

Aligning Images To Drawings in AutoCAD

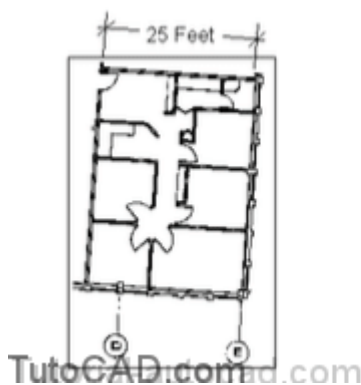
Description

When you combine raster and vector data in a single drawing you must set the image insertion parameters appropriately.

- it may be difficult to know the required parameters before you actually insert the image into the current drawing
- but you can insert an image with default parameters & then use **Move, Scale & Rotate** commands to align images to vectors.

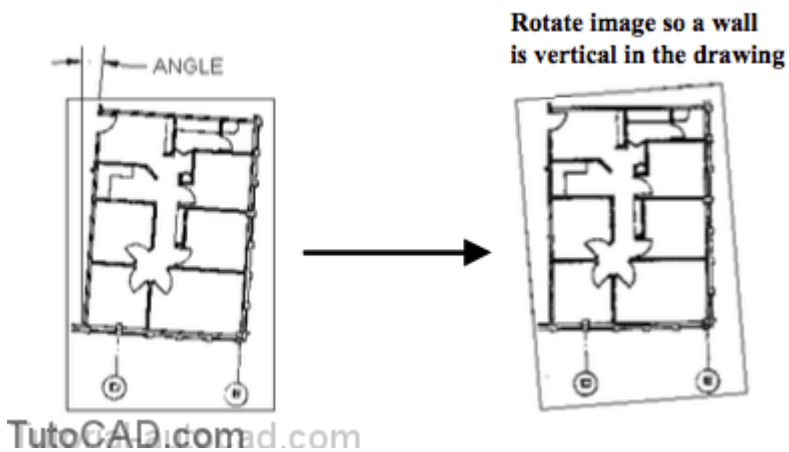
An effective way to align images with drawings is to use the Reference option of **Scale & Rotate**.

- you must know the distance (in drawing units) between 2 points in the image.



Scale the image so the distance between two points matches the distance it represents in drawing units.

- similarly, you should know an angle (normally a vertical or horizontal scanned line) for a feature in the image file.



PRACTICE ALIGNING IMAGES WITH VECTOR DRAWINGS

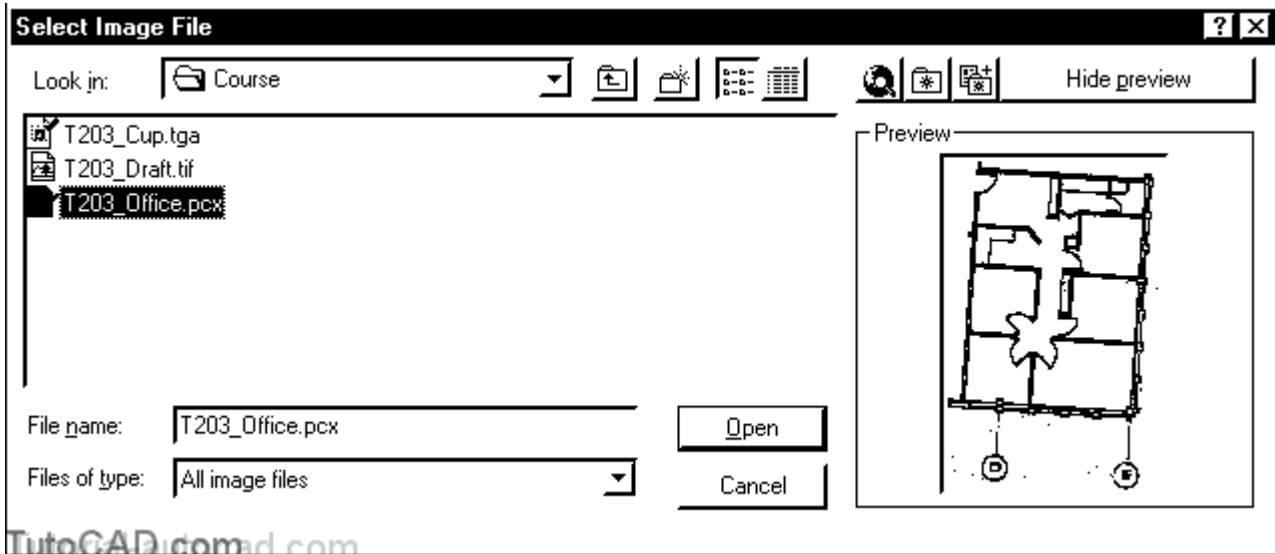
- 1) **Close** the drawing from the previous exercise if it is open.
- 2) **Open** the [T203_2.dwg](#) drawing in your **personal folder**.

This empty drawing contains block definitions & layers but there are no objects in it yet.

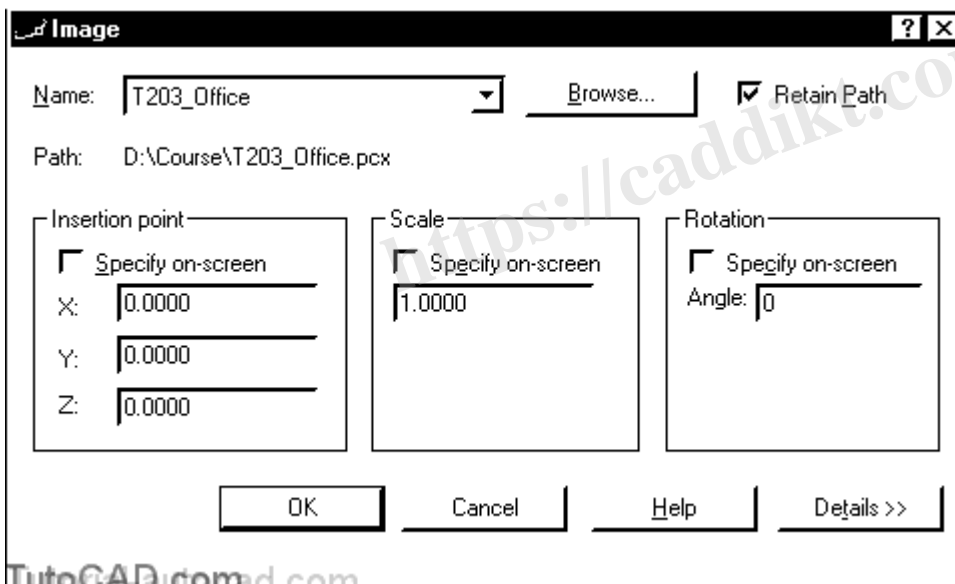
In this exercise, you will attach an image of a floor plan and then insert furniture symbols into it.



- 3) Pick **Insert + Raster Image**. Select the [T203_Office.pcx](#) file and pick **Open** to continue.



4) **Uncheck** all Specify on-screen boxes and pick **OK**.

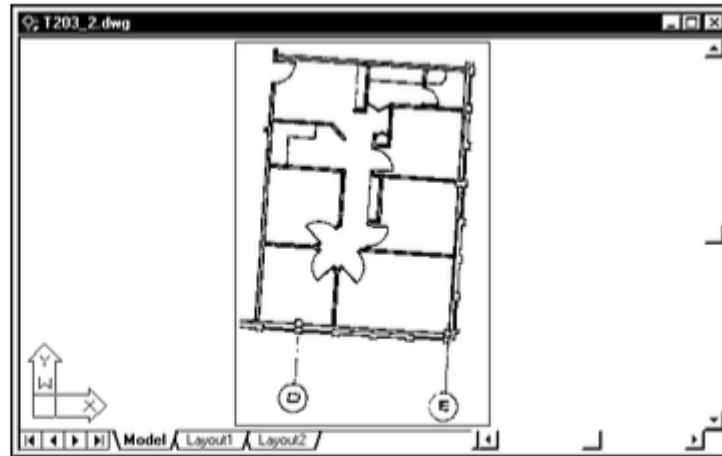


5) Pick **View + Zoom + Extents** to see the attached image.

