

IOE 491 AutoCAD Exercise I

AutoCAD drawing tips

AutoCAD familiarization:

- 1) Review CAEN AutoCAD technical note: <http://www.engin.umich.edu/caen/technotes/autocad.pdf>. Note: there are many good books on AutoCAD, e.g., “AutoCAD for Dummies,” “AutoCAD Bible,” etc.
- 2) Open AutoCAD and review desktop, menu, help menus, etc.

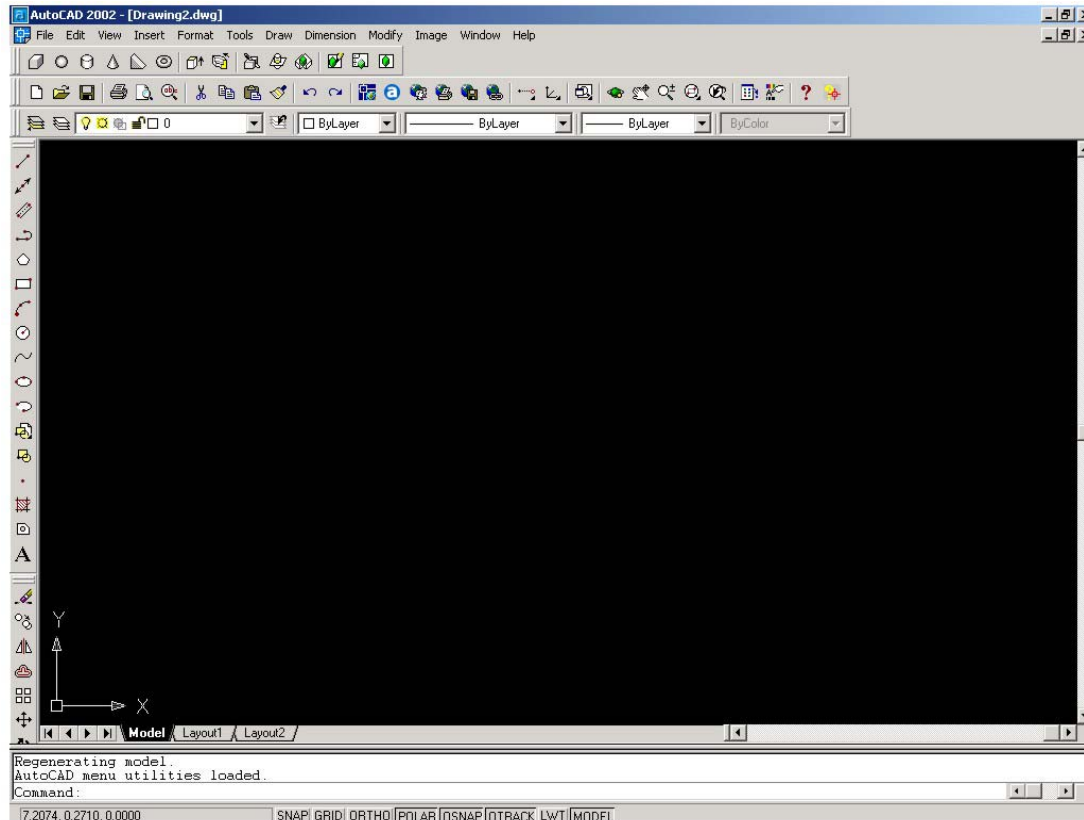


Figure 1: AutoCAD desktop. Commands may be entered via the pull-down menus at the top, the drawing icons on the left, or via the command line at the bottom. The black area is the drawing area. The coordinates in the lower left corner indicate the position of the cursor. The command “undo” can be typed at any time to undo your last command.

Exercise 1: Set Drawing limits. The default drawing limits are from 12 x 12 inches.

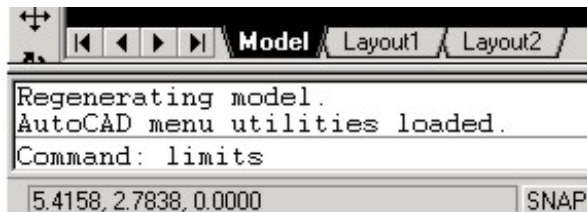


Figure 2: The command “limits” is entered on the command line on the lower left corner of the desktop.

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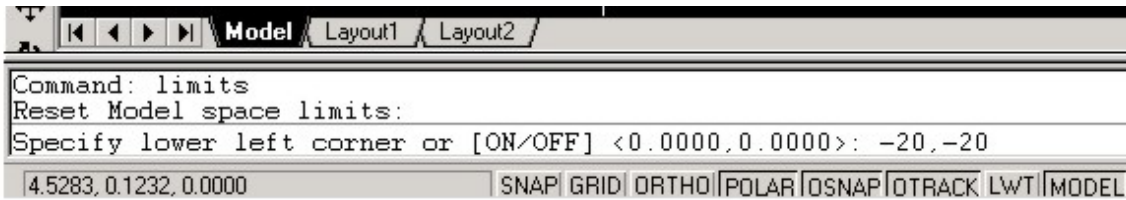


Figure 3: -20,-20 is entered to specify the lower left corner of the drawing limits.

