

**AutoCAD<sup>®</sup> 2011**  
**2D**  
**Building Drawings**

*Frede Uhrskov*

**AutoCAD® 2011**  
**2D Building drawings**

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# Preface

The exercises are structured as detailed typing exercises and as learning they cannot stand alone, but since it is also important to have success working with AutoCAD, this has been the form chosen.

The exercises are structured so that it is possible also for LT users to take full advantage of the booklet.

If you have any comments or find errors in the book, please do not hesitate to contact the undersigned -**frede@uhrskov.com**

I hope you will enjoy the exercises.

Frede Uhrskov  
Holsted -2010



# Contents

Contents .....	5
Read this first .....	7
Everything in one drawing .....	7
The house .....	8
Creating a layer .....	9
Exercise 01 - LAYER .....	9
Drawing of an external wall .....	12
Exercise 02 - RECTANG .....	12
Exercise 03 - OFFSET .....	13
Save the drawing .....	15
Exercise 04 - SAVE .....	15
Objectsnap .....	16
Draw the inner walls .....	18
Exercise 05 - ZOOM .....	19
Windows and doors .....	22
Exercise 06 .....	22
Blocks .....	23
Insert windows .....	33
Holes for the windows .....	34
Exercise 07 - TRIM .....	34
External door section .....	36
Exercise 08 - ARC .....	38
Internal doors .....	43
Internal door .....	43
Setting up the dimension style .....	44
Exercise 09 DimStyle – Setting up the dimension style .....	44
Dimension .....	48
Exercise 10 - DimLinear - Linear dimension .....	48
Guidelines .....	52
Exercise 11 - XLINE - Guidelines .....	52
Section in brickwork .....	54
Section arrow .....	55
Exercise 12 - PLINE - Polyline .....	55
Attributes .....	57
Exercise 13 - ATTRIBUTES .....	57
Section .....	60
Section line .....	60
Exercise 14 - SECTION .....	60
Section in foundation .....	63
Foundation .....	64
Exercise 15 – Foundation and lightweight concrete block .....	64
Exercise 16 - Floor construction .....	67
Offset .....	68
Exercise 17 - OFFSET - Parallel copy .....	68
Plinth rendering .....	71
Exercise 18 - Plinth rendering .....	71

Hatching.....	72
Exercise 19 - HATCH.....	72
Hatching style for rigid insulation.....	76
Spline.....	82
Exercise 20 - SPLINE.....	82
Level arrows.....	84
Exercise 21 - LEVEL ARROWS.....	84
Exercise 22 - MIRROR.....	85
Extending the oblique line to the right by 60 mm.....	86
Exercise 23 - EXPLODE.....	86
Exercise 24 - EXTEND.....	86
Text.....	89
Textstyle.....	89
Exercis 25 - TEXTSTYLE.....	89
Multilinetext.....	90
Exercise 26 - MULTILINETEXT.....	90
Section in the wall.....	93
Exercise 27 - MIRROR.....	93
Exercise 28 - JOIN.....	94
Exercise 29 - BRICK.....	95
Soft insulation hatching.....	100
Window section.....	103
On your own.....	104
Window section:.....	104
Roof detail.....	105
Printing.....	106
House plan.....	106
Foundation section.....	113
Template.....	114
Reuse.....	115

## Read this first

It is assumed that AutoCAD is properly installed and that a default setup of the screen and workspace **2D Drafting & Annotation** is being used.

In the selection of layers I have chosen to build on AutoCAD Architecture 2010, as drawings in this way easily can be shared with companies which are using AutoCAD Architecture.

