blocks with attributes will be prompted as they are inserted into the drawing

Hatching from the Design Center 20.3

- 1. Choose a crosshatchpattern from the following AutoCAD directory \AutoCADxxxx\Support\acad.pat or \AutoCADxxxx\Backup
- 2. **Drag** and drop a pattern into a drawing.



TIP:

• Be sure the HPSCALE is set before dropping a hatch patterninto a drawing.

20.4 Tool Palettes

- 1. **Choose** Tool, ToolPalettes Window
- 2. Choose Palettes icon from the Standard Toolbar




Chapter 21 Point, Divide, Measure

Point Styles 21.1

Changes the appearance of points and point sizes.

- 1. Choose Format, Point Style... or
- 2. **Type** DDPTYPE at the command prompt.

Command : DDPTYPE

Point Style			×
		\square	1
$\bigcirc \bigcirc$] 🕀	\boxtimes	\bigcirc
		\square	
		\square	
Point Size: 5.	0000 ative to Scre	en	%
	Cancel	, ⊦	lelp

Point Command 21.2

1.	Choose	Draw, Point, Single or Multiple Point.			
		or			
2.	Click	the Point icon.			
		or			
3.	Туре	POINT at the command prompt.			
		Command : POINT			
4.	Pick	A point on the drawing.			
		Point (point)			



Divide 21.3

1.	Choose	Draw, Point, Divide.
		or
2.	Туре	DIVIDE at the command prompt
		Command: DIVIDE
3.	Pick	Object to divide
		Select object to divide: (pick one object) You can select a single Line, Arc, Circle, or
		polyline. If you enter a segment count between 2 and 32,767, Point entities will be placed along the object to divide it into that number of equal segments.
4.	Type	The number of equal segments to divide the

Type The number of equal segments to divide the object into<Number of segments>/Block: (number)

Objects divided using points



AutoCAD 2D Tutorial

or

5.	Туре	B to specify a block instead of a point to insert.
6.	Туре	The name of the block to insert
		Block name to insert: (name)
7.	Туре	Yes or No to align the block with an object
		Align block with object? Y or N Number of
		segments:
8.	Туре	The number of equal segments to divide the object into <number of="" segments="">/Block: (number)</number>

TIP: The Block must currently be defined within the drawing. If you answer yes to the Align block? prompt, the Block will be rotated round its insertion point so that it is drawn tan- gent to the object being divided.



Objects divided using block symbols

AutoCAD 2D Tutorial

Measure 21.4

1.	Choose	Draw, Point, Measure.
		or
2.	Туре	MEASURE at the command
		prompt. Command: MEASURE
3.	Pick	Object to measure: Select object to measure: (pick one object)
4.	Туре	The length of each segment along the object.
		<lengthofsegment>/Block:(number)</lengthofsegment>
		or

5. **Type** B to specify a block instead of a point to insert.

Points placed along measured distance (remaining length is on the right side of the line)



Chapter 22 Grips

Grips Overview 22.1

Entity Grips

Entity grips allow AutoCAD drawings to be edited in an entirely new way. Without entering any edit commands, you can stretch, move, copy, rotate, scale, and mirror entities. You can also snap to geometric features such as endpoints, midpoints, centers, quadrants without entering object snaps.

Grips are the small squares that appear when objects are selected with the crosshairs directly from the command prompt.

Unselected Grip

An unselected grip is one that has not yet been picked with the cursor, but is an item in the current selection set (it is highlighted). Pick an object to see grips.



Selected Grip

A selected grip is the grip box that you select with the cursor to define the base point to edit from. It has a solid filled color and is the grip location that editing is done from.



The red grip at the line endpoint is the selected grip

Cancelling Grips

1. **Press** ESC to clear GRIPS.

TIP: If grips are visible on an object, pressing the DEL key or ERASE will delete the selected object.

How To Use Grips 22.2

- 1. **Pick** The objects you want to edit.
- 2. **Pick** One of the grips to use as the base grip.
- 3. **Press** the SPACE BAR, or RIGHTMOUSE BUTTONto cycle through the grip modes.

or

- 4. **Type** The keyword for the mode you want: Stretch(ST) Stretch the objects. Move (MO) Move the objects. Rotate (RO) Rotate the objects. Scale (SC) Scale the objects. Mirror (MI) Mirror the objects.
- 5. **Drag** The mouse to perform the operation.
- 6. **Type** C to create a new copy of the selection set enterC.
- 7. **Type** X to exit Grip mode.



Copy Multiple with Grips 22.3

If you use the COPYoption with anyone of the edit commands, a temporary auxiliary snap grid is created. To invoke the grid, hold the SHIFT keyafter specifying the location of the first copy. AutoCAD then uses the X and Yoffsets from the original entity to define the snap, grid, and rotation of the remaining entities.



Grips Settings (DDGRIPS Command) 22.4

1. **Choose** Tools,Options...

or

2. **Type** DDGRIPS at the command

prompt.

Command: DDGRIPS

3. **Choose** the Selection tab from the dialog box.

Pickbox Size Grip S □ □ Selection Preview ✓ When a command is active ✓ When no command is active ✓ Selection Selection Selection	
Selection Preview Grips ✓ When a command is active ✓ When no command is active Select ✓ Select	ected grip color:
Visual Effect Settings	olor 160 🔹 ted grip color: ed 🔹
Selection Modes Hove Image: Selection Image: Selection Image: Selection Imag	r grip color: reen Table grips nable grips within blocks nable grip tips Dbject selection limit for display of grips

Enable Grips

Enables the display of grips. AutoCAD stores this setting in the GRIPS system variable.

Enable Grips Within Blocks

Enables the display of grips on objects within blocks. If you disable this setting (but have Enable Grips selected), blocks are assigned one grip at their insertion point. Disable this setting to work on blocks with many objects. AutoCAD stores this setting in the GRIPBLOCK system variable.

Unselected

Sets the color of unselected (unfilled) grips. Choosing this button displays the Select C olor dialog box, in which you set the grip color. AutoCAD stores the color in the GRIPCOLOR system variable.

Selected

Sets the color of selected (filled) grips. Choosing this button displays the Select Color dialog, in which you set the grip color. AutoCAD stores the color in the GRIPHOT system variable.

Grip Size

Changes the size of grips. To adjust the size of grips, move the slider box left or right. AutoCAD stores the pixel size (1-255) of the grips in the GRIPSIZE system variable. Changes the size of grips. To adjust the size of grips, move the slider box left or right. AutoCAD stores the pixel size (1-255) of the grips in the GRIPSIZE system variable.

Chapter 23 Advanced Selection Commands

Selection Modes 23.1

- 1. **Choose** Tools, Options...
- 2. **Choose** the Selection TAB from the following dialog.



3. **Change** the settings as desired.

Noun/Verb Selection

Allows you to select an object before starting a command. The command affects the previously selected object or objects. You can also set this option by using the PICKFIRST system variable.

Use Shift to Add to Selection

Adds or removes an object to the selection set when you press SHIFT and select an object.

Press and Drag

Draws a selection window by selecting a point and dragging the pointing device to a second point.

Implied Windowing

Initiates the drawing of a selection window when you select a point outside anobject.

Object Grouping

Selects all objects in a group when you select one object in that group. With GROUP you can create and name a set of objects for selection.

Associative Hatch

Determines which objects are selected when you select an associative hatch. If this option is selected, boundary objects are also selected when you select an associative hatch.

Groups 23.2

- 1. **Type** GROUP at the command prompt. Command:**GROUP**
- 2. **Type** a name for a new group.
- 3. **Choose** the Newbutton under Create Group.
- 4. **Pick** objects to be included in the group.
- 5. **Press** ENTER whendone choosing objects.
- 6. **Pick** OK.

	Object Grouping	×
	Group Name	Selectable
	Group Identification	2
	<u>G</u> roup Name:	LINES
	Description:	Line Objects
	Eind Name <	Highlight < Include Unnamed
	Create Group	
	<u>N</u> ew <	☑ <u>S</u> electable ☐ <u>U</u> nnamed
Lines in a group	Change Group	
	<u>R</u> emove <	Add < Rename Re-Order
	Description	<u>Explode</u> Selectable
	OK	Cancel <u>H</u> elp
	lurr	ning Groups ON/OFF
	Ata	any time, toggle group selection
		RL+H or SHIF T+CTRL+A.

Object Selection Cycling 23.3

It is difficult to select objects that are close together or lie directly on top of one another. The following example shows two lines and a circle that all lie within the selection pickbox

1. **Press** the CTRL key before choosing objects at the

Select Objects prompt.

- 2. **Pick** repeatedly in the area where multiple objects are located. AutoCAD will cycle throughall objects that were touching the pickbox.
- 3. **Press** ENTER when the desired object highlights.
- 4. **Press** ENTERagain.

Objects touching pickbox





First object selected highlights

Second object selected



Double-Click Edit 23.4



1. **Double-Click** an object to edit.

Draw Order 23.5

1.	Choose	Tools, DisplayOrder.
		or
2.	Click	the Draworder Icon from the Modify II Toolbar.
		or
3.	Туре	DRAWORDER at the command prompt. Command: DRAWORDER
		Select objects: pick an object.



Object Filters 23.6

- 1. **Type** FILTER at the Command prompt.
- 2. Select Line in the Object Selection Filters dialog box under Select Filter.
- 3. **Choose** Add to List.
- 4. **Choose** Apply.
- 5. **Type** ALL at the Select Objects prompt or select a window.

Command:

FILTER Applying filter to selection.

Select objects: all

6 found

3 were filtered out.

Object Selection Fill	ters		×
Object Color	= Circle = 1 · Bo	ed	
•			Þ
Select Filter	✓ Select	Edit Item Delete	<u>C</u> lear List
⊻ = ▼ 1		Named Filters	-
¥ = <u>*</u>		Save As:	
Z = _	<u>S</u> ubstitute	Delete Current <u>F</u> ilter I	_ist
	ud Object /		



Quick Select 23.7

- 1. **Type** QSELECT at the command prompt. Command: **QSELECT**
- 2. **Enter** the selection criteria (i.e. TEXT HEIGHT < .5)
- 3. Choose OK.

? ×



Layer Filters 23.8

- 1. **Choose** the layer dialog box.
- 2. **Choose** the three dots (...) to invoke the filter dialog for layers.

- Named Javer filters		
Nameu layer nikers		
×	Invert filter.	
	🗋 🔤 🗖 Analy ta Ohiant Demanifas ta dhar	
	Apply to ubject Properties toolbar.	

3. **Choose** the type of filter you would like to use (e.g. layer name = 1st*)

Layer Filte	r Properties									?
kername:										
Properties Filte	1								Show exam	ple
iter definition	S									0
Status	Name	On	Freeze	Lock	Color	Linetype	Lineweight	Plat Style	Flot	
*										
4										
ter preview.	S									
Status	Name	On	Freeze	Lock	Color	Linetype	Lineweight	Plot Style	Flot	
> 0	0 Layer1	\$ \$	0	69 (9)	white white	Continuous Continuous	Default Default	Color_7 Color_7	é	8
J										2
						3	۵K.	Cano	a	Help

Point Filters 23.9

AutoCAD point filters allow the user to specify one coordinate, such as the X, with one pick and a second coordinate, such as the Y, with another pick. The point filters are .X, .Y, .XY, .XZ and .YZ. Only .X and .Y are used for two dimensional drawings.

1.	Туре	A command that asks for a point. Command: CIRCLE
2.	Туре	.X when AutoCAD asks for a point.
		3P/2P/TTR/ <centerpoint>:.X</centerpoint>
3.	Pick	The point to filter (HINT: use osnaps)
		of MID of point on x axis
4.	Pick	The next point to filter
		(needYZ)
		MID of point on y axis
5.	Pick	A diameter or radius
		Diameter/ <radius>: Pick or type a diameter</radius>



Chapter 24 External References

External Reference Files Overview

Attaches, overlays, lists, binds, detaches, reloads, unloads, renames, and modifies paths to external references (xrefs) in the current (or host) drawing.

