Two Point Perspective: Drawing A Perfect Cube

Step One

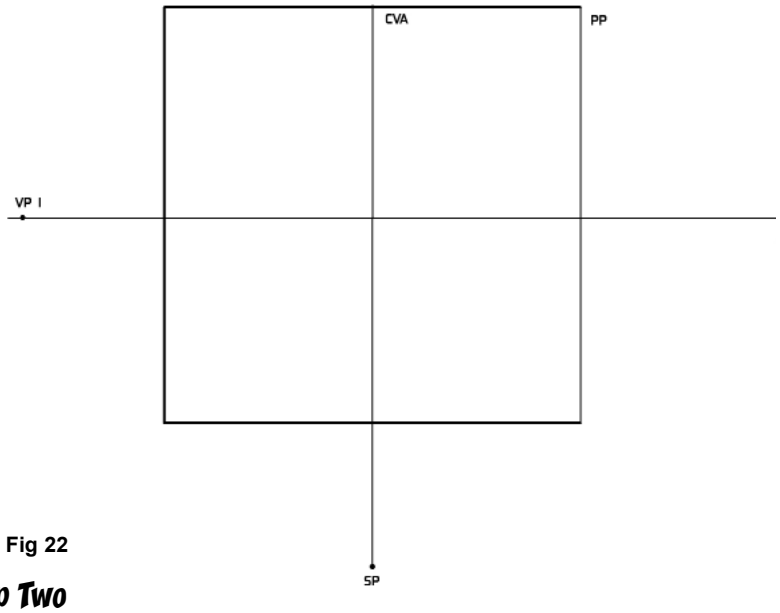

Fig 22

Figure 22
Not all objects we see will be viewed parallel to us or in 1PP. Objects that share our ground plane but are at any angle to us are now considered to be in what is called two point perspective. This can be simplified by saying we see an object's angle rather than it's plane in this perspective.
2PP and any persective view refers to some old tools; the HL, SP, CVA, and PP. Just as in 1PP we plot in a vanishing point. Note: now VP1 is off the central vertical axis and should not be confused with the MP we used for 1PP.

Step Two

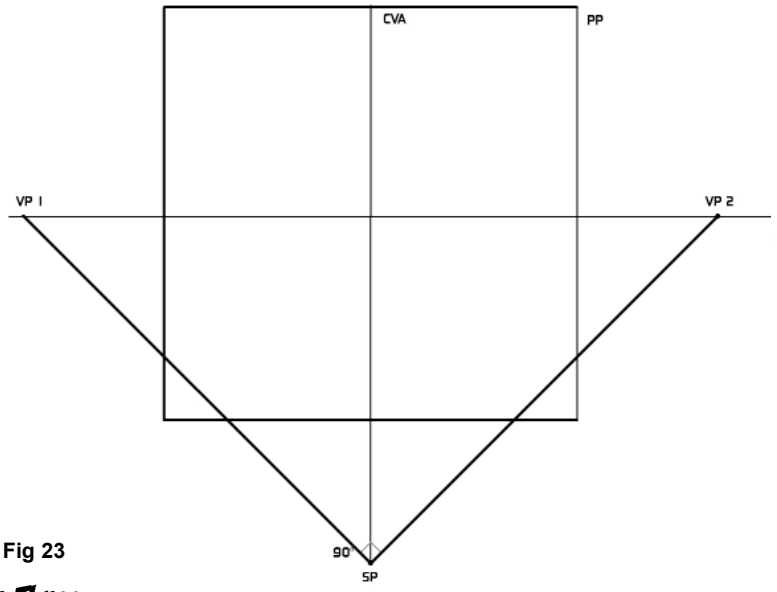

Fig 23

Figure 23
Now that we know where our first vanishing point is located we can find our second. Draw a construction line connecting VP1 to the station point. Now make a ninety degree angle back up to the horizon line as shown; use a right triangle or protractor. The intersection of this line and the HL marks the position of the second vanishing point or VP2. We did this to ensure that everything we draw within the picture plane will appear in true ninety degree space and look "real".

