

TurboCAD V14 Deluxe – Dinner Setting

Donald B. Cheke



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Special Note

All of the work presented within this tutorial is based on TurboCAD V14 Deluxe. Although users of previous versions are welcome to try the tutorial it cannot be stated what results will be achieved. Many changes, some subtle and others not so subtle, are made with each program revision. Although many steps and directions would be generic some may not be. The same can be said for tools between versions. Older versions may not have the same tools as V14 Deluxe and if the same tools are available the tools themselves may have been revised and hence, work in a different manner than they previously did.

The author would like to extend a thank you to Henry O. Hubich for determining and supplying the Arbitrary Wrapping parameters for TurboCAD Deluxe surface objects.

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Introduction

Great news for TurboCAD V14 Deluxe users is the addition of some features that have previously been found only in the Professional version of TurboCAD. These features include the ability to apply materials to 3D objects, the ability to use Luminance lighting and the ability to use Render Scene Environments within the program. These additions completely change the level of achievable work with TurboCAD Deluxe. It is because of these changes that the author has decided to revisit the Dinner Setting tutorial.

Long ago the author had created a 10 module tutorial series called TurboCAD V8 Standard Tutorial – Dinner Setting for Four. It led the reader through the processes to create the various components pictured below. Six versions later, and with the author having gained much experience, the reader is now presented a similar series with the exception that it is now contained within in one large tutorial.

From the V8 Series.



From this V14 Tutorial



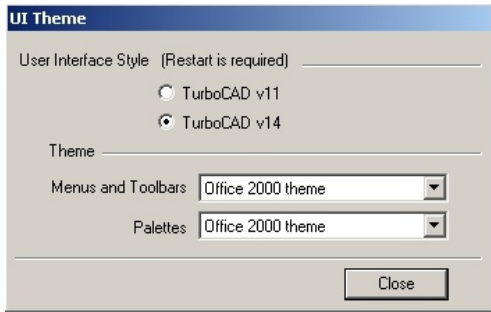
In the same fashion as all the latest Textual Creation tutorials this one will lead the reader through every keystroke to create the Dinner Setting pictured on the cover of the tutorial.

As with any technically advanced software, the user is generally faced with a steep learning curve. It is the hope of the author that the money and time spent working through a Textual Creation tutorial will help ease the learning and allow the reader to come away feeling confident that they made a wise decision. This tutorial is in no way intended to teach furniture design or construction but rather it is intended to teach the use of many of the tools that TurboCAD offers and to introduce the new user to a drawing methodology. The author feels confident that the techniques outlined within the tutorial can help lay the foundation for future successful TurboCAD illustration for even the newest user.

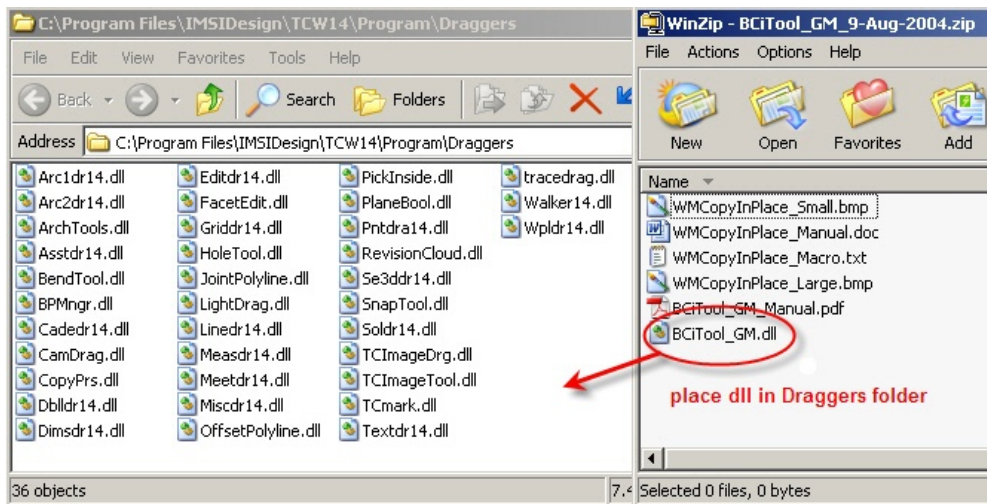
There are many ways to approach a project and it is likely that each person using the program would proceed in very different ways, so be open to alternative methods as experience builds. What is important is that the user becomes familiar with the objects that they wish to model and begin to look at them in a different way than they might otherwise do. What primitive shapes make up the whole? What will be required of these primitive shapes early in the drawing and how will this affect needs further along? What component or components should be started with? Many questions can only be answered through experience but hopefully some of them will be answered by the time the beginner has worked through this tutorial. There is a great deal covered in this tutorial and the author urges the beginner to be

patient, to read very carefully and to take the time necessary to do a good job. Try to enjoy the process as much as you will enjoy the final results.

This tutorial assumes that the beginner has studied the desktop to some degree and can locate most of the tools. Since there are endless desktop configurations that can be set up in TurboCAD the author has opted to illustrate the required tools with the V14 user interface and the default toolbars in their undocked format (Office 2000 theme).



This tutorial also utilizes a tool that does not come pre-packed with TurboCAD. It is the Copy in Place tool created by David Bell, based on an original macro by Winston Mitchell. It is available as a free download on the General Macros page at <http://www.bcitool.com/>. Please download it and install it as per the instruction that come with the download. It is truly an indispensable tool.



Some images have been supplied with the tutorial. Please place these in a permanent file location on the hard drive of your computer.

A HDR image is being used within the tutorial during the Render Scene Environment section. Please download `rnl_probe.hdr` from <http://www.debevec.org/RNL/Source/> and place it in a permanent file location on the hard drive of your computer.

```
rnl_probe.hdr UC Berkeley Eucalyptus Grove light probe image
```

The beginner should not overlook the importance of the internet as a resource for material to help understand the dynamics of what they are trying to model. If only to help gain a better understanding of what a user is modeling a Google image search and regular web search is time well spent.

Setup

Begin a new drawing in Model Space. If the user has not changed any program preferences the new drawing should be based on the Normal Imperial default template that comes with the program. If this is not the one that opens do not worry as the drawing will be changed immediately to better suit the tutorial.