1.	Choose	Insert, ExternalReference	
		or	
2.	Click	the Xref Iconfrom the Reference Toolbar.	rft Tr
		or	
3.	Туре	XREF at the command Prompt.	
		Command: XREF	

The following are Xref characteristics:

-An external reference file is known as an "Xref".

-Current drawing contains only a "pointer", the path and filename, to the Xref.

-The current drawing does not increase much in size when it contains an Xref.

-The Xref is reloaded each time the current drawing is loaded, thus always showing the latest revision of the Xref.

-Xrefs import their linetypes, layers, text styles, dimstyles, views, ucs's,

vports, and blocks into their current drawing.

-Each Xref named object is prefixed with the xref drawing name and a pipe "|" symbol.

(i.e. HOUSE|A-WALL for drawing house.dwg and layer a-wall)

- Xdep stands for external reference dependent objects.
- Xref's layers can be turned on/off in the current drawing.
- Layer zero(0) resides on layer zero(0) of the current drawing.
- Xrefs can be bound to the current drawing, in which case they become blocks.

-Xref layers cannot be made current the the drawing they are xreferenced into.

- Xrefs can be snapped to.
- -Xref entities cannot be individually modified in the current drawing.
- -Xrefs can be plotted.
- -Xrefs can be detatched from the current drawing and will disappear.
- -The current drawing pointer, file and pathname can be changed.
- -Xrefs can be re-loaded during the current drawing session.
- -Xrefs can be nested.
- -Xrefs can be clipped to show parts of the reference files.



Attaching Xrefs 24.1

Attaches, overlays, lists, binds, detaches, reloads, unloads, renames, and modifies paths to external references (xrefs) in the current (or host) drawing.

1. **Choose** Insert, ExternalReference

or

2. **Type** XATTACHat the command prompt.

or

3. **Click** the Xref Attach I confrom the Reference Toolbar.



4. **Choose** a drawing name to attach.

Lookin	Sample	• • 2	Q X 1 Sam	e 🕈 Taole 🔹
Ranay Alanay Secondor Frankes TTD Control Desires	Marie - Activez Design Center Dynamic Blocks Dynamic Blocks Blocks and Tables - Triperial dwg Blocks and Tables - Prior to dwg Blocks and Tables - Prior to dwg Blocks and Loke Cable with Charles Dynamic Blocks Dynamic Blocks Dynami	236 K 220 K L,740 K 201 K 2,172 K 57 K 57 K 57 K	Periev	
1	File name:		-	Quen
Battom	In the hole of			Cancel

5. **Specify** the insertion parameters.

External Reference		? ×
Name: 8th floor furniture	▼ Brows	:e
Found in: C:\Prog Saved path: C:\Prog Reference Type	gram Files\AutoCAD 2005\Sample\8 gram Files\AutoCAD 2005\Sample\8	Ith floor furniture.dwg Ith floor furniture.dwg Path type
Insertion point	Scale	Rotation Specify On-screen
X: 0.00 Y: 0.00	X: 1.00 Y: 1.00	Angle: 0 Block Unit
Z: 0.00	Z: 1.00	Factor: 1.0000
	ОК	Cancel Help

Xref Layers 24.2

Layer Dialog Box

-Each Xref named object is prefixed with the xref drawing name and a pipe "]" symbol. (i.e. HOUSE|A-WALL for drawing house.dwg and layer a-wall)

-Xdep stands for external reference dependent objects.

-Xref's layers can be turned on/off in the current drawing.

-Layer zero(0) resides on layer zero(0) of the current drawing.

-Xref layers cannot be made current the the drawing they are xreferenced into.

		10n	Freeze	Look	Color	Linetune	Linowoight	Dic 🔺
All Used Layers	0 8th floor furnitureIA-EURN-3-WKSE	0			white	Continuous	Defaul	Co
	 Sth floor furnitureIA-FURN-P-FILE 	Q	ŏ	2	blue	Continuous	0m	Co
	 8th floor furniture A-FURN-P-FREE 8th floor furniture A-FURN-P-FREE2 	Å	ö	10 10	200	Continuous	0m	
	 8th floor furniture A-FURN-P-PEDS 8th floor furniture A-FURN-P-PHWL-46 	0 0 0	8	93 93	blue red	Continuous Continuous	— 0m — 0m	Col Col
	 8th floor furniture A-FURN-P-PHWL-462 8th floor furniture A-FURN-P-SEAT 	8	0	1) 1)	red cvan	Continuous Continuous	— 0m	Col Col
	8th floor furniture/A-FURN-P-SEAT-T 8th floor furniture/A-FURN-P-STOR	⁰	ĕ	ng Ma	cyan	Continuous	— 0m	Col
	 Sth floor furniture A-FURN-P-WKSF Sth floor furniture IA-FURN-P-WKSF 	8 A	ğ	2	200	Continuous	0m	Col
	 8th floor furniture/A-FURN-P-WKSF2 8th floor furniture/A-FURN-P-WKSF2 	8 V	ö	2	200	Continuous	0m	Col
	 8th floor furniture COMPUTER-P3 8th floor furniture COPIER-XRX 	8	8	19 19	yw yw	Continuous Continuous	— 0m	Col Col
	 8th floor furniture E-LITE-CIRC-NEWW 8th floor furniture E-TEXT 	8	8	93 93	red 71	Continuous Continuous	— 0m — 0m	Col
Search for layer		Č	~	~	 71	<u></u>	^	3 L
All: 72 layers displayed of 72 total lay	vers							

Xclip 24.3

Defines an xref or block clipping boundary and sets the front or back clipping planes.

1.	Choose	Modify, Clip, XRef			
		or			
2.	Click	the Xclip Iconfrom the Reference To	olbar. 📎		
		or			
3.	Туре	XCLIP at the command prompt.			
		Command: XCLIP Select objects:			
		Other corner: 1 found Select objects	:		
		pick reference file			
		ON/OFF/Clipdepth/Delete/generate Polyline/			
		<new boundary="">:</new>			
		Specifyclipping boundary:			
		Select polyline/Polygonal/ <rectang< th=""><th>ular>: First corner:</th></rectang<>	ular>: First corner:		
		Other corner: pick corners	Defining a Clipping Boundary		



Xclipframe 24.4

Controls visibility of xref clipping boundaries.

1.	Choose	Modify, Object, ExternalReference.
		or
2.	Туре	XCLIPFRAME at the command prompt.
		Command: XCLIPFRAME
	0	Clipping boundary is not visible
	1	Clipping boundary is visible

Turning xclip frame on/off



Binding an Xref 24.5

Converts Xreference files to block definitions in the current drawing. Associ- ated objects change names (i.e. the layer called HOUSE|A-WALL becomes HOUSE\$0\$A-WALL). Binding looses the connection to the referenced file. Xrefs can also be inserted like Wblocks.

To Bind an Xref:

- 1. **Choose** Insert,Xref Manager
- 2. **Choose** an xref name.
- 3. **Choose** the Bind option.

Reference Name	Sta	itus	Size	Туре	Date	Attach
8th floor furniture 8th floor plan	M 	Needs reloading Loaded - recent changes	253 210	Attach Attach	2/10/200. 6/1/2005.	Detach
						Reload
						Unload
						Bind
<u>دا</u>					•	Open
Xref Found At						
C:\Program Files\Au	toCA	D 2005\Sample\8th floor furi	niture.dwj	,	Browse	Save Path

- 4. **Choose** Bind or Insert.
- 5. Choose OK.



Xbind 24.6

The XBIND command is used to bind layers, blocks, linetypes, styles, and dimstyles of an attached xref without binding the entire xref.

1.ChooseModify, Object, External
Reference, Bind....
or2.Clickthe Xbind Icon from the Reference Toolbar.3.TypeXBIND at the command
prompt.
Block/Dimstyle/LAyer/LType/Style:

8

Xbind		<u>? ×</u>
Xrefs The second secon	Add -> Contraction of the second s	Cancel
		Cance

Editing Xrefs (Xref Manager) 24.7

Detaching Xrefs

Detaches one or more xrefs from your drawing, erasing all instances of a specified xref and marking the xref definition for deletion from the symbol table.

- 1. **Choose** a drawing name to detach from the Xref Dialog.
- 2. **Choose** the Detachoption.

Unload an Xref

Unloads one or more xrefs. Unloaded xrefs can be easily reloaded. Unlike detach, unloading does not remove the xref permanently. It merely sup- presses the display and regeneration of the xref definition, to help current session editing and improvement of performance.

- 1. **Choose** a drawing name to unload from the Xref Dialog.
 - 🛺 Xref Manager ? X Reference Name Status Size Туре Date Saved Path Attach.. 付 8th floor furniture 🌱 Needs ... 253... Overlay 2/10/200... C:\Program F Detach 🛅 8th floor plan 🔩 Loade... 210... Attach 6/1/2005... 8th floor plan Reload Unload Bind... + Open Xref Found At C:\Program Files\AutoCAD 2005\Sample\8th floor furniture.dwg Browse. Save Path 0K Cancel Help
- 2. **Choose** the Unload option.

Reload an Xref

Marks one or more xrefs for reloading. This option re-reads and displays the most recently saved version of the drawing.

- a drawing name to reload from the Xref dialog. 1. Choose
- 2. Choose the Reload option.

Opening Xrefs to Edit

Modify, Xref and Block Editing, Open Reference. 1. Choose

or

- Modify, Xref and Block Editing, Edit Xreference in Place. 2. Choose
- the objects as desired. 3. Edit
- Refedit 4. Save the edits with the following icons. 1 8th floor plan ta ta ն ն

X

			Properties Match Prop Object Clin	erties		A/
eference Edit				?×,	Open Ref	erence
entify Reference	Settings or plan Th floor pla Th floor pla Th floor pla Th floor pla Th floor pla	- Preview			Edit Refer Add to W Remove f Save Ref Close Ref	rence In-Place orking set rom Working set erence Edits erence
Path: C:\Prog	}th floor pla ▼ pram Files\AutoC	XD 2005\Sample\8t	n floor plan.dwg			

Overlay an Xref 24.8

Overlays are typically used when you need to view another drawing's geometry temporarily, but don't plan to plot using that data. In the following illustration, several people are working on drawings referenced by master.dwg. The person working on a.dwg needs to see the work being completed by the person working on b.dwg, but does not want to xref b.dwg because it would then appear twice in master.dwg. Instead, the person overlays b.dwg, which is not included when a.dwg is referenced by master.dwg.



1. **Choose** the Attach option from the Xref Dialog.

or

- 2. **Click** the Xref Attach I confrom the Reference Toolbar.
- 3. **Choose** a drawing name to attach.
- 4. **Choose** Overlayin the AttachXrefdialog box under Reference Type.
5. **Specify** the insertion parameters.

			1	<i>د</i> لند.
Name: 8th floo	r furniture		Browse	
Found in:	C:\Program F	Files\AutoCAD 2005\9	ample\8th floor furniture.d	lwg
aved path: Reference Type	U: \Program r	Illes VAUTOLAD 2005 (S	ampie votin rioor rurniture.c	IWg
C Attachment C Overlay		Overlay	Full path	•
Insertion point → Specify On-s X: 0.00 Y: 0.00 Z: 0.00	creen	Scale Specify On-scre X: 1.00 Y: 1.00 Z: 1.00 Image: Uniform State	en Factor: 1.	Dn-screen nitless
			DK Cancel	Help

Chapter 25 Raster Images

Inserting Images 25.1

- 1. **Choose** Insert, Raster Image...
- 2. **Choose** a raster image file to insert.
- 3. **Specify** a location to insert the image.

or

4. **Type** IMAGEATTACHat the command prompt. Command: **IMAGEATTACH**

or

5. **Click** the Image iconfrom the Reference Toolbar.

J .	

