Learning Objectives

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Learning Objectives

1. Use Autocad to prepare a simple floor plan.
2. Learn how to use coordinates in Autocad
3. Learn how to dimension drawing features
4. Lean how to make and insert blocks.

Assignment 5

1. Use AutoCAD title block template file (.dwt file) to create a title block. An example of a title block is found below. Use the information shown below to populate the boxes of your title block. This title block will be used for the two drawings that you submit and other drawings this semester. Once you have finished the title block and contents, save it as a *.dwt file for future use. **(20 points)**

Design Engineer Steven F. Bartlett ~~UAC~~ ~~119 Songo Moonwha-Ro~~ ~~Yeonsu-Gu Incheon~~ ~~Korea, 21985~~	Civil Engineering 114 CME Bldg Salt Lake City, UT 84114
Project Location: ~~IGC Gymnasium Floor Plan~~	Residential Home
Owner: ~~Incheon Global Campus~~ ~~Incheon, Yeonsu-gu~~ ~~Songdo~~ ~~Phone 032-715-7795~~	Your name and address (Do not include phone number)
Project Number: CVEEN 1400 ~~HW2~~ File Name: ~~Gym-01.dwg~~ Drawn By: Your Name (full name) Checked By: Steven F. Bartlett, P.E. Copyright. Your Name	HW 5 HW5_lastname_firstname.dwg
Title: ~~Gymnasium, Floor Plan~~	House Floor Plan
Sheet: G-01	
Sheet 1 of 1	

Assignment (continued)

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2. Watch the three YouTube videos about making floor plans included in this lecture.

a. Draw a floor plan and elevation view from the sketch given. The elevation view should be drawn thru the A - A' section line. Make sure that all components of the home are labeled and dimensioned. Your dimensions should be in decimal feet. Be sure to make one dwg file for the plan view **(50 points)** and one dwg file for the cross-sectional view **(30 points)**. Assume that all exterior walls are 1-ft (12-in) thick and interior walls are 0.5-ft (6-in) thick. Make sure that all walls are shown as double lines and windows are located.

b. Use the title block developed in problem 1 for the drawings made in problem 2. SUBMIT THE TWO DRAWINGS AS PDF FILES to Canvas using the format HW5_lastname_firstname.pdf

Example Floor Plan - House Sketch - For Homework

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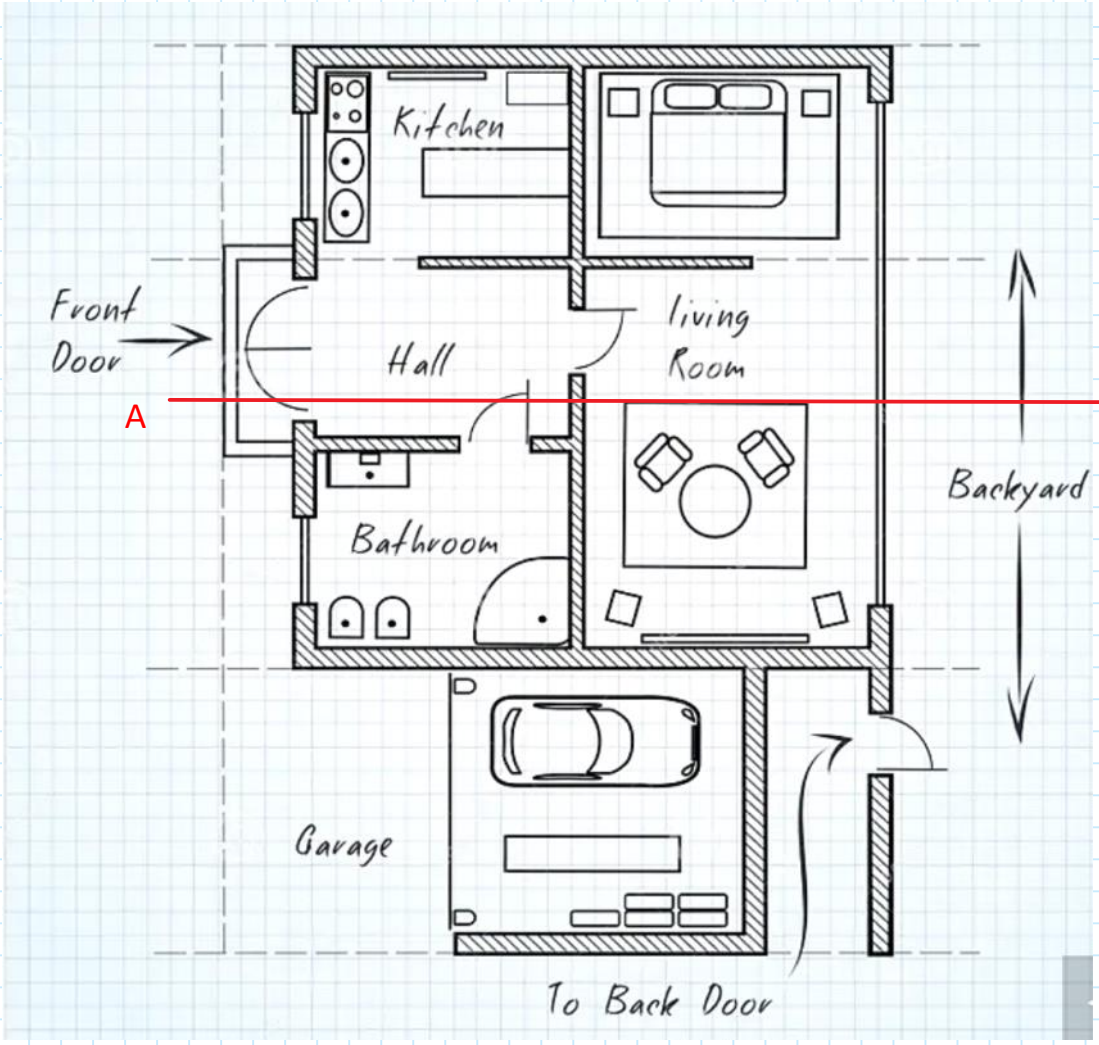
https://www.dreamstime.com/stock-illustration-floor-plan-house-sketch-technical-construction-architectural-flat-vector-illustration-image52483697

House Plan



Exterior wall thickness = 1 foot

Interior wall thickness = 6"

Windows = 4"

(Note: Thickness of walls and windows are not to scale on this drawing)

Scale: 1 square = 2 feet

Floor Plans (continued)

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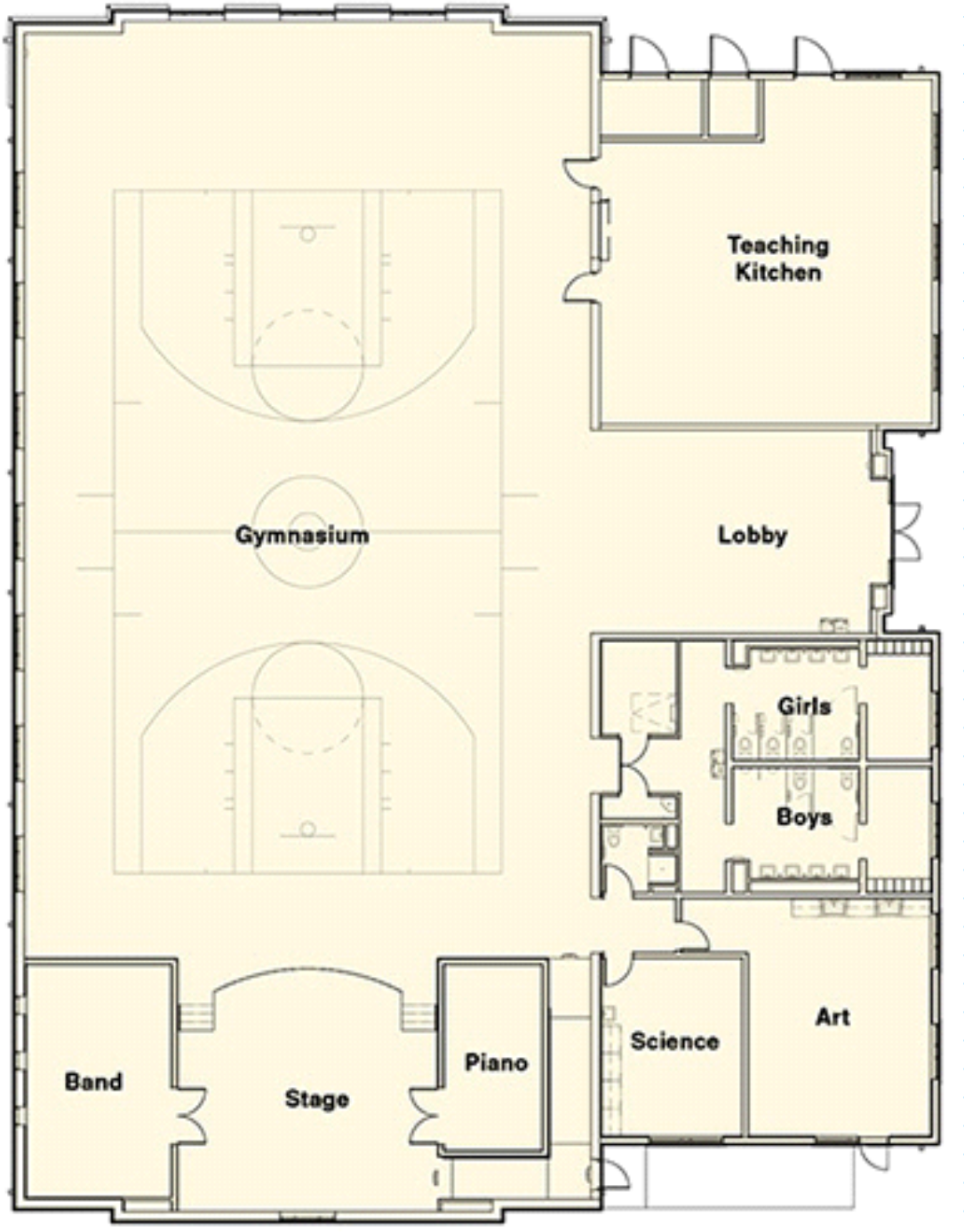

Example Floor Plan

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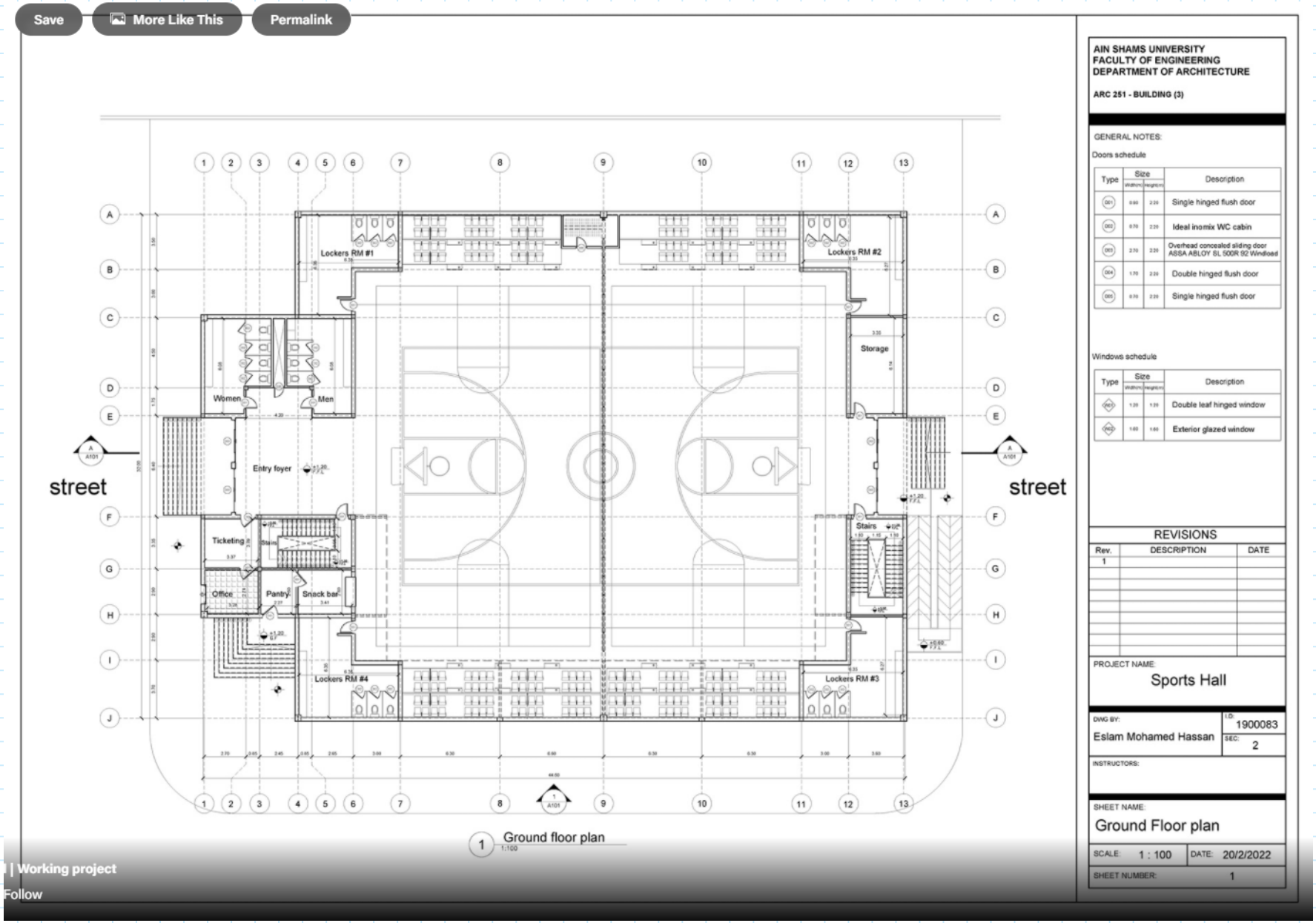
Save More Like This Permalink



