

SESSION THREE

In this session we will look again at LAYERS; recap on LINETYPE, BLOCKS and the use of the PROPERTIES function; and introduce the use of TEXT and DIMENSIONS.

LAYERS

Open the Layer Properties Manager window by clicking on the icon in the top left of the Layers toolbar.

TURNING ON AND OFF LAYERS

To turn off a layer you can click on the 'light bulb' next to the layer you want to switch off. When you return to the drawing everything on that layer will have 'disappeared'.

LOCKING LAYERS – works the same way. Click on the 'open lock' icon. It changes to a closed lock and now everything on that layer stays the same and nothing can be altered by accident.

Close or minimise the Layers Property Manager.

CHANGING THE LAYER YOU'RE WORKING ON - The Line immediately above where you see the word 'Layers' in the Layers toolbar shows the current layer you are working on. To work on another click on the down arrow next to this and select a new layer.

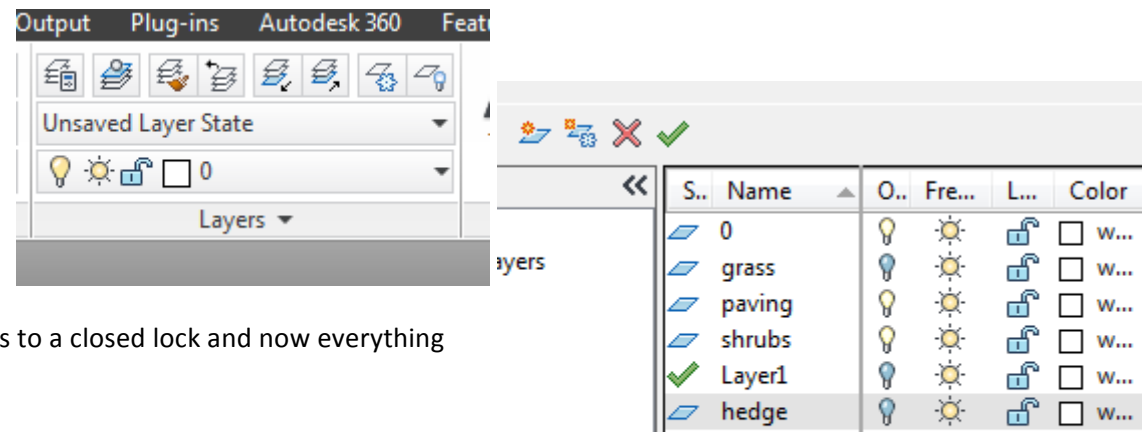
MAKE EXISTING LAYER CURRENT – select an object on the layer you now want to work on. Click on the 'Make Current' icon – 2nd left.

MOVING OBJECTS TO NEW LAYERS – either a) select an object you want to move to a different layer. Open the list of layers on the layers toolbar. select the new layer and the object should move or b) select the object and change the layer using the properties toolbar or c) select the object. Click on 'Match Layer'. Click on an object on the layer you want to move the original object to.

LAYER ISOLATE – this allows you to switch all the other layers off whilst you work on one layer alone. Once you've finished click on 'UNISOLATE' (no. I didn't think that was a real word either!) You can either have all the other layers switch off completely and disappear OR lock them and have them fade. This is easily changed by using the setting button on the top right of the Layer Properties Manager toolbar.

LAYER WALK – useful if you need to cycle through all the layers separately but seldom used.

OTHER OPTIONS – Try them out. There are more available when you click on the Layers button down arrow. Ignore any that refer to 'Viewports'.

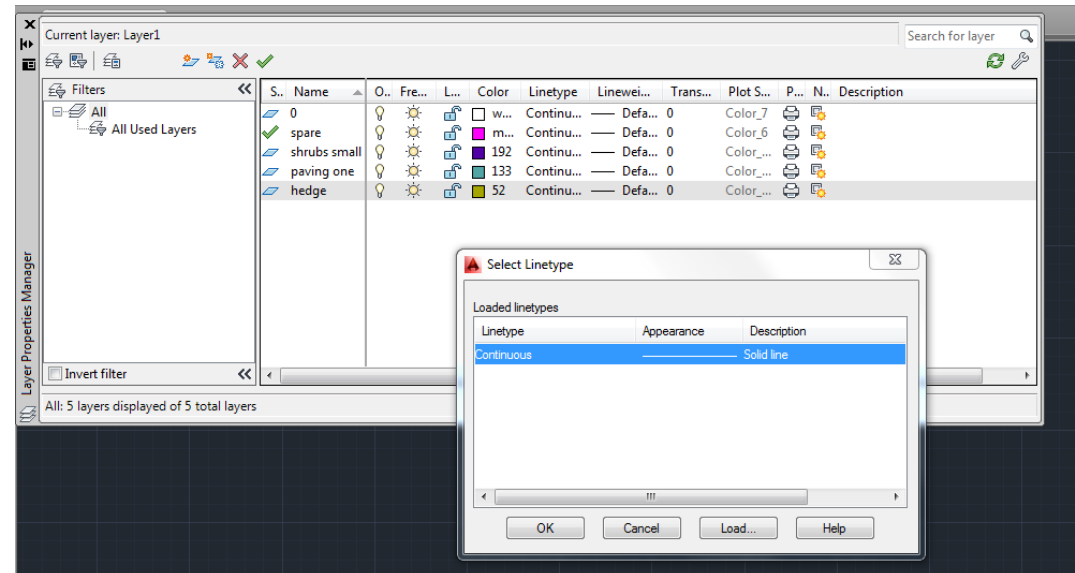


LINETYPES

Loading and allocating new linetypes into the layers.