Look in: 🛛 🖾	Temp		 3 1 	📂 🛄 •	0 🕵 🐯	Hide preview
downtown					Preview	o
ile name:	downtown			Open	(1770)	
iles of type:	All image files All image files		~	Cancel		
	GIF (*.gif) IG4 (*.ig4)					
	GE 05/C017 (00) IG4 (*.ig4) IG5 (*.ig4) IG5 (*.ig5) JFIF (*.ip6) PCX (*.pcx) PICT (*.pct) PNG (*.png) RLC (*.rlc) TGA (*.bca)	🖬 Imag	e			2
	GE (*. joř) IG4 (*. joř) IG4 (*. joř) IG5 (*. joř) JFIF (*. joř) PCX (*. por) PCT (*. por) PICT (*. por) PICT (*. for) TGA (*. tor) TIFF (*. tif)	la Imag	e downtown	(Browse	Retain Path
	GE (*, gif) GIF (*, gif) IGS (*, ig4) IGS (*, ig4) IGS (*, ig9) PCX (*, pc9) PCX (*, pc1) PNG (*, pc1) PNG (*, pc1) RLC (*, ic6) TGA (*, iga) TIFF (*, itf, *, tiff)	Rame: Path:	e downtown C:\CMUCourses\4	8-568-Fall04\Course	Browse	. ✓ Retain Path
	GE 05/07 (*.60) GF (*.ig4) IGS (*.igs) JFIF (*.ipg) PCX (*.pcx) PICT (*.pct) PICT (*.pct) PIC (*.rlc) TGA (*.tga) TIFF (*.tif,*.tiff)	■ Imag Name: Path:	e downtown C:\CMUCourses\4	8-568-Fall04\Course Scale	Browse eDocu	Petain Path ∩ Rotation
	GEDSPOT (bi) GIF (*.ig4) IGS (*.ig4) IGS (*.ig9) PCX (*.pc9) PCX (*.pc9) PICT (*.pc1) PNG (*.pn9) RLC (*.lc) TGA (*.tga) TIFF (*.tif.*.tiff)	■ Imag Name: Path: □ Sp	e downtown C:\CMUCourses\4 on point weally on-screen	8-568-Fall04\Course Scale Scale	Browse eDocu	Retain Path
	GE DSPOT (bij GF (*.ig4) IGS (*.ig4) IGS (*.igs) JFIF (*.ipg) PCX (*.pct) PICT (*.pct) PICT (*.pct) PICT (*.pct) TGA (*.tc) TGA (*.tga) TIFF (*.tir,*.tiff)	Name: Path: Sp X:	e downtown C:\CMUCourses\4 on point ecify on-screen 0.0000	8-568-Fall04\Course Scale Scale Speci 1.0000	Browse eDocu	Retain Path Rotation Specify on-screen Angle: 0
	GE (*. gif) GIF (*. gif) IG4 (*. ig4) IG5 (*. ig9) JFIF (*. ipg) PCX (*. pct) PNG (*. pct) PNG (*. pcg) RLC (*. rlc) TGA (*. trga) TIFF (*. tif, *. tiff)	Name: Path: Insertic Sp X: Y: Z:	e downtown C:\CMUCourses\4 on point ecify on-screen 0.0000 0.0000	8-568-Fall04\Course Scale Specil 1.0000	Browse eDocu	Retain Path Rotation Specify on-screen Angle: 0
	GE DSPOT (bij GF (*ig4) IG4 (*.ig4) IG5 (*.igs) JFIF (*.ipg) PCX (*.pct) PNG (*.prg) RLC (*.rlc) TGA (*.tc) TIFF (*.tir,*.tiff)	Name: Path: Insertic Sp X: Y: Z:	e downtown C:\CMUCourses\4 on point ecify on-screen 0.0000 0.0000 0.0000	8-568-Fall04\Course Scale Scale 1.0000	Browse eDocu iy on-screen	Retain Path Rotation Specify on-screen Angle: q

Image Appearance 25.2

Adjusting Image Appearance

- 1. **Choose** Modify, Object, Image, Adjust...
- 2. **Choose** a raster image file edit.
- 3. **Choose** options from the dialog box to adjust.

Brightness				downtown
Dark		Light	77	
Contrast				
Low		High	50	and gradient
Fade				1200 1948
Min	<u> </u>	Мах	23	



Image Transparency

1.	Choose	Modify, Object, Image, Transparency,

- 2. **Choose** a raster image file edit.
- 3. **Type** ON or OFF to turn an image's transparency on or off.

Erasing Images

- 1. **Click** once on the image to remove.
- 2. **Choose** Edit, Cut.

Imagequality

 Type
 IMAGEQUALITY at the command prompt. Command: imagequality

 Enter image quality setting [High/Draft] <High>:

Clipping Images 25.3

- Y A Model (Layout1 (Layout2)
- 1. **Choose** Modify, Clip, Image.

Chapter 26 Dimensioning

Linear Dimensions 26.1

	1.	Choose	e Dimension, Linear.	
			or	
	2.	Click	the Linear Dimension command from the toolbar.	
⊢ * _⊁	<i>C</i> :	¥ 03(> <u>^ द</u> ⊨ H1 ፲፬ ± ● 1 ⊕ ↓ ↓ ↓ ▲ 云 Standard	





Aligned Dimensions 26.2

1.	Choose	Dimension, Aligned.
		or
2.	Click	the Aligned Dimension command from the toolbar.
⊢қ₽	# 030 <u>1</u> 75	・ 〒 🏥 🕂 🝽 🕂 🏷 🖓 🗛 🔂 Standard 💽 🚅
		or
3.	Туре	DIM at the command prompt.

Command: DIM

Dim: ALIGNED



Radial Dimensions 26.3

1.	Choose	Dimension, Radius or Diameter.
		or
2.	Click	the Radial Dimensions command from the toolbar.
⊢⊀,	C# 0301 5	וֹדִי וייו וְשָׁו וּדָי וּאָ וּדָין ווּשָׁו וּדָי וּאָ וּדָין און Standard עובן אַין אַ אַן אַין אַ אַן אַ
		or
3.	Туре	DIM at the command prompt.
		Command: DIM
		Dim: RADIUS or DIAMETER
	ø4.00-	-R0.50

Angular Dimensions 26.4

1.	Choose	Dimension, Angular.
		or
2.	Click	the Angular Dimensions command from the toolbar.
\bowtie	C#10301	片 베 🎞 🛨 🕶 🕂 🖅 🔨 🖂 🎝 🕞 🗍 Standard 🛛 💌 🚄

or

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

Command: DIM

Dim: ANGULAR



Continued and Baseline Dimensions 26.5

1. Choose	Dimension, Continue or Baseline.
	or
2. Click	the Continue or Baseline Dimensions command from the toolbar.
$H \checkmark \mathscr{C} \Downarrow 0 \land 0 \land \natural$	키 뉴 바케 🎘 🛨 편 🕂 🖅 🔨 📈 🎮 🟹 Standard 🛛 💌 🛋
	or

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

Command: DIM

Dim: CONTINUE or BASELINE



AutoCAD 2D Tutorial

Leaders 26.6

1.	Choose	Dimension, Leader
		or
2.	Click	the Leader icon from the Dimension toolbar.
H4,	C#103011	루 바케 ፲፱ 🛨 🕶 🕂 🖓 🕂 🕰 🎮 굿 Standard 🛛 🔽 🚄
		or

3. **Туре**

QLEADER at the command prompt.

Command: **QLEADER**



Leader Settings

1.	Туре	QLEADER at the command prompt. Command: QLEADER
2.	Туре	"S" at the QLEADER prompt to change the leader settings.
3.	Choose	a setting from the following dialog box.

Annotation Type	MText options:
C Copy an Object	Always left justify
C <u>T</u> olerance	Frame text
C Block Reference	Annotation Reuse
(N <u>o</u> ne	C Reuse Next
	C Reuse Current

Quick Dimensions 26.7

Quickly creates dimension arrangements from the geometry you select.

1.	Choose	Dimension, QDIM.
		or
2.	Click	the Quick Dimension icon from the Dimensions toolbar.
\bowtie	12 12 0 3 0 1 K	히 뉴 베베 ፲፱ 🕂 🝽 🕂 🖅 ∿ 🖓 🕰 🗟 Standard 🛛 🔽 🚄

		or
3.	Туре	QDIM at the command prompt.
		Command: QDIM
4.	Pick	the objects to dimension.

 ▲
 4.00
 ▲
 3.00
 ▲

Modifying Dimensions 26.8

DDEDIT

1.	Choose	Modify, Object, Text.
2.	Choose	the dimension text to modify.

TIP: The actual dimension is placed in brackets <>. Text can be placed in front of or behind these brackets. If text is placed between the brackets, the dimension loses its associative properties.



Stretching Dimensions

- 1. **Choose** Modify, Stretch.
- 2. **Choose** a crossing window around the area to stretch. Be sure to include the dimension endpoints.

DIMTEDIT

Moves and rotates dimension text

- 1. **Choose** Dimension, Align Text. or
- 2. **Type** DIMTEDIT at the command prompt.
 - Command: DIMTEDIT

Select dimension: select object

Enter text location (Left / Right / Angle):

Dimension Edit Commands

HOMetext	Moves the Dimension text back to its home (default) position.
NEWtext	Modifies the text of the Dimensions.
Rotate	Rotates dimension text.
OBlique	Sets the obliquing angle of Dimension extension lines.
OVerride	Overrides a subset of the Dimension variable settings.
UPdate	Redraws the Dimensions as directed by the current
	settings of all dimensioning variables.

Ordinate Dimensions 26.9

1.	Choose	Dimension, Ordinate or
2.	Туре	DIMORDINATE at the command prompt.
		Command: Dimordinate

Chapter 27 Dimension Styles

Creating Dimension Styles 27.1

1.	Choose	Format, Dimension Style
		or
2.	Choose	Dimension, Style.
		or
3.	Choose	Dimension Style icon from the Dimension Style toolbar.
╘┤╶╲╸	£#103€	및 <u>소</u> 당히 뉴 바바 ፲፱ ±+ ₩□ ④ 당 +∿ 욘 욘 당 Standard ▼ 굗
4.	Туре	DDIM at the command prompt Command: DDIM
5.	Choose	New from the dialog box.
6.	Create	a new style from the existing styles.
		Create New Dimension Style New Style Name: ARCH Start With: Standard Use for: All dimensions Continue Cancel
7.	Click	the Continue button.

TIP:

All dimension variables except for DIMSHO and DIMASO can be saved as a style.

Lines and Arrows 27.2

Edits Dimension Lines, Extension Lines, and Arrows.

1. **Pick** the Lines and Arrows tab from the Dimension Variables and Styles dialog box.

Dimension miles		1	_
Color:	ByBlock	- 1.02 -	
Linetype:	ByBlock		
Lineweight:	ByBlock		2
Extend beyond ticks:	0.0000		1
Baseline spacing:	0.3800		>
Suppress: 🔲 Dim li	ne 1 🛛 🗖 Dim line 2	R0.80	
Extension lines			
Color:	ByBlock	Extend beyond dim lines: 0.1800	Ī
Linetype ext line 1:	ByBlock	Offset from origin: 0.0625	÷
Linetype ext line 2:	ByBlock		
Lineweight:	ByBlock	I Fixed length extension lines	-
Suppress: Ext.lir	ne 1 🔲 Extline 2	Length: 0.1800	Ŧ

	1.02
First:	
E Closed filled	
Second:	
Closed filled	
Leader:	60° / `
E Closed filled	
Arrow size:	R0.80
0.1800	Arc length symbol
	Preceding dimension text
Jenter marks	C Above dimension text
C None Size:	○ None
• Mark 0.0900	E Badius dimension iog
<u></u>	
Line	Jog angle: 4J

Text 27.3

Edits Text Appearance, Text Placement and Text Alignment.

1. **Pick** the Text tab from the Dimension Variables and Styles dialog box.

ines Symbols and Arrows	Text Fit Primary Units Alternate	Units Tolerances
Text appearance Text style: Sta Text color: Fill color: Text height: Fraction height scale:	idard T 3yBlock T None T 0.1800 T 1.20 1.20 R0.80 T T R0.80 T	+ 60°
Text placement Vertical: Cen Horizontal: Cen Offset from dim line:	ered C Aligned C ISO star 0.0900	tal with dimension line ndard

Primary Units 27.4

Edits Unit options for dimension's primary units.

1. **Pick** the PRIMARY UNIT tab from the Dimension Variables and Styles dialog box.