Floor Plans Videos

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Resources:

1. Work Books 1 and 2 - Basics of AutoCAD
2. Videos

[Making a simple floor plan in AutoCAD: Part 1 of 3]

SourceCAD

Video Topics

Part 1
Overview (0 to 0:49)
Units (0:49 to 1:19)
Walls (1:19 to 5:29)
- Rectangles
- Polyline
- Explode (to lines)
- Join (lines to polylines
- Offset Tool
- Trim Tool

Doors & Windows (5:29 to 7:11)
- Layers
- Mirror
- Hatching
- Create Blocks

Text (10:55 to 12:18)

[Making a simple floor plan in AutoCAD: Part 2 of 3]

SourceCAD

Part 2
Inserting Blocks
Hatches

Part 3
Dimensions
Plotting

Floor Plans Videos (continued)

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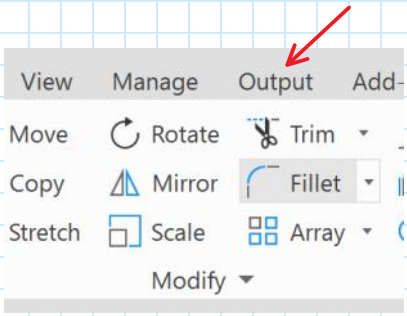
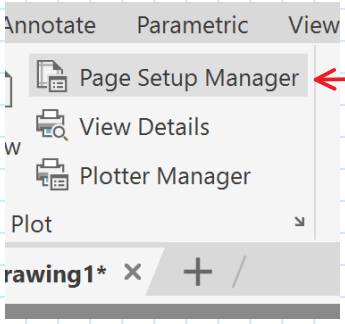
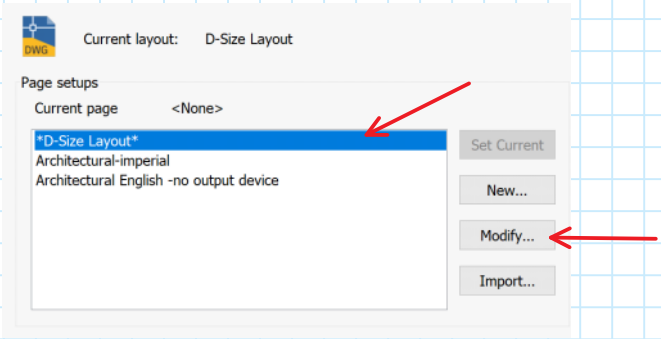
[Making a simple floor plan in AutoCAD: Part 3 of 3]
SourceCAD

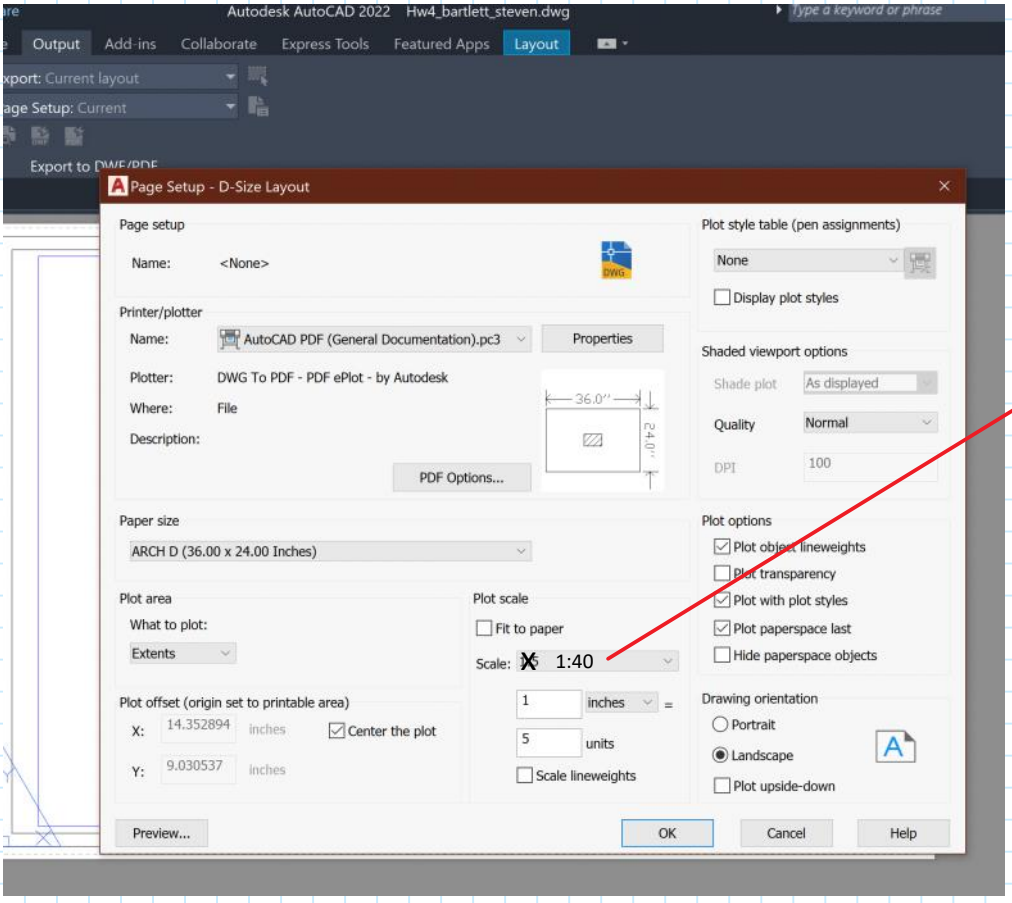
Scaling the drawing space

Wednesday, February 1, 2023 1:48 PM









The floor plan drawing for the homework assignment has 39 squares for its maximum length (Example Floor Plan - House Sketch). Thus, the maximum length is 39x2=78 ft, where the length of each grid square is 2 feet. To determine scale to be used divide 78 by the longest dimension in the current drawing space. For the Tutorial-iArch.dwt template, this is 2' 4" (2.33 ft). Thus, the minimum scale should be 78/2.33=33.4764 or 1:33. I recommend you select 1:40 for this drawing)

Understanding Blocks

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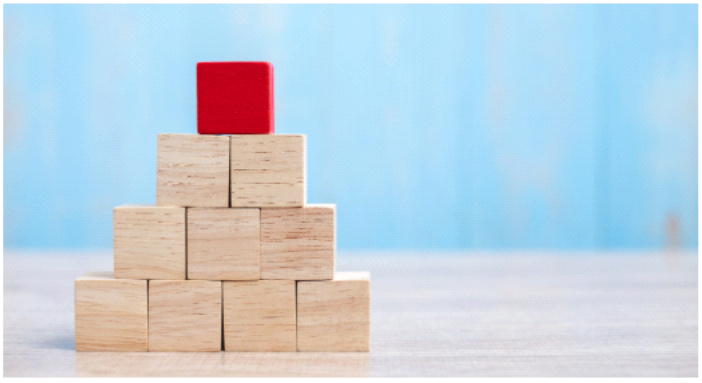
Block Basics: How to Create a Block in AutoCAD and Other Block Tips



A block is a combination of AutoCAD object types that make up a real-world object. For example, it could be a chair, manhole, door, utility pole, you name it.