This is a low grade scanned image, typical of what you could expect after sending a hand drawing by fax to a computer and then saving the faxed image as a PCX raster image.

Scanned images can be much higher quality than this but the image file sizes would be much larger.

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6) Pick **Modify + Scale**. Select the **image frame** when prompted to select objects then press <enter> to continue. Follow the dialogue below to scale the image such that the distance between points **P1** & **P2** is **300** (25 feet).

Command: **SCALE?**

Select objects: (**picktheimageframe**)

Select objects: ?

Specify base point: (**pickinsidecornerpointnearP1**)

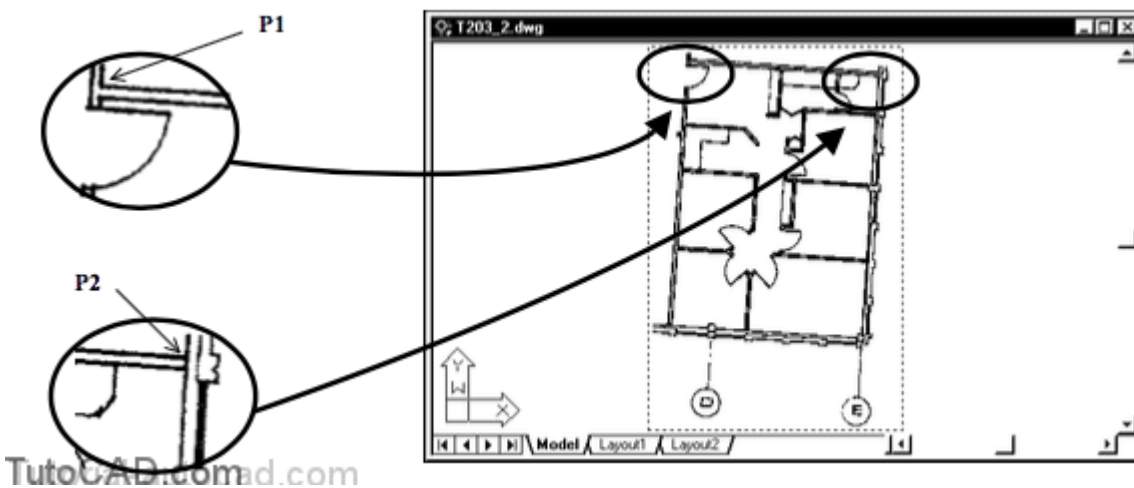
Specify scale factor or [Reference]: **R?**

Specify reference length <1>: (**pickinsidecornerpointagainnearP1**)

Specify second point: (**pickinsidecornerpointnearP2**)

