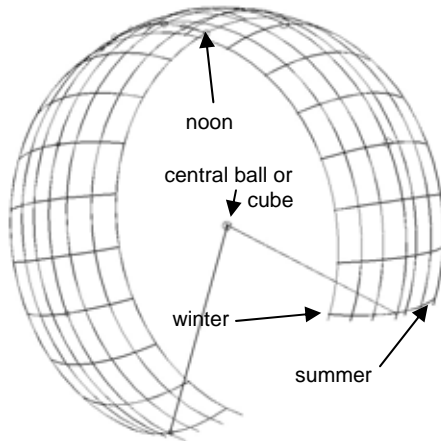


USING CAD LIGHTS FOR ACCURATE HOUR LINES

Manipulating lights can be rather tiresome. However, the secrets to know when using TurboCAD are that a light is normally placed on the work-plane like any object, and the light shines along the Z axis if it is directional or a spot light. Additionally, VIEW and LIGHTS will show the color thrown by a light and you may need to set it to white, and also turn off unused light sources.

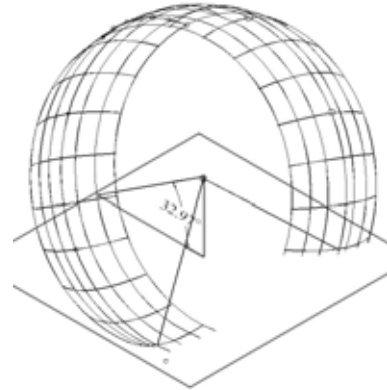
While that simplifies lights, it doesn't make them accurate. The secret is a mesh of arcs which can be made by the arc command, turned into 3d, or by using the solar-travel mesh on the website.



This mesh depicts solar travel, and can be copied and then pasted into a CAD dial drawing, and it's center placed on the nodus, and then rotated for your latitude.

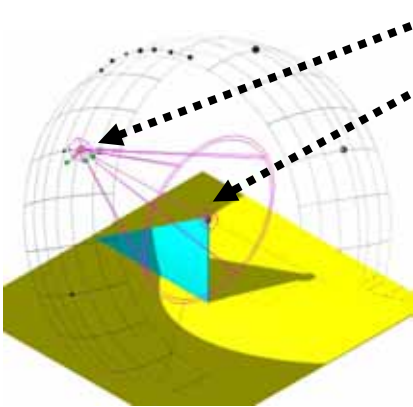
For example, a dial plate was laid out, with a gnomon set for latitude 32.97° in this case.

The solar-travel CAD 3d drawing model was opened, selected, and copied, and then pasted into the dial's drawing.



In TurboCAD the work-plane is set horizontal and level with the nodus before pasting the model mesh into place, and thus before adjusting it also. Alternatively, you can place the mesh and note good x, y, and z coordinates, and using a different view, move any remaining axis that needs moving, and reset the undesired coordinates manually in the inspector area. The center of the 3d solar-travel model matches the coordinate center, so the solar-travel mesh is easily placed and tilted to match the planet's equatorial plane. Failure to set work-planes appropriately results in frustration.

Then a light is selected, such as the directional light, and with the mouse no where in particular, use a right click, select "local snap", then "nearest on facet". Move the cursor to the intersection of the hour lines and the months, and wait for a mini work-plane to show that the snap is working and do a left click to anchor it. The light is anchored on that time and date. Now do another right click, select "local snap", and select "nearest on facet". This time move the mouse to the nodus of the gnomon, wait for the mini work-plane and left click. Now the center of the light as well as the direction have been set. Don't forget to set the light color to white. You can delete the mesh also.



In the picture to the left, the light is anchored at 9 o'clock in mid April or mid August, the light was placed on a facet of the mesh, then it's target on a facet on the nodus, and with the light selected, full rendering was used. This shows a spotlight and the shadow cast by the gnomon and nodus.

This technique allows rapid light placement without the need for adjusting the x, y, or z axis of the light.

Depending on the method used to create the mesh, the light may be anchored with "local snap", and then "intersection".

The light used here was a spotlight. The light may be selected and changed to a directional light in the properties, if so desired.