Step Three

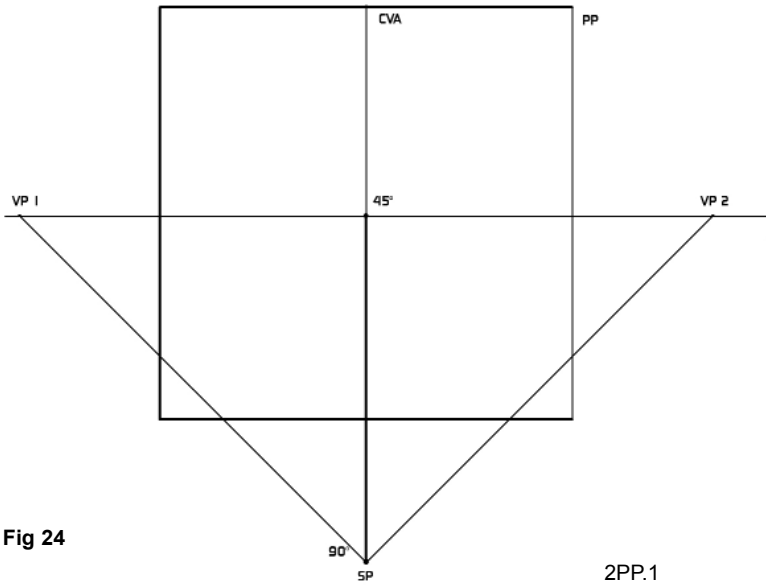

Fig 24

Figure 24
Now we need to find our median point for this view just as we did for 1PP. Rather than measuring the length of the CVA from HL to SP, as we did in 1PP, all we have to do in 2PP is divide the 90 degree angle in half at the SP and draw a line from here to the horizon line. Where this line intersects the HL is the location of the MP or 45 degree point. In this case, this point is located at the intersection of the CVA and the HL but this will change depending upon the placement of the two VPs.

Step Four

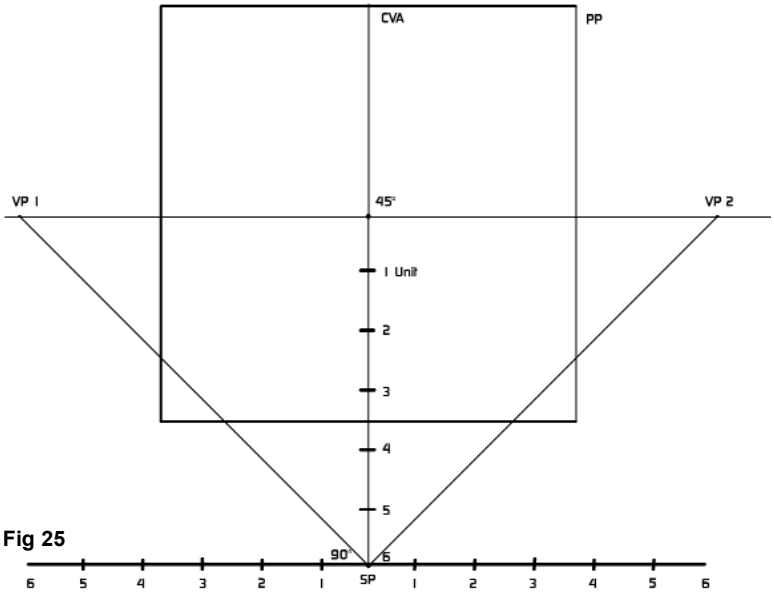

Fig 25

Figure 25
At this point we can describe the visual height of this view. Once again, the visual height of figure 25 is six units or if you have thing for feet, six feet. Again we draw in a line parallel to the HL through the SP and mark off the unit measurements...

Step Five

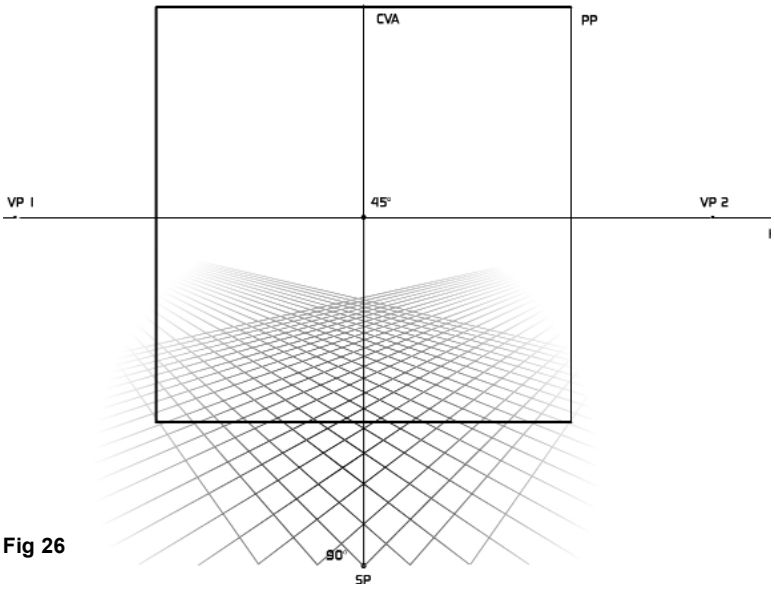

Fig 26

Figure 26
...Aaaaand we can draw in a grid for this view. Note the difference between a 1PP grid and a 2PP grid. We now have two VPs to create a grid from, and thus, the grid has turned at an angle from it's parallel 1PP view.

Step Six

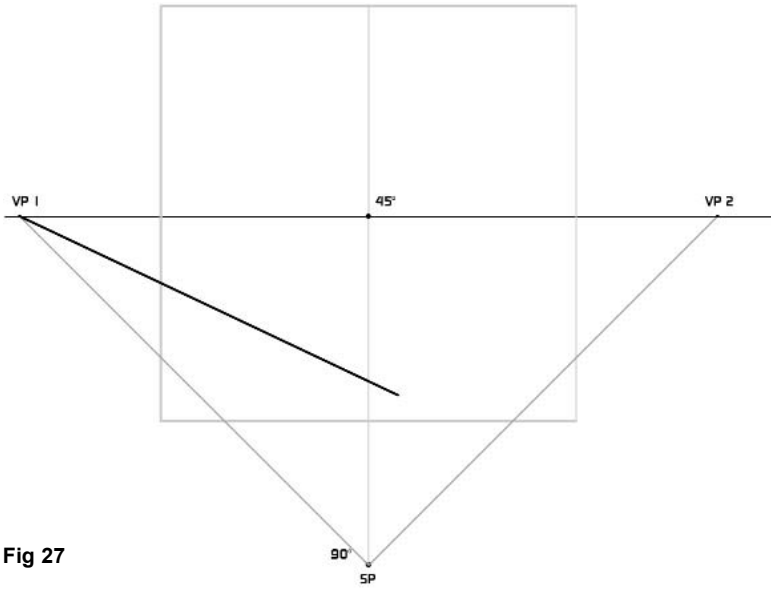

Fig 27

Figure 27
So now we have a ground plane with which to work. So the next step would logically be to draw in a convergence line from a VP. Figure 27 has faded the excess information for clarity and dropped in a convergence ray from VP1.

Step Seven

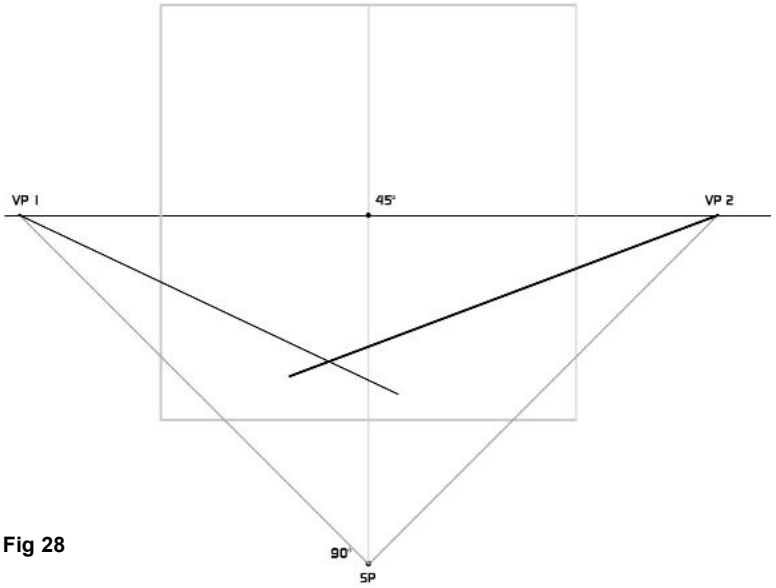

Fig 28

Figure 28
Do the same with VP2. The front corner of the object we are in the process of drawing is located where the two lines intersect.

Step Eight

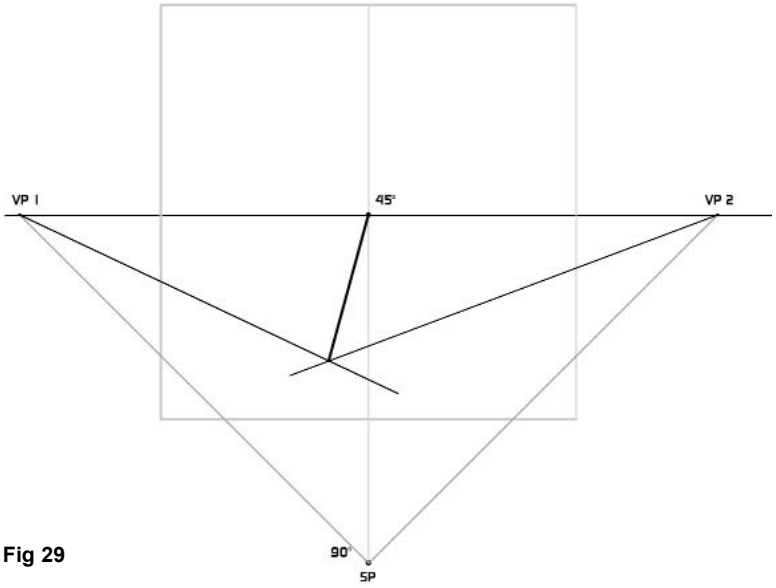

Fig 29

Figure 29
Refer back to your 45° point and draw a line from this point down to the intersection of the two convergence rays to find the angle's middle.

Step Nine

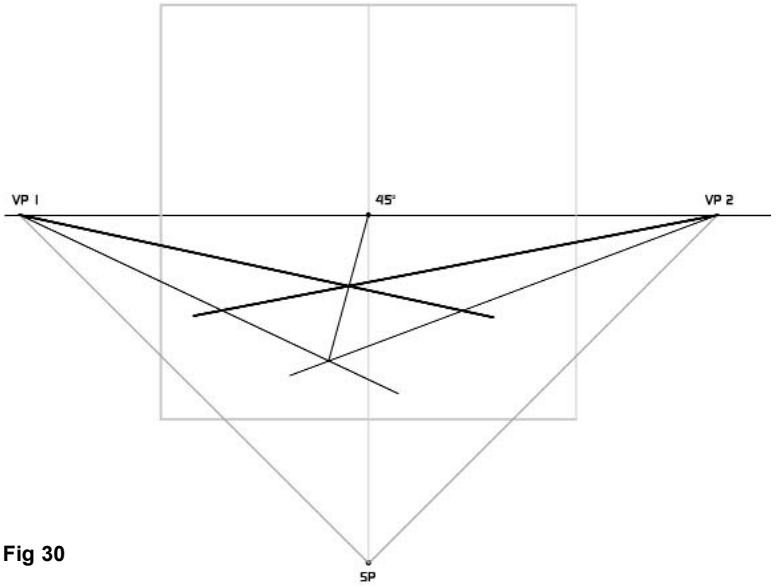

Fig 30

Figure 30
Now all you have to do is draw in another ray from one of the VPs, where it crosses the 45° line is the back corner of the square we are drawing. Then just draw in a ray from the other VP to this intersection aaaaaand...

Step Ten

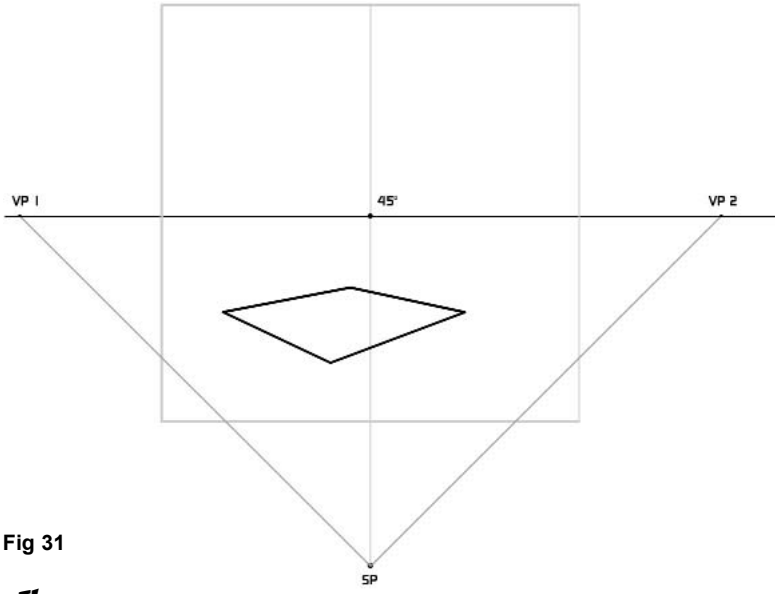

Fig 31

Figure 31

...*Whappo!* you have yourself a perfect square...even if it doesn't look like a square. (You know it is because of the MP.)

"Alright," you say, "here's a square." But finding the height is a little more involved than what we talked about in 1PP due to the fact that we don't know right off hand how far the edges are moving away in space, and therefore the height is a little harder to determine.

Step Eleven

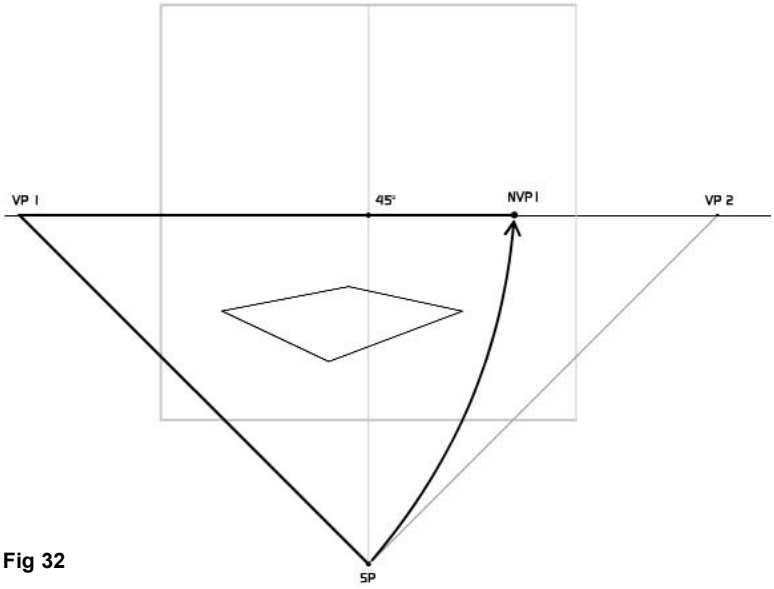

Fig 32

Figure 32

So we will use new points to figure this out. To find these new points, you will need to measure the distance from VP1 to the SP and then arc this up or measure the same distance to the right of VP1 on the HL as shown

Step Twelve

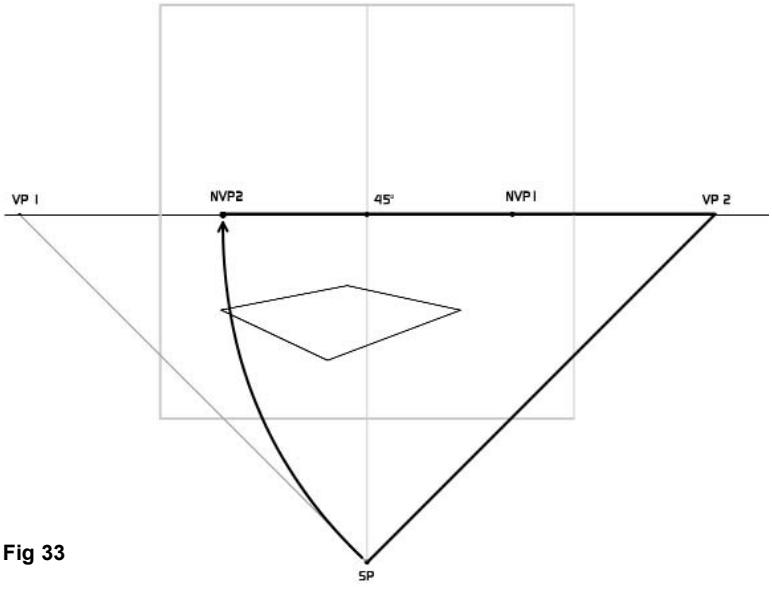

Fig 33

Figure 33

You can do the same with the distance from VP2 to the SP and measure that up on the HL as well. These new points will be labeled New Vanishing Point One (NVP1) and NVP2. These points only serve a temporary purpose so don't get too used to them hanging around.

Step thirteen

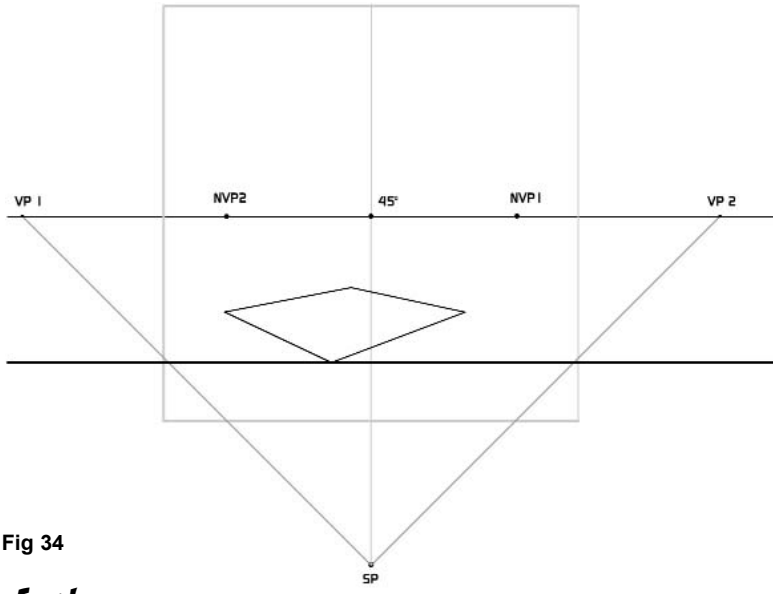

Fig 34

Figure 34
After you have found NVP1 and NVP2, draw a line that is parallel to the horizon line and have it intersect the lowest corner of the square you have drawn.

Step Fourteen

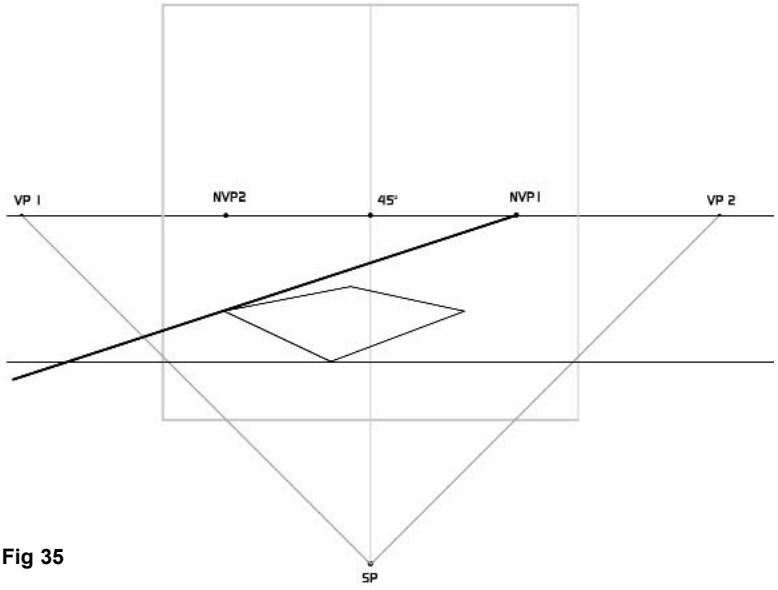

Fig 35

Figure 35
Draw a line from either NVP1 or NVP2 so that it just touches the corner of the square which is farthest from the NVP as shown. Your line from NVP1 will head off to the left, and from NVP2, it will head off to the right.

Step Fifteen

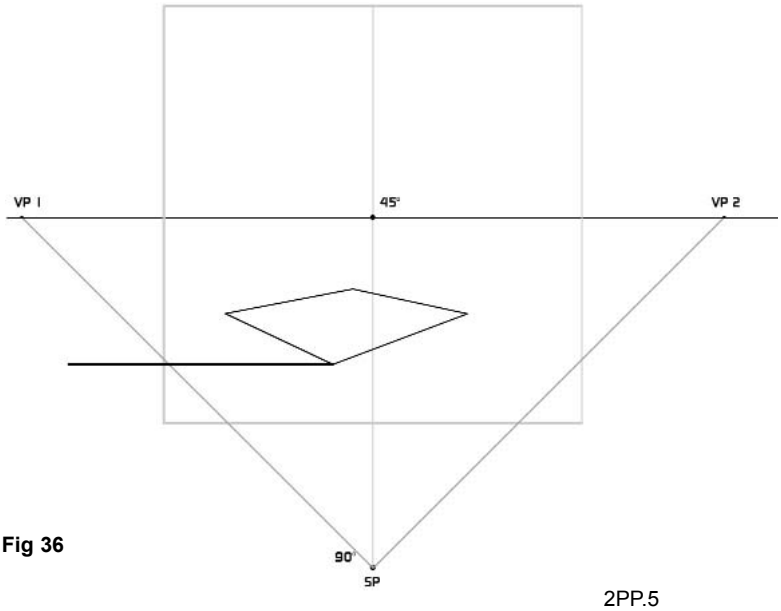

Fig 36

Figure 36
The intersection of the line parallel to the HL and the line radiating from NVP1 to the point at the corner of the square indicates the length of the square if it were in 1PP.
Once you have found this length, you no longer need the NVPs (note that you only used one but I showed you to find two in case the first was hard to use or too far off the page) I would suggest getting rid of them now so that they don't confuse you later. Good thing you're not using permanent ink, eh?

