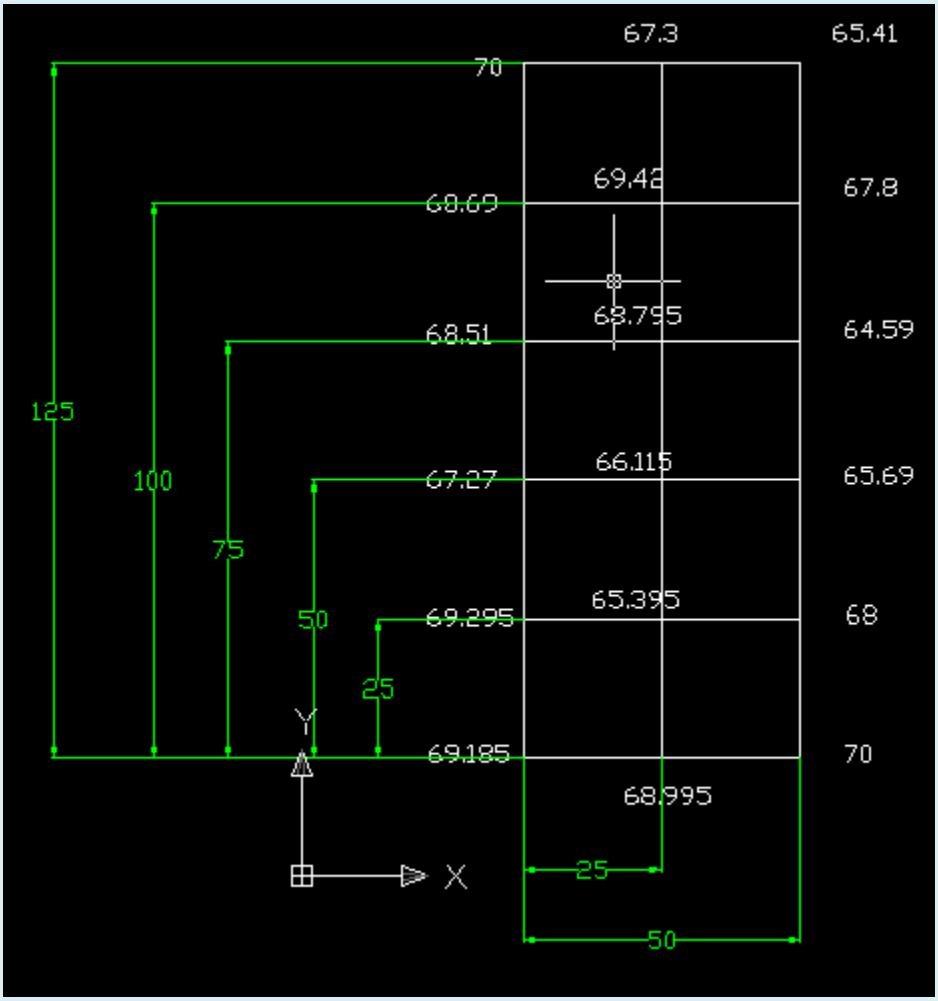
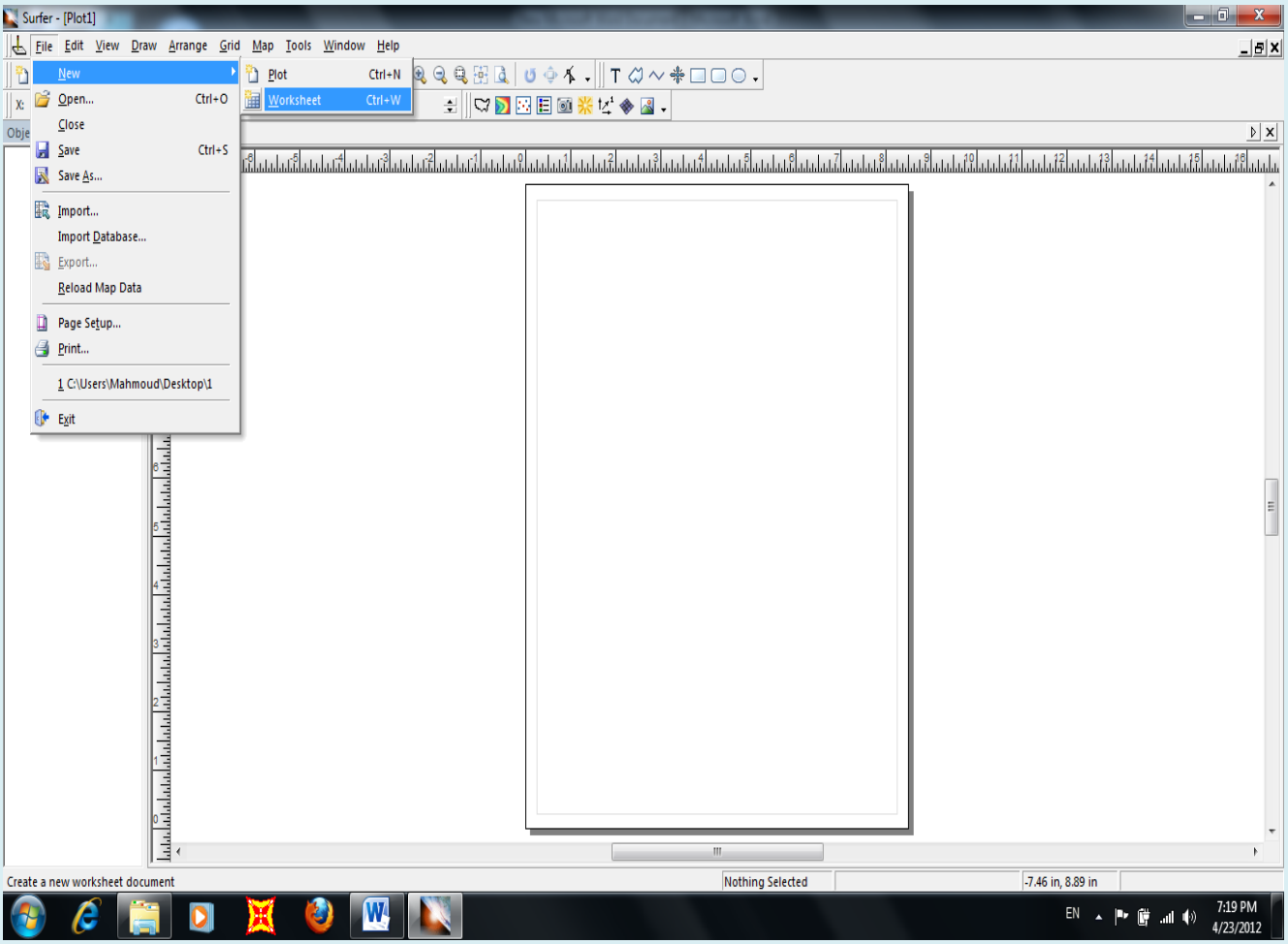
(1) A piece of land had been surveyed contour by dividing the area with grid lines. The grid lines are at 25 m interval both ways and the levels reduced are as follows, Adobe a scale 1cm : 10m and draw the contour lines at 1 m interval. (while drawing the contours, interpolation of R.L. may be done by eye-estimation), Calculate the volume of excavation to level the land at elevation of 67 m.