Linear dimensions —		
Unit format:	Decimal	- 1.02 -
Precision	0.00	
Fraction format:	Horizontal	1.20
Decimal separator:	V (Period)	
Round off:	0.0000	
Prefix:		- R0.80 -
Suffix:	Γ	Angular dimensions
Measurement scale		Units format: Decimal Degrees
Scale factor:	1.0000	
Apply to layout of	dimensions only	
Zero suppression	E and	
	I official and a	
I I railing	I ∪ inches	_ I railing

Alternate Units 27.5

Edits Unit options for dimension's alternate units.

1. **Pick** the ALTERNATE UNIT tab from the Dimension Variables and Styles dialog box.

Alternate units Alternate units Unit format: Precision Multiplier for alt units: Round distances to: Prefix: Suffix:	→ 1.02 → 1.0	60°
Zero suppression C Leading T Leading C O fee T Trailing C 0 incl	After primary value C Below primary value	

Tolerances 27.6

Edits Unit options for tolerances.

1. **Pick** the TOLERANCES tab from the Dimension Variables and Styles dialog box.

l olerance format	-		> [
Method:	None		
Precision	0.00		\sim
Upper value:	0.0000		+ 60* 2.02
Lower value:	0.0000		$\leq 1 $
Scaling for height:	1.0000	Alternate unit tole	erance
Vertical position:	Middle	Precision:	0.00
Zero suppression		Zero suppressio	on
	🔽 0 feet	Leading	🔽 0 feet
🗖 Trailing	🔽 0 inches	🗖 Trailing	🔽 0 inches

Fit 27.7

Edits Unit options for fitting dimensions and dimension scales.

1. **Pick** the FIT tab from the Dimension Variables and Styles dialog box.

If there isn't enough room to place both text and arrows inside extension lines, the first thing to move outside the extension lines is: Either text or arrows (best fit) Arrows Text Both text and arrows Always keep text between ext lines Suppress arrows if they don't fit inside	
extension lines Text placement When text is not in the default position, place it: Beside the dimension line Over dimension line, with leader Over dimension line, without leader	C Scale dimensions to layout Fine tuning Place text manually Draw dim line between ext lines

Dimscale 27.8

Edits Unit options for fitting dimensions and dimension scales.

1. **Pick** the FIT tab from the Dimension Variables and Styles dialog box.



Dimension Overrride 27.9

1.	Choose	Dimension, Override.
2. Туре		a dimension setting to change (i.e. DIMSE1 which suppresses the first extension line).
		Command: _dimoverride
		Enter dimension variable name to override or [Clear overrides]: dimse1
3.	Set	the new value.
		Enter new value for dimension variable <off>: on</off>
4.	Press	enter.
5.	Pick	the dimension to override.

Dimension Variables 27.10

1.	Туре	SETVAR at	the command prompt.
		Command: SE	ETVAR
		Enter variable	name or [?]: ?
		Enter variable	(s) to list <*>: dim *
		DIMADEC	0
		DIMALT	OFF
		DIMALTD	2
		DIMALTF	25.4000
		DIMALTRND	0.0000
		DIMALTTD	2
		DIMALTTZ	0
		DIMALTU	2
		DIMALTZ	0
		DIMAPOST	""
		DIMASO	ON
		DIMASSOC	1
		DIMASZ	0.1800
		DIMATFIT	3
		DIMAUNIT	0
		DIMAZIN	0
		DIMBLK	"ArchTick"
		DIMBLK1	
		DIMBLK2	""
		DIMCEN	0.0900
		DIMCLRD	0
		DIMCLRE	0
		DIMCLRT	5
		DIMDEC	1
		DIMDLE	0.1250
		DIMDLI	0.5000

- 243 -

	"."	
	0.1800	
	0.1250	
DIMFIT	3	
DIMFRAC	0	
DIMGAP	0.0900	
DIMJUST	0	
DIMLDRBLK	"Open90"	
DIMLFAC	1.0000	
DIMLIM	OFF	
DIMLUNIT	4	
DIMLWD	-2	
DIMLWE	-2	
DIMPOST		
DIMRND	0.0000	
DIMSAH	OFF	
DIMSCALE	1.0000	
DIMSD1	OFF	
DIMSD2	OFF	
DIMSE1	OFF	
DIMSE2	OFF	
DIMSHO	ON	
DIMSOXD	OFF	
DIMSTYLE	"ARCH"	(read only)
DIMTAD	1	
DIMTDEC	1	
DIMTFAC	1.0000	
DIMTIH	ON	
DIMTIX	OFF	
DIMTM	0.0000	

DIMTMOVE	0
DIMTOFL	OFF
DIMTOH	ON
DIMTOL	OFF
DIMTOLJ	1
DIMTP	0.0000
DIMTSZ	0.0000
DIMTVP	0.0000
DIMTXSTY	"Standard"
DIMTXT	0.1800
DIMTZIN	0
DIMUNIT	4
DIMUPT	OFF
DIMZIN	0

Chapter 28 Views and Viewports

Named Views 28.1

Ddview Command

1. **Choose** View, Named Views...

or

2. **Click** the Named View icon from the View toolbar.



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

Command: DDVIEW

膨 View Manager			×
Current View: Current			
Views			
Current	View	^	Set <u>⊂</u> urrent
Model Views	Camera X	4.1952	
Layout views	Camera Y	5.7032	<u>N</u> ew
Fiese views	Camera Z	0.1578	Lindate Lavers
	Target X	4.1952	opasso Bayoro
	Target Y	5.7032	Edit <u>B</u> oundaries
	Target Z	-0.8422	Delete
	Roll angle	0	Delete
	Height	7.0472	
	Width	12.5254	
	Perspective	Off	
	Lens length (mm)	50.0000	
	Field of view	40	
1			
	OK	Cancel	Apply <u>H</u> elp

- 4. **Choose** the NEW button.
- 5. **Type** a view name.
- 6. **Choose** Current display or Define Window.

View name: PLAN
View category:
View type: Still
View Properties Shot Properties
Boundary
C Current display
Settings
UCS:
Vione >
Current
Background
Current override: None
OK Cancel Help

Typing the View Command

1.	Туре	View at the command prompt. Command: -VIEW
2. Type		One of the following view options:
		?/Delete/Restore/Save/Window:

View options:

?	Lists the named views for this drawing
Delete	Deletes the named view
Restore	Displays the specified view
Save	Attaches a name to the current view of the drawing
Window	Attaches a name to specified window

Plotting Named Views

		i 4	earn about Plotting
Page setup			
N <u>a</u> me:	<none></none>	▼	Add <u>.</u>
Distant Law			
-Printer/plotter	St Name		Properties
Na <u>m</u> e:	100 Mone		Pipperdes
Plotter:	None		<u> </u>
Where:	Not applicable		
Description:	The layout will not be plotted unless a new (plotter	11.0
Plot to file	configuration name is selected.		l 📶
I Hot to De			
– Paper si <u>z</u> e –		N	lum <u>b</u> er of copies
ANSI A (8.50	0 × 11.00 Inches)	-	1 *
Plot area		Plot scale	
What to plot:		🔽 Fit to paper	
View		Scale: Custom	v
Plot offset (or	igin set to printable area)	1	inches 💌 =
x: 0.0000	00 inch 🔽 Center the plot	1 210	unite
<u> </u>		1.310	Units.
Y: 0.0000	00 inch	🗖 Scale	lineweights
Preview	Apply to Layout OK	Cancel	Help D
Demannin			

Viewports 28.2

Vports Command

- 1. **Choose** View, Viewports, New Viewports...
- 2. **Choose** one of the viewports configurations
- 3. Click OK.

New name:	
Standard viewports:	Preview
"Active Model Configuration" Single Two: Vertical Two: Horizontal Three: Right Three: Left Three: Above Three: Below	View: "Current" Visual style: 2D Wireframe View: "Current"
Three: Vertical Three: Horizontal Four: Equal Four: Right Four: Left	Visual style: 2D Wireframe View: "Current" Visual style: 2D Wireframe
Apply to: Setup: Display I 2D I	Change view to: Visual Style: Current* 2D Wireframe

- 4. **Click** once in each vport to make it active.
- 5. **Type** a ZOOM option in each viewport.



Viewport options

New Name Restore Delete	Gives a name to a viewport Restores an original viewport DEL deletes a viewport
Join	Joins two viewports together
Single	Creates on viewport in the drawing

TIPS:

Viewports can be named and restored later.

AutoCAD plots only the current vport.
Chapter 29 Model Space and Paper Space

Creating a Layout 29.1

1. **Choose** the Layout1 TAB at the bottom of the screen.

Model Layout1 (Layout2)

Ш	Command: <switching layout1="" to:=""></switching>
	Regenerating layout. Regenerating model - caching viewports.
Ш	Command:



2. Right-click

Layout 1 to change the name and other properties



Creating Multiple Layouts 29.2

1.

2.

Choose the Layout2 TAB at the bottom of the scre			
	Id <		
	Command: *Cancel* Command: <switching layout2="" to:=""> Restoring cached viewports - Regenerating layout. Command:</switching>		
Change	the name of the layout.		

3. **Change** the remaining Layout options for page setup and plots.



Quick View Layouts 29.3



Mview Command 29.4

- The MVIEW command controls the size and position of the mview viewports (from now on called mviews). Mview is to tilemode = 0 as vports is to tilemode = 1.
- Use mview when you would like to see a view of the model.
- Pspace mode must be active to use mview. AutoCAD will automatically switch to pspace when you issue the mview command.
- The default mview option is "<<first point>>" To use this option, pick a point which represents one corner of the mview. At the "other corner" prompt, pick a point which represents the opposite corner of the mview.
- 1. **Choose** View, Viewports, 1 Viewport.

or

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

Command: **MVIEW or MV** ON/OFF/Hideplot/Fit/2/3/4/Restore/<<First Point>>:

P1



TIP: Mviews should be created on their own layers in order to be turned ON/OFF.

Other corner: P2

Irregular Shaped Viewports 29.5

- 1. **Draw** a shape in Paper Space (e.g. circle, polygon, ellipse)
- 2. Choose View, Viewports, Object
- 3. **Choose** the object to make a viewport.



Model Space 29.6

MSPACE (model space) can only be activated if there is at least one mview. To enter model space mode use "MSPACE".

1. **Type** MSPACE at the command prompt.

Command: MSPACE or MS

or

2. **Double-Click** the word "PAPER" on the Status Bar to toggle to model space.



Notice the ucsicon will appear in each of the mviews when you enter model space.



Paper Space 29.6

PSPACE mode should be entered to create a border, a title, mviews, and annotations only. This environment is used to lay out a 2 dimen- sional working drawing suitable for plotting. When you plot from pspace, you should plot 1=1.

1. **Type** PSPACE at the command prompt. Command: **PSPACE or PS**

or

2. **Double-Click** the word "MODEL" on the Status Bar to toggle to paper space.





Notice the "Paper" in the status line and the pspace icon.

Scales - Zooming in Model Space 29.7

- Use ZOOM "XP" to zoom the model a certain factor of the paper.
- If you enter a value followed by xp, AutoCAD specifies the scale rela- tive to paper space units. For example, entering .5xp displays model space at half the scale of paper space units.
- If you want to plot the m odel at 1/4"=1', typeZOOM 1/48XP. If you want to plot a part at 3 times, type ZOOM 3XP.
- Views can also be shown in 3D by using the VPOINT command.
- 1. **Type** MS at the command prompt to enter Model Space for each individual viewport.
- 2. **Type** ZOOM at the command prompt. Command: ZOOM All/Center/Dynamic/Extents/Previous/ Scale(X/XP)/ Window/<Realtime>: **3XP**





Adding Text in Paper Space 29.8

Title block text and miscellaneous text can be added in Paper Space.



Plotting in Paper Space 29.9

- Plotting all MVIEWS should be done from Paper Space not from Model Space.
- When you plot from pspace, you should plot1=1.
- For hidden line removals, remember to use the HIDEPLOT option in the MVIEW command.
- Once a ZOOM SCALE has been defined, do not zoom again before plotting. You can change the display with the PAN command.