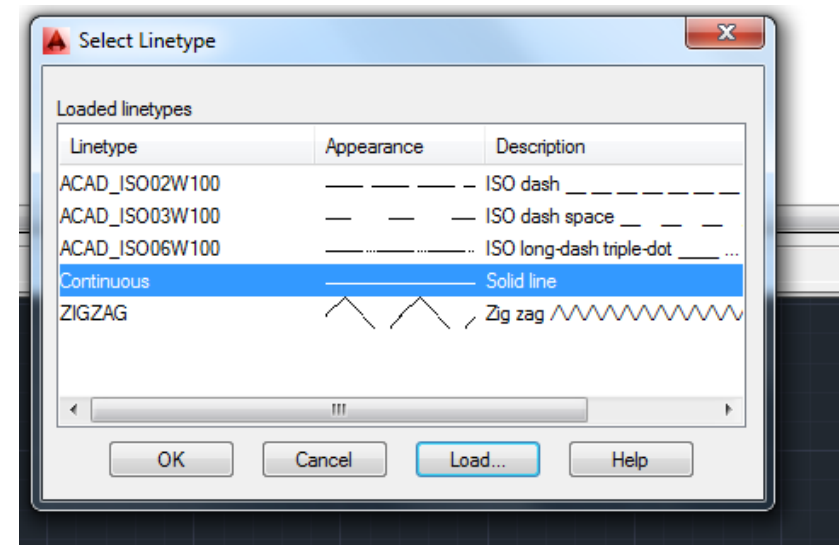
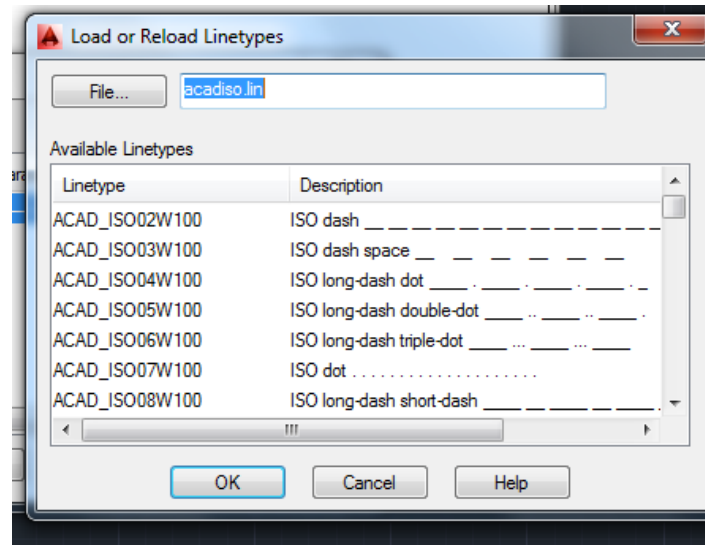
As well as giving each layer a different colour we can change the linetype of everything drawn on or moved to that layer. To do this :-

- open the Layer Properties manager as before.
- Click on the word "continuous" under the heading 'Linetype' and the 'select Linetype' menu will appear – as shown on the right. The default starting position is with just one linetype – ie 'continuous.'
- Click on the 'Load' button and the 'Load Linetypes' window will open – see image on bottom left
- Select the linetypes you want to use in the drawing and press "OK" (you can select as many as you need or you can return later and add more linetypes)
- After OK you will be returned to the 'Select Linetype' window where your new linetypes will be available in the list.
- In the background the layer we originally selected is still highlighted grey.
- Click on the style of linetype you want to allocate to that layer and then press OK and the select linetype window disappears.
- You will see that the previously selected layer now has this new linetype allocated to it. Everything now drawn on that layer will be drawn using that linetype.



LINETYPE SCALE

If you have allocated a linetype to a particular layer yet the lines you draw on that layer do not appear as you expect then it is likely to be a problem of LINETYPE SCALE. Select the line in question; open the PROPERTIES dialogue box. Click on the number next to 'Linetype scale'. Change the number – just a little at first. Below 1 makes the detail 'finer'. Above makes it larger. Have a play with it to see what happens.

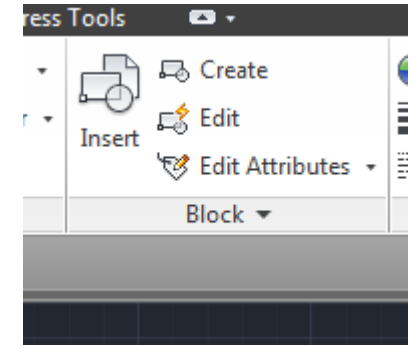


CREATING BLOCKS

Blocks are objects in Autocad that may have lots of detail (i.e. are made up of lots of different polylines and shapes) but form one entity in a drawing, so that wherever you click on it, the whole thing will be selected. Common examples are Trees and bushes. They remain with the drawing but in the future you can open the same drawing and 'save as' another and the blocks will be there to use again. (Later if we have time, we will look at creating blocks with 'attributes' attached to them such as cost, size etc which can be exported to an excel spreadsheet to calculate costs etc..)