70.000	67.300	65.410
68.69	69.420	67.800
68.510	68.795	64.590
67.270	66.115	65.690
69.295	65.395	68.000
69.185	68.995	70.000



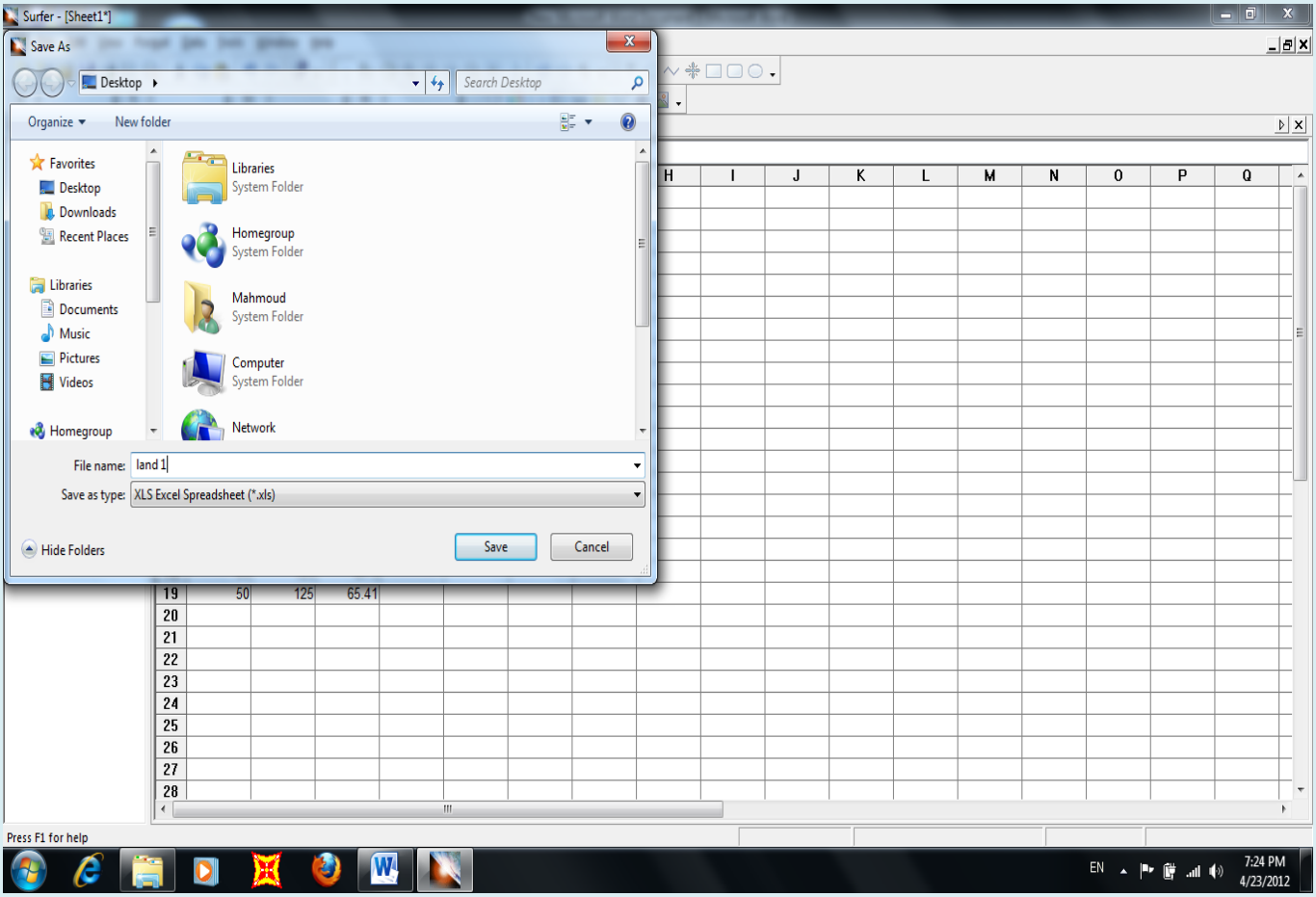
Open Surfer Program>file>new>worksheet



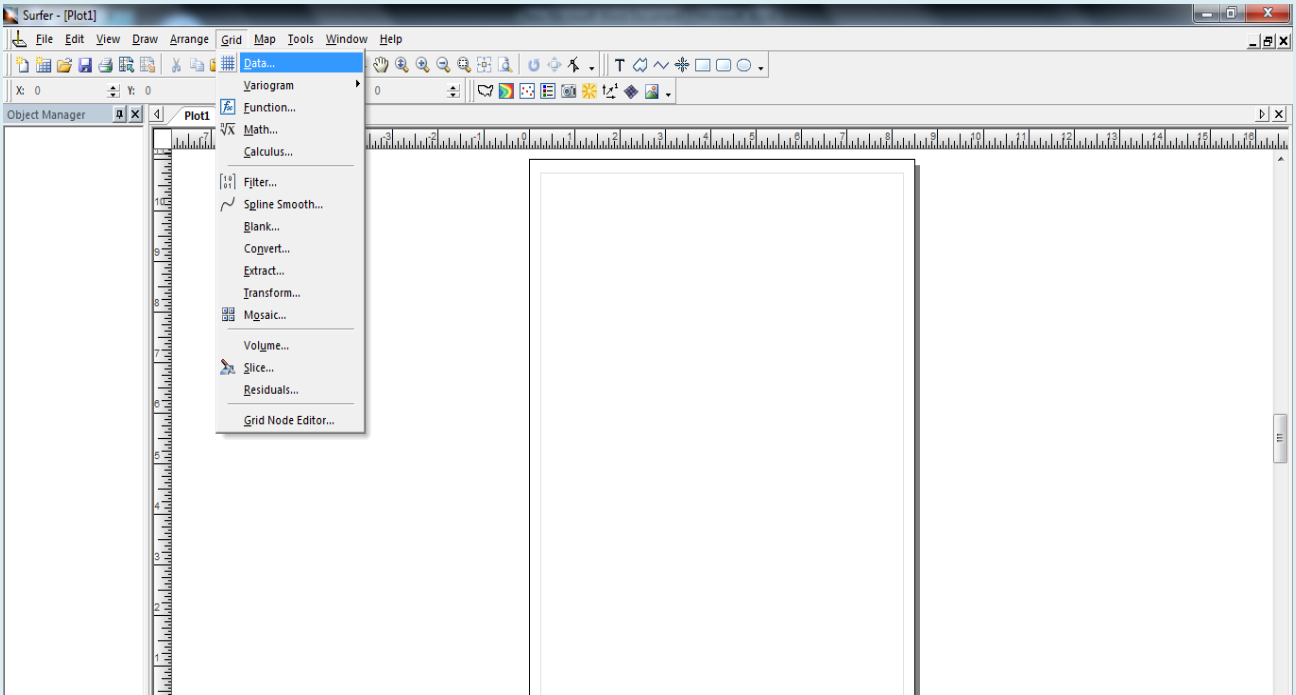
Enter (x,y,z)for point in the excel sheet as shown :

	A (x)	B (y)	C (z)	D	E
1	x	y	z		
2	0	0	69.185		
3	25	0	68.995		
4	50	0	70		
5	0	25	69.295		
6	25	25	65.395		
7	50	25	68		
8	0	50	67.27		
9	25	50	66.115		
10	50	50	65.69		
11	0	75	68.51		
12	25	75	68.795		
13	50	75	64.59		
14	0	100	68.69		
15	25	100	69.42		
16	50	100	67.8		
17	0	125	70		
18	25	125	67.3		
19	50	125	65.41		
20					