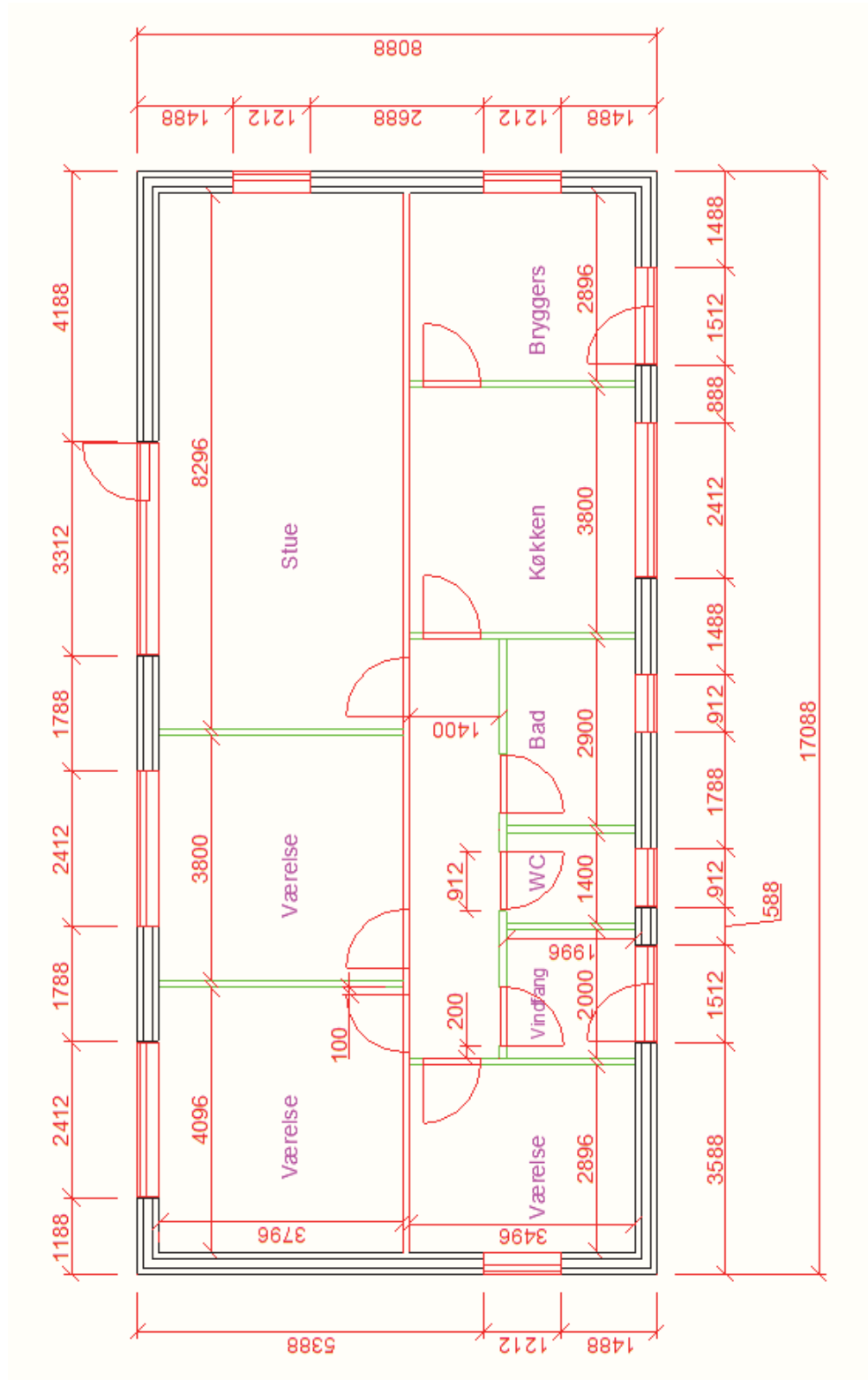
## Everything in one drawing

There are a lot of different ways to make a drawing but in this case I have chosen to draw all the drawings in the same drawing. In this way, the standard blocks that are being made are all available without further operations. At the same time it makes the plotting and the drawing administration easier.

If you follow the exercises, carefully you will have a number of useful tools and blocks you will be able to use in other drawings.

# The house

The ground plan of the house that is to be drawn is shown below. Since there are numerous references to the ground plan it would be an advantage to take a copy of this page so you always have this drawing beside you.

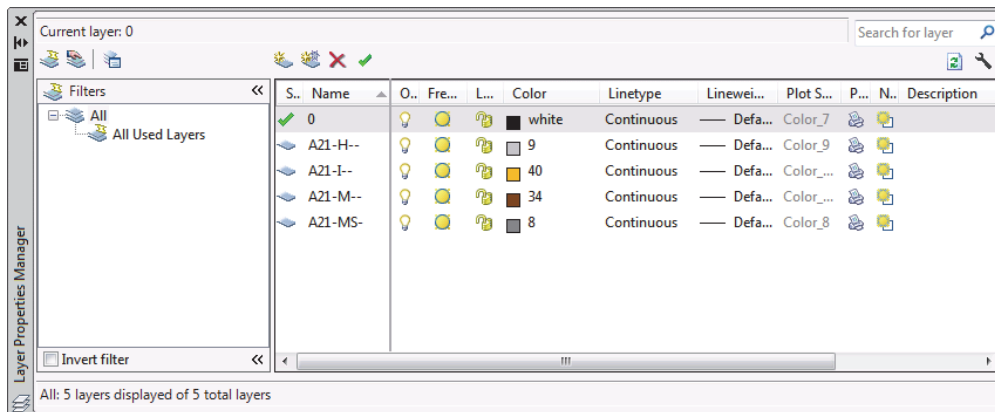




# Creating a layer

## Exercise 01 - LAYER

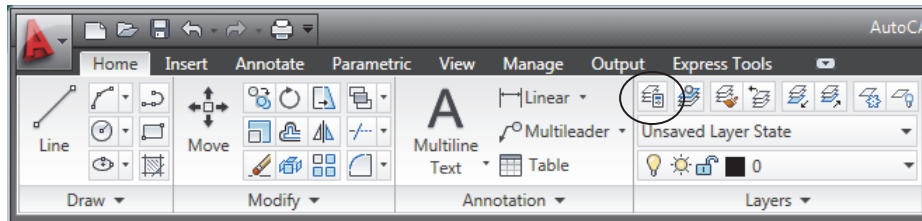
We will only work with layers, which are in consistency with BIPS 2005. It is a very complex system but in the context of "The Digital Building", this is actually an advantage.



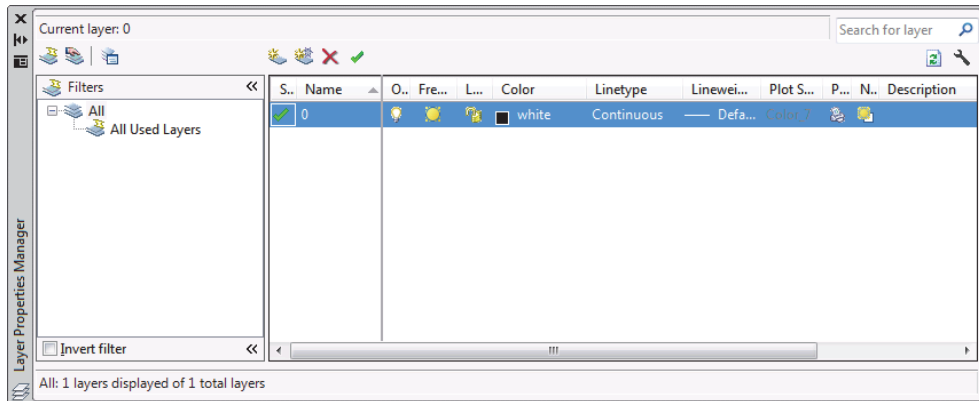
The layers starting with an A are all architect layers. The 4 layers shown here are all related to external walls.

- A21-H-- holes and recesses in masonry
- A21-I-- insulation hatching
- A21-M-- lines to external walls
- A21-MS- hatching in external walls

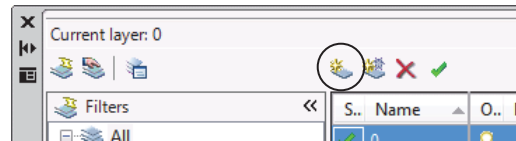
- Click the button accentuated:



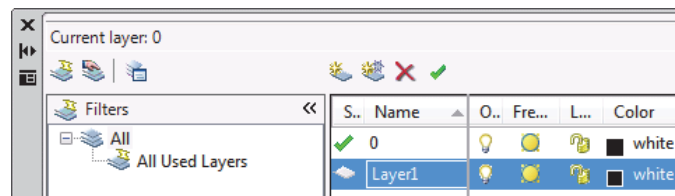
This dialog box appears:



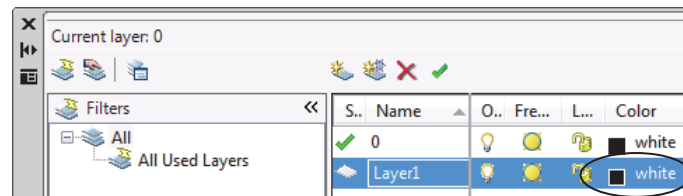
- Click the button accentuated:



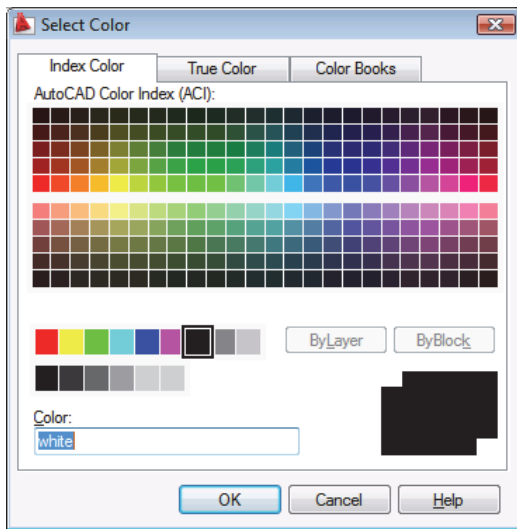
Create a layer called LAYER1 - see the illustration below:



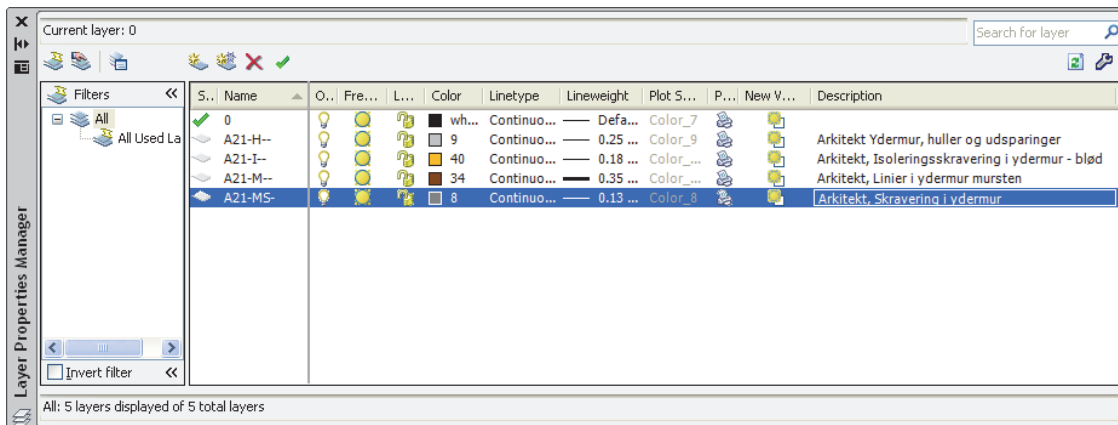
- Write the name of the layer in the blue box - note that the text marked with blue automatically disappears.
- Press ENTER when you have written the name of the layer
- Color the layer by clicking on the box accentuated below:



A dialog box appears showing all the colors available in AutoCAD 2011:



- Select the desired color - see the table below
- Now create the layers shown in the table below.
- Specify the right lineweight for the layers by clicking in the box **Lineweight** – see the weight in the table below.

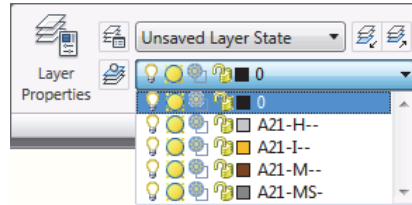


You might also add descriptions as shown in the table - it makes it a little easier to navigate through the layer names. You need not exert yourself to learn these layer names as they will largely be linked to the drawing objects.

# Drawing of an external wall

## Exercise 02 - RECTANG

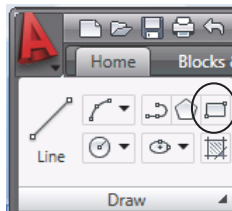
- Change the layer to A21-M-- by clicking on the name in the drop down list.



- Choose the command Rectang in one of the following ways:

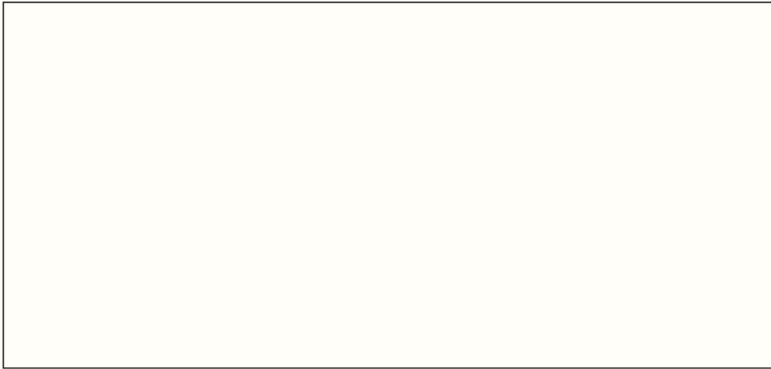
**Keyboard:** REC

**Ribbon:**



- Type 0,0 - ENTER  
This is the lower left corner of the house.
- Type 17088,8088 (the upper right corner of the rectangle) - ENTER.
- As you can see on the screen only a part of the house is visible.
- Double-click the mouse wheel – hereby you zoom to the extents of your drawing and fit all elements into the screen.
- Scroll a little towards yourself with the mouse wheel– hereby you zoom in on the image.

- The house perimeter is now drawn.



We have to construct the outer and inner leaf of the wall. This is done by the command **OFFSET**.

### Exercise 03 - OFFSET

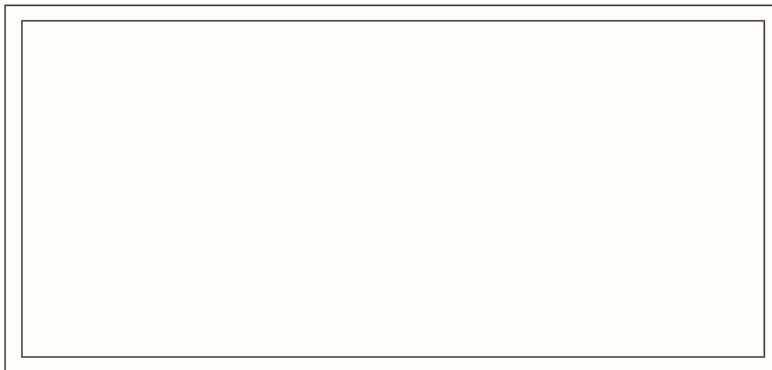
- Select the command **Offset** in one of the following ways:

**Keyboard:**    **O**

**Ribbon:**

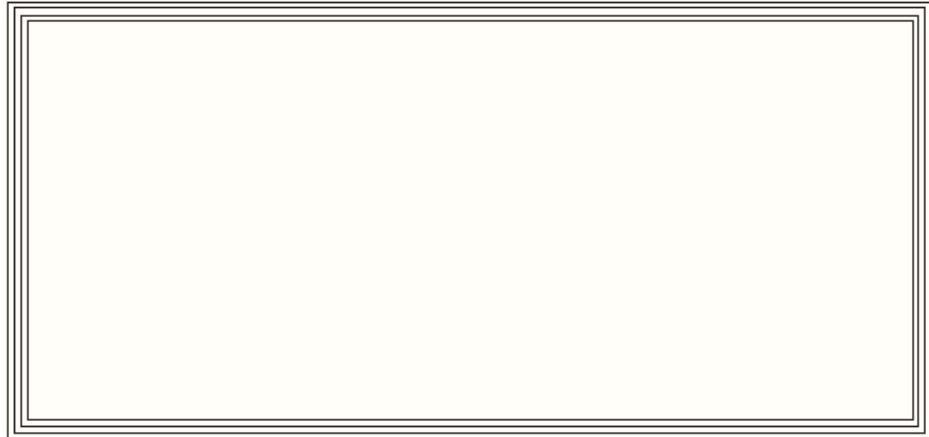


- Type in the Offset distance **348**, (the thickness of the wall) – ENTER.
- Select the rectangle
- Point inside the rectangle – now the rectangle is copied 348 units inwards
- Press ENTER



In this house, we will work with an outer and inner leaf which are both made of brick. Therefore, they are 108 mm wide. Both the outer and the inner rectangle should therefore be offset 108 units respectively inwards and outwards.

- Again, select the command **Offset**
- Type in **108** as the distance
- Select the outer rectangle
- Click inside the rectangle to indicate that that the rectangle is to be copied inwards.
- Select the inner rectangle and click outside the rectangle to show that the rectangle is to be copied outside of the inner rectangle.
- Press ENTER to finish the command. The external wall is now drawn.



# Save the drawing

## Exercise 04 - SAVE

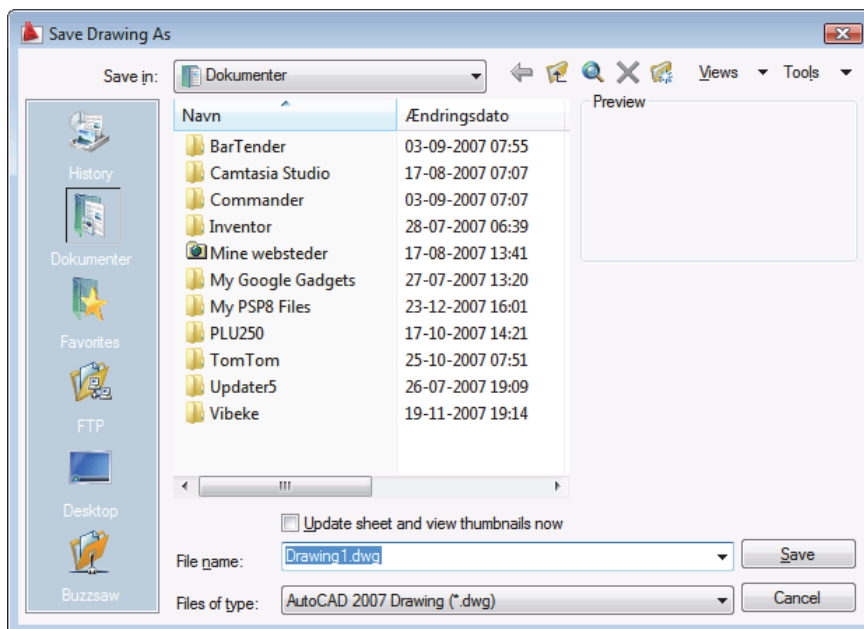
- Save the drawing.
- Choose the command **Save** in one of the following ways:

**Keyboard:**    **Ctrl+S**

**Quick menu:**



If the drawing hasn't been named earlier the dialog box shown below will pop up:



If you would like to save in the current directory you just have to write the drawing name (without the '.dwg'-extension) in the 'File name'-field and click Save.

If the drawing has been saved before, the current drawing is just saved, replacing the old drawing.

# Objectsnap

When you draw in AutoCAD, it is important that the lines begin and end exactly in certain points. Therefore, we use the **objectsnap** set of snapping tools. This means that lines and other objects begin and end in certain points in relation to other objects.

The Objectsnap functions are found in a separate toolbar.

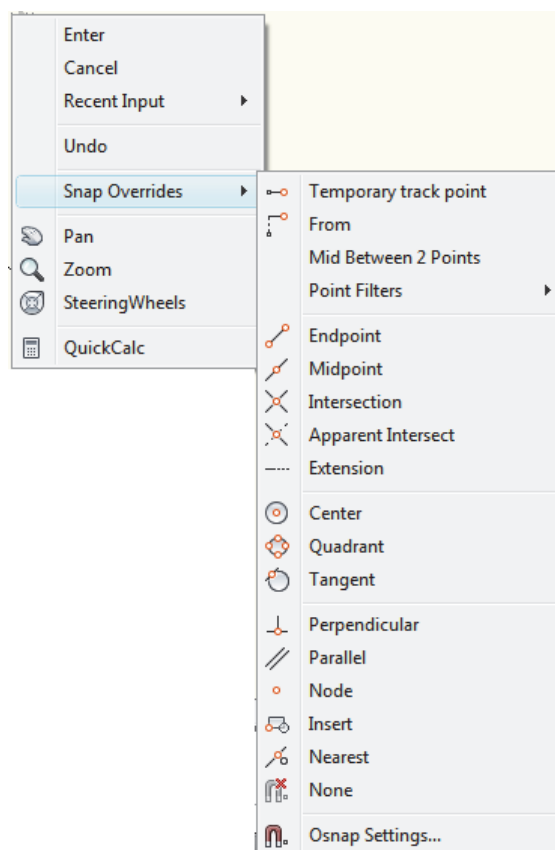
To show the toolbar write **-Toolbar** on the command line and then **Osnap\_snap**

- Information in Danish about the **OSNAP** functions is available in **AutoCAD 2011 - 2D Grundbog** page 209 / **AutoCAD LT 2011 – Grundbog** page 200.

The toolbar looks like this:



Right-clicking and choosing Snap Overrides could also show the Osnap options from this right-click menu:



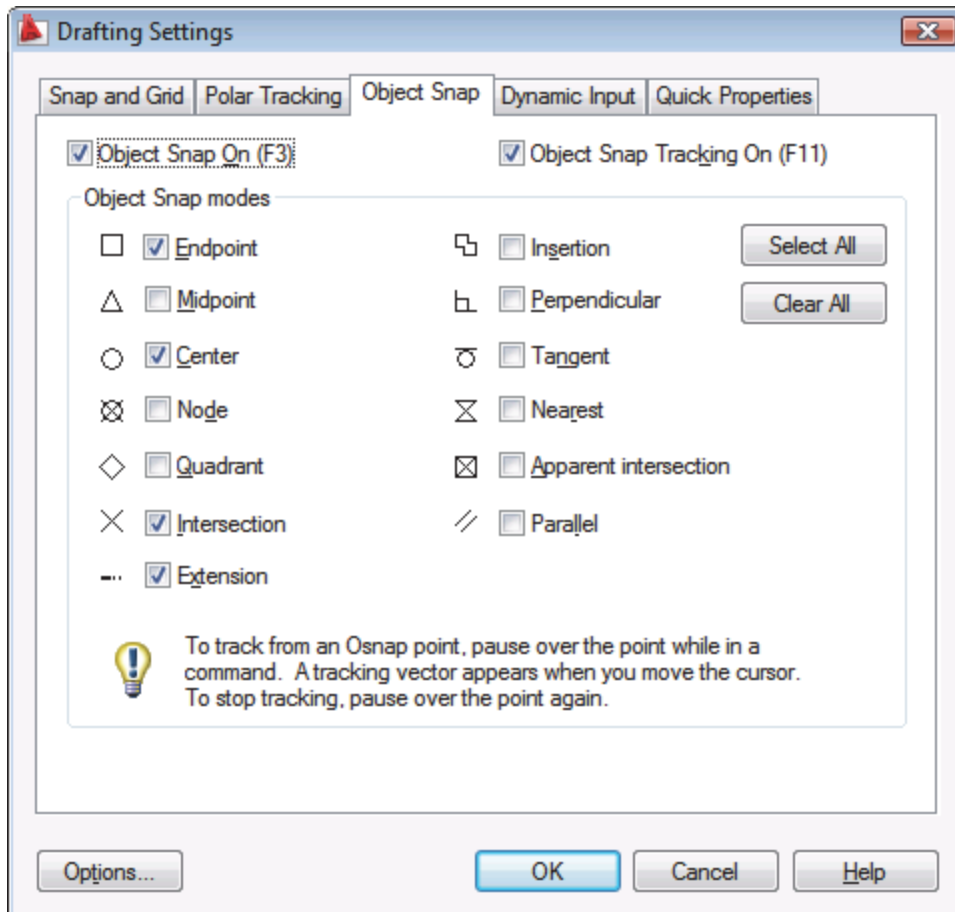


From the toolbar or the right-click menu you can choose the wanted snap function, but you can also choose to make some of the snap functions permanent so they will always work.

This is done by writing **OS** or by clicking this icon:



Now the following dialog box appears. Here you can tick the desired functions:

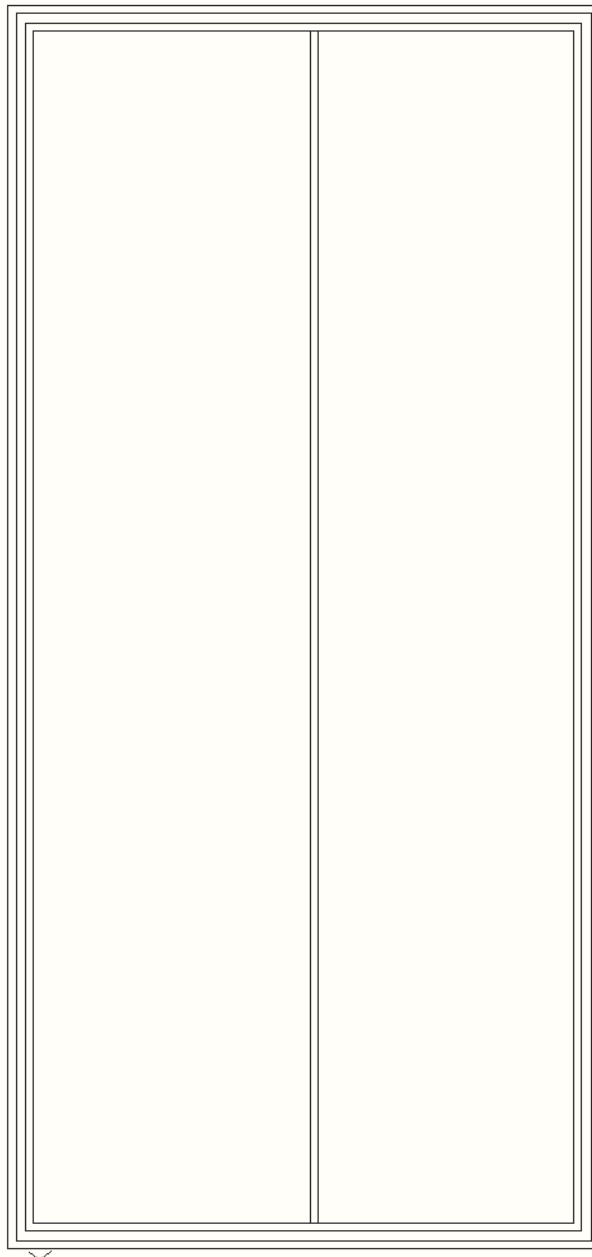


- Click on Clear All
- Tick the functions **Endpoint** and **Perpendicular** and click **OK**.

## Draw the inner walls

Now, draw the internal walls of the house. Start by drawing the wall that runs lengthwise through the house.

- Create the layer **A21-L--** The layer is for light partition walls  
Color 113  
Lineweight 0,35
- Create the layer **A21-LS--** The layer is for hatching light partition walls  
Color 8  
Lineweight 0,13
- Switch to layer **A21-L--**



## Exercise 05 - ZOOM

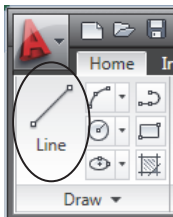
- Use **ZOOM - Window** to ZOOM in on the shown area:



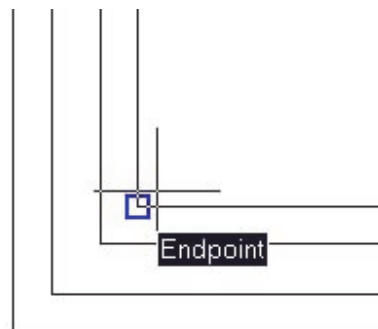
- Choose the command **Line** in one of the following ways:

**Keyboard:** L

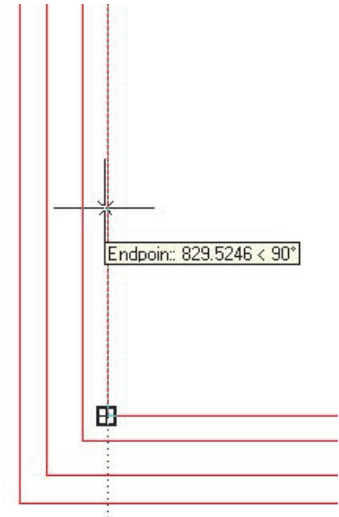
**Ribbon**



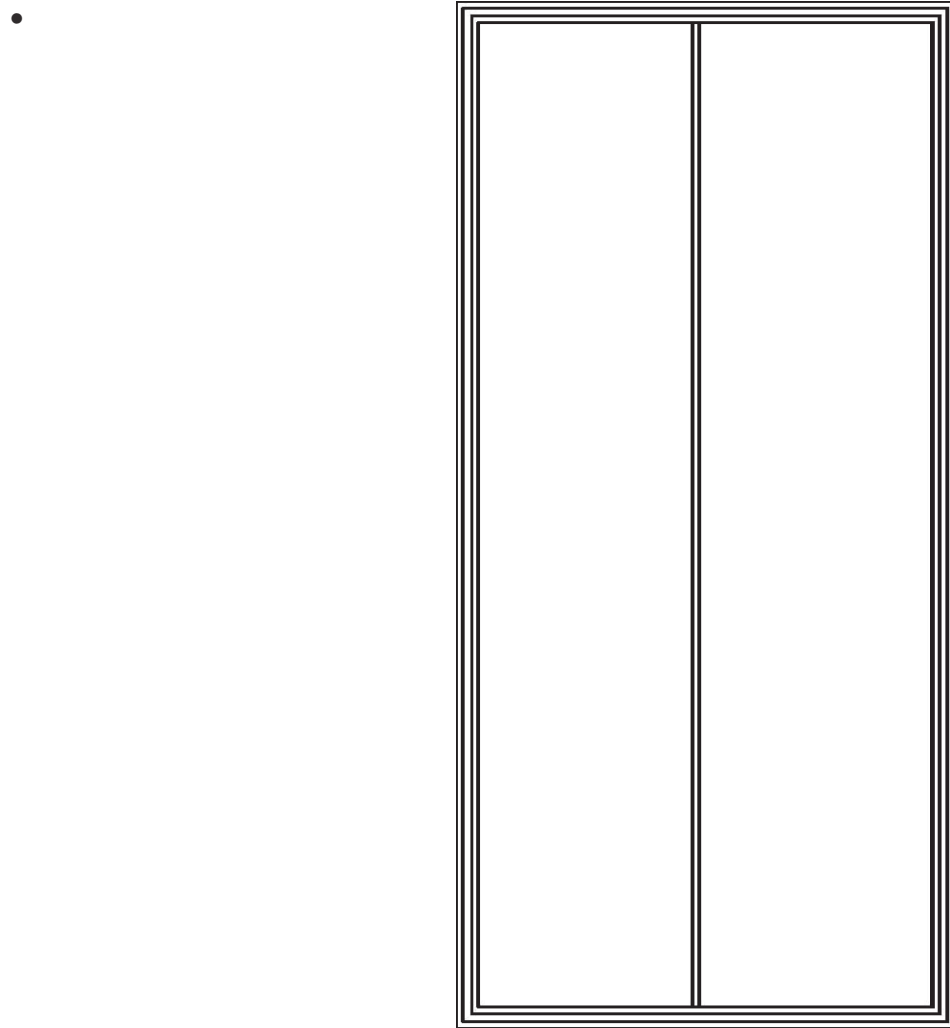
- Move the cursor to the point shown below but do NOT select the point by a mouse click. Just keep the cursor still over the point until a marker is shown in the point. It is the function **Object Snap Tracking** that puts down the marker.
- Drag the cursor lengthwise alongside the wall.



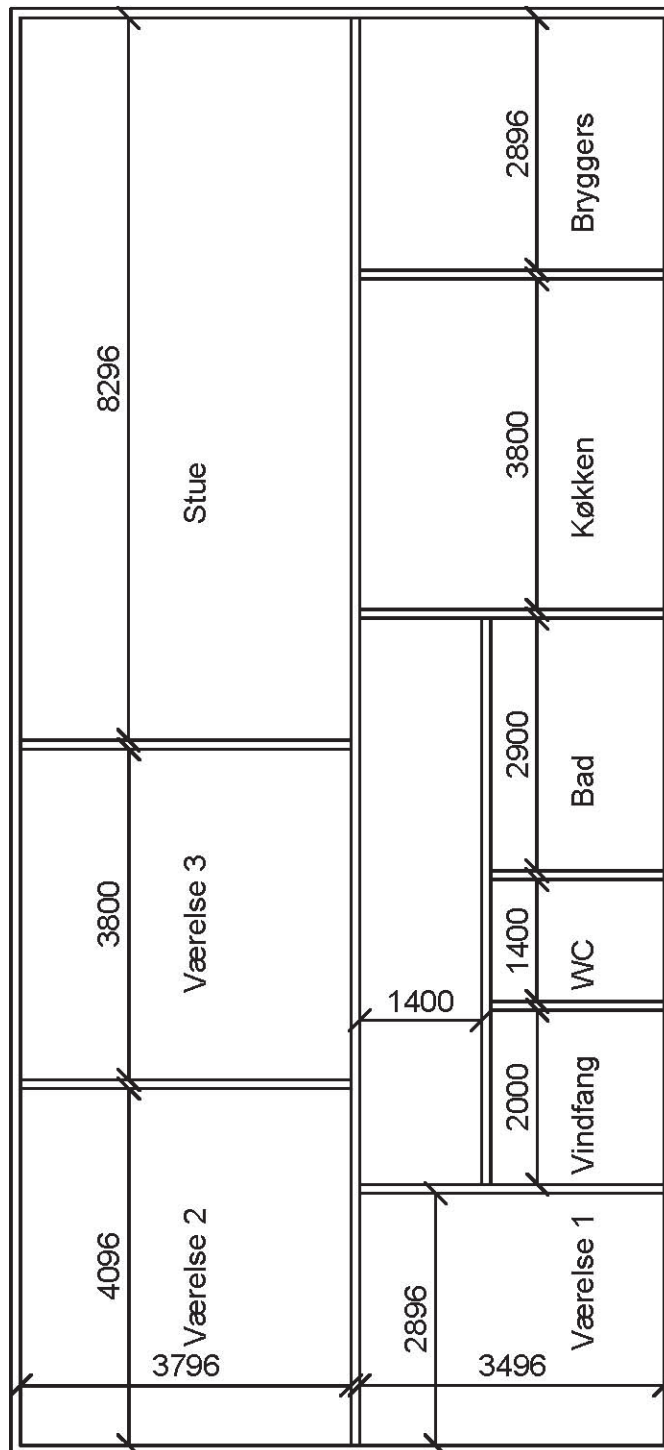
Remember that **OTRACK** has to be activated.  
Notice the dotted help-line that shows alongside the wall.