Step Sixteen

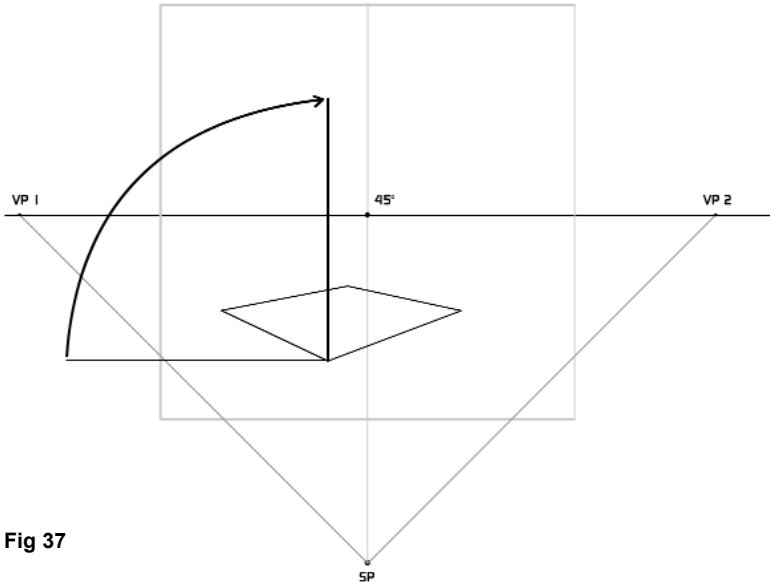

Fig 37

Figure 37
Now, measure of the line length we just drew or arc the point upward to vertical and we have found the height of the closest corner on the cube.

Step Seventeen

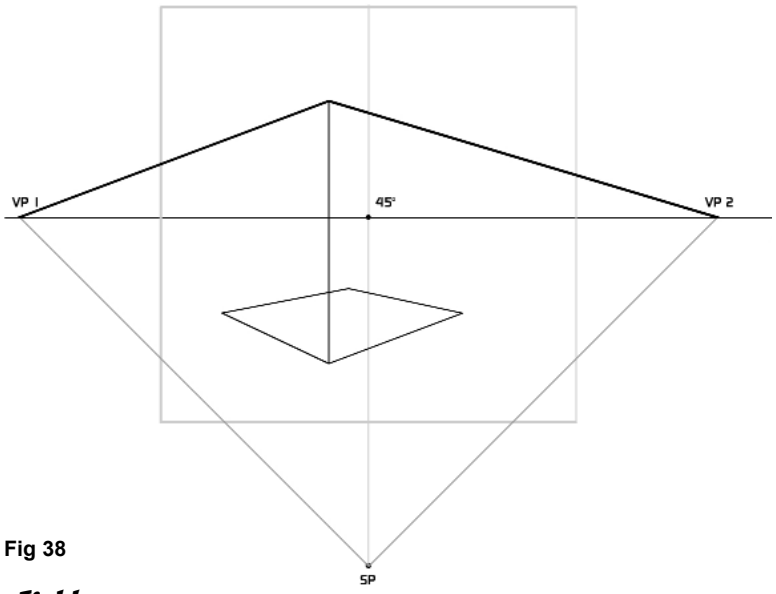

Fig 38

Figure 38
From here, draw a convergence line from each of the two VPs to the tip of the new height.

Step Eighteen

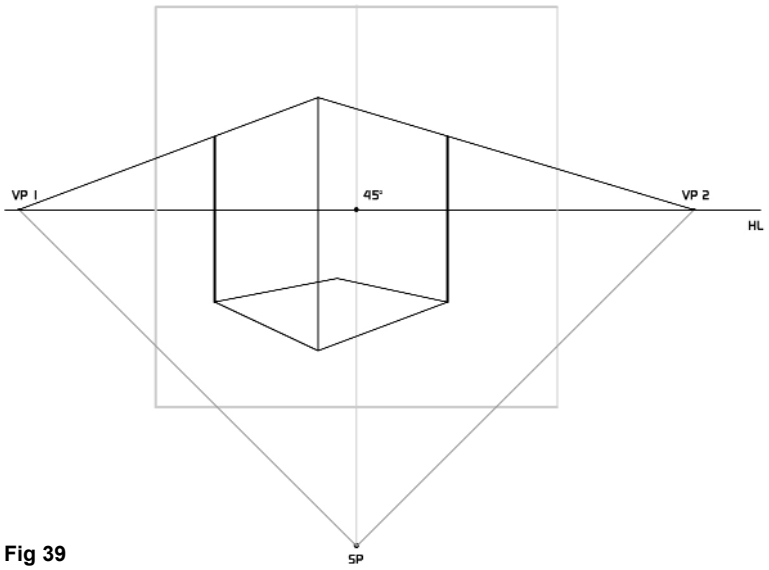

Fig 39

Figure 39
Drop vertical lines down at the corners to determine their heights.

Step Nineteen

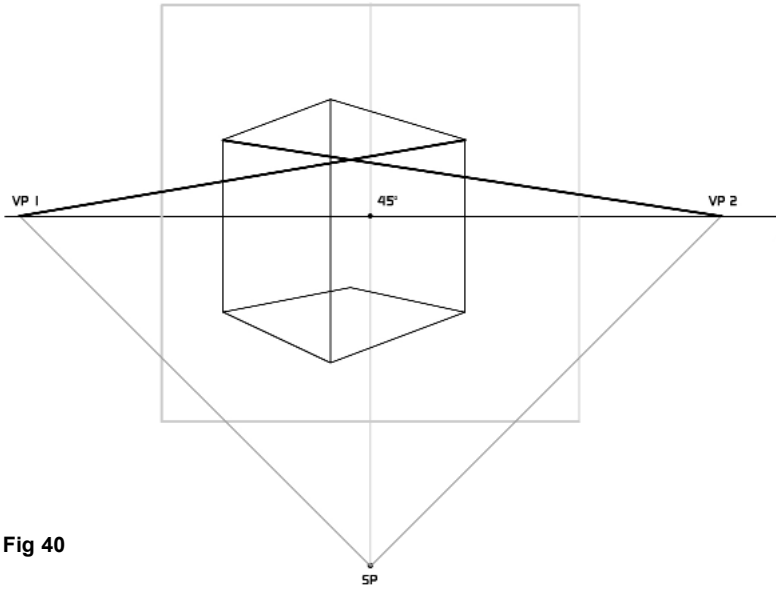

Fig 40

Figure 40
Draw convergence lines to these new corners to find the top plane of the cube.

Step Twenty

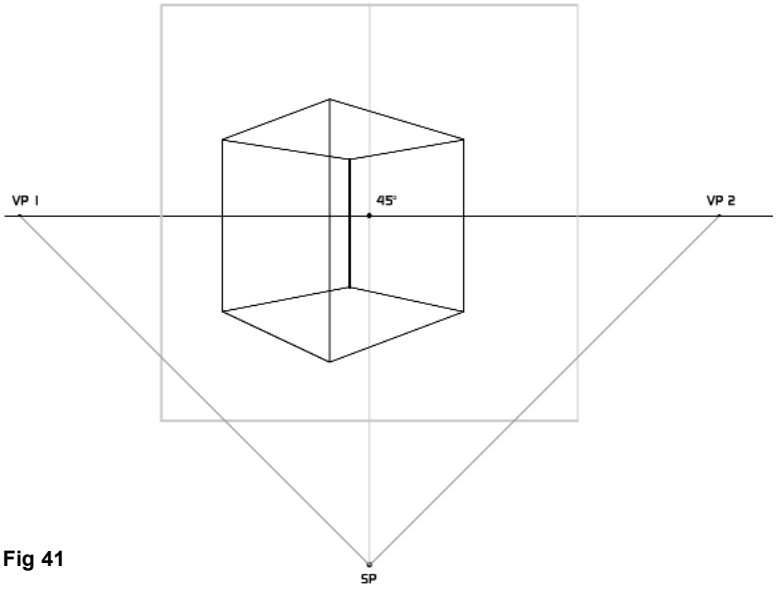

Fig 41

Figure 41
Draw a vertical line down to find the back corner and ***Whappo!*** you have yourself a true cube in 2PP

Step Twenty-one

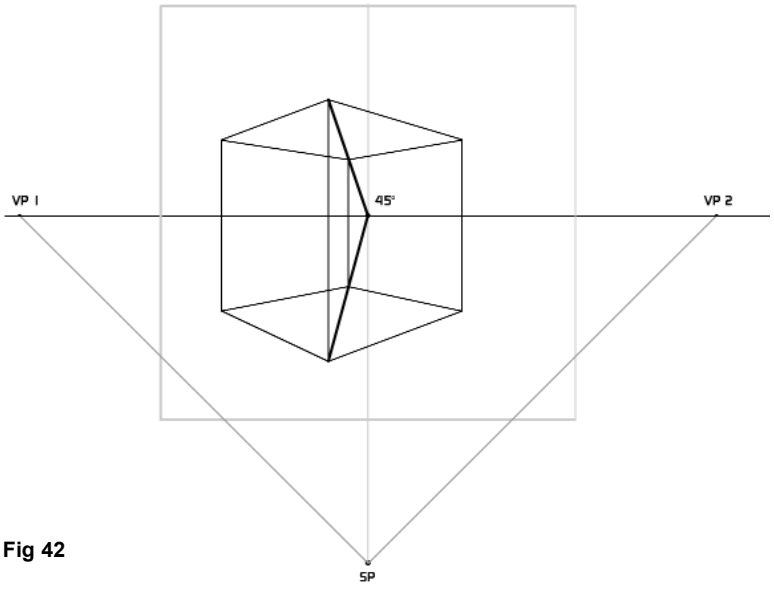

Fig 42

Figure 42
Just to make sure it's a cube, draw in a line from the MP to the outer top and bottom corners, if this line intersects two corners as shown, you know you have a perfect cube. Wow wasn't that great? So easy and useful too. Once you get the hang of it you'll be able to draw cubes and then anything over and over without a hitch. Below is our finished cube, rendered without on side.