Looking to learn how to create a block in AutoCAD? There are a few ways to do it. Here, we'll discuss different ways to make a block as well as some tips to get blocks to do what you want.

Understanding Blocks

Let's say we want to make a symbol for a telephone manhole from a bunch of CAD objects. And, on top of that, the manhole may be used to show that it is existing or that it is proposed, and they each need to look like the following image on the right.

https://www.autodesk.com/blogs/autocad/how-to-create-a-block-in-autocad/?redirected=1

You could make two blocks each with their own layer properties—or you can leverage a really cool functionality in AutoCAD.

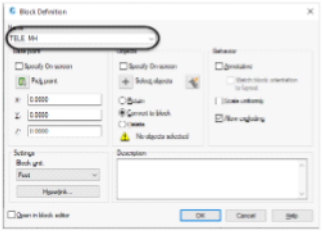
First, everything in AutoCAD goes on a layer and has object properties (e.g., color, linetype, lineweight, etc.), and this includes blocks. That said, the objects "inside" the block can also go on their own layers. If you make a block of objects on their own unique layers, AutoCAD "locks in" what layer those objects are on. No matter what layer the block is on, none of the AutoCAD objects will look like the properties of the block.

And this is where layer 0 comes in. You can leverage this cool feature in AutoCAD where any objects that are on layer 0 (and set to ByLayer) and are in the block will take on the blocks layer properties. Now, understanding this functionality, let's make one block called Telephone Manhole.

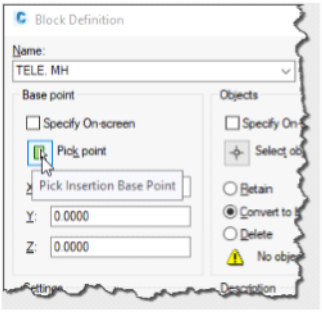
How to Create a Block in AutoCAD

To use the layer 0 functionality in your block, let's first set all the objects to layer 0 and set the properties to ByLayer.

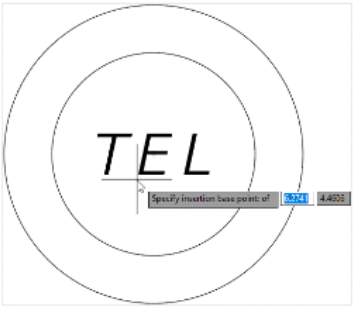
Type "B" in the command line to open the Block Definition dialog box. Starting from left to right, give the block a name.



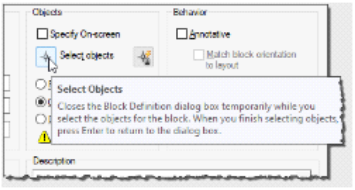
Now, you need to tell AutoCAD what the insertion point should be. In other words, when you place the block, the point about which the block appears at your cursor.



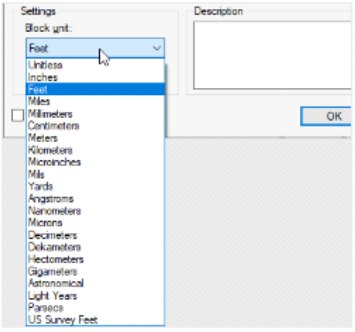
Click the Pick point button and choose the center of the circle.



Click the Select Objects button and select the objects you want to be stored in the block.



Be aware of the Block unit setting. AutoCAD has no idea what units in which you created the object; here is where to say what it is. Setting this will allow you to insert the block into other drawings with different units and to scale automatically.



If you have multiple block instances in the drawing, the objects inside the block will take on the block's layer properties for whatever layer each block is on. Here, the block on the left is on the layer ManholeTel_ep (existing) and the block on the right is on layer ManholeTel (proposed). Notice the grip at the center of the block. This is the insertion point that is defined.

Understanding Blocks (cont.)

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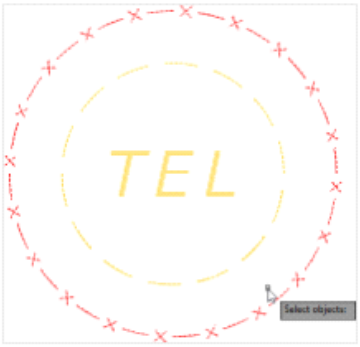
ByBlock...What the Heck is This Property?

Now, let's talk about the ByBlock property. I always get the question, "What the heck is this property for?" It's actually not that difficult to understand. The ByBlock property allows you to change the individual object properties in the block to use the block's property (e.g., color, linetype, lineweight, etc.)

Take a look at this example below. If I change the property of the outside circle to ByBlock for the color, linetype, and lineweight, it allows me to change the blocks property's and the circle will be affected by me doing so.

A Quick Way to Create a Block in AutoCAD

The last thing I want to discuss is how to create a block in AutoCAD quickly and easily. First, press CTRL+SHIFT+C on the keyboard, and then snap to the “insertion” point where you want the block to be defined. Then, select the objects from which you want to make a block and press ENTER.



Now, all you do is press CTRL+SHIFT+V (Paste as Block), and you have an unnamed block.

Understanding Blocks (cont.)

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Understanding Blocks (cont.)

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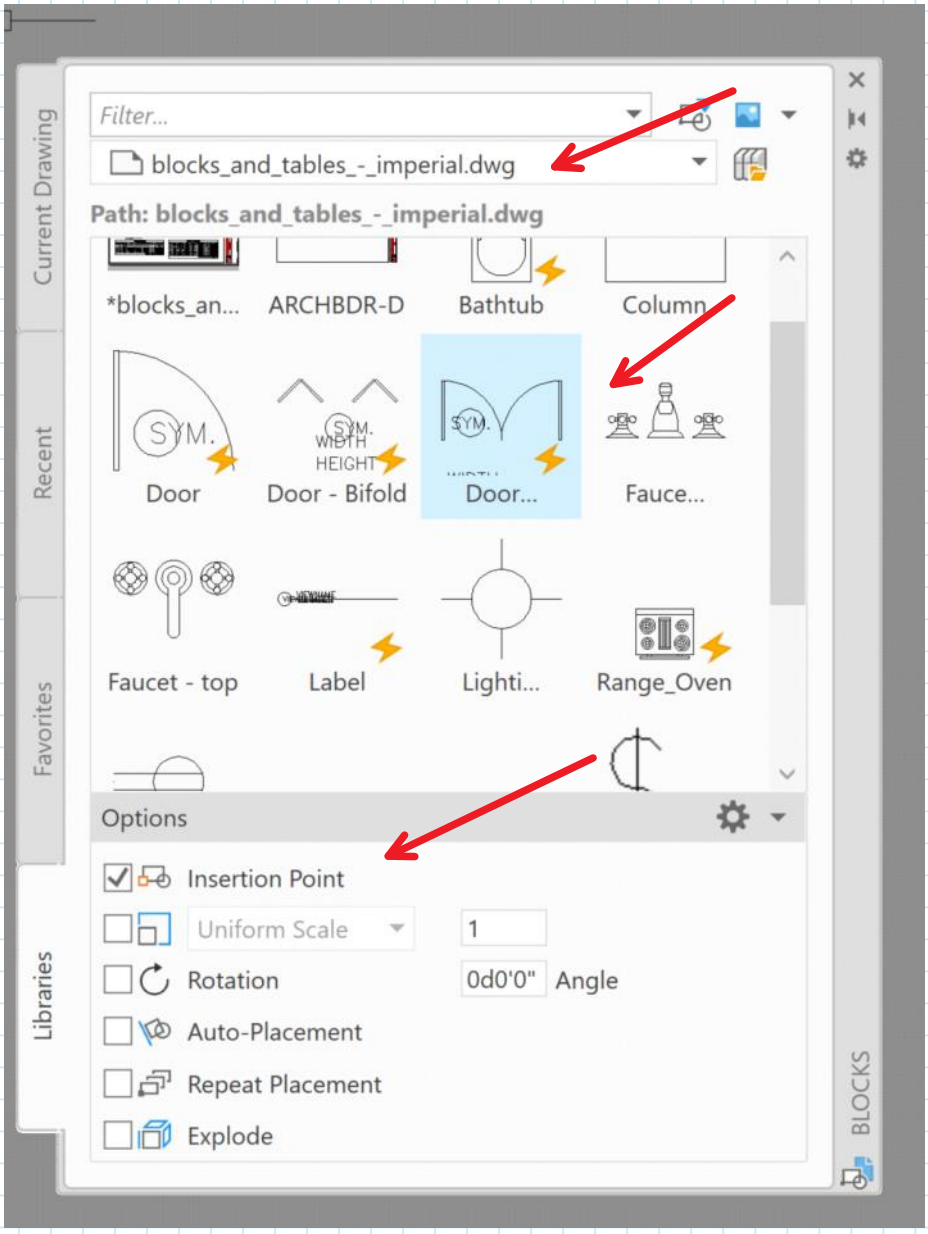

Adding Blocks from External Files

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Downloading Blocks

https://www.autodesk.com/support/technical/article/caas/tsarticles/ts/6XGQklp3ZcBFqljLPjrnQ9.html

- Architectural - Annotation, Scaling and Multileaders (dwg - 185Kb)
- Architectural Example (Imperial) (dwg - 145Kb)
- Blocks and Tables (dwf - 99Kb)
- Blocks and Tables (Imperial) (dwg - 222Kb)
- Blocks and Tables (Metric) (dwg - 253Kb)
- Civil Example (Imperial) (dwg - 166Kb)
- Color Wheel (dwg - 1745Kb)
- Line Weights (dwg - 57Kb)
- Mechanical Example (Imperial) (dwg - 139Kb)
- Plot Screening and Fill Patterns (dwg - 84Kb)
- Tablet (dwg - 428Kb)
- Title Block (ansi) (dwg - 123Kb)
- Title Block (arch) (dwg - 124Kb)
- Title Block (iso) (dwg - 125Kb)
- TrueType (dwg - 69Kb)
- Visualization - Aerial (dwg - 716Kb)
- Visualization - Condominium with skylight (dwg - 1383Kb)
- Visualization - Conference Room (dwg - 951Kb)
- Visualization - Sun and Sky Demo (dwg - 540Kb)

From this list download the blocks and table file.

https://download.autodesk.com/us/samplefiles/acad/blocks_and_tables_-_imperial.dwg

Save file this in a folder of your choice. The file is shown on the next page.

Adding Blocks from External Files (cont.)

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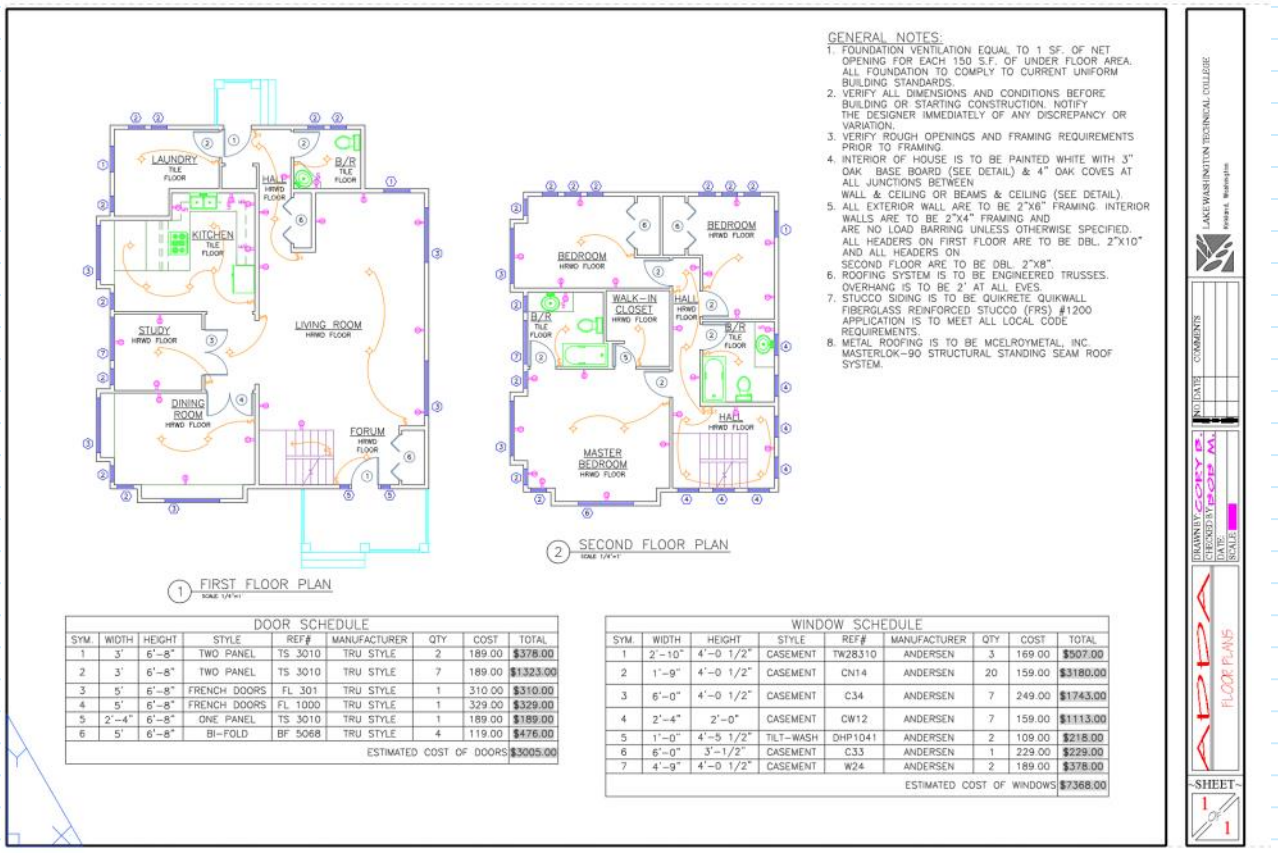


GENERAL NOTES:

1. FOUNDATION VENTILATION EQUAL TO 1 SF. OF NET OPENING FOR EACH 150 S.F. OF UNDER FLOOR AREA. ALL FOUNDATION TO COMPLY TO CURRENT UNIFORM BUILDING STANDARDS.
2. VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE BUILDING OR STARTING CONSTRUCTION. NOTIFY THE DESIGNER IMMEDIATELY OF ANY DISCREPANCY OR VARIATION.
3. VERIFY ROUGH OPENINGS AND FRAMING REQUIREMENTS PRIOR TO FRAMING.
4. INTERIOR OF HOUSE IS TO BE PAINTED WHITE WITH 3" OAK BASE BOARD (SEE DETAIL) & 4" OAK COVES AT ALL JUNCTIONS BETWEEN WALL & CEILING OR BEAMS & CEILING (SEE DETAIL).
5. ALL EXTERIOR WALL ARE TO BE 2"X6" FRAMING. INTERIOR WALLS ARE TO BE 2"X4" FRAMING AND ARE NO LOAD BARRING UNLESS OTHERWISE SPECIFIED. ALL HEADERS ON FIRST FLOOR ARE TO BE DBL. 2"X10" AND ALL HEADERS ON SECOND FLOOR ARE TO BE DBL. 2"X8".
6. ROOFING SYSTEM IS TO BE ENGINEERED TRUSSES. OVERHANG IS TO BE 2' AT ALL EVES.
7. STUCCO SIDING IS TO BE QUIKRETE QUIKWALL FIBERGLASS REINFORCED STUCCO (FRS) #1200 APPLICATION IS TO MEET ALL LOCAL CODE REQUIREMENTS.
8. METAL ROOFING IS TO BE MCELROYMETAL, INC. MASTERLOK-90 STRUCTURAL STANDING SEAM ROOF SYSTEM.

1 FIRST FLOOR PLAN

2 SECOND FLOOR PLAN

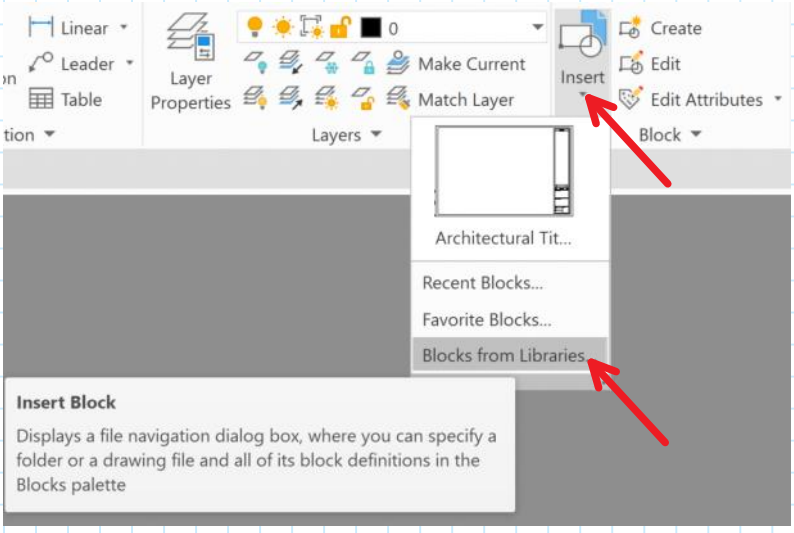
DOOR SCHEDULE

SYM.	WIDTH	HEIGHT	STYLE	REF#	MANUFACTURER	QTY	COST	TOTAL
1	3'	6'-8"	TWO PANEL	TS 3010	TRU STYLE	2	189.00	$378.00
2	3'	6'-8"	TWO PANEL	TS 3010	TRU STYLE	7	189.00	$1323.00
3	5'	6'-8"	FRENCH DOORS	FL 301	TRU STYLE	1	310.00	$310.00
4	5'	6'-8"	FRENCH DOORS	FL 1000	TRU STYLE	1	329.00	$329.00
5	2'-4"	6'-8"	ONE PANEL	TS 3010	TRU STYLE	1	189.00	$189.00
6	5'	6'-8"	BI-FOLD	BF 5068	TRU STYLE	4	119.00	$476.00
							ESTIMATED COST OF DOORS	$3005.00

WINDOW SCHEDULE

SYM.	WIDTH	HEIGHT	STYLE	REF#	MANUFACTURER	QTY	COST	TOTAL
1	2'-10"	4'-0 1/2"	CASEMENT	TW28310	ANDERSEN	3	169.00	$507.00
2	1'-9"	4'-0 1/2"	CASEMENT	CN14	ANDERSEN	20	159.00	$3180.00
3	6'-0"	4'-0 1/2"	CASEMENT	C34	ANDERSEN	7	249.00	$1743.00
4	2'-4"	2'-0"	CASEMENT	CW12	ANDERSEN	7	159.00	$1113.00
5	1'-0"	4'-5 1/2"	TILT-WASH	DHP1041	ANDERSEN	2	109.00	$218.00
6	6'-0"	3'-1/2"	CASEMENT	C33	ANDERSEN	1	229.00	$229.00
7	4'-9"	4'-0 1/2"	CASEMENT	W24	ANDERSEN	2	189.00	$378.00
							ESTIMATED COST OF WINDOWS	$7368.00

To insert the blocks in the drawing into your drawing use Blocks/Insert/Blocks from Library

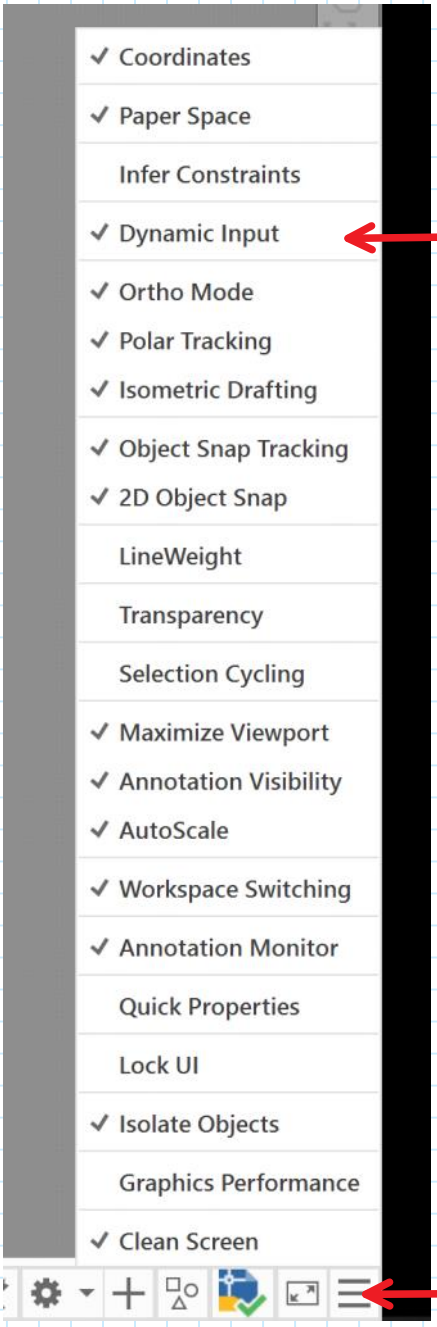


Methods of Drawing Lines - Dynamic Mode

Thursday, February 8, 2024 1:48 PM

1. Dynamic Input Mode
2. Using Coordinates
3. Drawing on a Grid

Dynamic Input Mode

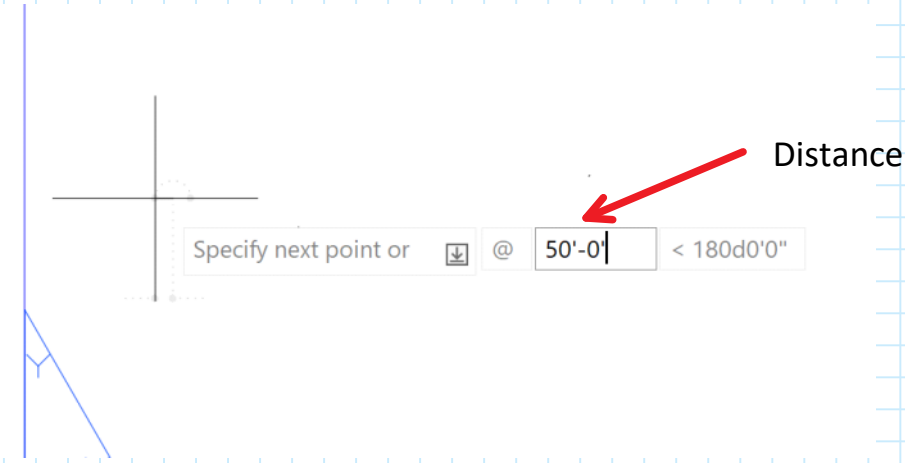


2. Click on Dynamic Input Mode to Turn it On

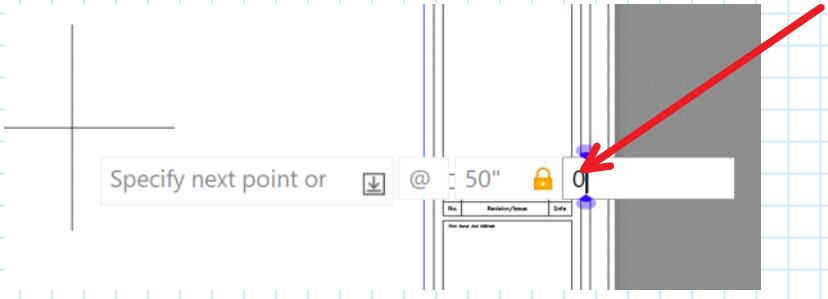
1. Select Here

Methods of Drawing Lines - Dynamic Mode

3. From the Home Menu Select **LINE**
4. Click in the drawing to specify the first point of the line
5. In the blue box shown below, type in the desired distance of the line. Use the @ symbol for relative referencing and the # symbol for absolute referencing. For example @50' will make the line 50 units long RELATIVE FROM THE PREVIOUS POINT. Whereas #50' will make the line go the 50 coordinate position reference by the User Coordinate System. (Make sure that you use the ' symbol for feet followed by a hypen - followed by the "symbol for inches;



6. Toogle to the Angle box by using the TAB key and type in the desired angle. Note that a vertical angle is 90d (degrees) and a horizontal angle is 0d.



Angle

Format 0d0'0"

Or just 0

for whole angles

Methods of Drawing Lines - Drawing With Coordinates

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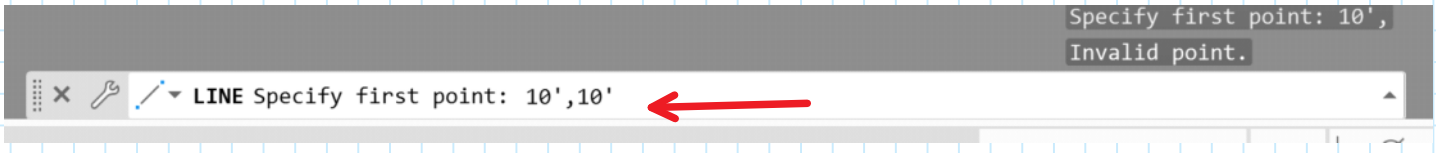