		<u>i</u> <u>L</u>	earn about Plotting
Page setup			
N <u>a</u> me:	<none></none>	•	Add <u>.</u>
Printer (plotte	,		
Name:	🔅 None	.	Properties
Plotter:	None		<u> </u>
Where:	Not applicable		
Description:	The layout will not be plotted unless a new	plotter	-11.0"
🗖 Plot to fi	e		
- Daman sina -			
Letter (8 50	1 x 11 00 Inches)		
	× 11.00 Inch03y		
Plot area		Plot scale	
What to plot	:	Fit to paper	
Layout	•	Scale: 1:1	▼
Plot offset (or	rigin set to printable area)	1	inches 💌 =
<u>X:</u> 0.0000	00 inch 🗌 Center the plot	1	
<u>Y:</u> 0.0000	00 inch	Scale	ļineweights
			1 10
Preview	Apply to Layou <u>t</u> OK	Cancel	Help 🔇



Layout Wizard 29.10

- 1. Choose Insert, Layout, Layout Wizard
- 2 **Change** the various options in the Layout Wizard.



Begin 🏷	Select a configured plotter for the new layout.
Printer Paper Size Orientation Title Block Define Viewports Pick Location Finish	Snagit 7 Microsoft Office Document Image Writer hp deskjet 960c EPSON Stylus CX5200 Canon PIXMA iP6000D Adobe PDF \\http://128.2.102.139\NPI5C1E0B Adobe PDF.pc3 Default Windows System Printer.pc3 DWF6 ePlot.pc3 PublishToWeb JPG.pc3 PublishToWeb PNG.pc3

AutoCAD 2D Tutorial

Printer	Select a paper size to be used for the layout. The paper sizes available are based on the plot device you select
Paper Size 🗦	ARCH D
Title Block Define Viewports Pick Location Finish	Enter the paper units for layout "Size D Architectural Pl Drawing units Millimeters C Inches C Pixels Height: 24.00 inches



Begin Printer	Select a title block to use for the layout. Select whether the title block will be inserted as a block or attached as an Xref. The title block will be placed at the lower left corner of the paper margin.
Paper Size Orientation Title Block Define Vie Pick Loca Finish	Path: C:\Documents and Settin\ANSI D title block.dwg ANSI A title block.dwg ANSI A title block.dwg ANSI C title block.dwg ANSI D title block.dwg DIN A0 title block.dwg DIN A0 title block.dwg DIN A0 title block.dwg DIN A0 title block.dwg
	Type © Block C Xref

AutoCAD 2D Tutorial

Printer Au	To add viewports to the layout, specify the setup type scale, and (if applicable) the rows, columns, and spa
Arientation	Viewport setup Viewport scale:
Title Block	• Single
Define Viewports	C Std. 3D Engineering Views
Pick Location	CArray
Finish	
	Rows: 2 Spacing between rows: 0.1
	Columns: 2 Spacing between columns: 0.1





Tilemode 29.11

Tilemode is an AutoCAD system variable which can be set to 0 or 1. When tilemode is set to "1". viewports act as they traditionally did, like floortiles. Each viewport butts up against the next. The viewports fill the screen. They can only be plotted one as a time. These traditional viewports are known as "tiled areas of the screen". This is the default setting.

1. **Type**

TILEMODE at the command prompt. Command: **TILEMODE**

New value for tilemode <1> : **Press ENTER**



When tilemode is set to "0". The new metaview (mview) viewports can be used. Mviews can be any size or place on the screen. They may overlap. More than one mview can be plotted at a time. Each mview can be quickly turned on or off.

1. **Type**

Command: TILEMODE

New value for tilemode <1>:0



Viewport Layers 29.12

VPLAYER (viewport layer) controls layers on and off, and freeze and thaw, for each mview. Layer controls the on and off, freeze and thaw, globally. Layers must be on and thawed globally before they can be effected per mview with vplayer.

- 1. **Click** in the viewport to change layer status.
- 2. **Choose** the layer dialog box.
- 3. **Highlight** the layer to freeze or thaw in the current or new viewport.

The layer dialog box also allows control of layers for each viewport.

🕌 Layer Properties Man	ager									? X
<u>38</u> 6	🕹 🗙 🗸 Du	nent layer, Misi	9 M							
이 등 Al	Stat Nane C Title Block Mview Defpoints	On Freze	Leek Calar white white Leek Calar white white Leek Calar white Leek Calar Cala	Linetype Co.lous Co.lous Co.lous Co.lous Co.lous	Lineweight — Default — Default — Default — Default — Default	Plot Style Color_7 Color_7 Color_5 Color_7	Rat Current V	New VP Freeze	Desciption	
Search for layer							44 U 1964			
Invertifiter	dicate layers dicate layers in use									
Apply to layers toolbar							OK	Cancel	Apply	Help



Chapter 30 Options Menu

Files 30.1

- 1. **Choose** Tools, Options...
- 2. **Click** the Files TAB.

H E	Support File Search Path	-	<u>B</u> rowse
🗄 🖻) Working Support File Search Path		
🗄 🖻	Device Driver File Search Path	-	A <u>a</u> a
± 🔋	Project Files Search Path		<u>R</u> emove
B	Customization Files	-	
₽ 0	Help and Miscellaneous File Names	-	Move <u>U</u> p
B	Text Editor, Dictionary, and Font File Names	1	Move Down
由 □	Print File, Spooler, and Prolog Section Names	-	TTOLO DOUNT
⊞ 🗋	Printer Support File Path		Set Current
🖻 🖻	J Automatic Save File Location		
Ð 🖻) Color Book Locations		
🖻 🖻	J Data Sources Location		
B	Template Settings		
🖻 🖻) Tool Palettes File Locations		
FT P	Authoring Palette File Locations	-	

Display 30.2

- 1. **Choose** Tools, Options...
- 2. **Click** the Display TAB.



Open and Save 30.3

- 1. **Choose** Tools, Options...
- 2. **Click** the Open and Save TAB.

ent profile: < <unnamed profile="">> les Display Open and Save Plot and Publish Sy</unnamed>	rstem User Preferences Drafting Selection Profiles
File Save Save as: AutoCAD 2004 Drawing (*.dwg) Ihumbnail Preview Settings 50 Incremental save percentage	File Open 9 <u>N</u> umber of recently-used files to list I Display full path in title External References (Xrefs) Demand load ⊠refs: Enabled with coor
File Safety Precautions Automatic save 10	Image:
	DbjectARX Applications Demand load ObjectARX apps:
Maintain a log file	Object detect and command invoke Proxy images for custom objects: Show proxy graphics
Security Options	Show Proxy Information dialog box
	OK Cancel Anniu Help

Plotting 30.4

- 1. **Choose** Tools, Options...
- 2. **Click** the Plotting and Save TAB.

ent profile: < <unnamed profile="">></unnamed>	🚱 Current drawing: widget.dwg
es Display Open and Save Plot and Publish System	User Preferences Drafting Selection Profiles
Default plot settings for new drawings Use as default output device Microsoft Office Document Image Writer Use last successful plot settings Add or Configure Plotters	General plot options When changing the plot device:
	Always alert (and log errors)
Plot to file Default leastion for plot to file operations:	OLE plot guality:
C:\Documents and Settings\Jennifer Bubnash\My	Automatically select
Background processing options Enable background plot when: 「Plotting 「Publishing	objects Image: Hide system printers
Plot and publish log file	Printable area C Edge of paper
 Automatically save plot and publish log Save one continuous plot log 	Plot Stamp Settings
○ Save one log per plot	Plot <u>S</u> tyle Table Settings

System 30.5

- 1. **Choose** Tools, Options...
- 2. **Click** the System TAB.

GSHEID110 ▼ Prgperties GSHEID110 ▼ Prgperties Current Pointing Device ✓ Display 0LE Text Size Dialog Current System Pointing Device ✓ Beep on error in user input Accept input from: ✓ Load acad.lsp with eyery drawing C Digitizer only ✓ Allow long symbol names Startyp: Do not show a startup dialog ✓ Layout Regen Options ✓ Live Enabler Options C Cache model tab and last layout ✓ Check Web for Live Enablers Maximum number of unsuccessful checks ✓ dbConnect Options ✓ ✓ Store Links index in drawing file Open tables in read-only mode	Files Display Open and Save Plot and Publish Syste	M User Preferences Drafting Selection Profiles
✓ Display 0LE Text Size Dialog Current Pointing Device ✓ Current System Pointing Device ✓ Current System Pointing Device ✓ Accept input from: ✓ Digitizer only ✓ Digitizer and mouse Layout Regen Options ✓ Eache model tab and all layouts ✓ Cache model tab and all layouts ✓ Dennect Options ✓ Store Links index in drawing file ✓ Open tables in read-only mode	GSHEIDI10 Properties	Single-drawing compatibility mode
Current System Pointing Device Image: Beep on error in user input Accept input from: Image: Digitizer only Image: Digitizer only Image: Digitizer and mouse Image: Digitizer and mouse Image: Digitizer and m	Current Pointing Device	✓ Display OLE Text Size Dialog ✓ Show all warning messages
Accept input from: C Digitizer only C Digitizer only C Allow long symbol names Startup: Do not show a startup dialog Layout Regen Options C Eache model tab and last layout C Cache model tab and all layouts C heck Web for Live Enablers C Cache model tab and all layouts Maximum number of unsuccessful checks dbConnect Options ✓ ✓ Store Links index in drawing file Open tables in read-only mode	Current System Pointing Device	Load acad lsp with every drawing
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Connect Options Store Links index in drawing file Open tables in read-only mode	C Digitizer only	Startup: Do not show a startup dialog
Layout Regen Options Live Enabler Options C Begen when switching layouts C Cache model tab and last layout C Cache model tab and all layouts B Gache model tab and all layouts dbConnect Options Image: Cache Live Enablers ✓ Store Links index in drawing file Image: Open tables in read-only mode Open tables in read-only mode	 Digitizer and mouse 	
C Begen when switching layouts C Cache model tab and last layout C Cache model tab and all layouts dbConnect Options ✓ Store Links index in drawing file Open tables in read-only mode	Layout Regen Options	Live Enabler Options
Cache model tab and last layout Cache model tab and all layouts Depression Depression	C Regen when switching layouts	Check Web for Live Enablers
(* Cache model tab and all layouts dbConnect Options ✓ Store Links index in drawing file ✓ Open tables in read-only mode	C Cache model tab and last layout	5 Maximum number of unsuccessful checks
dbConnect Options ✓ Store Links inde <u>x</u> in drawing file ✓ Open tables in read-only mode	 Cache model tab and all layouts 	
Store Links index in drawing file Open tables in read-only mode	dbConnect Options	7
C Open tables in read-only mode	🔽 Store Links inde <u>x</u> in drawing file	
	C Open tables in read-only mode	
		OK Cancel Apply Help

User Preferences 30.6

1. **Choose** Tools, Options...

2. **Click** the User Preferences TAB.

rent profile: < <unnamed profile="">></unnamed>	📷 Current drawing: widget.dwg				
iles Display Open and Save Plot and Publish S	System User Preferences Drafting Selection Profiles				
Windows Standard Behavior Shortcut menus in drawing area Right-click Customization	Priority for Coordinate Data Entry C <u>B</u> unning object snap C <u>K</u> eyboard entry C Keyboard entry <u>ex</u> cept scripts				
Insertion scale Default settings when units are set to unitless: <u>S</u> ource content units: Inches <u>I</u> arget drawing units: Inches	Associative Dimensioning Associative Dimensioning Make new <u>d</u> imensions associative Hyperlink Display hyperlink cursor, tooltip, and shortcut menu				
Fields ↓ Display background of fields <u>Field Update Settings</u>	Undo/Redo				
Hidden Line Settings	nt Settings <u>E</u> dit Scale List				

Drafting 30.7

- 1. **Choose** Tools, Options...
- 2. **Click** the Drafting TAB.