- Type in the distance **3496** and press ENTER – the start point of the line is now 3496 units up along the wall.
- ZOOM out to the full picture using **ZOOM Previous**
- Click at the opposite wall when you see the indication for Perpendicular.
- Press ENTER to end the drawing of the wall.
- Offset this wall 100 units upwards, so we get a wall at 100 mm.



Use the same technique to draw the other internal walls in the house.  
Remember to switch layer to A21-L--



## Windows and doors

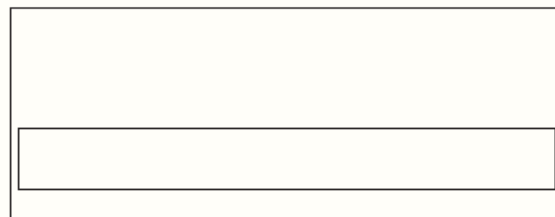
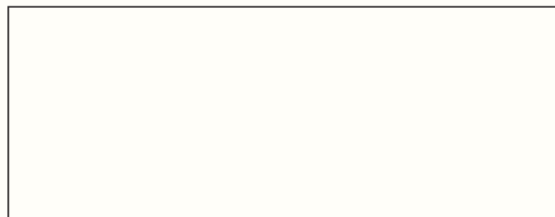
We are now going to make holes for windows and doors in the outer walls.

First, we will draw some windows. It is clever only to draw things once and therefore we will turn the windows and doors into blocks, which can be reused later.

The first window is a window to be placed in a wall hole at 912 mm. Simply draw the window somewhere on the screen *but in the same drawing as a ground plan*.

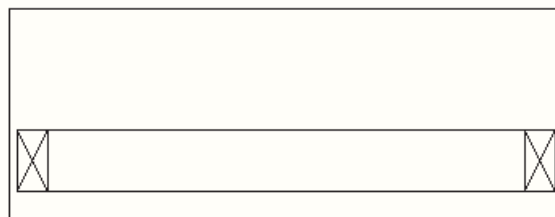
### Exercise 06

- Switch layer to **A21-H--**
- Draw a rectangle with the measurement 912x348
- Create a layer for the drawing of windows and doors  
The layer is named **A314---**  
Color **32**
- Switch to the layer **A314---**
- Draw the window frame. It is to be placed 12 mm from both edges and to be pulled 50 mm back in the window hole – I have given it the measurements 888x100.



To place the window frame correctly, I have used **Snap From**.

If you prefer you can draw a few more details in the window – you decide.



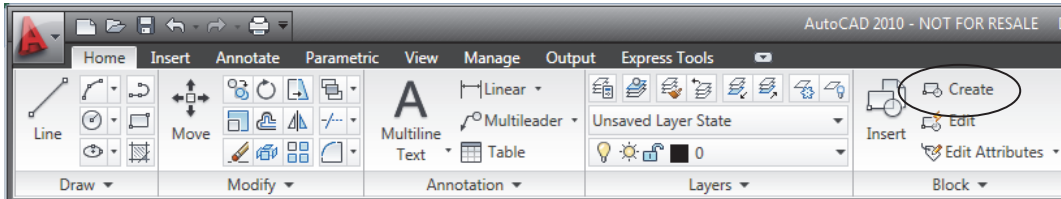
# Blocks

The window is now to be converted into a block.

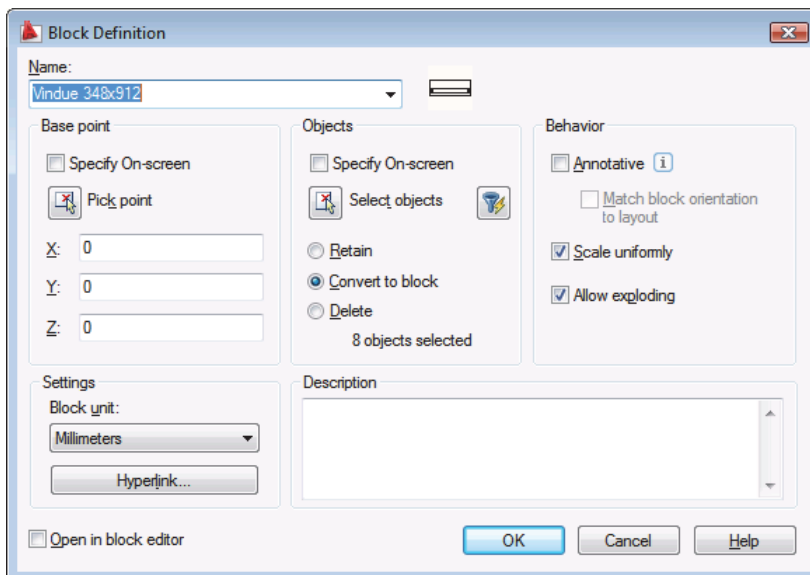
- Choose the command **Block** in one of the following ways:

**Keyboard: B**

**Ribbon**



The following dialog box appears:



- Name the block:

