Introduction

This tutorial is intended to provide you with a step by step approach to understanding basic drawing setup for AutoCAD 2009 LT.

The following procedure can be applied to drawings started from scratch or those started from a template. Some variations will occur but in general the procedure can be applied similarly.

All two-dimensional drawings are a collection of line work, text, dimensions, and layouts. It is critical to understand which FORMAT settings to adjust and how to make drawings conform to any standard. This will be true whether you work solely in the model, use layouts, or even model and sheet files.

This tutorial will the review the FORMAT settings for drawings and establish guidelines for correct representation of all drawing elements.

Apply what you learn in the tutorial to the Practice exercises. Explore more by adding your own settings or standards.

Audience: Users new to the AutoCAD 2009 LT user interface engaged in a program of occupational training for entry-level employment.

Prerequisites: Working knowledge of the FORMAT menu commands and the basic DRAW & MODIFY-commands.

Features Covered in This Tutorial:

1. Drawing type
2. Units
3. Drawing Limits: Scale, Scale Factor, Sheet Size, & Drawing Limits
4. Styles: Text, Dimensions, and Multileaders
5. Drafting Settings
6. Annotation Scale
7. Save, Edit Templates, & New Drawings from Templates

Before you begin

The intent of this tutorial is to develop procedural knowledge of basic drawing setup and to supplement the tutorial application. This tutorial assumes you have received some basic instruction on the FORMAT menu and you can manipulate the user interface.
Format Settings for Architectural Drawings

The following is a step by step basic drawing setup tutorial exercise. Here is the given information from which to start the drawing setup:

Tutorial Step by Step

1. Determine the drawing type:

   For all Architectural drawings use an Imperial file type. This file type will start with feet and inches as the basic unit of measurement.

   Upon opening AutoCAD, use “Start from Scratch” or “Use A Template” to select the correct file type.

   In “Start from Scratch” select Imperial, then click OK.

   Or

   In “Use A Template” select Acadlt.dwt from the list, then click OK.
2. Set the units:

The UNITS will control the measurement unit type and the precision. This will also serve as the unit of measure displayed to the user for any inquiry. This can be adjusted again later for greater or lesser precision, according to the needs of the drawing.

**Go to:**

Menu Browser: Format: Units.

In the Length box area, change the Type from Decimal to Architectural. This will provide feet and inches as the unit of measurement.

In the same area, change the Precision to 0'-0 1/16''

Notice in the Sample Output area an example of the unit measurement type.

Click OK
3. Set the Drawing Limits:

The visible grid is a representation of the drawing limits and also helps the user to visualize the drawing within the desired sheet size for the desired output scale.

The drawing limits (L) are defined as a rectangular area with a lower left hand corner (LLC) and an upper right hand corner (URC). The drawing limits depend on the intended output scale and sheet size. The sides of the sheet are multiplied by the scale factor to increase or decrease the drawing limits.

Assume LLC is the origin or (0,0).

Some (x,y) coordinate is the URC or L of the drawing limits.

Scale is the intended output scale. Think of this as a ratio between the actual model units and the printed paper units.

Scale Factor is the amount of the model enlargement or reduction to suit the paper. It is determined by dividing the model units by the paper units.

Sheet Size is the intended paper output. See reference table for standard sheet sizes.

Note: The sheet size is visualized in the model space as the length and width of the paper, each multiplied by the scale factor.
Example

Let's continue with the example of a drawing to be printed on letter size paper at 1/4"=1'-0" scale.

To determine the drawing limits we need to determine: print scale, scale factor, and sheet size to print. The drawing limits are two coordinates that represent the rectangular area to be printed. Assume the LLC of the drawing limits is (0,0). To solve for the URC coordinates, multiply each side of the sheet size by the scale factor and the result will be the new URC.

The scale is given as 1/4"=1'-0", solve for the scale factor (SF):

1. Scale: 1/4" = 1'-0", which means every 1/4" on paper equals 1’in the model.
2. Solve for the scale factor (SF), where SF=m/p.
3. SF = m/p, where m is the model and p is the paper units
4. SF= (1'-0")/(1/4")=48, the scale factor is unitless

The sheet size (SS) is given as Letter size or 8.5" x 11".

The drawing limits:

1. Assume LLC = 0,0
2. Need URC = L =SSxSF, some (X, Y)
3. 8.5” x 48= 408” or 34’ (X)
4. 11” x 48 = 528” or 44’ (Y)
5. The drawing limits will be LLC= (0,0) and the URC=(34’,44’)

Access the Drawing Limits by starting with the

Menu browser: Format: Drawing Limits.

Accept (0,0) as the LLC and enter the result as the new URC to set the drawing limits.
4a. Use Annotative styles for Text

Create a new text style based on Annotative. You can also navigate to the Annotate tab and then to the Text panel to select the Text Style icon.

**FORMAT: Text style**

The desired text height can vary for different types of text such as notes, titles, and dimensions. In general notes will be 1/8", 1/4", or 3/32" but not smaller than 1/16".

Create two text styles, one for notes called "notes" and one for dimensions called "dims". Create annotative text styles for each different type and size of text where the paper text height is the desired text print size.

First, select the Annotative text style, select New, and set the paper text height to the desired print size, i.e. 1/8". Choose a legible font and make any other adjustments.

Note: Use either MTEXT or DTEXT to input text in the model. Choose the appropriate style for the desired font and print size. As you place text you can apply one or more Annotative scales in which the text can be viewed and automatically resized. You will be able to move each instance of the text displayed for each scale without one affecting the other.
4b. Use Annotative styles for Dimensions

**FORMAT: Dimension style:**

You can also navigate to the Annotate tab and then to the Dimension panel to select the Dimension Style icon. Create a new dimension style based on Annotative.

In Modify: TEXT tab of the Annotative dimension style, set the text style to annotative or the “dims” text style. This will keep the dimension text to the size set in the text style.

Make sure the text height is 1/8” and that the primary units are architectural with the appropriate precision.
Use the following settings for lines, arrows, and fitting to complete the dimension style settings.

Click OK, then be sure to select the new dimension style and click Set Current before click OK again to close the dimension style dialog box.
4c. Use Annotative styles for Multileaders

Create a new multileader style based on Annotative.

**FORMAT: Multileader style**

You can also navigate to the Annotate tab and then to the Multileader panel to select the multileader Style icon.

Use the following settings for leader format, leader structure, and content to complete the multileader style settings.
Click OK, then be sure to select the new dimension style and click Set Current before click OK again to close the dimension style dialog box.
5. Set the drafting settings:

Right-click over the GRID button and select SETTINGS. Set the grid on, and use a grid spacing appropriate for the drawing limits. For example, use 1 foot or 2 foot spacing. Too small a spacing will make the grid too dense and therefore cause it to not appear.

Set the polar angles to track. Use 45 degree angle increments or as small as 15. This will ensure that the most typical angles will be tracked during drawing. Use additional angles to track unique angles such as 19 or 32 degrees. Additional angles are not incremental.

Turn the object snap on and set minimal snap modes. Too many selected snap modes will slow the drawing down. Remember you can always access the pop-up object snap to focus on a particular snap mode for one instance. To access the pop-up object snap, use shift-right click in the drawing area.

Click OK to exit the drafting settings dialog box and accept your changes.
6. Set the Annotation Scale:

Use zoom command to see the entire drawing area.

**VIEW: Zoom: all**

Use the Annotation scale to set the correct size for any text, dimension, or leader to be used on the drawing.

Once you set the scale, all annotations will be placed at the correct size for the corresponding scale.
Saving as a Template

Templates typically have no drawing geometry. So, if you are using the tutorial file, be sure to select everything in the drawing window and delete before proceeding.

FILE: SAVE AS:

Use the save as command to save the current drawing as a template.

Check the location to “save in” and check the file type selected is “(*.dwt)”. Save your template with a description, click ok then close.

Note: AutoCAD will automatically direct you to a system folder to save templates. To save to a different location, such as a network folder, simply change directories in the Save In pull-down menu.
Editing a Template

FILE: OPEN:

Navigate to the saved location of your template in the “Look in” pull down menu.

Switch the file type to *.dwt. If the folder changes, switch back by using the back button.

Confirm that you are editing the template by check the title bar. It should show the full drawing title. Be sure it has the .dwt file type extension.

Note: To ensure that you are editing the desired template and not editing a new drawing, check the title bar for the file name.
Using a Template

**FILE: NEW:**

Navigate to the saved location of your template in the “Look in” pull down menu.

Switch the file type to *.dwt. If the folder changes, switch back by using the back button.

Select and open the desired template and open. The title bar should indicate a new drawing with a generic name and the .dwg extension.

Note: You can also use the Template option of the Start Up dialog and Browse for your desired template.

You are now ready to begin using templates and start new drawings!