To create a block it is better to be in "Layer 0". This is because you will want the block to take on the properties of the layer you put it in (e.g. if you create a tree block, you want it to inherit the tree layer properties you've created) and drawing in "Layer 0" allows this to happen (it is impossible to delete "Layer 0").

Draw a symbol for a shrub eg by using Polar Array to make a spiky grass. Then click on the "Create" icon on the Block toolbar and the 'Block Definition' menu will appear. Name the block (e.g. Phormium large) and click on "Select Objects" - you will return to your screen, select the shrub symbol and press return. Click on 'Pick point' under the 'Base point' heading. Again you will be returned to the drawing. Select the most useful point eg the centre of a circular object or the corner of anything rectangular. You will return to the block definition menu. Click "OK" in the box and your block will be created. Now put it into the tree layer and it should inherit the properties of that layer.



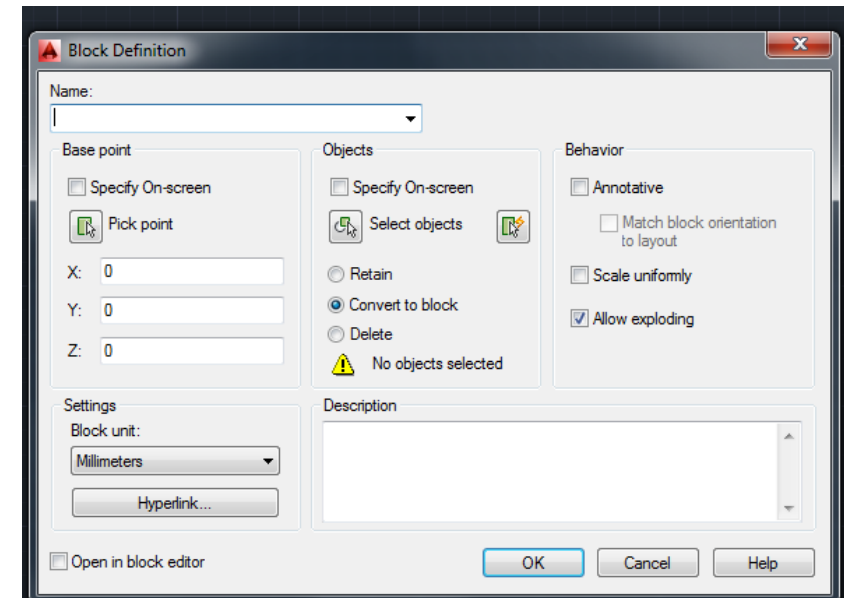
Create

INSERT BLOCKS

To use the blocks created click on 'Insert' which opens the toolbar. Clicking on the down arrow next to name shows all the blocks available in the drawing. Choose the block you need. Click 'OK'. AutoCAD now asks for where you want to place the block in the drawing. Click to place it. Any blocks inserted cannot be simply copied and pasted as per normal.



CAD BLOCK SITES – there are many places on the internet where you can download CAD files to use to create blocks. This is one of them <http://www.ceco.net/> but have a look around.



POLYLINE EDIT – PEDIT

Allows us to change the properties of a polyline eg adjusting the width, joining lines together, closing polylines to make Hatching easier and even to add more points or 'Vertices' into a line. Type PEDIT and press enter. Look at the command bar. You can choose to edit an existing polyline or select multiple polylines eg to Join. Type M for Multiple if you're doing this, then Enter. Select the objects you want to work with. If the lines are not already Polylines then AutoCAD will ask whether you want to convert them to polylines. 'Y' for Yes is the default. Press enter and the dialogue box on the right opens. There are a number of options which are selected by typing the highlighted capital letter.