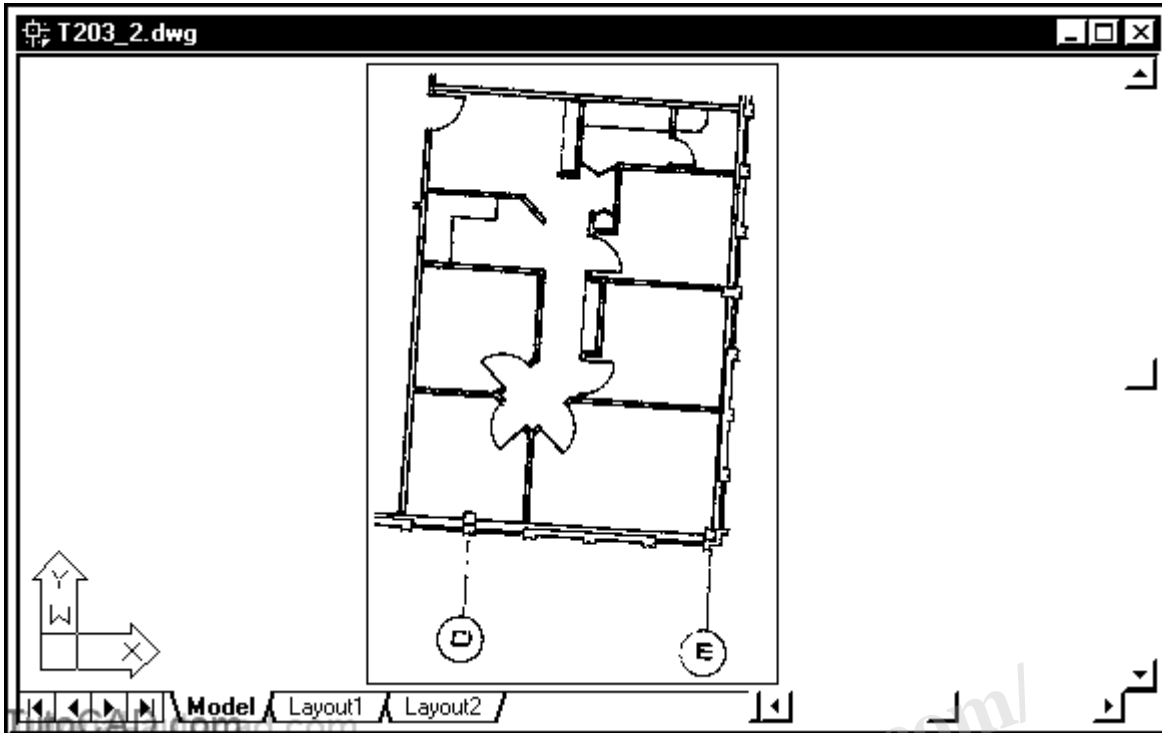
Specify new length: **300?**

Command:



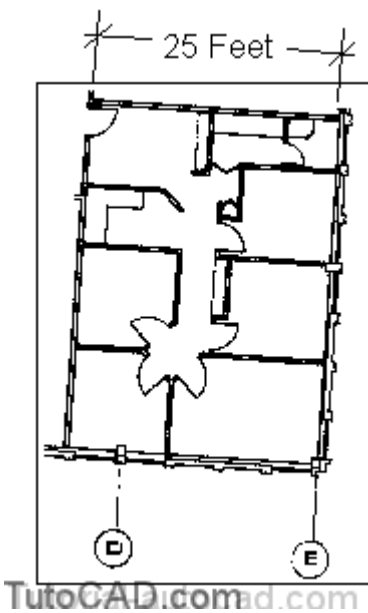
You can **Zoom** in transparently to pick these points more precisely if you wish but in this exercise it is not critical to be precise.

7) Pick **View + Zoom + Extents**.

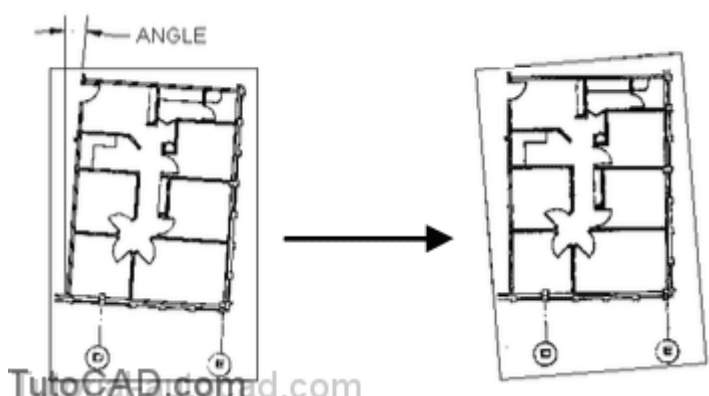


The image will look the same on your screen but if you performed the last step properly it should now be inserted at the desired scale.

- the inside dimension shown below should be 300 drawing units (inches) which corresponds to 25 feet.
- you could use the **Dist** command to verify that the distance between these points in the image is approximately correct.



In the next step you will use the Reference option of **Rotate** to align the image walls with vertical & horizontal directions in AutoCAD.



8) Pick **Modify + Rotate** and select the **image frame** when AutoCAD prompts to select objects then press <enter> to continue. Follow the dialogue below to align the image walls to vertical and horizontal directions.

Command: **ROTATE?**

Current positive angle in UCS: ANGDIR=counterclockwise ANGBASE=0 Select objects:

(pick the image frame)

Select objects: ?

Specify base point: **(pick point along outside edge of wall near P1)**

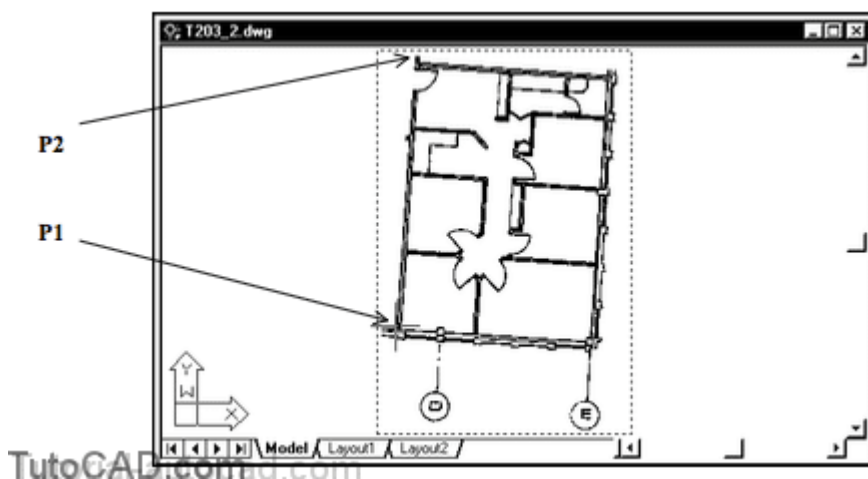
Specify rotation angle or [Reference]: **R?**

Specify the reference angle <0>: **(pick the same point P1)**

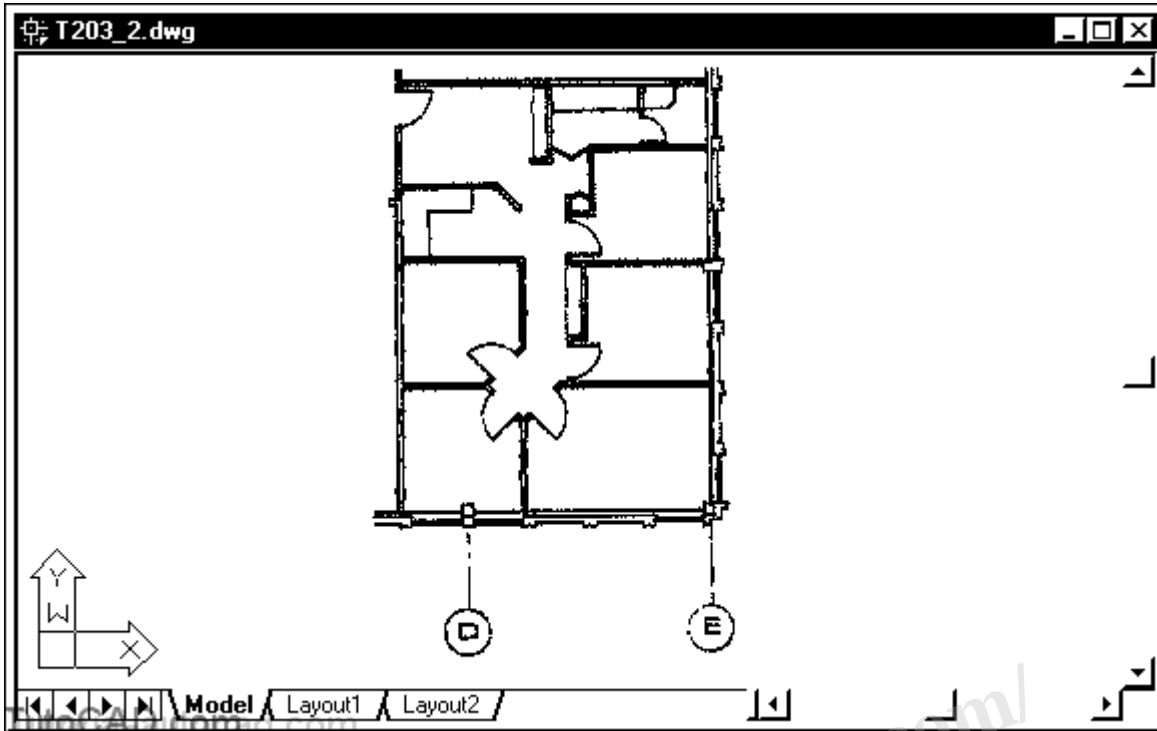
Specify second point: **(pick another point along the outside of the wall near P2)**

Specify the new angle: **90 ?**

Command:



9) Pick **Modify + Object + Image + Frame**. Then **right-click** in the drawing area to invoke a **shortcut** and select **OFF**.

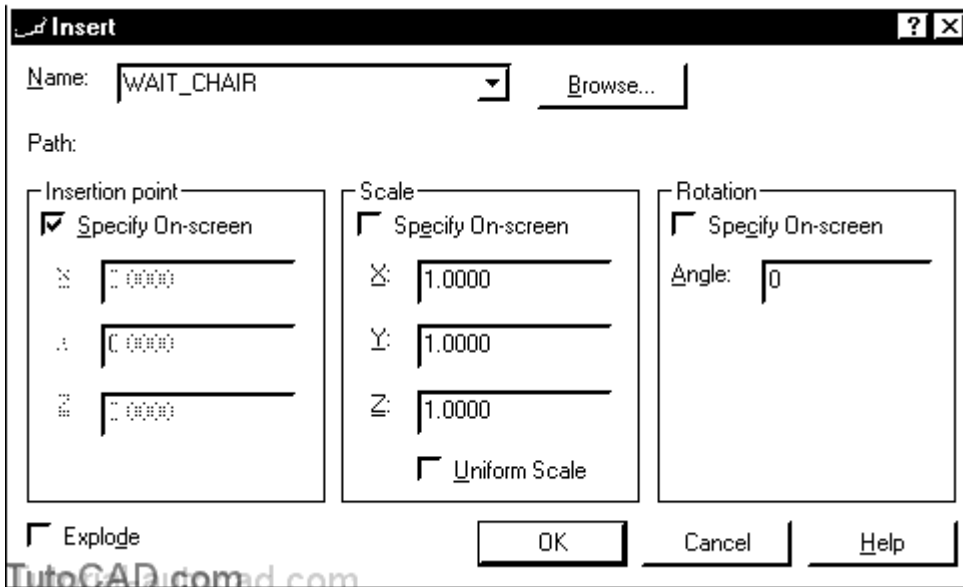


The image is now aligned with the vector drawing so you could now insert furniture symbols at a scale of 1 in this drawing.

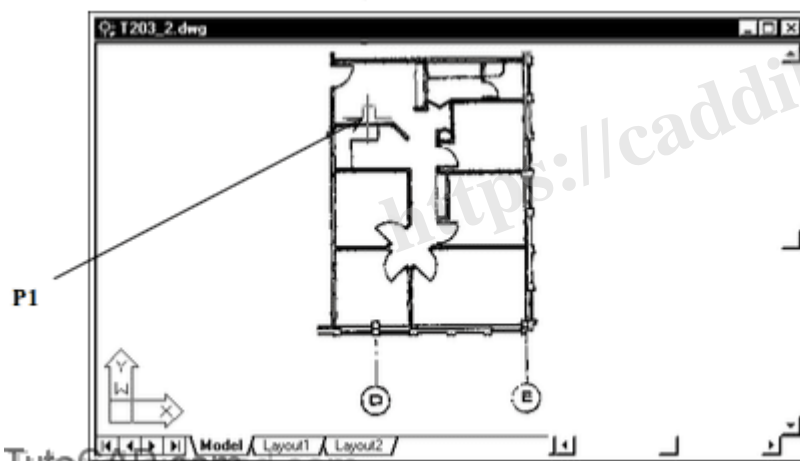
10) Make **FURNITURE** the current layer.



11) Pick **Insert + Block**. Select **WAIT_CHAIR** as the name and **check** Specify on-screen for **Insertion point**. **Uncheck** Specify On-screen for **Scale & Rotation**. Pick **OK** to continue.



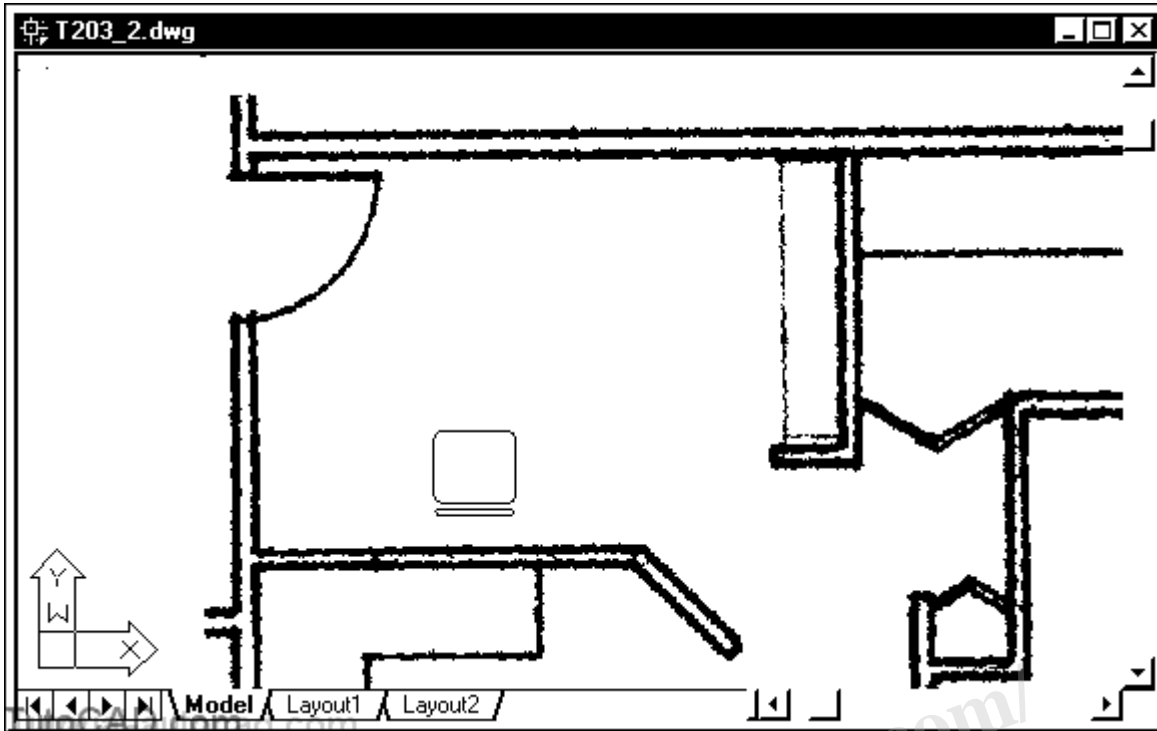
12) Move your crosshairs near **P1** below and **left-click** to use this as the insertion point for this chair.



13) Pick **View + Zoom + Window** and zoom into the room that you just inserted the chair in so that this room almost fills your screen.

When you **Zoom** in you can see clearly the difference between this low grade raster image and the (vector) chair symbol

- but with higher quality raster images (with much larger file sizes) it would not be obvious on your screen or in final plots.



You can use add-on applications (e.g. Autodesk CAD Overlay 2000) to convert a raster image into an equivalent vector drawing.

- a collection of pixels that appear to be in a straight line could generate an equivalent vector LINE object.
- a collection of pixels that appear to be in a circular form could generate an equivalent vector CIRCLE object, etc..

You may have to experiment to yield a suitable drawing that matches a raster image

- but the advantage of being able to edit the resulting vector objects may be well worth your effort
- file sizes are much smaller and it would be much easier than manually redrawing an entire image using vectors in AutoCAD.

14) **Save** the changes to the current drawing and **Close** the file.