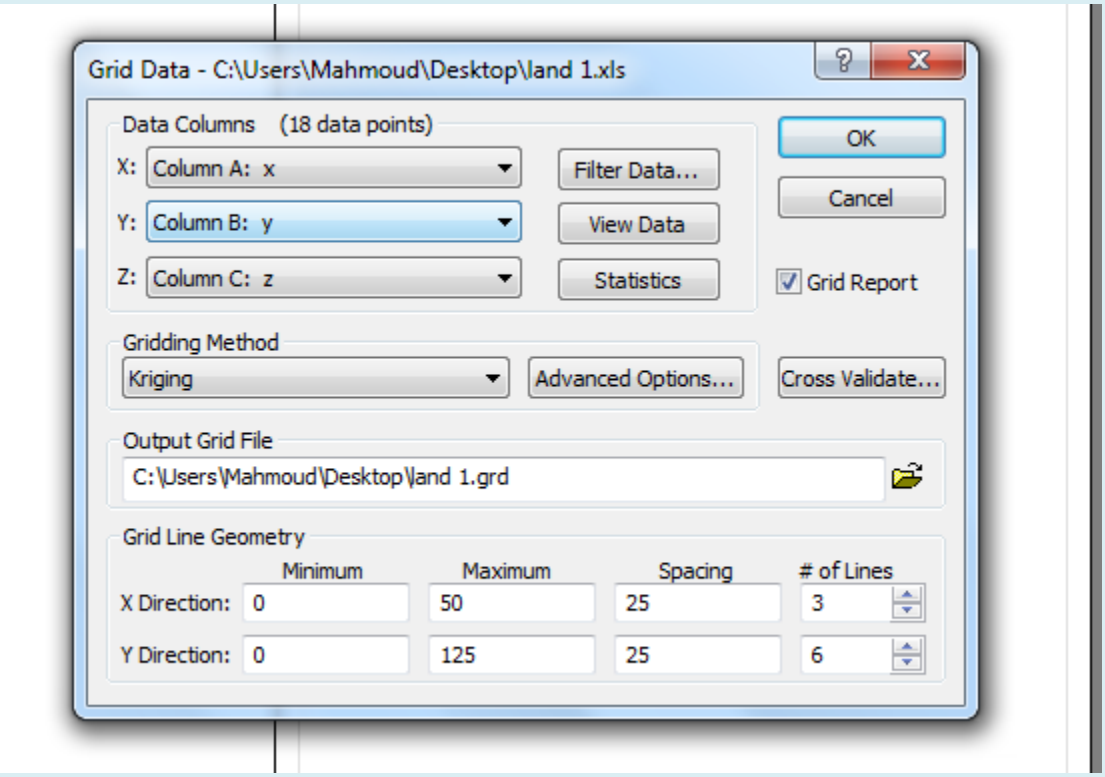
Save the worksheet and exit from the excel sheet(saved as land1)



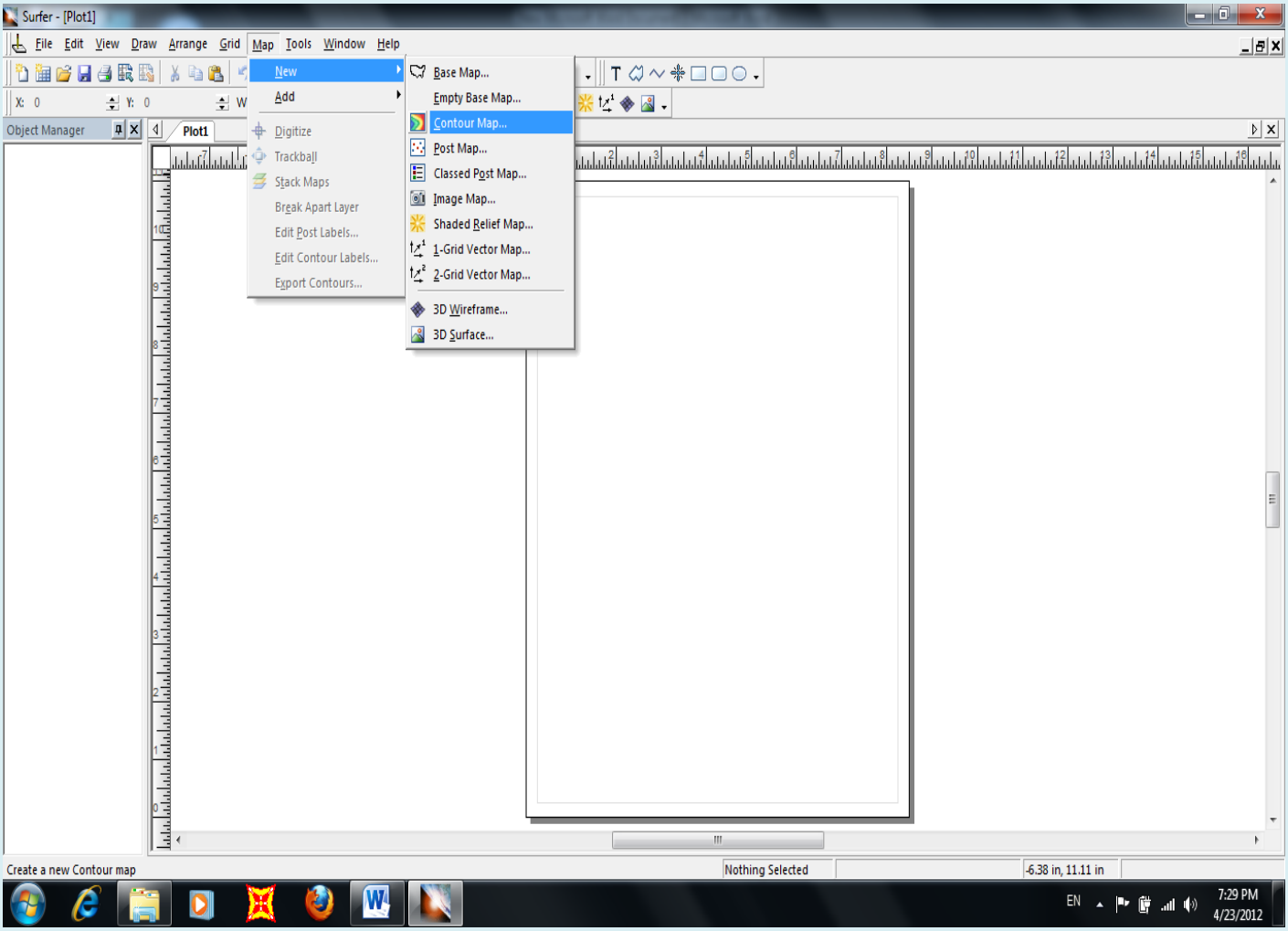
Grid>Data>((choose exel file you saved))



Be sure that spacing is 25m at x-direction and y-direction as shown in the given of the problem



From : Map >New >Contour Map

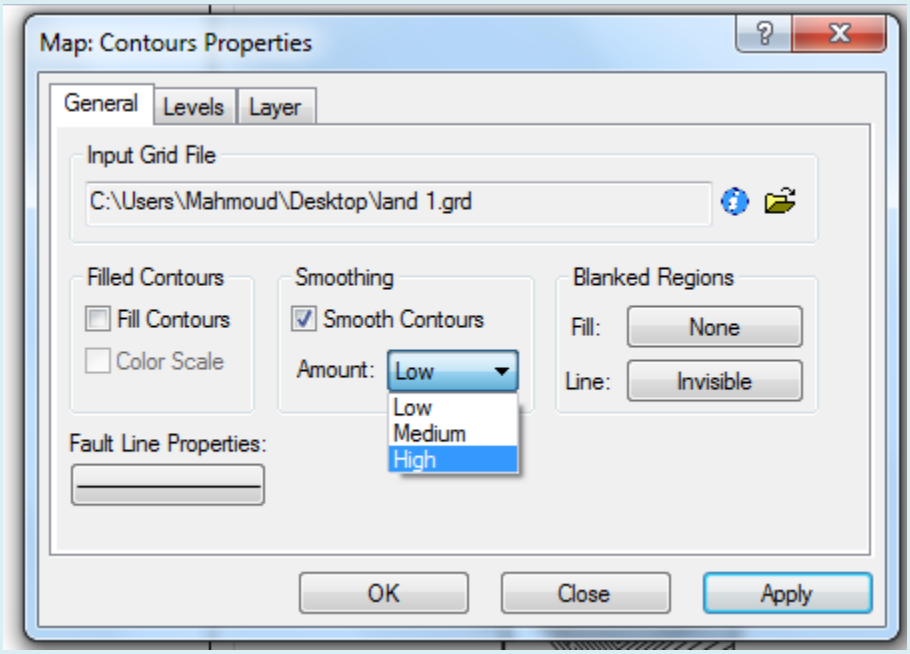


Choose the grid file (land 1)

You will notice that contour map is drawn

Double click on contour map

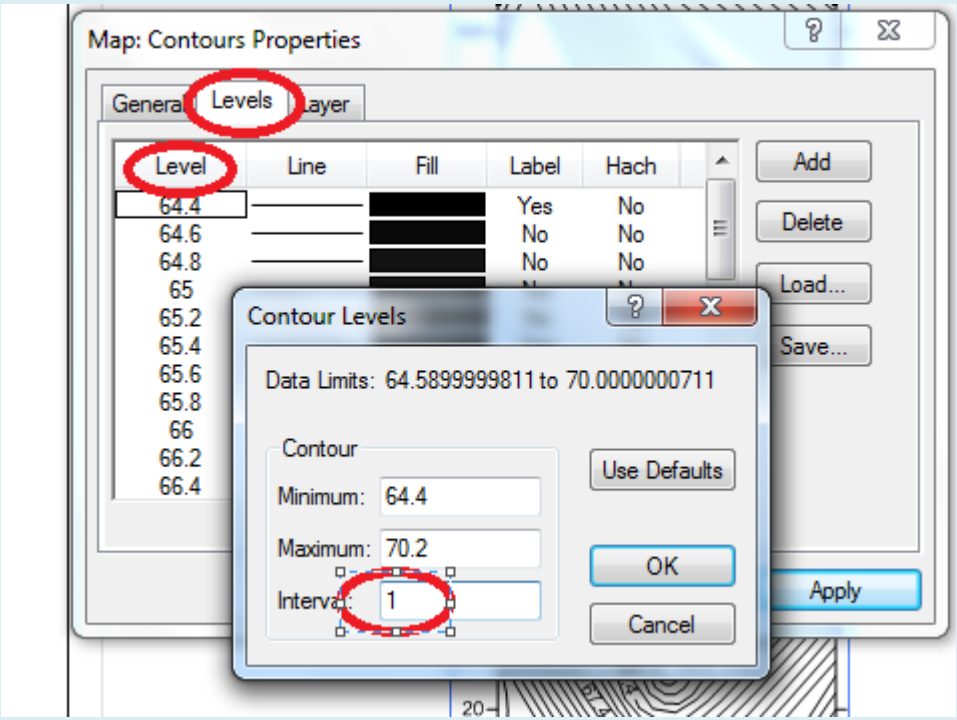
And mark at smooth >make it high



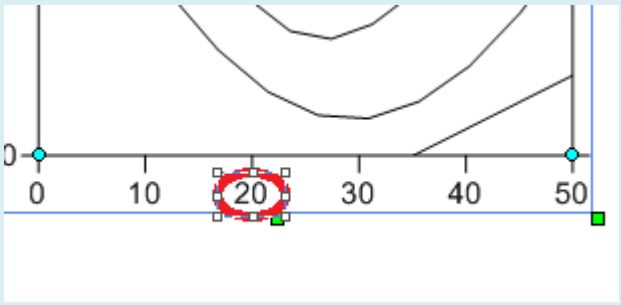
Then click on Level tab

And click on level word

And adjust interval to 1m as given at the problem

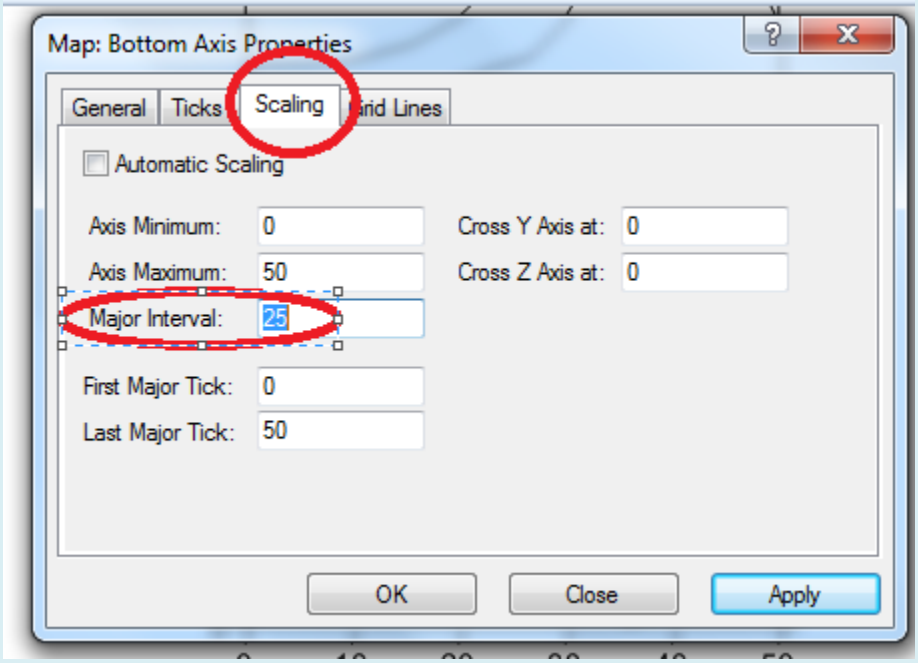


Double click on any number at x-axis



From the scaling tab

Let the Major interval be 25

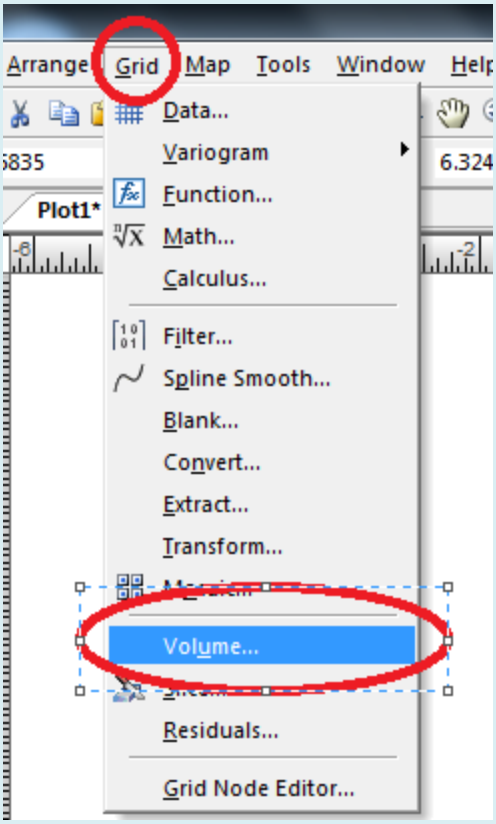


Repeat the process at the three remain sides

To get volume

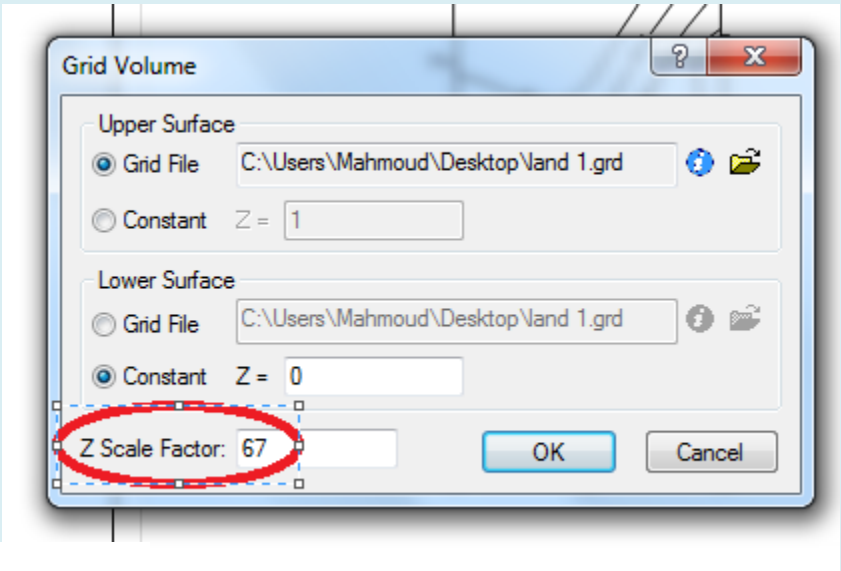
From

Grid > volume



Choose your saved grid file (land1.GRD)

Choose your formation level at **(z scale factor)**



Volumes

Z Scale Factor:	67
Total Volumes by:	
Trapezoidal Rule:	28326082.02924
Simpson's Rule:	28293378.817194
Simpson's 3/8 Rule:	28304900.257914
Cut & Fill Volumes	
Positive Volume [Cut]:	28344943.227483
Negative Volume [Fill]:	0
Net Volume [Cut-Fill]:	28344943.227483

From the opened Report get your data about Volumes