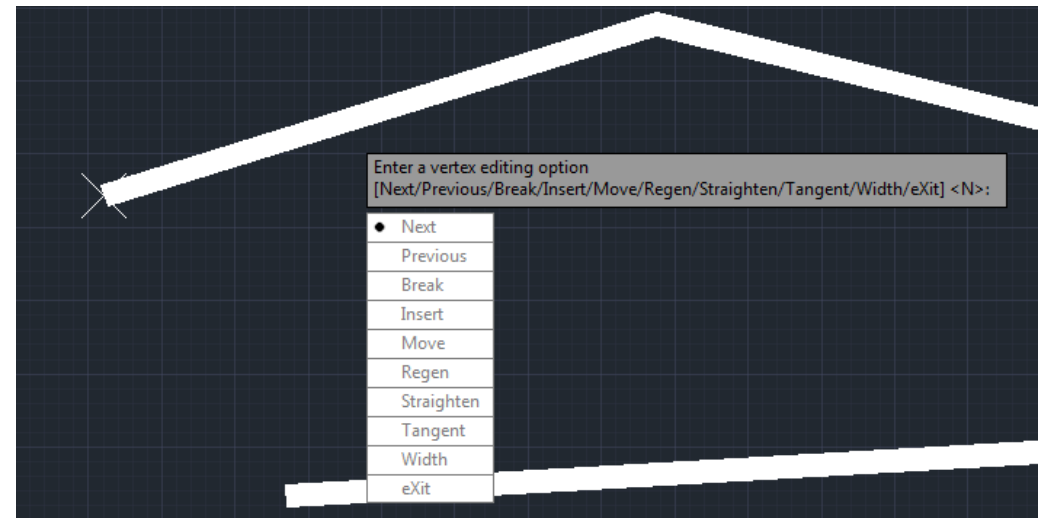
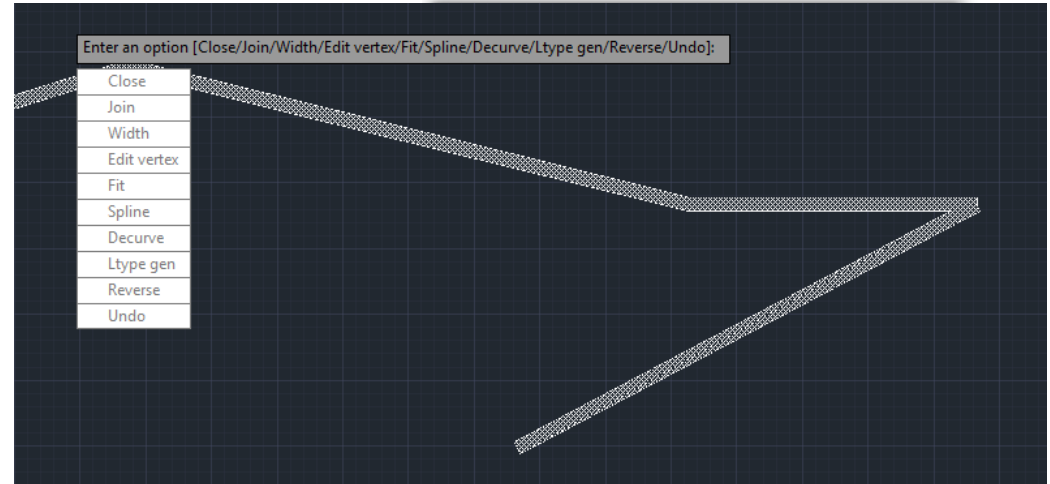
JOIN brings together separate object – the FUZZ DISTANCE is the distance that AutoCAD will 'reach out' from the end of one object to another.

CLOSE – seals a polyline to make an enclosed object.

WIDTH – alters the width of a line.

Word of advice – try to avoid SPLINE as they are notoriously difficult to manage later and use a lot of memory.

EDIT VERTEX is very useful. Select it and a cross appears on the line and the drop-down menu changes. NEXT moves the cross to the next vertex; PREVIOUS – the opposite; BREAK splits the line at that point; INSERT allows a new vertex to be inserted – useful when trying to adjust hatch boundaries. eXit takes you back to the usual Pedit menu. Press Enter to close.



TEXT

Open up you garden plan.

Click on the down arrow below the large letter A. Choose Multiline text.

Draw a rectangle alongside your garden where you want to put a piece of text such as " hedge", by selecting the 2 corners. Immediately that you select the second corner you are able to start typing. Note that the tools ribbon at the top has changed.

The type face will look angular as in the image below right. This is the default text style and a) is unlikely to be of a useful size and b) looks pretty ugly.

To change the text we need to set up our own TEXT STYLE.

Click on the down arrow next to 'Annotation'.

Click on the down arrow next to 'Standard' – the top line – and then click on 'Manage Text Styles'.

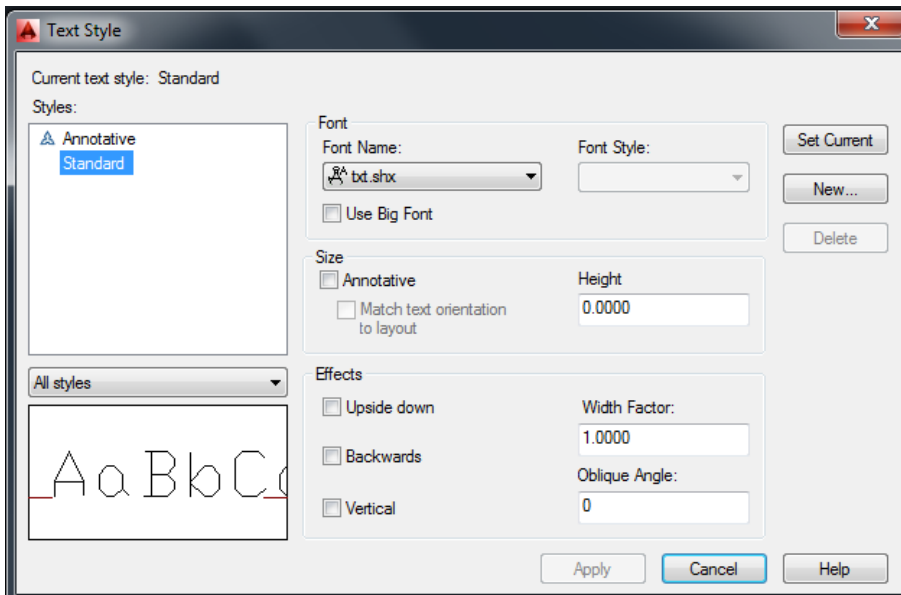
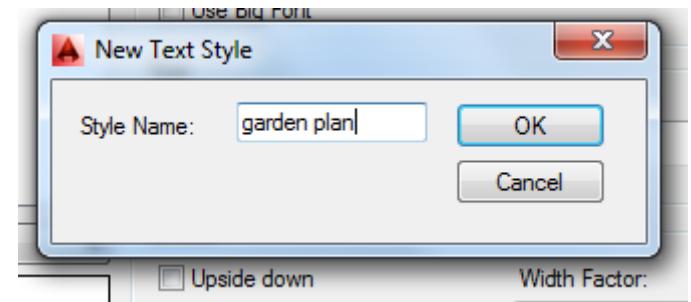
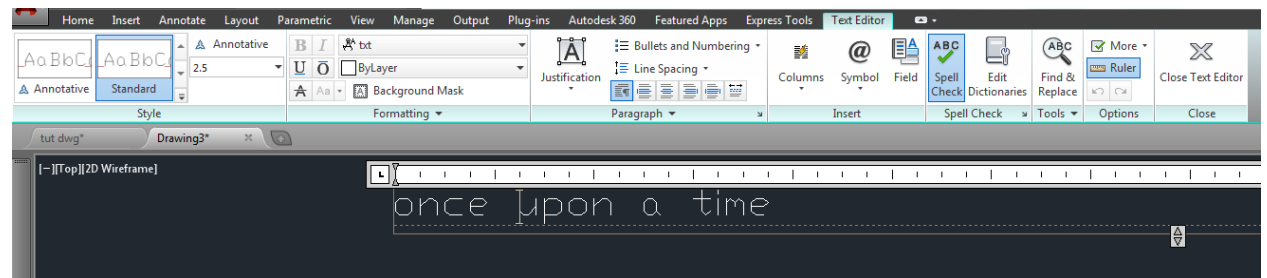
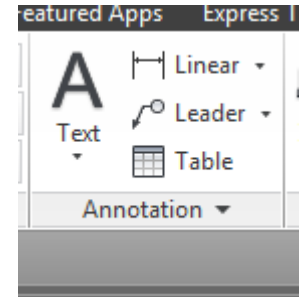
The Text Style menu shown bottom left should appear.

Click on 'New'. (second to bottom right) Give it a new name and press OK.

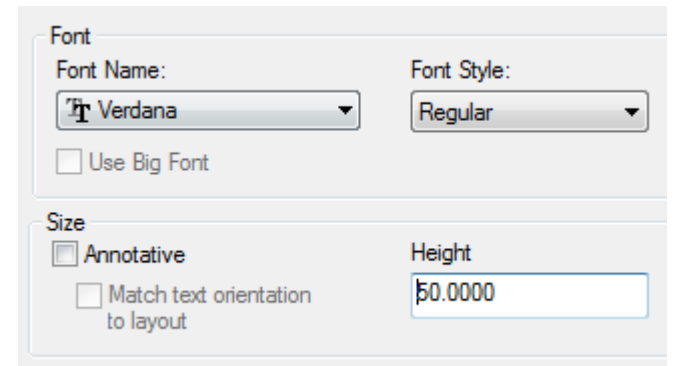
(bottom right) Select a new Font and choose a height for the text – NOTE the height is in drawing units – in our case this is mm.

Click 'Apply', 'Set Current' then 'Close'. Now when you create a new a new piece of text it will use this new style.

If it's not what you wanted then just go through the above process again and change the text height and style and press apply again and 'Close' when done. You can create as many new styles as you need.



Now apply some text to your drawing.



DIMENSIONS

Again – create a new layer called 'Dims' or Dimensions. This tool automatically measures elements in the drawing and places a label next to the object/distance measured. These are essential for working drawings,

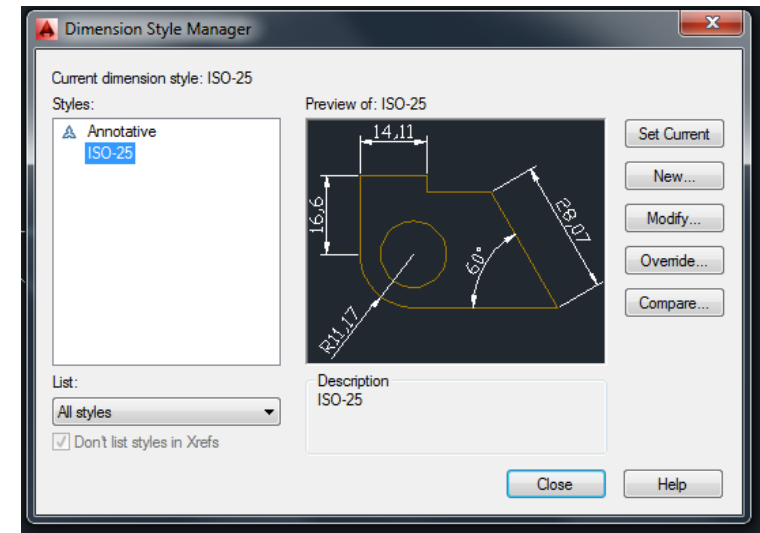
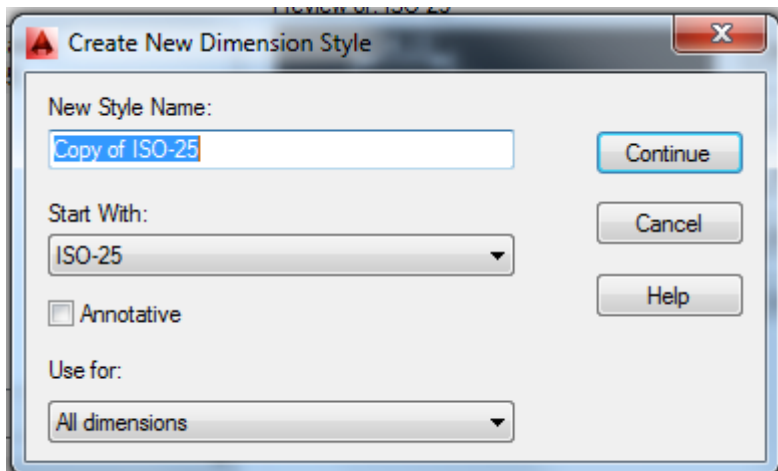
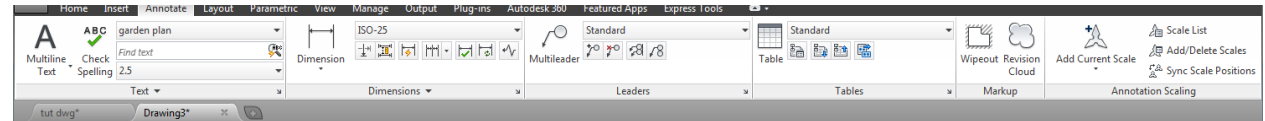
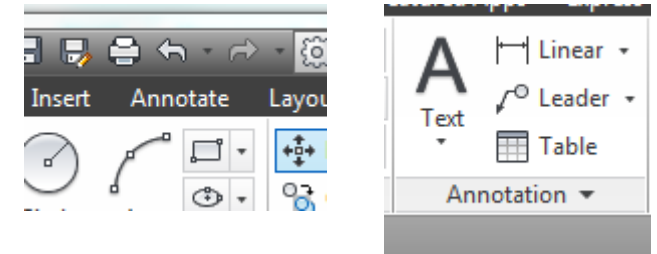
Click on the LINEAR option on the 'Annotation' toolbar and all options appear. Choose 'Linear'.
Choose a 1st point to measure from then click on the second point to which you will be measuring.

Use you mouse to place the measurement text where you want it.

Chances are you won't be able to read what it says so we need to create our own dimension style which fits the drawing.

Click on ANNOTATE on top row. Click on the arrow pointing down and right next to the 'Dimensions' toolbar title. This opens the DIMENSION STYLE MANAGER (below – top right) which lets us set up a *dimension style* in same way as you just set up *text style*.

Select 'New' and the window below opens. Give the new style a name and press 'Continue'

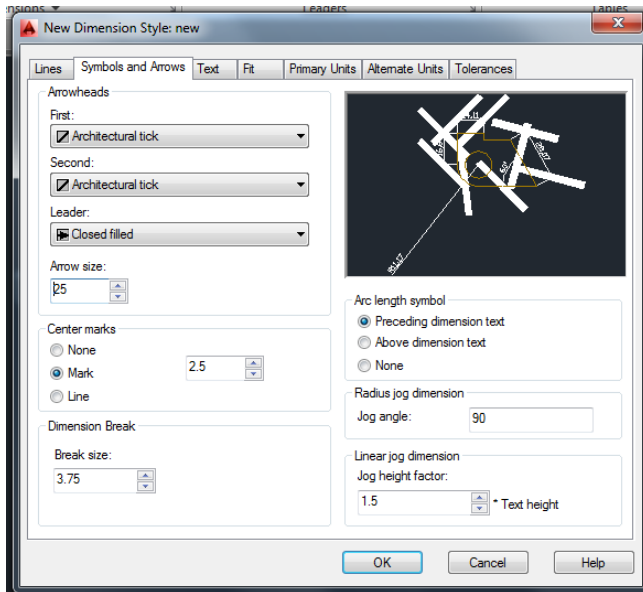


The 'New Dimension Style : new' menu now opens.

LINES – the most important options here are extend beyond dim lines which controls how far the 'vertical' lines stick out beyond the 'arrowheads'

'Offset from origin' controls how far from the point of measurement the 'vertical' line starts. – Too close and the drawings get confusing.

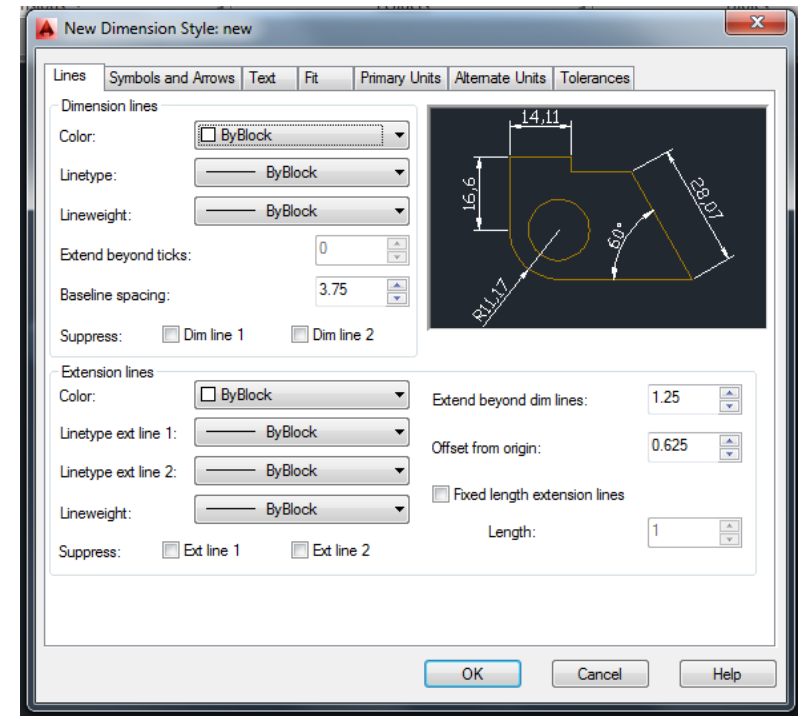
REMEMBER – ALL THESE FIGURES RELATE TO THE DRAWINGS 'UNITS' – in our case they are millimetres.



Symbols and arrows (image left) controls the size and shape of the 'arrowhead'. Click on the down arrows to see the options. Set an arrow size appropriate to the drawing. Do the same with the TEXT options- choosing a better font and correct text height When you have done click on 'OK' which returns you to the 'Dimension Style Manager' menu.

Click on 'SET Current' and then 'Close'.

Now when you start creating dimensions they should appear in you new style.



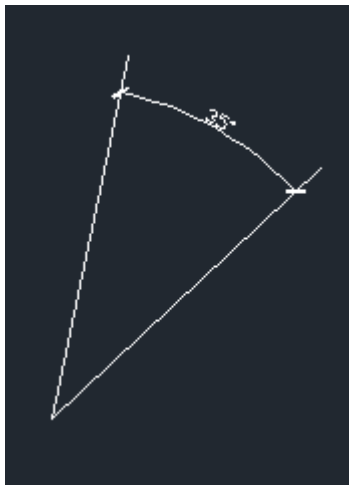
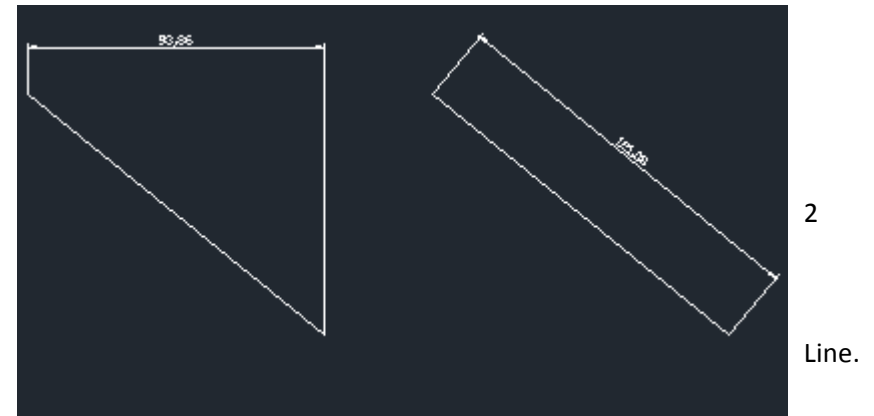
If the dimensions still look strange / small / large we can make changes to the style we've created by going back to the 'Dimension Style Manager' and using 'Modify' rather than create new.

Click on the down arrow below 'Dimension' and try out the different dimension tools.

LINEAR is only used for horizontal or vertical measurements.

ALIGNED can be used for slopes .

See the image on the right to see the difference or, better still, draw a lin at an angle and try the options. You will see they produce dramatically different results.



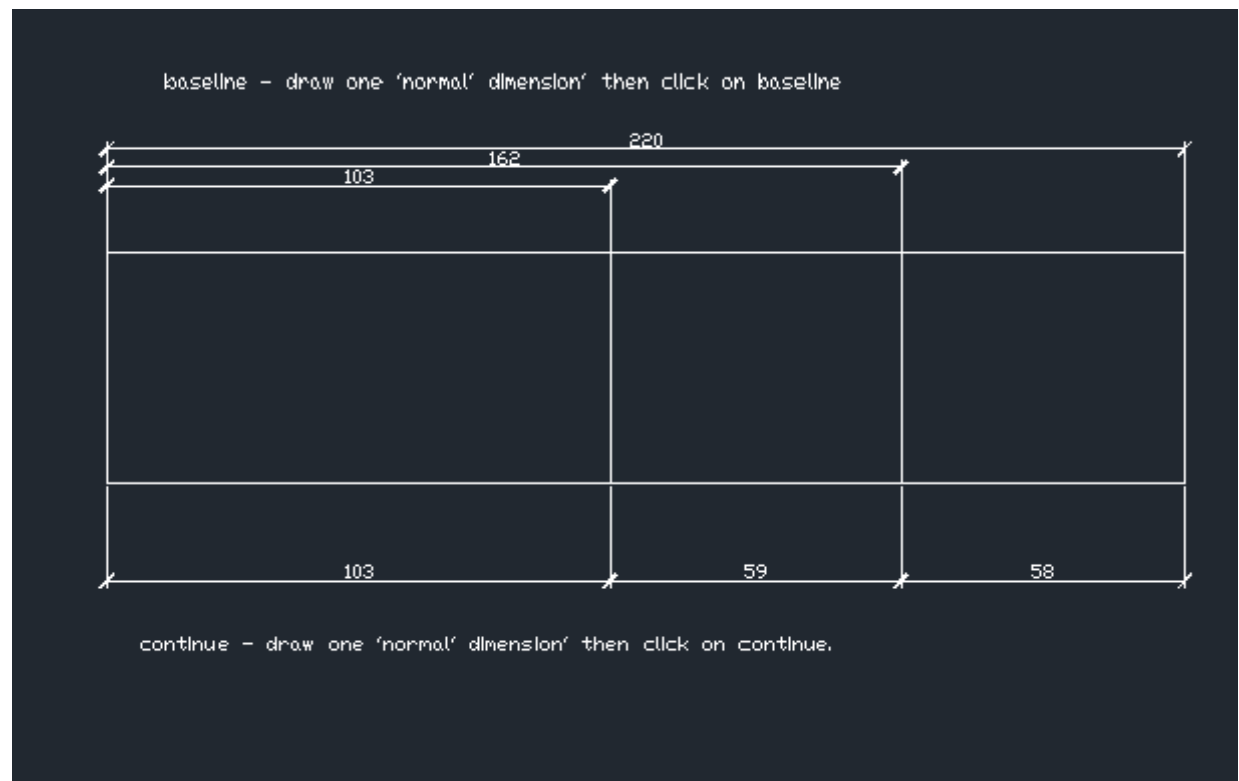
ANGULAR (left) is relatively easy –
Just follow the instructions on the screen / in the Command
Essentially you select the 2 lines between which you want to
measure the angle.
ARC LENGTH, RADIUS AND DIAMETER are equally self-evident.

'CONTINUOUS and BASELINE – available to the right of the
'Dimension' button - are handy for saving time and to make
the drawing look 'neater' – see the image right.

BASELINE creates a series of dimensions from the origin.

CONTINUOUS starts the next dimension form the end of the
previous one.

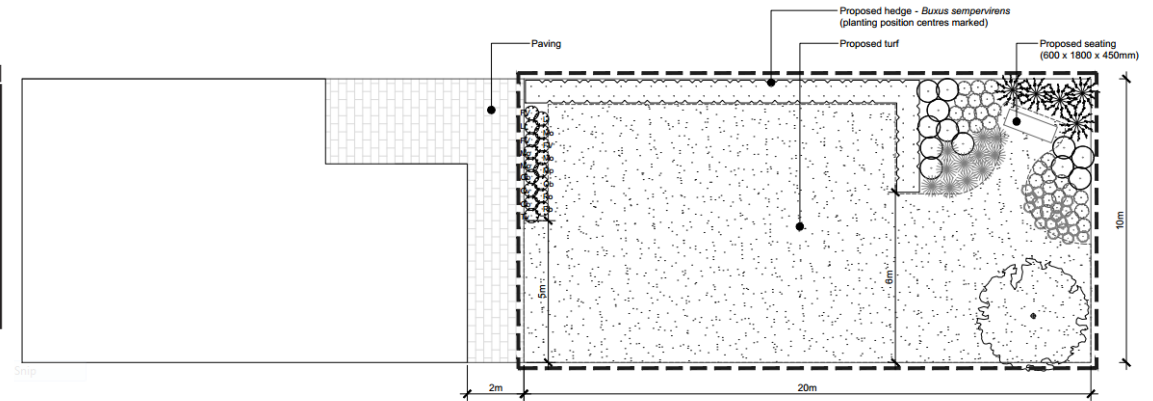
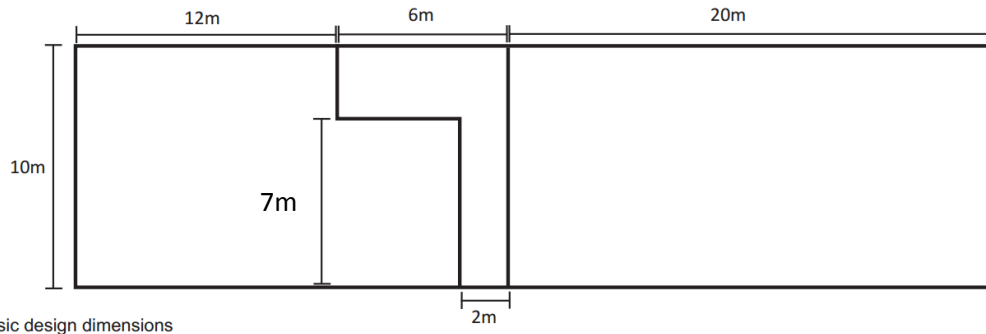
They both kick in AFTER you draw a standard dimension. In this



case it follows 'LINEAR'. Draw the dimension. Click on 'CONTINUE' then carry on. Do the same with BASELINE

GARDEN PROJECT

To practice some of our techniques and to try out new ones label and dimension your garden drawing.



If you want to challenge yourself further try recreating this house and garden, adding more vegetation around the seating area.