🚱 Current drawing: widget.dwg
em User Preferences Drafting Selection Profiles
AutoTrack Settings
Display full-screen tracking vector Display AutoTrack tooltip
Alignment Point Acquisition Automatic Shift to acguire
Drafting Tooltip Appearance

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Selection 30.8

- 1. **Choose** Tools, Options...
- 2. **Click** the Selection TAB.

rent profile: < <unnamed profile="">> iles Display Open and Save Plot and Publish Sy</unnamed>	stem User Preferences Drafting Selection Profiles
Eickbox Size	Grip Size
Selection Preview ✓ When a command is active ✓ When no command is active Visual Effect Settings	Grips Unselected grip color: Color 160 Selected grip <u>co</u> lor: Red
Selection Modes Image: Moun/verb selection Image: Use Shift to add to selection Image: Press and grag Implied windowing Implied grouping Associative Hatch	Hover grip color: Green Enable grips Enable grips within blocks Enable grip tips 100 Object selection limit for display of grips

Chapter 31 Drawing Utilities

AUDIT 31.1

1.	Choose	File, Drawing Utilities, Audit.		
		or		
2.	Туре	Audit at the command prompt		
		Command: AUDIT		
3.	Туре	Yes or No to fix any errors		
		Fix any errors detected? <n>: Y or N</n>		

If a drawing contains errors that AUDIT can't fix, use the RECOVER command to retrieve the drawing and correct its errors.

RECOVER 31.2

1. **Choose** File, Drawing Utilities, Recover....

or

2. Type RECOVER at the command prompt Command : RECOVER



The RECOVER command performs recoveries or audit operations on DWG files only. Performing a recover on a DXF file will only open the file.

PURGE 31.3

1.	Choose	File, Drawing Utilities, Purge.		
		or		
2.	Туре	PURGE at the command prompt		
		Command: PURGE		
3.	Туре	One of the following purge options:		
		Purge unused Blocks/Dimstyles/LAyers/LTypes/ SHapes/STyles/Mlinestyles/All:		

A Purge	<u>? ×</u>
 View items you can purge 	
C View items you cannot purge	
Items not used in drawing:	
All items Blocks Dimension styles Layers Casework Furniture Pfix Dimestyles Mline styles Plot styles Shapes Table styles Furniture Shapes Text styles	
 Confirm each item to be purged Purge nested items 	
Purge Purge All Close	Help

Rename 31.4

1.	Choose	Format, Rename
		or
2.	Туре	RENAME at the command prompt
		Command: RENAME
3.	Choose	One of the following options to rename" Block / Dimstyle / LAyer / LType / Style / Ucs / VIew / VPort:
4.	Туре	The old object name
		Old (object) name: Enter the old name
5.	Туре	The new object name
		New (object) name: Enter the new name

<u>N</u> amed Objects	<u>I</u> tems
Blocks Dimension styles Lavers Table styles Text styles UCSs Viewports Views	Casework Defpoints dim Furniture Mview Pfix Title Block
i <u>O</u> ld Name:	
Rename To:	

Chapter 32 Data Management

Importing Files 32.1

1.	Choose	File, Open		
		or		
2.	Choose	Insert, 3D Studio, ACIS, DXB, WMF, or ESP		
		or		
3.	Туре	Import at the command prompt.		
		Command: Import		



Exporting Files 32.2

1. Choose File, Saveas

or

- 2. Choose
- File, Export

拱 Export Data							? ×
Save in:	temp		•	1	Q X 🕼	⊻iews	▼ Tools ▼
	Name 🔺			Size T	уре	Da	ite Modified
History							
My Documents							
Favorites							
12							
FTP							
	•						•
Desktop							
<u> 12</u>	File name:	widget.wmf				<u> </u>	<u>S</u> ave
Buzzsaw	Files of type:	Metafile (*.wmf)				<u> </u>	Cancel
		- Metanle (".wm/) ACIS (".sat) Lithography (".stl) Encapsulated PS (".e DXX Extract (".dxx) Bitmap (".bmp) 3D Studio (".3ds) Block (".dwg)	ps)				

Chapter 33 Object Linking and Embedding

Copying from AutoCAD 33.1

- 1. Launch a Windows program to link to (e.g. Microsoft Word)
- 2. **Open** an AutoCAD drawing.
- 3. Choose Edit, Copy.
- 4. **Pick** the AutoCAD objects to copy.
- 5. **TAB** to the Window's program.
- 6. **Choose** Edit, Paste.



Print Screen 33.2

- 1. Launch a Windows program to link to (e.g. Microsoft Word)
- 2. **Open** an AutoCAD drawing.
- 3. **Press** PRINT SCREEN on the keyboard.
- 4. **TAB** to the Window's program.
- 5. Choose Edit, Paste.


OLE Linking to AutoCAD 33.3

A linked object remains associated with its source file. When you edit a linked object in AutoCAD, the source file changes. When you edit the object in the source file. the linked object in AutoCAD changes.

- 1. Launch a Windows program to link from (e.g. Microsoft Excel)
- 2. **Create** a spreadsheet to bring into AutoCAD.

	Microsoft Ex	cel - Booki	2						-	
	<u>Eile E</u> dit	⊻iew In	sert F <u>o</u> rmat	<u>T</u> ools <u>D</u> a	ata <u>W</u> indow	<u>H</u> elp	Туре	a question for	help 👻 🚽	. 8 ×
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5	Widget Pa	art 2	34	3	\$1.00					
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7	Widget Pa	art 4	78	6	\$0.25					
8							9			
9										
10										-
	→ → \She	eet1 / Shee	et2 / Sheet3 ,	/		•			2	
Rea	dy					1	nii.	I. II.	li li	11.

- 3. **Open** an AutoCAD drawing.
- 4. **Choose** Insert, OLE Object.
- 5. **Choose** browse to pick a file to link to AutoCAD.
- 6. **Pick** a location in the drawing to place the OLE object.

Insert Object		<u>? ×</u>
C Create New	File:	OK Cancel
	Browse Link	🗖 Display As Icon
Result your of the pr	s the contents of the file as an object into document so that you may activate it using ogram which created it.	

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AutoCAD 2006 - [C:\Documents and S	ettings\Jennifer Bubnash\My D	ocuments\AutoCAD n	nanual\wide	get.dwg]		_ 🗆 🗙
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		Widget Part 2	34	3	\$1.00	
		Widget Part 3	56	4	\$0.75	11172
		Widget Part 4	78	6	\$0.25	
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7. **Double Click** to edit that object in the original program.

TIPS:

- Spreadsheets that are imported into AutoCAD drawings with OLE are limited in size. If your spreadsheet is too large, you can reduce the column width and row height, reduce the font size, or paste the spreadsheet in separate parts to break the OLE object into smaller OLE objects.
- OLE objects are inserted in an AutoCAD drawing on the current layer. Turn off or freeze a layer to suppress the display of OLE objects on that layer.
- Set the system variable OLEHIDE to display or suppress the display of all OLE objects in paper space, model space, or both.

Hyperlinking 33.4

1.	Choose	Insert, Hyperlink
		or
2.	Press	CTRL + K
		or
3.	Туре	HYPE RLINK at the command prompt
		Command: hyperlink
4.	Select	the object to hyperlink
		Select objects: 1 found

5. **Choose** an option in the hyperlink dialog box.





Opening a Hyperlink 33.4

- 1. **Move** the cursor to the object with the hyperlink.
- 2. **Click** with your right mouse button.
- 3. **Choose** Hyperlink from the menu.
- 4. **Open** the file from the menu.





Chapter 34 Communication and Collaboration Tools

34.1 Plotting to the WEB

- 1.TypePLOT at the command prompt.
Command: plot
- 2. **Choose** the Plot Device TAB.
- 3. **Choose** the dropdown list for Plotter Configuration.
- 4. **Plot** to a .DWF, JPG, or PNG file.

are set in				() Pint stule table	Learn about Plotting
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lot area What to plot: Display		Rot scale R Rit to paper Scale: Custom	<u>*</u>	F Hosper F Plot stam F Save dra	ancerns chiekta plan nges to layout
lot affset (origin set t x: 0.000000 ; y: 0.000000 ;r	oprintable area) ch 🦳 Center the plat ch] [2.126 [⊂ 5can)	inches V =	Drawing orient C Portrat C Landscap E Plot upsic	etion • 2

- DWF format does not compress the drawing file.
- JPEG format uses lossy compression; that is, some data is deliberately discarded to greatly reduce the size of the compressed file.
- PNG (Portable Network Graphics) format uses lossless compression; that is, no original data is sacrificed to reduce the size of the file.

34.2 Configuring DWF Files

- 1. **Type** PLOT at the command prompt. Command: **plot**
- 2. **Choose** the DWF plot configuration option.
- 3. Choose the Properties...button.
- 4. Choose Custom Properties....
- 5. **Slide** the slider bar to extreme for a clearer resolution on the DWF file.

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🔤 Custom I	Paper Sizes			
🚽 🛄 Modify S	tandard Paper Sizes (Printat	ble Area)		
Filter Par	per Sizes			
	alibration			
merie The second	Iname (none>			
		OWF6 ePlot Properties		
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ŪK

Cancel

Help

34.3 Publish Command

the Publish to WEB icon from the Standard Toolbar. 1. Choose

or

- File, Publish 2. Choose
- 3. Туре PUBLISH at the command prompt.

Command: publish

Sheet Name	Page Selup	Status	1
 Beh fram Madel Beh fram Madel Beh fram Wadel Beh fram Weh Roar Furniture Plan Beh fram Weh Roar Livitage Plan Beh fram Weh Roar Lighting Plan Beh fram Weh Roar Denters Plan Beh fram Weh Roar Plant Ban Beh fram Weh Roar Plant Ban 	State State State Opfault Arch E1> State Opfault Arch E1>	 No errors 	
a m m m m m m m m	Include plot storp	Number of copies:	1 4 1



34.4 Publishing WEB Pages

1.

2.

3.

4.

- Choose File, Publish to WEB. or PUBLISHTOWEB at the command prompt. Type Command: PUBLISHTOWEB Click Create New Web Page and Next. Publish to Web - Begin × ▶ Begin This wizard creates a Web page that displays images from one or more drawing files. You can control the appearance Autod Create Web Page of your Web page by choosing from a variety of templates. Edit Web Page Once you have created a Web page, you can use this Wizard to update it. Describe Web Page Select Image Type Select Template Create New Web Page Apply Theme C Edit Existing Web Page Enable i-drop Select Drawings Generate Images Preview and Post Next > Cancel
- **Specify** a name for the WEB page, location and description for the new WEB page and click Next. (NOTE: Save the WEB pages to C:\TEMP)



4. **Select** PNG as the image type for the drawings and Image Size "Medium" and click Next.

NOTE: If you have the Express Viewer loaded, you can pick DWF files to view. This will allow you to zoom and pan the drawings.



5. Select

Array of ThumbNails as the Template type and click Next.

Publish to Web - Select To Begin Create Web Page	Select a template from the list below. The Preview pane demonstrates how the selected template will affect the layout of drawing images in your Web page.
Edit Web Page Describe Web Page Select Image Type Select Template Apply Theme Enable i-drop Select Drawings Generate Images Preview and Post	Array of Thumbnais Array plus Summary List of Drawings List plus Summary List plus Summary Image Image
	<back next=""> Cancel</back>

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6. **Select** a Theme (color) and click Next.



7. Select

Enable i-drop and Click Next



8. **Select** drawings and/or layouts to place on the WEB page.

Begin Create Web Page Edit Web Page	To add an image to your Web page, selec Enter a label and description to annotate t To change an image, select it in Image Lis An asterisk indicates a missing drawing.	t a drawing and I he image on the ' t, specify new se	then pick one of its layouts. Web page, then choose Ac attings then choose Update.
Describe Web Page Select Image Type	Image settings Drawing:	Add ->	Image list 8th Floor Furniture Plan
Select Template Apply Theme	C:\Programth floor.dwg	Update ->	8th Floor Lighting Plan 8th Floor Plan
Enable i-drop	8th Floor Plan	Remove	
Select Drawings	Label:		
Preview and Post	8th Floor Plan		
	Description:		
		Move Up	
		Move Down	I
	<u>.</u>		

9. **Click**

Regenerate all images and Next.

blish to Web - Generate Images	
Begin Create Web Page Edit Web Page Describe Web Page Select Image Type Select Template Apply Theme Enable i-drop Select Drawings Generate Images Preview and Post	Choose Next to generate your Web page. The Web page is created in the file system directory that you specified earlier in this wizard. You cannot undo this operation once it is started. You will have the opportunity to preview the Web page and post it to the Internet in the following step. Please wait while the images are generated. Regenerate images for drawings that have changed Regenerate all images
	< Back Next > Cancel

10. Click

Preview and Finish.





34.4 e-Transmit

1. **Type**

ETRANSIT at the command prompt. Command:**etransmit**



e-Transmit options

.EXE (files are self extracting)

.ZIP (PKZIP or WINZIP is needed to extract files)

34.6 i-Drop

i-drop allows users to drag a drawing from an i-drop handle on an i-drop supported WEB site to an open AutoCAD drawing. Choose the i-drop option when publishing to the WEB to create an i-drop enabled WEB page.

1. **Type** http://www.autodesk.com/idrop to learn more about Autodesk's i-drop technology.



Chapter 35 AutoCAD WEB Viewers

AutoCAD DWF Viewer 35.1

- 1. **Launch** Your WEB Browser.
- 2. **Type** <u>http://www.autodesk.com/products</u>
- 3. **Click** on Autodesk DWF View from the list of Autodesk products.
- 4. **Browse** the site for information or to download a free copy of the DWF Viewer.



Volo View 35.2

- 1. **Launch** Your WEB Browser.
- 2. Go to http://www.autodesk.com/products/
- 3. **Click** Volo View to learn more about the Volo View application.



CAD Viewer 35.3

- 1. **Launch** Your WEB Browser.
- 2. Go to http://www.cadviewer.com/

CADViewe Write Once • View Anywhe	Try our Software!	About Us Context Us Privacy
Home	Tailor Made CADViewer	Enterprise
Products		Solutions
News	Internet based advanced CAD format collaboration	CADViewer is designed to easy
Success Stories		component within any business
Support	CADViewer is a Web-based or desktop viewing and mark-up tool supporting AutoDesk, MicroStation, HP and Adobe formats. CADViewer makes it easy for an yone with PC or a lays enabled	advanced collaboration.CADViewer is
Purchase	browser to access commonly used vector and raster engineering files across the corporate enterprise.	designed to meet the requirements from companies providing solutions for industries
Online Store	Desktop or Server	as diverse as E-business, ERP, CRN, SCM, PLM, CAD/CAN,
Custom Solutions	CAD Viewer is a multi-component solution engineered both as a web-based distributed solution and as a desktop based solution that can link with any viewer of your choice, such as AutoDesk Express Viewer and Adobe Acrobat Viewer.	Decument Hanagement, Content Management and Process Workflow
GUI and functionality to your requirements.	Format Fidelity	A
Advanced Format Solutions	The only DWF viewer sanctioned by Autodesk, CADViewer was the first and is the best Java-based CAD drawing viewer and mark-up application1	Solaris
)		🔮 Internat

Internet Explorer 35.5

- 1. **Launch** Internet Explorer 5.0 or later.
- 2. **Choose** File, Open.
- 3. **Browse** to C:\TEMP and open a .DWF file to view.



AutoCAD Related WEB Sites 35.6

1.	Launch	Internet Explorer.
2.	Click	on one of the following WEB sites.
		or
3.	Search	for AutoCAD related topics on the Internet on an Internet search engine
		http://www.cadalog.com
		http://www.cadalyst.com/
		http://www.cadsoftware.com/
		http://www.3dcafe.com/
		http://www.mcneel.com
		http://www.caddepot.com/
		http://www.caddigest.com/

Chapter 36 Customization

Menu Loading 36.1

1. **Type** MENU at the command prompt.

Command: Menu

2. **Choose** a menu (mnu) file to load.



Creating New Menu Files 36.2

1. **Copy** ACAD.MNU to a new file name such as **MYACAD.mnu**

2. **Type** MENU at the command prompt to load the new menu.



Command: MENU

AutoCAD 2D Tutorial

Menuload 36.3

1. **Choose** Tools, Customize, Menus...

or

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

Command: MENULOAD

- 3. **Choose** the Menu Bar Tab.
- 4. **Choose** Add or Remove to modify the appearance of the Pulldown menu.

🐨 Menu Customization			? 🗙
Menu Groups Menu Bar Menu Groups: ACAD		<u>U</u> nload	
<u>F</u> ile Name:	Beplace All	Load Bro <u>w</u> se	
			<u>H</u> elp

🐨 Menu Customization			? 🔀
Menu Groups Menu Bar			
Me <u>n</u> u Group:			
ACAD			
Menus: Dbject Snap Cursor Menu File Edit View Insert Format Tools Draw Dimension Modify Window	Insert >> << <u>R</u> emove	Menu <u>B</u> ar: File Edit View Insert Format Tools Draw Dimension Modify Window Help	
		Close	<u>H</u> elp

Customizing Toolbars 36.4

Create New Toolbars

- 1. Choose View, Toolbars... or
- 2. **Type** TBCONFIG or TOOLBAR at the command prompt. Command: **TBCONFIG or TOOLBAR**

🐨 Customize	? 🔀
Commands Toolbars Properties Keyl Toolbars 3D Orbit GAD Standards Dimension Draw Draw Order Inquiry Insert Layouts Modify Modify II Object Snap Properties Refedit Reference Render 	board Tool Palettes Menu Group ACAD New Rename Delete Large buttons Show ToolTips on toolbars Show shortcut keys in ToolTips
	Close Help

- 3. Choose the New...button.
- 4. **Type** the name of the new toolbar.

OK.

5. Click

🐨 New	Foolbar	? 🗙
Toolbar n My Favor	ame: ite Tools	
Save tool	bar in menu group:	
ACAD		~
	ОК	Cancel

- 6. Choose
- the Commands...TAB.



7. **Drag** commands from each menu and drop onto your toolbar.

My Favo	orite 1	۲ool	s			×
10	(N. (0	<u>8</u>	₽	Ö	?

TIP: To copy a tool from another toolbar, press and drag the tool to the new toolbar.

8. **Choose** Close to close the Customize dialog box.

User Defined Buttons 36.5

- 1. Choose View, Toolbars...
- 2. **Choose** the Commands...TAB.
- 3. **Click User Defined** from the Categories section.

🐨 Customiz	ze					? 🔀
Commands	Toolbars	Properties	Keyboard	T ool F	Palettes	
Categories				Comma	ands	
File Edit Unsert Format Tools Draw Dimension Modify Window Help				U	ser Defined Button ser Defined Flyout	
Description User Defir	: ned Button			☑ Sho ♀ Tip	ow image and name Drag command to o create new toolbar. toolbar to add butto	drawing area to . Drag command to on.
					Close	Help

4. Drag

5.

a user defined button to your toolbox.



Double Click the new button.

The Button Properties dialog box will appear.

6. **Choose** Edit...from the Button Properties window.

AutoCAD 2D Tutorial

📴 Customize	2 🔀
Commands Tool	bars Button Properties Keyboard Tool Palettes
Name:	User Defined Button Image
Description:	User Defined Button
Macro associated	d with this button:
°C°C	
	Apply
	Close Help

7. **Draw**

the desired symbol by using the draw tools.

- 8. Close
- 9. Press

the Button Editor (save if necessary)
Apply.

Button Editor		
R		
Grid	\sim	
Clear Open	der.	
Undo Save As	Save Close	Help

10. Close

the button properties window by selecting the X in the upper right corner.

11. **Close** the Toolbars window.

My Favo	rite T	00	s				×
10	<u>(</u> N, (3	S A	÷	Ö	?	\geq

Macros 36.6

- 1. **Click** Your right mouse button on the button you wish to modify or create.
- 2. **Type** the macro command in the macro window.

Macro that inserts a block called chair

🐨 Customize	? 🔀
Commands Tool	bars Button Properties Keyboard Tool Palettes
Name:	Chair Block Button Image
Description:	Insert Chair Block
^C^Cinsert:cha	
	1 M. O
	Apply Reset
	Close Help

TIPS:

- Use ^C^C to cancel any previous AutoCAD command
- apostrophe (') will issue a transparent command
- Use a semicolon (;) to separate a series of commands
- a dash (-) will issue the command without a dialog box.

Characters Used in Macros 36.7

Pausing for User Input Example

To accept input from the keyboard or the pointing device in the middle of a menu macro, place a backslash (\) at the point where you want input.

Commands To	olbars B	utton Properties	Keyboard	Tool Palettes	
Name:	Chair B	lock		1	Button Image
Description:	Inserts	Chair Block			
Macro associa	ted with thi	s button:			
^C^Cinsert;c	:hair \1;1;0				? ? ? ▲ ? / □ % ↓ □ % ↓
				Apply	Reset

;	Issues ENTER
^M	Issues ENTER
^	Issues TAB
SPACEBAR	Enters a space; blank space between command sequences in a menu item is equivalent to pressing the SPACEBAR
\ Accel	Pauses for user input (cannot be used in the erators section)
_ that	Translates AutoCAD commands and keywords follow
+	Continues menu macro to the next line (if last character)

AutoCAD 2D Tutorial

=*	Displays the current top level image, pull-down, or shortcut menu				
*^C^C	Prefix for a repeating item				
\$ or expression	Special character code that loads a menu section introduces a conditional DIESEL macro				
	(\$M=)				
^B	Toggles Snap on or off (CTRL+B)				
^C	Cancels command (ESC)				
^D the	Toggles Coords on or off (CTRL+D) SPACEBAR at end of a menu item				
^E	Sets the next isometric plane (CTRL+E)				
^G	Toggles Grid on or off (CTRL+G)				
^H	Issues backspace				
^O	Toggles Ortho on or off (CTRL+O)				
٨P	Toggles MENUECHO on or off				
^Q	Echoes all prompts, status listings, and input to the printer				
	(CTRL+Q)				
^T	Toggles tablet on or off (CTRL+T)				
۸V	Changes current viewport (CTRL+V)				
^Z	Null character that suppresses the automatic addition				
ot					

Editing Menus in Word 36.8

- 1. **Open** a menu (.mnu) file in a text editor.
- 2. **Change** the desired menu.
- 3. **Type** MENU at the AutoCAD command prompt to compile and use the menu in AutoCAD/

🗐 MyAcad.mnu - Microsoft Word 📃 🗖 🔀						
Eile Edit View Insert Format Tools Table Window Help Type a question for help 🗸 🗙						
🗈 🖆 🔚 🔁 🎒 🗟 🖤 🐰 🗈 🛍 💅 🗠 - 🗠 - 🍓 🗗 📰 🏭 🐼 100% 🛛 - 📿 😤						
🕼 Open PDF 🦓 Create PDF 🖕 🔳 👻 🙊 Zoom 100% 🖕						
A Plain Text \checkmark Courier New \checkmark 10 \checkmark B I U \equiv \equiv \equiv \equiv $=$ $(I \land A \lor A)$						
. ID Osnan [&Osnan Settings]' +dsettings 2						
·						
4						
***POP1						
· **FILE						
- ID MARINE [&FILE]						
TD Open [some], $tCtr[+0]^{CCC}$ open						
ID DWG CLOSE [sclose]^C^C close						
. ID PartialOp [\$(if, \$(eq, \$(getvar, fullopen), 0),,~)Partia&l Load]^C^C						
. []						
· ID Save [«Save\tCtrl+S]^C^C qsave						
ID Saveas [Save GAs]^C^C saveas						
. ID ETransmit [e&Transmit]^C ⁻ C etransmit						
· ID_Publish [Publish to &Web]^C^C_publishtoweb						
ID_Export [&Export]^C^C_export						
· []						
· ID_PlotSetup [Pa≥ Setup]^C^C_pagesetup						
- ID_PlotMgr [Plotter & Manager]^C^C_plottermanager						
ID PlotStVMar (Plot St&vie Manader)^C^C stviesmanader						
Draw • 🔓 AutoShapes • 🔨 🔌 🖸 🔿 🚔 🐗 🔅 🙍 🔊 • 🚄 • 📥 = 🧮 🛱 🌍 •						
Page 3 Sec 1 3/90 At 5.5" In 30 Col 1 REC TRK EXT OVR English (U.S 🕮						

Chapter 38 Slide Shows

Creating Slides 38.1

MSlide Command

- 1. **Type** MSLIDE at the command prompt. Command: **MSLIDE**
- 2. **Type** the name of the slide file (and location).

🕼 Create Slide I	File				? 🔀
Save in:	Contraction temp		🗸 🔶 🖪	e q 🗙 🖻	⊻iews ▼ Tools ▼
	Name 🔺		Size	Туре	Date Modified
History	☐ 3DGrant.sld		21 KB	AutoCAD Slide	06/17/2004 7:33
My Documents					
Favorites					
Desktop					
R.	<		- 110		>
FTP					
<u></u>	File <u>n</u> ame:	3DGrant.sld			Save
Buzzsaw	Files of type: Slide (*.sld)				Cancel

Viewing Slides 38.2

- 1. **Type** VSLIDEat the command prompt. Command: **VSLIDE**
- 2. **Pick** the name of the slide file (and location).




Slideshows 38.3

Scripts

In a Word Processor, create a series of commands to execute in AutoCAD.

Save the script file with an extension called .SCR.

Pausing a Slide

1. **Type** DELAY at the command prompt. Command: **DELAY**

Enter delay time (in milliseconds): 3000

NOTE: 3000 milliseconds is 3 seconds



Running a Script in AutoCAD

- 1. **Type** SCRIPT at the command prompt. Command: **SCRIPT**
- 2. **Pick** the script name to run.

Repeating a Script

1. **Type** RSCRIPT at the command prompt. Command: **RSCRIPT**

This will repeat the script command lines continuously.

Chapter 39 CAD Standards

39.1 Drawing Standards (.DWS) Files

Standards define a set of common properties for named objects such as layers and text styles. You or your CAD manager can create, apply, and audit standards in AutoCAD drawings to enforce consistency. Because standards make it easier for others to interpret drawings, standards are particularly useful in collaborative environments, where many individuals contribute to the standards.

- 1.
 Open
 a drawing with standards defined (i.e. AIALayersSampleDrawing.dwg)

 2.
 Turne
 SAV/EAS at the command prompt
- 2. **Type** SAVEAS at the command prompt. Command: **saveas**
- 3. **Choose** .DWS as the file type to save.
- 4. **Save** the drawing standard file.

Sure Druming				10 10 10 H			
Save in:	Control Contro	1	▼ < 12		⊻iews	▼ Tools	
History Documents Favorites Desktop V	Name 8th floor, AIA_Stan AIALayer MKMStd.co	dws dards.dws sSampleDrawing.dws lws	Size 40 KB 25 KB 24 KB 37 KB	Preview			
	File name:	AIALayersSampleDrawir	ng.dws		~	<u>S</u> ave	
Buzzsaw	Files of tupe:	AutoCAD Drawing Stan	dards (* dws)			Cancel	-

39.2 CAD Standards Manager

- 1. **Choose** Tools, CAD Standards, Configure... or
- 2. **Type** STANDARDS at the command prompt. Command: **standards**
- 3. **Choose** Add standards button to add a standards file (aialayer.dws)

and and a file and a single doubt the annual drawing a	Description
AIA_Standards	Standards File C:\Temp\AlA_Standards.dws Last Modified Tuesday, September 30, 2003 Drawing Format AutoCAD 2004

- 4. **Open** a drawing to check its standards (i.e. HBH-G.dwg)
- 5. **Load** the CAD standards AIALayer.DWS file.
- 6. Choose Checkstandads... or
- 7. **Type** CHECKSTANDARDS at the command prompt.

Command: checkstandards

8. **Choose** the fix button to make changes to the existing drawing.

🐨 Check Standards		? 🔀
Problem:		
Layer 'GLASS' Name is non-standard		
Replace with:		
Layer	Standar	ds File 🔼
A-FLOR-PATT	AIA_Star	ndards
A-FURN	AIA_Star	ndards 🔲
A-GLAZ	AIA_Star	ndards 🗸
A-01AZ-511	AIA Stat	ndards
Preview of changes:		
Property	Current Value	Standard Value
Color	White	Cyan
Mark this problem as	ignored	Fix Next
Settings	Close	Help

39.3 Layer Translator

1.	Туре	LAYTRANS at the command prompt.
		Command: laytrans

or

- 2. **Choose** Tools, CAD Standards, Layer Translator.
- 3. Choose Load...to load standards from a .DWS or .DWG file.

4. **Match** the layers in the current drawing to the layers in the .DWG or .DWS file.

🛃 Layer Translator						? ×
Translate <u>F</u> rom			- Tran	slate T <u>o</u>		
OUTERWALLHATCH	+ 🔺			a-strs		
RUUM-IDEN				a-wall-ontr a-wall-ext		
STRS .			Ē	a-wall-htch-e	xt	
WALL WALLCEN				a-wall-htch-in a-wall-int	t	
Calcular Eller		<u>M</u> ap		ceiling		_
Selection Filter	Coloot	Manager		- · ·	Lord	Nous I
					I LIAU I	NEW
	00000	- Mgp same			<u>_</u> 000	
Layer Translation Mapping		- Mgp same			<u>Fogg</u>	
Layer Translation Mappin Old Layer Name	gs		Linetype	Linewei	Plot style	
Layer Translation Mappin	gs New Layer Name	Color I	Linetype	Linewei	Plot style	
Layer Translation Mappin Old Layer Name	gs New Layer Name	Color I	Linetype	Linewei	Plot style	
- Layer Translation Mappin Old Layer Name	js	Color I	Linetype	Linewei	Plot style	
Layer Translation Mappin DId Layer Name	gs	Color	Linetype	Linewei	Plot style	Cove
Layer Translation Mappin DId Layer Name	gs	Color 1	Linetype	Linewei	Plot style	<u>Save</u>

39.4 Batch Standards Checker

Performs batch checking on multiple drawings outside of AutoCAD's drawing editor.

- 1. **Choose** Start, Programs, AutoCAD 2000x, Batch Standards Checker.
- 2. **Load** multiple drawings to check.



3. Compare

to an existing standards file (i.e. aialayers.dws).

🔽 Batch Standards Checker - C:\Tem	ip\Check1 📃 🗖 🔀
File Check Help	
🗋 🗅 🚅 🖬 🟭 🔍 🕲 🛍 📾 📍	
Drawings Standards Plug-ins Notes P	rogress
O Check each drawing using its associa	ted standards files
 Check all drawings using the following 	ı standards files
Standards used for checking all drawings:	Description:
₽AIA_Standards	 Standards File C:\Temp\AlA_Standards.dws Last Modified Tuesday. September 30, 2003 Drawing Format AutoCAD 2004

4. **Save** the standards audit as a file (.chx)

Save in:	🛅 Temp		~	1	🔍 🗙 🎇 Views	• Tools •
	Name 🔺	l.		Size	Туре	Date Modifie
History My Do	Check1.c	hx		202 KB	File Folder AutoCAD Standards	07/05/2004 07/06/2004
avorites	<		III			
	File name:	Check1.chx			v _	Save
_						Connel

Audit Drawing Standards Results - Micro	soft Internet Explorer			_ 0 🗙
File Edit View Favorites Tools Help				.
Address 🕘 C:\Documents and Settings\Kristen Kurlan	d\Local Settings\Temp\STD63.HTM		🖌 🔁 🖉	io Links [»]
Google -	ch Web 🔹 🌊 Search Site 🛛 🧔 PageRank 🚯 👻 💽 Op	tions 📄 🔹 🥒		_
FDA 🔄 Free Downloads 🔰 📔 Downloads 🔻 🖷 🖓	otions 📔 💽 💌 🔍 📓 Top Dow 🎽	POP-UP BLOCKER - ODISA	ABLED	Open
	STANDARDS AUDIT	REPORT		Â
C:\Temp\Check1.chx				≡
Show:	Overview			
Overview				
Plug-ins	Created by:			
O Standards	Kristen Kurland			
O Problems	Created on:			
Ignored Problems	Tuesday, July 06, 2004			
⊂ All				
For:	Notes:			
✓ All Drawings	Kristen's Check for Standard	S		
✓ 8th floor furniture.dwg	Summary:			
🗹 8th floor hvac.dwg	Drawing	Problems	Ignored problems	
🗹 8th floor lighting.dwg	8th floor.dwg	41	0	
🗹 8th floor plan.dwg	8th floor furniture.dwg	34	0	
🗹 8th floor	8th floor hvac.dwg	57	0	
plumbing.dwg	8th floor lighting.dwg	43	0	~
Done			🚽 My Comput	er

39.5 Redline Markup Language

- 1. Choose Insert, Markup...
- 2. **Pick** a markup language file to insert.



TIPS:

Markups range from hyperlinks to simple boxes and circles. Created in programs such as VoloView

A new "MARKUP" layer is created in the current drawing.



39.6 Revision Cloud

1. Choose	Draw, Revcloud
	or
2. Туре	REVCLOUD at the command prompt.
	Command: revcloud
	Minimum arc length: 0.5000
	Maximum arc length: 0.5000
	Specify start point or [Arc length/Object] <object>: Guide crosshairs along cloud path Revision cloud finished.</object>
	or

3. **Click** the Revcloud icon from the draw menu.



39.8 Wipeout

Creates a polygonal area that masks underlying objects with the current background color. This area is bounded by the wipeout frame. You can turn on the wipeout frame for editing and turn it off for plotting.

1. **Choose** Draw, Wipeout

or

2. **Туре**

Command: _wipeout

WIPEOUT at the command prompt.

Specify first point or [Frames/Polyline] <Polyline>: Select a closed polyline:



Chapter 40 Isometrics

Isometric Cursor 40.1

1.	Choose	Tools, Drawing Aids	
		or	
2.	Туре	DDRMODES at the command prompt.	
		Command: DDRMODES	
3.	Toggle	Isometric Snap/Grid to ON.	

🕏 Drafting Settings 🛛 🔹 👔 🔀				
Snap and Grid Polar Tracking Object Sna				
Snap On (F9) Snap Snap X spacing: 0.86602540 Snap Y spacing: 0.5000 Angle: 0 X base: 0.0000 Y base: 0.0000	Grid On (F7) Grid Grid X spacing: 0.86602540 Grid Y spacing: 0.5000 Snap type & style Grid snap Rectangular snap			
Polar spacing Polar distance: 0.0000	⊙ Isometric snap ○ PolarSnap			
Options	OK Cancel Help			

Isoplane Toggle 40.2

- 1. **Press** Function Key F5 to toggle <Isoplane Top> <Isoplane Left> <Isoplane Right> or
- 2. **Press CTRL + E** to toggle isoplanes.



Isometric Circles 40.3

1. **Type**

ELLIPSE at the command prompt. Command: ELLIPSE or EL Arc/Center/Isocircle/<Axis endpoint 1>: I Center of circle: <Isoplane Top>

<Circle radius>/Diameter:



Isometric Text 40.4

1.	Туре	STYLE at the command prompt
		Command:STYLE
2.	Туре	RISO as a style name
		Text style name (or ?) RISO
3.	Pick	A font file
		Font file: Romans.shx
4.	Туре	Zero(0) for the text height
		Height <0> 0
5.	Туре	.85 for the character width factor
		Width factor: .85
6.	Туре	30 degrees for an obliquing angle
		Obliquing Angle: 30
7.	Туре	NO to Backwards, Upside Down, and Vertical
8.	Туре	DTEXT at the command prompt
		Command:DTEXT
9.	Pick	A start point
		Justify/Style/ <start point="">: pick</start>
10.	Туре	30 for the rotation angle
		Rotation angle:30
11.	Туре	A string of text
		Text:(text string)
12.	Press	ENTER to end the text command

AutoCAD 2D Tutorial

Style	Width Factor	Oblique Angle	Rotation Angle
Left ISO	.85	-30	-30
Right ISO	.85	30	30
Top ISO	.85	30	-30

Isometric Dimensions 40.5

- 1. **Type** DIMALIGNED to place an aligned dimension in isometrics
- 2. **Type** DIMEDIT oblique the angle of the dimension line and rotate the text.

Oblique Angle = -30

Rotated Text = 30