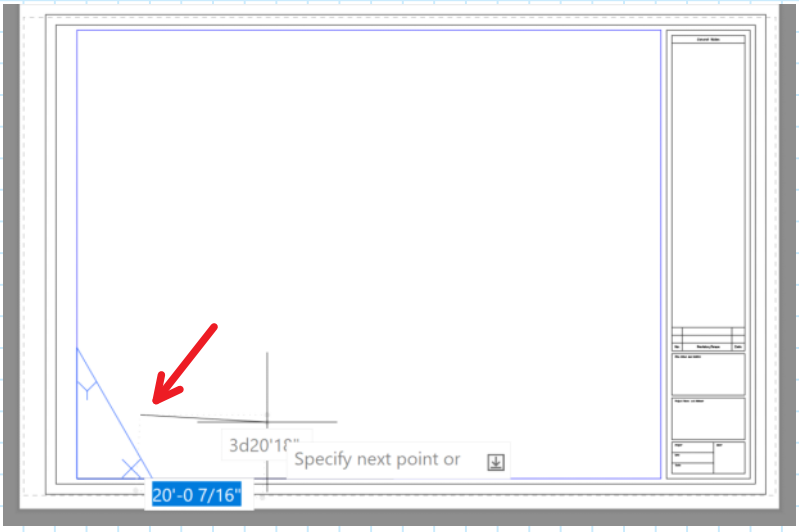

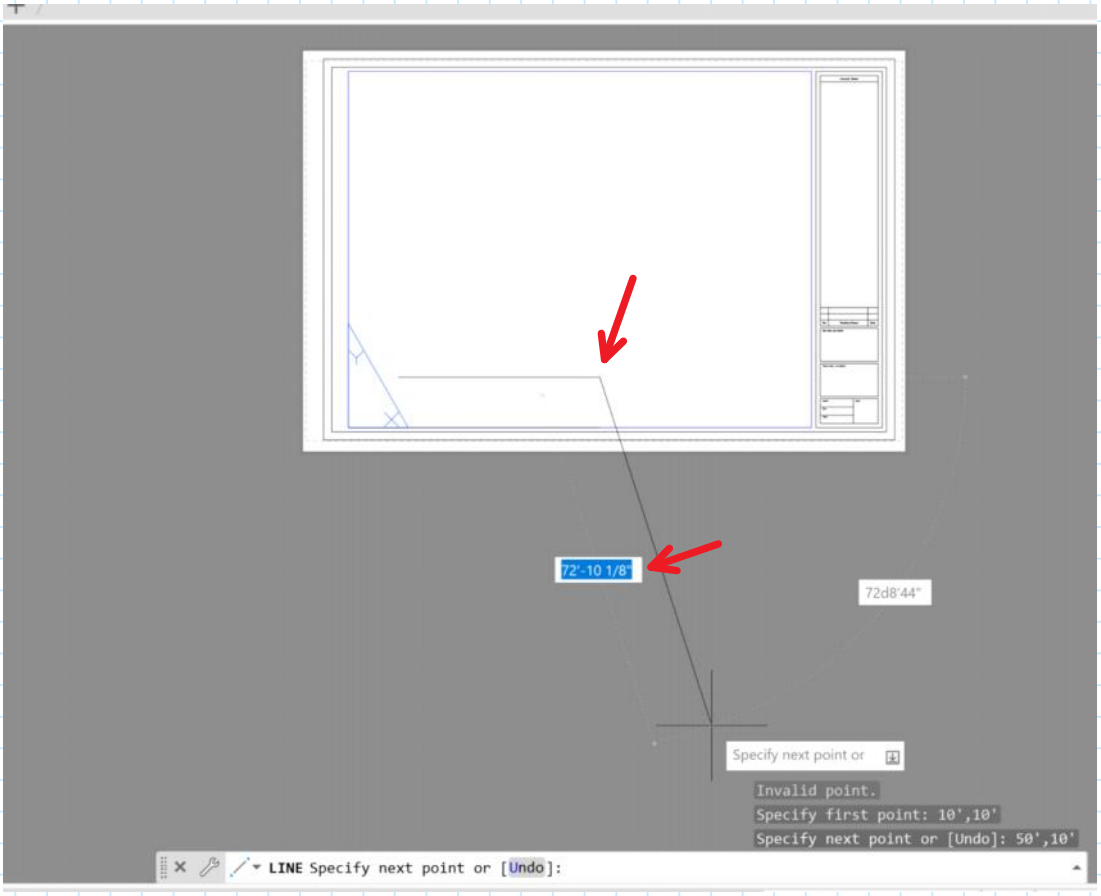

Methods of Drawing Lines - Drawing On a Grid

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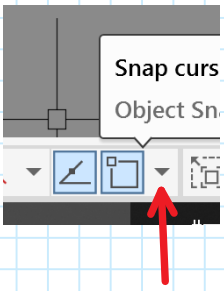
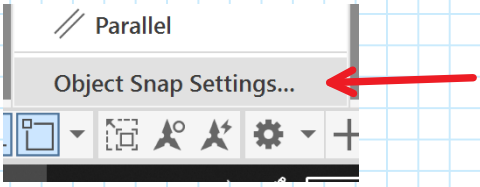
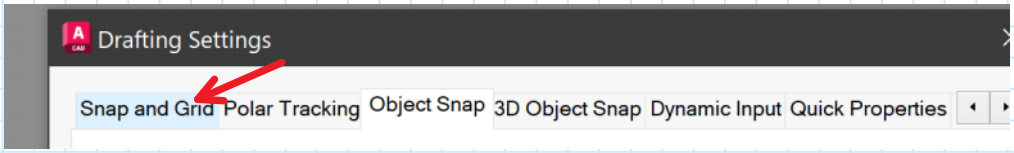
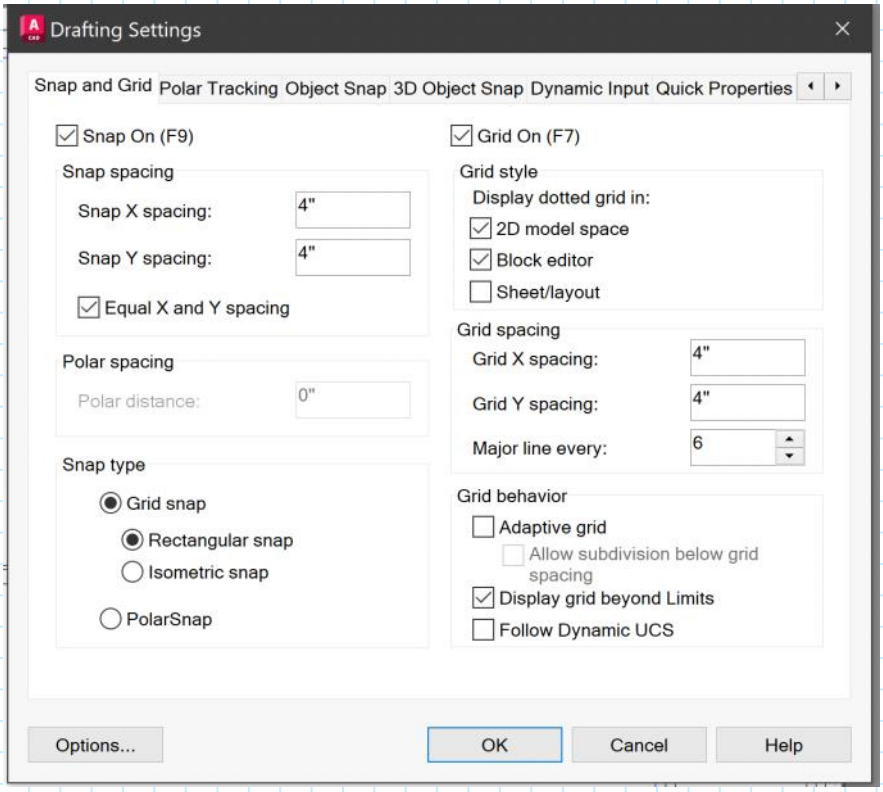
This menu is found in tool bar at the bottom of the screen









The inputs selected in this menu create a 4" by 4" grid with a major grid line every 6 units (i.e., 2 feet). The snap features is set on an snaps to a 4" x 4" grid