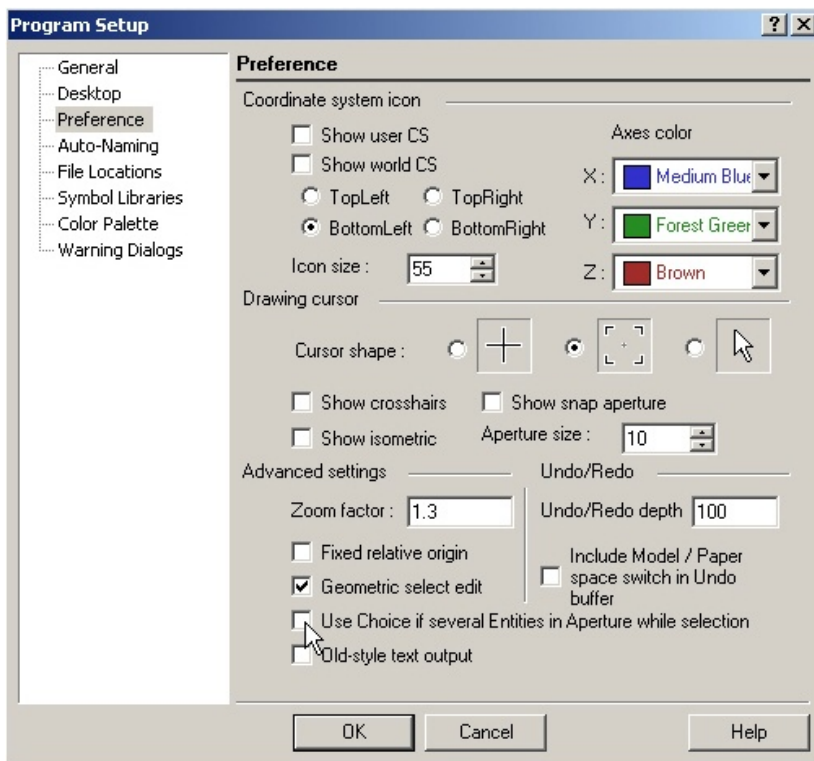
Ensure that the TurboCAD desktop is set to **Isometric SE** view.



Select **Plane by World** from the Workplane toolbar.

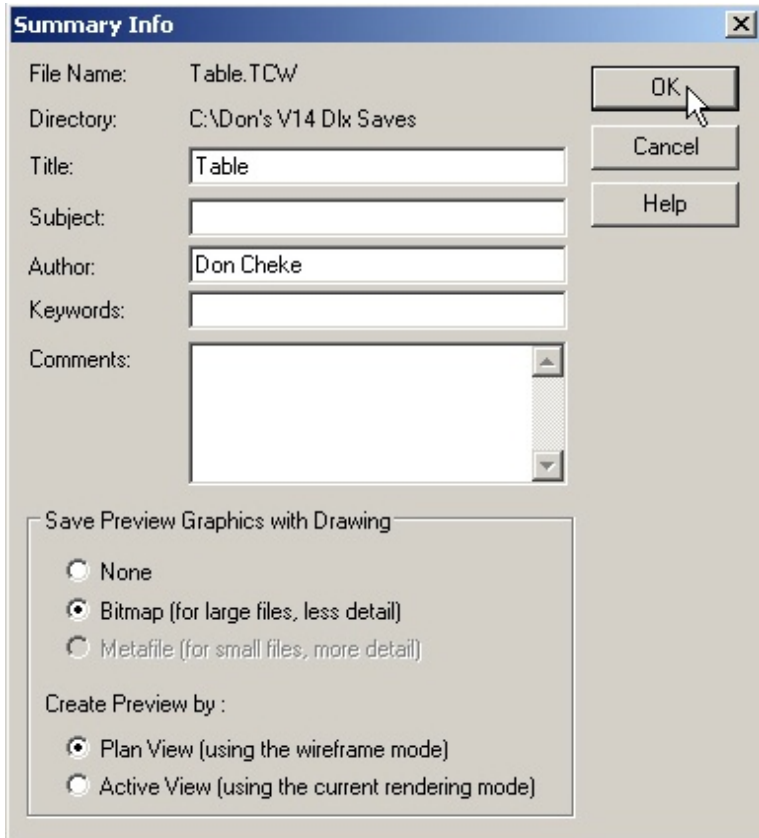


From the Option Menu at the top of the TurboCAD desktop select Preference. Uncheck the Use Choice option. Click OK to exit the dialogue.



So that there is no confusion experienced while following the tutorial please ensure that the following Drawing Setup properties are established.

Paste the file name into the title field of the Summary dialogue and click OK.

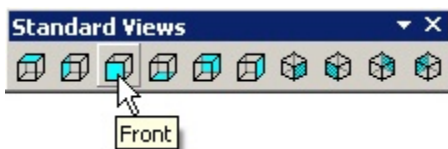


Be sure to click the Save button at the top of the TurboCAD desktop on a regular basis.

Table

Although it may seem intuitive to start drawing in World Plan view (the default view in TurboCAD) the table will be started in Front view. This will save having to rotate the table later on.

Switch to Front view.

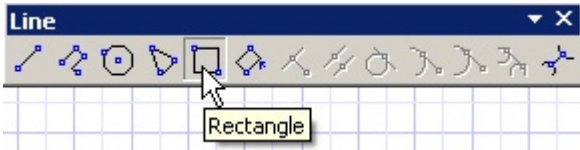


Select Plane by Active View from the Workplane toolbar.

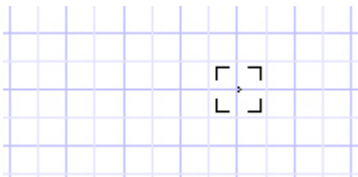


The table that is about to be created will begin having a 42" round profiled top, 1" thick. The table will have a 2.75 inch skirt that is .75 inches thick. Later in the tutorial a leaf will be inserted to lengthen the table. The top of the table will sit 29.5 inches off the floor. The table top will be created by revolving a 2D profile that represents half the table.

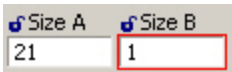
Select the Rectangle tool from the Line toolbar.



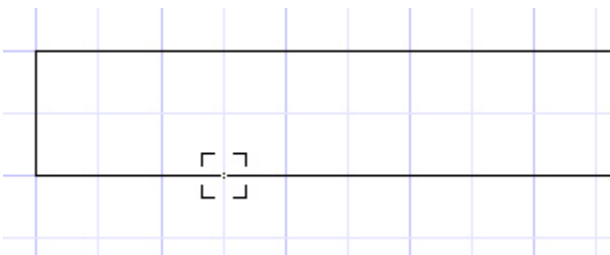
Place the cursor over one of the grid intersections and press the G key (G SEKE) on the keyboard to place the first point of the rectangle.



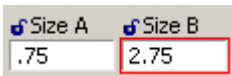
Move the cursor in a left downwardly direction for a short distance and then Tab into the Inspector Bar and enter 21 in the Size A field and 1 in the Size B field. Press Enter.



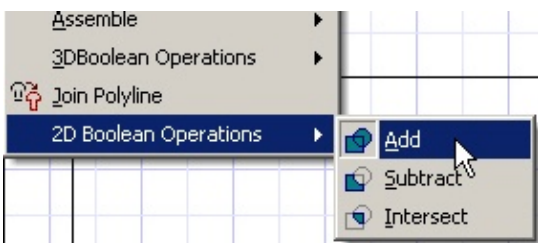
Place the cursor 1.5 inches to the right of the lower left corner and G SEKE snap to place the first point of the next rectangle. (Remember, the grid is set to .5 inch increments.) In progress below.



Move the cursor in a right downwardly direction for a short distance and then Tab into the Inspector Bar and enter .75 in the Size A field and 2.75 in the Size B field. Press Enter.

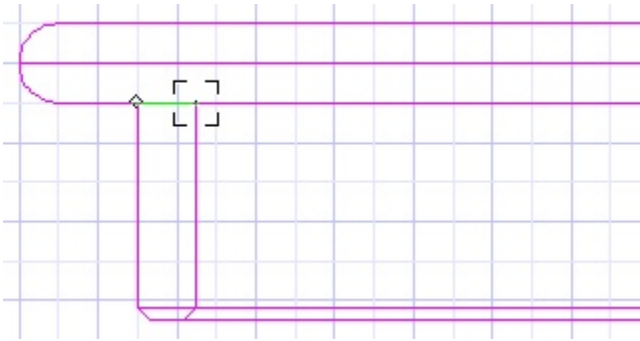


Select the 2D Add tool from the Modify / 2D Boolean Operations menu at the top of the TurboCAD desktop.



Select the larger rectangle as the first object of the operation and then select the smaller rectangle to add it to the first. In progress below.

Select the table top as the object to slice. V SEKE snap the top vertex of the left line of the skirt to define the first point of the slice line. Move the cursor to the top of the right line of the skirt and V SEKE snap to define the second point of the slice line. In progress below.



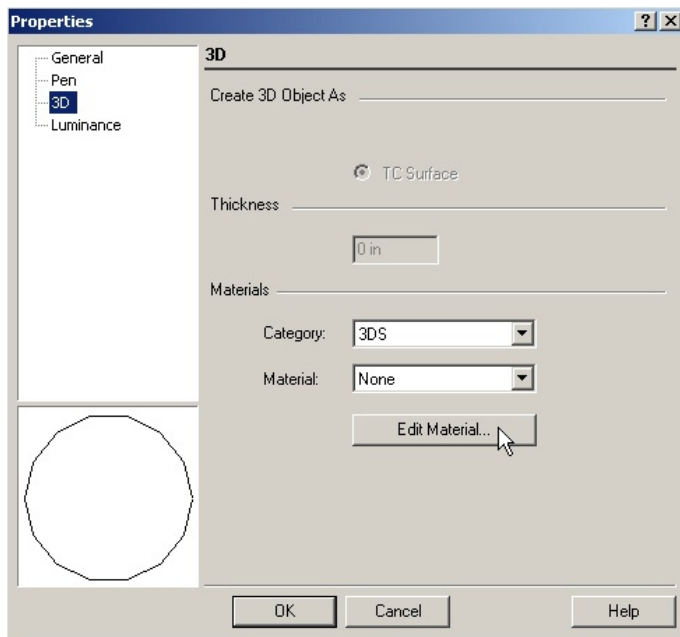
Press the Space Bar to exit the tool.

Switch to Isometric SE view.

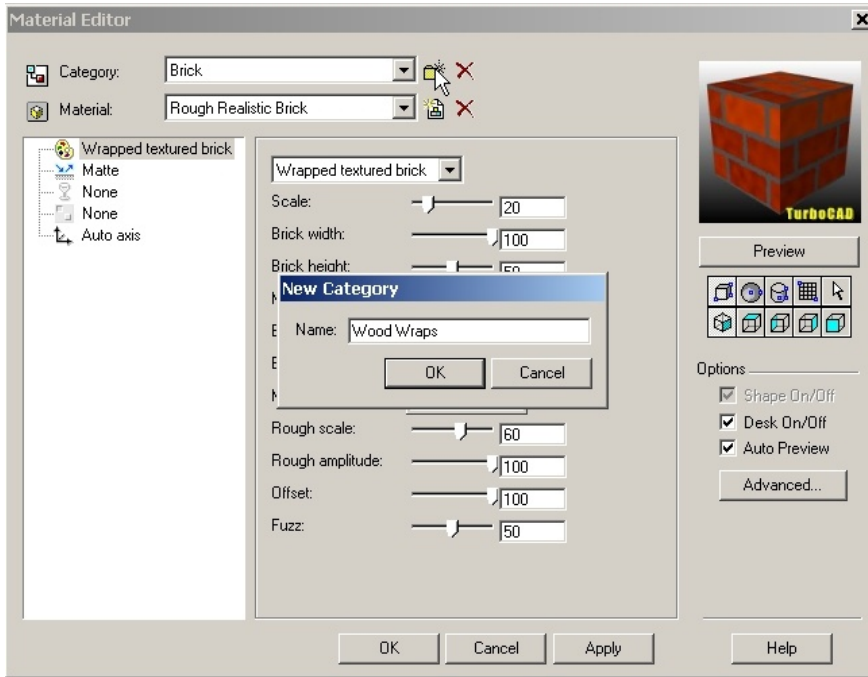
Select Plane by World from the Workplane toolbar.

Double click on the table top to open the Properties dialogue for the selection.

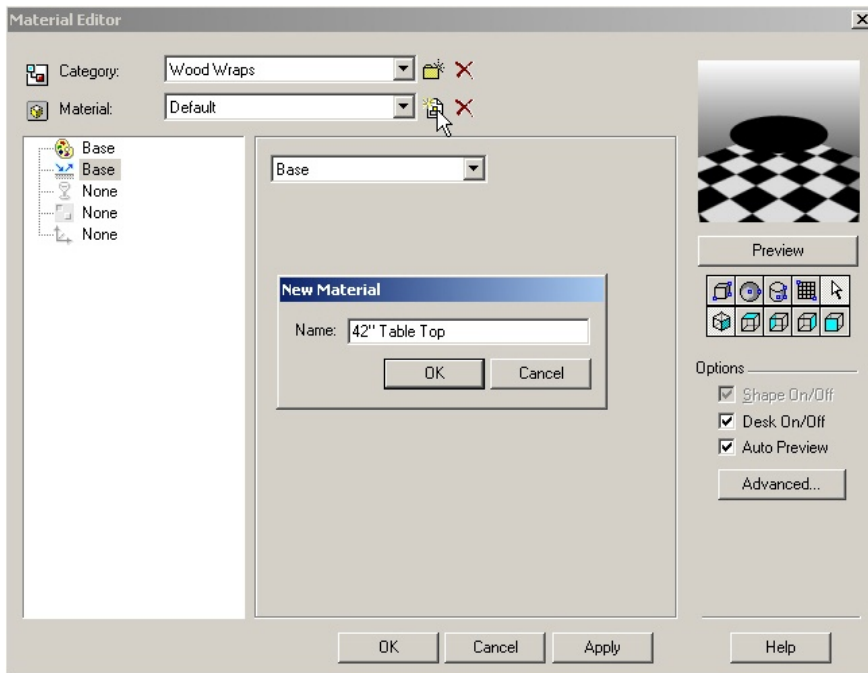
Under the 3D tab select Edit Material.



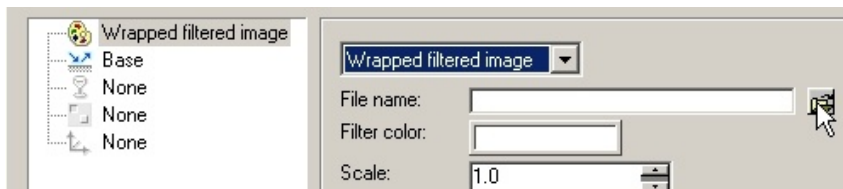
Select the Create New Category icon to the right of the current category name field. Enter Wood Wraps in the New Category dialogue and click OK.



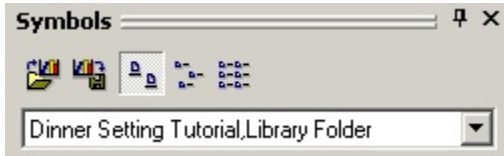
Select the Create New Material icon to the right of the current material name field. Enter 42" Table Top in the New Material dialogue and click OK.



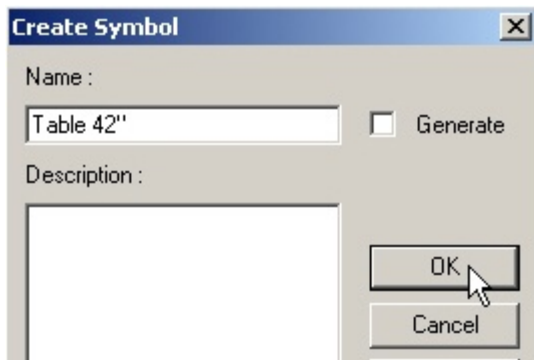
The Pattern tab is the open tab. Hover the mouse over the names in the window on the left to see which tab is which. Select Wrapped filtered image from the dropdown menu and then left mouse click the yellow folder icon next to the File name field. Do not change any other settings in this window.



The Library folder opens.

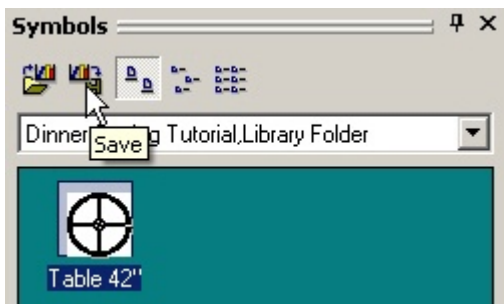


Select all the components of the table and drag the selection onto the Symbol palette and when the add cursor appears release the mouse button. Enter "Table 42" as the name and click OK.



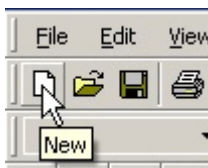
FYI: If auto name is not checked, double click on the thumbnail to name it.

Select Save at the top of the palette to save the library changes.

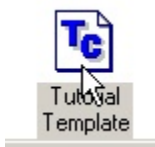


Save and close the Table file.

Select the New icon at the top of the TurboCAD desktop.



When the New from Template dialogue opens double click on the Tutorial Template thumbnail to open a new drawing.



Chair

Switch to World Plan view.

Select Plane by World from the Workplane toolbar.

The chair will be started by creating some 2D profiles for the legs and seat.

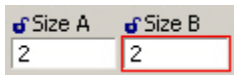
Select the Rectangle tool from the Line toolbar.

Select Red from the color dropdown menu on the Property toolbar.

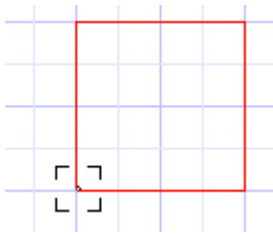


G SEKE snap the first point of the rectangle to a grid intersection.

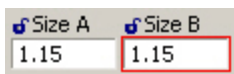
Move the cursor in a right upwardly direction for a short distance and then Tab into the Inspector Bar and enter 2 in the Size A and Size B fields. Press Enter.



V SEKE snap the first point of the next rectangle to the lower left corner of the first rectangle.

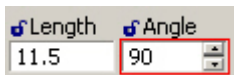


Move the cursor in a right upwardly direction for a short distance and then Tab into the Inspector Bar and enter 1.15 in the Size A and Size B fields. Press Enter.

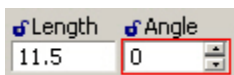


Select the Line tool from the Line toolbar.

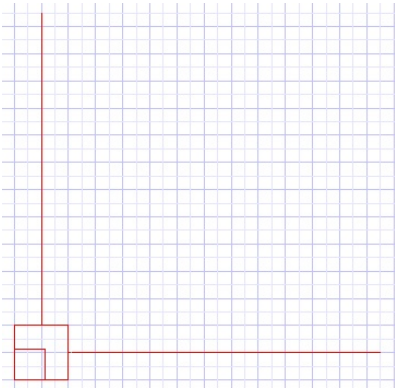
M SEKE snap the first point of the line to the top line of the larger rectangle. Tab into the Inspector Bar and enter 11.5 in the Length field and 90 in the Angle field. Press Enter.



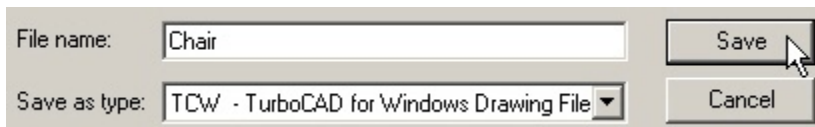
M SEKE snap the first point of the next line to the right line of the larger rectangle. Tab into the Inspector Bar and enter 11.5 in the Length field and 0 in the Angle field. Press Enter.



Like so.

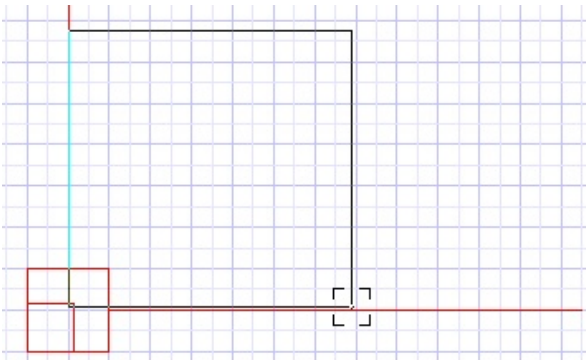


Save the drawing with the file name Chair. Before the save button is selected copy the file name so that it can be pasted into the Summary dialogue when it opens.

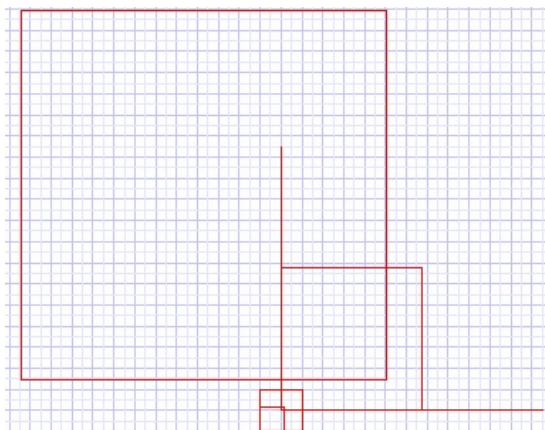
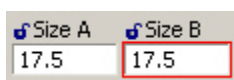


Select the Rectangle tool from the Line toolbar.

M SEKE snap the first point of the new rectangle to the middle of the vertical 11.5 inch line. Move the cursor to the horizontal 11.5 inch line and M SEKE snap to complete the rectangle. In progress below.



Using a left mouse click and Inspector Bar entries create a 17.5 inch square anywhere in the drawing area.



Press the Space Bar to exit the tool.

Materials Application – Placemat

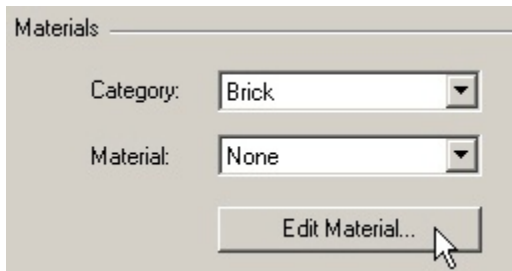
Turn off the Grid.

Select Zoom Extents.

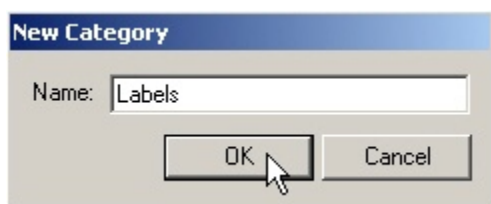
Select the Quality Rendering tool on the Render toolbar.

Double click on the black panel to open the Properties dialogue for the selection.

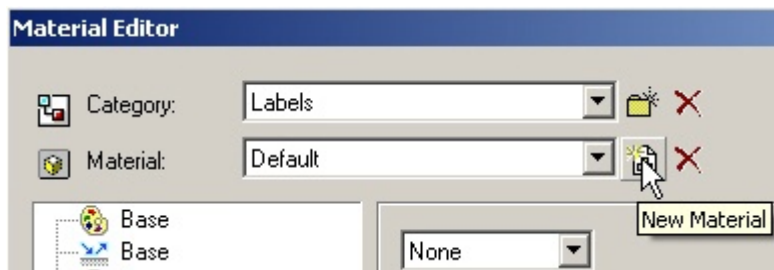
Under the 3D tab select Edit Material.

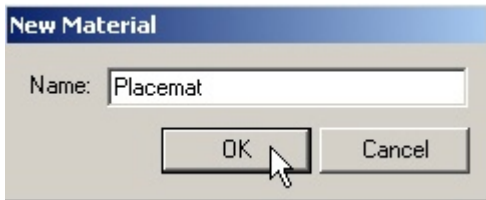


Select the Create New Category icon to the right of the current category name field. Enter Labels in the New Category dialogue and click OK.



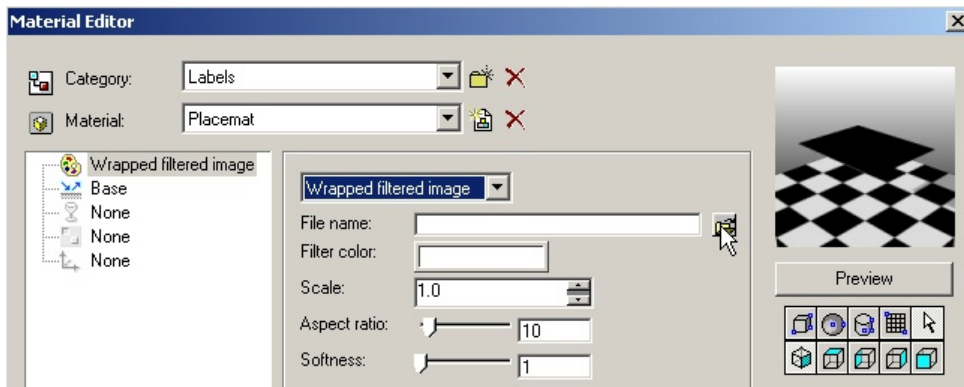
Select the Create New Material icon to the right of the current material name field. Enter Placemat in the New Material dialogue and click OK.



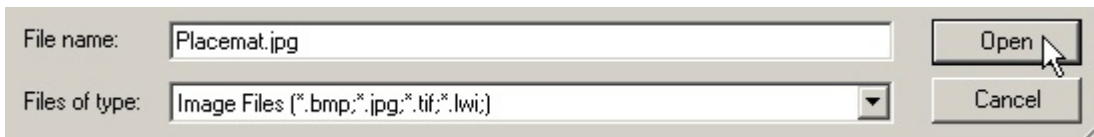


The Pattern tab is the tab that is open.

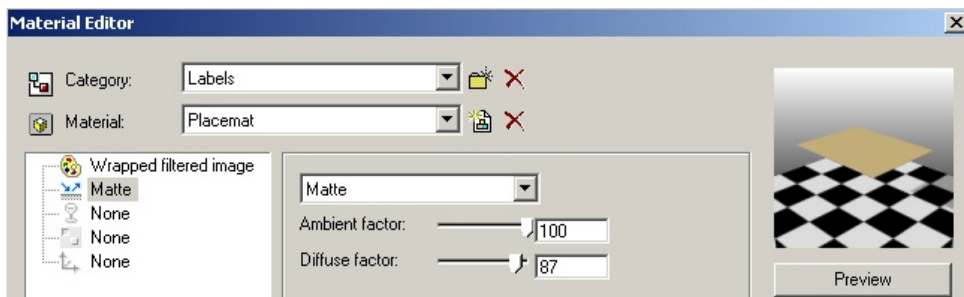
Select Wrapped filtered image from the dropdown menu. Click the arrow under the Preview button to get a view of what is to be wrapped. Select the yellow folder icon to find the image that will be used for wrapping. Leave the other settings alone under this tab.



Locate the supplied file Placemat.jpg that was created by the author. Click Open



Left mouse click the Reflectance tab in the window on the left. Select Matte from the dropdown menu and adjust the settings to reflect those in the image below.



Leave Transparency set to None.

Leave Texture set to None.

Select the Wrapping tab in the window on the left. Select Arbitrary plane from the dropdown menu. Set the Scale to 16.5 – that is the width of the object in drawing units being wrapped (16.5 inches = 16.5 drawing units. 16.5 mm = 16.5 drawing units, etc.). Set the Aspect Ratio to 79. Aspect ratio is generally determined with the image dimensions (pixels) using the formula $\text{Height} \div \text{Width} \times 100 = \text{Aspect Ratio}$

Select the Quality Rendering tool on the Render toolbar.



Select the Wireframe icon on the Render toolbar to end the render.

Open the Symbols palette.

Select the napkin **and** the ring. Drag the selection to the Dinner Setting Tutorial, Library Folder. Name the symbol Napkin and Ring.

Name :
 Generate

Select Save at the top of the palette.

Save and close the Napkin drawing.

Select the New icon at the top of the TurboCAD desktop.

When the New from Template dialogue opens double click on the Tutorial Template thumbnail to open a new drawing.

Cutlery

Switch to World Plan view.

Select Plane by World from the Workplane toolbar.

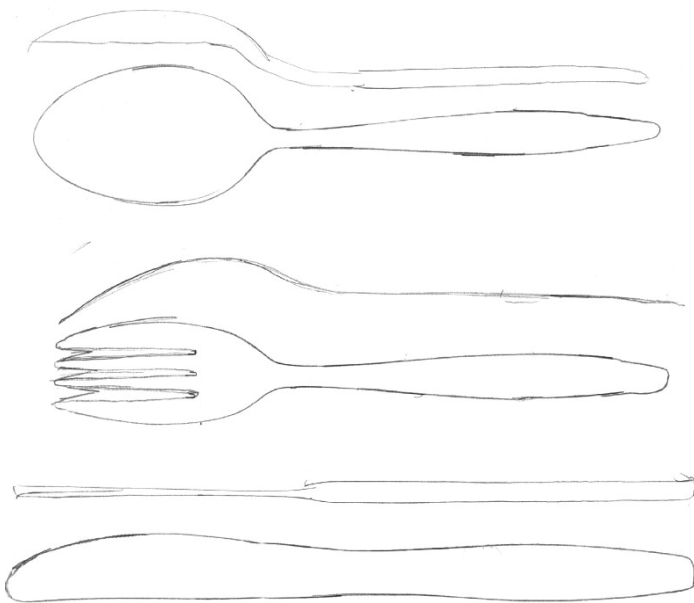
The cutlery that will be used within this section is from the author's kitchen drawer. There are several methods available to get the correct overall dimensions of cutlery, none of which would prove easy to do. One method would entail the use of calipers and other radius measuring devices that a user may or

may not have at their disposal. This would be very accurate, and if extreme precision is required this is likely the way to go.

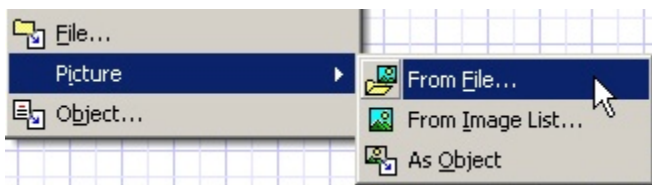
A second would be to use a flatbed scanner. After placing the cutlery on the scanner and scanning, a scanned image of the flat surfaces would be created and inserted into the TurboCAD drawing. These scans could then be scaled and manually traced with appropriate TurboCAD tools. An okay method but the curvature of the utensils would be unavailable unless a user could find a method to place the utensils on their sides upon the scanner bed. There exists with this method the possibility of scratching the scanner bed.

A third method, and the one used here, is very similar to the second but it produces a bit more usable result. Since the only concern within the tutorial is creating a visually pleasing 3D set of cutlery it is not necessary to attain exact dimensions, only something that is relatively close to the actual size and proper proportions. What has been done in this case is - the author has used a pencil and paper to trace the flat and edge profiles of each piece on a piece of paper. Once completed, a scan of the paper was performed. The final image that will be inserted into TurboCAD has been included with the tutorial file download.

Nothing fancy but it suites the purpose quite nicely.



From the Insert menu at the top of the TurboCAD desktop select Picture/From File.

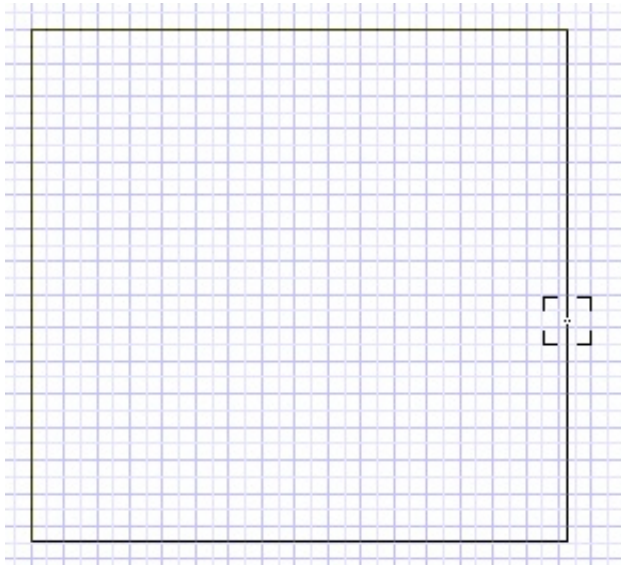


Locate the supplied file CutleryScan.jpg and click Open.

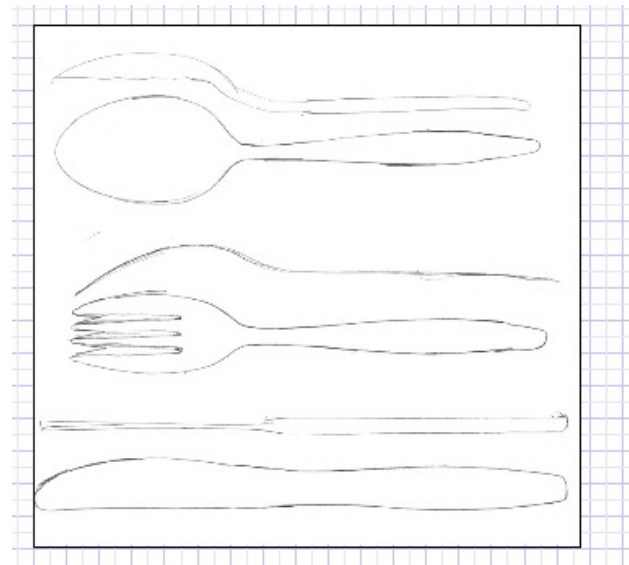


G SEKE snap at a grid intersection in the drawing to place the first point of the image. Move the cursor in a right downwardly direction for a distance and then left mouse click to place the second point of the image.

In progress.



Like so.

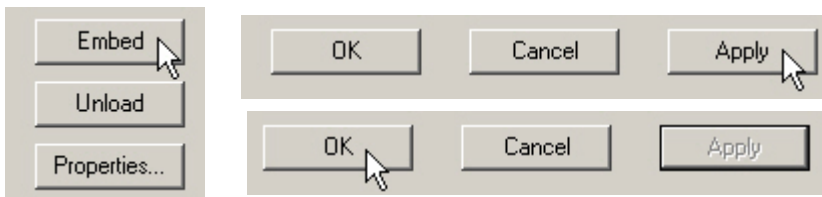


So that the image remains available in the drawing even if the original is moved or deleted it should be embedded into the drawing.

From the Tools menu at the top of the TurboCAD desktop select Raster Image/Image Manager.



The CutleryScan image should be highlighted. With the image highlighted, click Embed, click Apply and click OK.



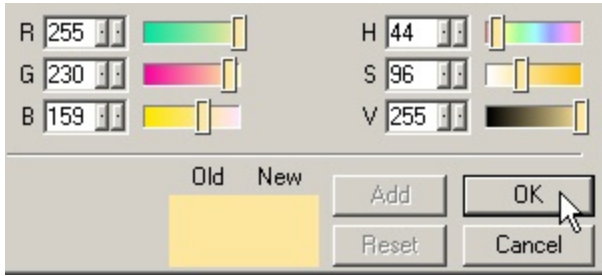
So that all readers are working at the same scale steps will be taken to size the inserted image.

Select the Line tool from the Line toolbar.

Select Red from the color dropdown menu on the Property toolbar.



Zoom in on the knife profiles. Left mouse click at a similar point on the knife profile as indicated in the picture below.

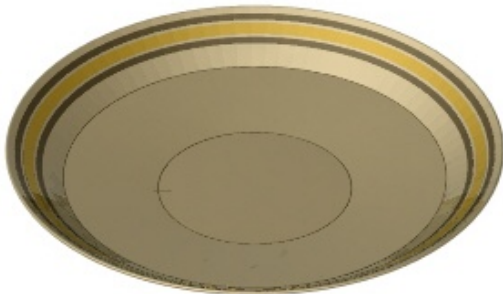


Click OK to exit the Material Editor.

Scroll down on the Material palette to locate the new thumbnail and double click it to apply the material.



Press Esc to deselect the selection.



This is actually a good place to try the Smooth option for the TC Surface Options as they work quite nicely on the bowl and plate. Select the plate and bowl main revolves. Open the Properties for the selection and check Smooth under the TC Surface Options tab. Press Esc after the screen renders.



The tutorial will continue with the Smooth option unchecked, but the reader is more than welcome to keep them checked and see if there are any adverse effects as the tutorial progresses. Smooth can always be turned off via the properties dialogue if need be. The Smooth option is not available any longer if Boolean operations have been performed on an object.

Select the Wireframe tool from the Render toolbar to end the render.

Open the Symbols palette.

Select all the components of the plate and drag it to the Symbol Palette, Dinner Setting Tutorial Library Folder. Name it Plate.

Select all the components of the bowl and drag it to the Symbol Palette, Dinner Setting Tutorial Library Folder. Name it Bowl.

Select Save at the top of the palette.



Save and close the Plate and Bowl file.

Select the New icon at the top of the TurboCAD desktop.

When the New from Template dialogue opens double click on the Tutorial Template thumbnail to open a new drawing.

Coffee Mug and Drinking Glass

Both the coffee mug and drinking glass are technically quite simple to produce using the Revolve and Rail Sweep tools. To present more of a challenge and utilize a few more tools some design elements will be added to the mug to amplify its visual appeal. The glass will be created by transitioning from one shape to another.

Switch to Front view.

Select Plane by Active View from the Workplane toolbar.

Some guide lines will first be established.

Select the Line tool from the Line toolbar.

Select Blue from the color dropdown menu on the Property toolbar.



G SEKE snap the first point of the line to a grid intersection of the drawing. Tab into the Inspector Bar and enter 3 1/8 in the Length field and 0 in the Angle field. Press Enter.

Salt and Pepper Shakers

To add a little more challenge to the creation of the Salt and Pepper Shakers they will be egg shaped and they will exhibit curved, embedded text.

Switch to Front view.

Select Plane by Active View from the Workplane toolbar.

Select the Line tool from the Line toolbar.

Select Red from the color dropdown menu on the Property toolbar.



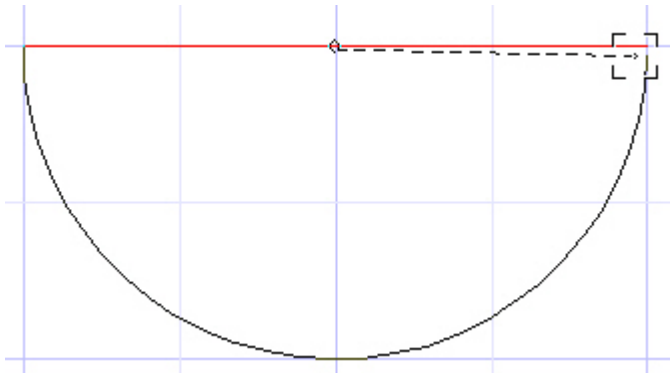
Using two G SEKE snaps place a 2 inch horizontal line in the drawing.

Select the Double Point Arc tool from the Arc toolbar.

Select Red from the color dropdown menu on the Property toolbar.

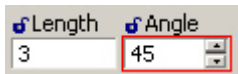


V SEKE snap the left vertex of the line to place the first point of the arc circle. Move the cursor to the right vertex of the line and V SEKE snap to place the second point of the arc circle. V SEKE snap the left vertex of the line to define the first point of the arc. Move the cursor to the right vertex of the line and V SEKE snap to place the second point of the arc. In progress below.



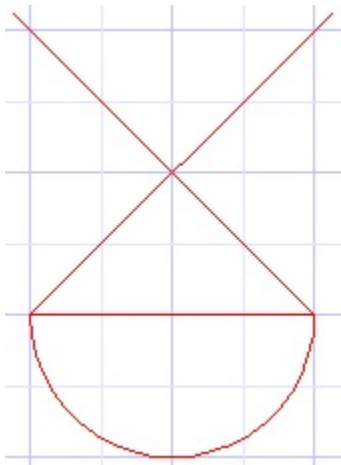
Select the Line tool from the Line toolbar.

V SEKE snap the first point of the line to the left vertex of the horizontal line. Tab into the Inspector Bar and enter 3 in the Length field and 45 in the Angle field. Press Enter.



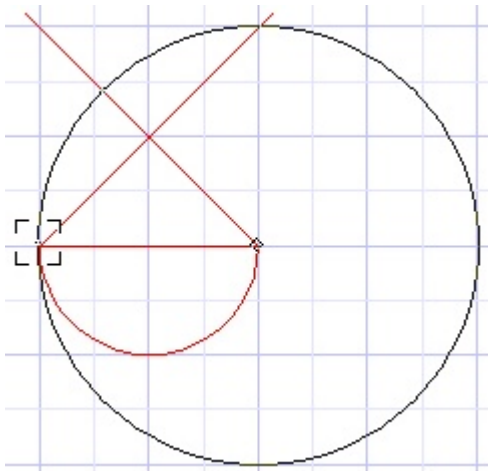
V SEKE snap the first point of the next line to the right vertex of the horizontal line. Tab into the Inspector Bar and enter 3 in the Length field and 135 in the Angle field. Press Enter.

Length 3 Angle 135

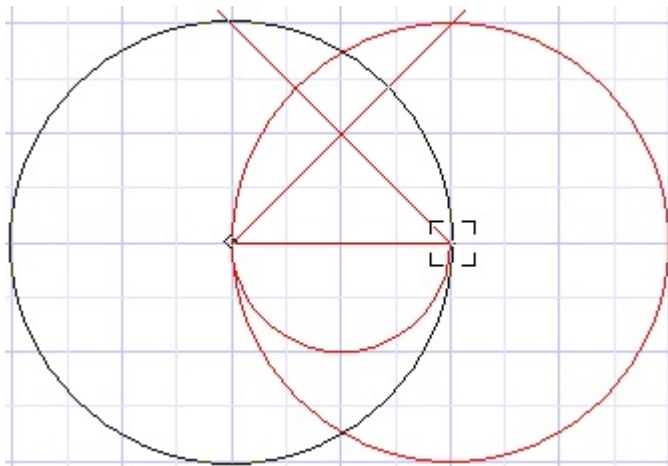


Select the Circle Center and Point tool from the Circle/Ellipse toolbar.

V SEKE snap the center point of the circle to the right vertex of the horizontal line. V SEKE snap the left vertex of the same line to define the diameter of the circle. In progress below.



V SEKE snap the center point of the circle to the left vertex of the horizontal line. V SEKE snap the right vertex of the same line to define the diameter of the circle. In progress below.



Save and close the Candlestick drawing.

Select the New icon at the top of the TurboCAD desktop.

When the New from Template dialogue opens double click on the Tutorial Template thumbnail to open a new drawing.

Table Leaf

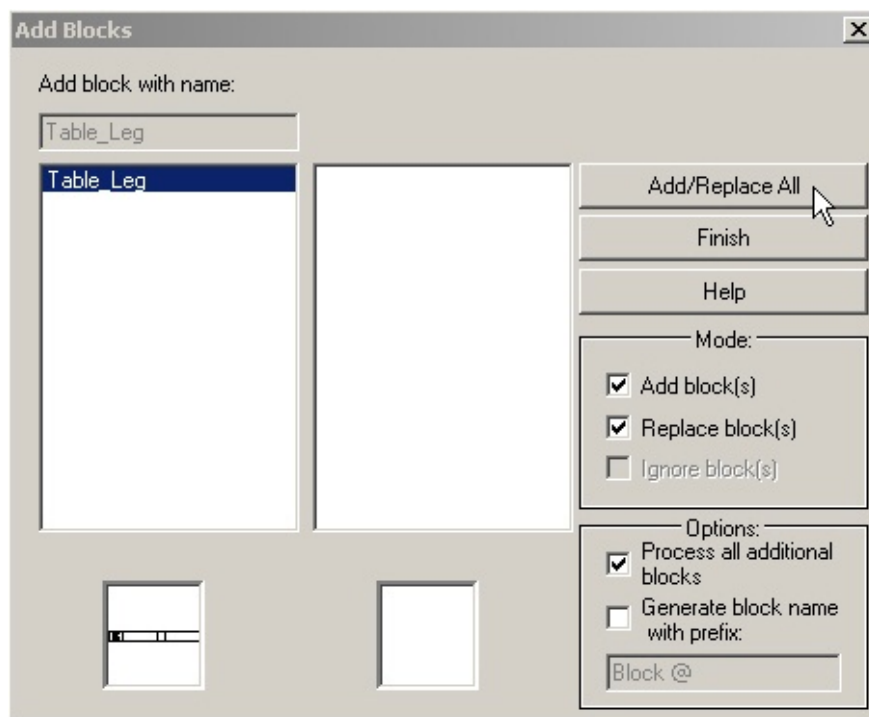
Switch to Isometric SE view.

Select Plane by World from the Workplane toolbar.

At this point a copy of the table will be brought into the new drawing from the Symbols palette. A table leaf will be created and inserted into the table to accommodate the four place settings that will be assembled.

Open the Symbols palette and pin it open. Locate the Dinner Setting Tutorial, Library Folder.

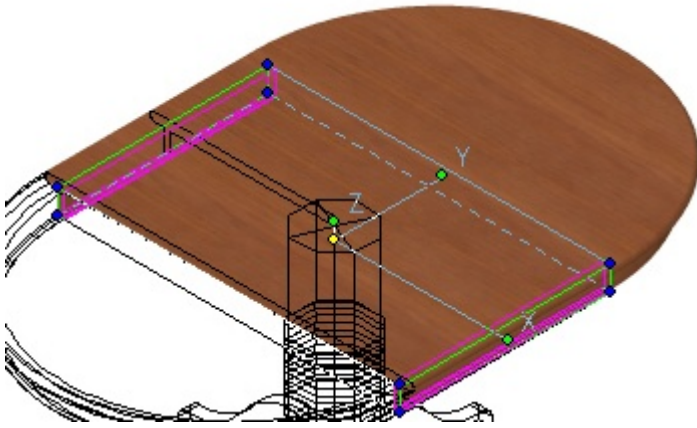
Drag a copy of the Table 42" symbol into the drawing. As the symbol is dragged in the Add Blocks dialogue will open since the table contains blocks. Select Add/Replace.



The symbol is placed in the drawing with the reference point at Z=0.

With the table still selected, Tab into the Inspector Bar and enter 0 in the X and Y Position fields and 14.75 in the Z Position field. Press Enter to move the table to the center of the world coordinates and the bottom of its feet at 0.

Pos X	Pos Y	Pos Z
0	0	14.75



Select the Wireframe tool on the Render toolbar to end the Render.

Press Esc to deselect the selection.

Right mouse click on the Wireframe tool icon to open the Camera Properties dialogue. Check Quality and uncheck Nonrenderable objects. Click OK.



Select the Wireframe tool on the Render toolbar to end the Render.

Dinner Setting Assembly

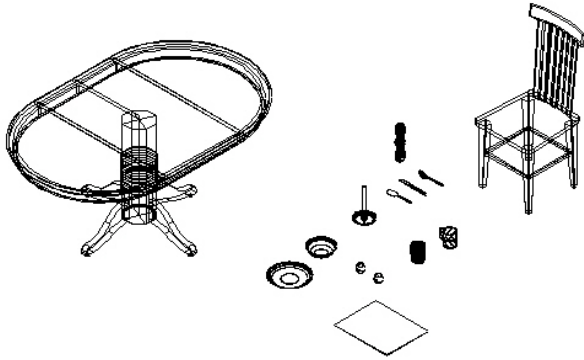
One setting will be assembled and it will be copied to the other locations.

Open the Symbols palette and pin it open.

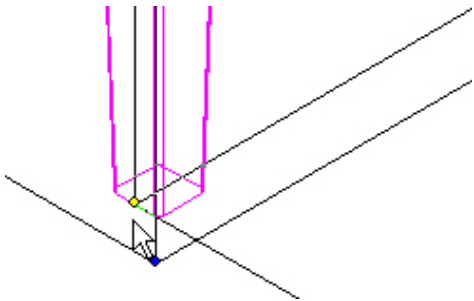
Turn off the grid.

Drag one of each of the symbols (except the table – which is already there and the single napkin ring) into the drawing to an area to the right of the table. Leave space between them.

Select Add/Replace all for the Chair, Fork, Knife, Mug, Napkin and Ring and Spoon. The reader can pick up and move the above units if need be as having to deal with the blocks dialogue will often make it impossible to drag them to a clear area.



Select the chair. Press D SEKE and relocate (M SEKE) the reference point to the bottom of one of the legs.



Tab into the Inspector Bar and enter 0 in the Z Position field. Press Enter.

Pos Z
0

Right mouse click and select Default Reference Point from the Local Menu.

Switch to World Plan view. Although it is not necessary to switch to World Plan view each time it can help to see what is going on more clearly.

Tab into the Inspector Bar and enter 0 in the X Position field. Press Enter.

Pos X
0

Tab into the Inspector Bar and enter 29 in the Y Position field. Press Enter.

Pos X	Pos Y	Pos Z
0 in	29	20.31810