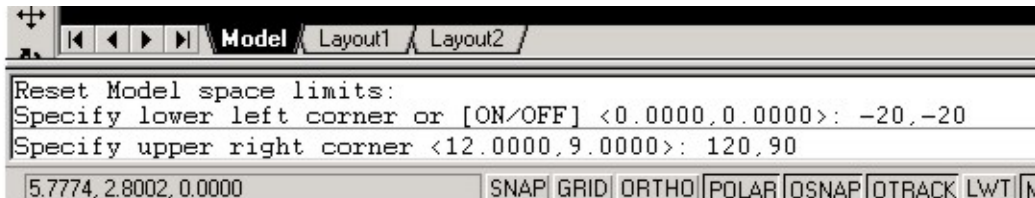


Figure 4: 120, 90 is entered to specify the upper right drawing limits

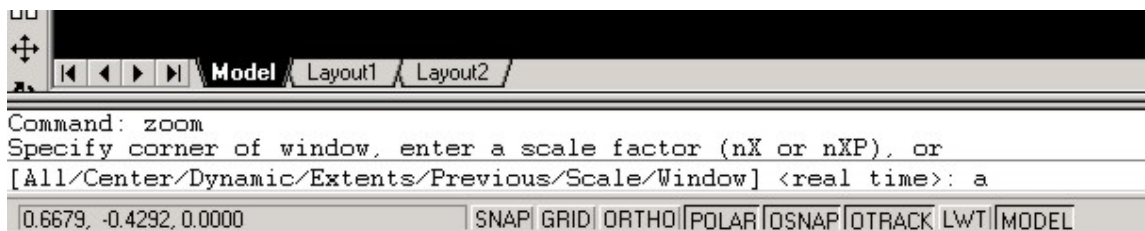


Figure 4: The “zoom” command is entered to increase or decrease the visible drawing area. The letter “a” is then entered to show all of the drawing area.

Other commands and options include:

Command: snap; **parameter:** 1; **effect:** cursor moves in discrete increments of 1

Command: line; **parameters:** 0,0; 50,0; return; **effect:** draws line from 0,0 to 0,50 as floor reference plan. Note: it will keep accepting points until you type return without new points.

Command: rectangle; **parameters:** 20,28; 50,30; **effect:** draws rectangle with lower left hand corner at 20,28 and upper right hand corner at 50,30, which corresponds to end view of work bench 2” thick & 30” deep.

Command: layer; **effect:** opens “layers menu.” Click “new” button. A new line will appear with label “Layer 1.” You may rename the layer by over typing, e.g., “Dimensions.” Click “Current” button so that additions to your drawing appear on the new layer. Click “white” in Layer 1 row and color column. Select a color to distinguish objects in dimension layer from those in the base layer, e.g., yellow. Click OK at bottom of layers menu.

Menu: “Dimension” at top of AutoCAD desktop. Select: “style,” “modify” button.

“Fit” tab, “use overall scale” option button & enter a number the corresponds with how many times the present drawing limits are greater than the default drawing limits. (If the new drawing limits are 10X greater than the default value enter 10.)

“Primary units” tab, “precision combo box to select 0 or one decimal places.

Click “OK” button at bottom of “style” menu.

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Menu: “Dimensions” at top of AutoCAD desktop. Select: “Linear.” Use cursor to select: 1st and to select 2nd corner of edge that is being dimensioned. Move cursor to location where you want the final dimension to appear and click a third time. The complete dimension should appear.

Save may be entered from the command line or from the pull down “File” menu. You may save in several formats. The ones you will use for now include:

- filename.dwg This is a standard AutoCAD file format
- filename.dwt This is a template file. It is used to store the drawing with all of your setup features, e.g., limits, zoom, snap, layers etc. It can then be saved as a regular AutoCAD .dwg file (the default).

Create stick figure (side view in new third layer):

- 1) Draw vertical line from floor with length equal to that of desired percentile worker/users.
- 2) Locate shoulder.
- 3) Draw line from shoulder equal in length to arm, forearm and hand.
- 4) Draw arc in front of vertical line representing worker. The arc center should be over shoulder and the radius should be equal to length of arm, forearm and hand. You may use the Arc command or you may use the circle command and trim it.
- 5) Allow approximately 4” between vertical line representing worker and front of bench for torso thickness.

Save: