# LAB ASSIGNMENT 4

## 1. Create three different random samples (100) and obtain the following:

```
x<-sample(1:200,100)
> x
  [1]  78  52 148 195 105  70 199   9 191  87  19  91 177  81 160 189   7 132 145 143  92 188   5 121 134 167 14
4  69  71
 [30]  66  62 123 194  55  64  45 178 175  48  84  36 151  20 149 124  22  38 169  12 164 184  46  68   2 116  42
122 200
 [59] 172 101 113   8  86  58 193  89 118 104  29  50 131  16  41 158 186 112 127  37 114  60 133  15 180   1  7
5  14  76
 [88]  74 140  23 108 117  18  59 185  31 136 109 130 156
> y<-sample(1:50,100,replace=TRUE)
> y
  [1] 35 37  8 20 19 41 35  9 45 31 16 26  4 33 37  3 36  3 38 39  2  1 47 49  8 38 24 18 13 18 37 33 16  3 16 32
5 15 22
 [40] 23  7 36 12 11 10 42 31 18 22 36  7 36 45 15 22 30 16 39  3 17 50 18 46 47 47 28 37 12 34 12  8 18 13 49
12 10 41 21
 [79] 31 30  2 18 31 45 23 46 16 18 10  6 29 14 19 14 43  7 12 44 50 29
> z<-sample(1:500,100)
> z
  [1] 445 221 338 289 265 421 328 424 110  39 357 141 206 292 375 432 393 302 315 329 369  94 299 216 384
350  74  88 466
 [30] 378 211  26 332 355 420 367 205 126 291 192 162 441 108 277 457 125 317  55 308 251  38 395 109 407
491 399 314 300
 [59] 181 439 128 452 273 275  63 423 419 166 234 416 115 477 228  97 257  95 147 414 306 119 282 268 260
278 331 391 235
 [88] 394 458 351  62 174 433  48 146 428 199  11 143 400
d=data.frame(x,y,z)
> d
     x  y   z
1    78 35 445
2    52 37 221
3   148  8 338
4   195 20 289
5   105 19 265
6    70 41 421
7   199 35 328
8     9  9 424
9   191 45 110
10   87 31  39
11   19 16 357
12   91 26 141
13  177  4 206
14   81 33 292
15  160 37 375
16  189  3 432
17    7 36 393
18  132  3 302
19  145 38 315
20  143 39 329
21   92  2 369
22  188  1  94
23    5 47 299
```

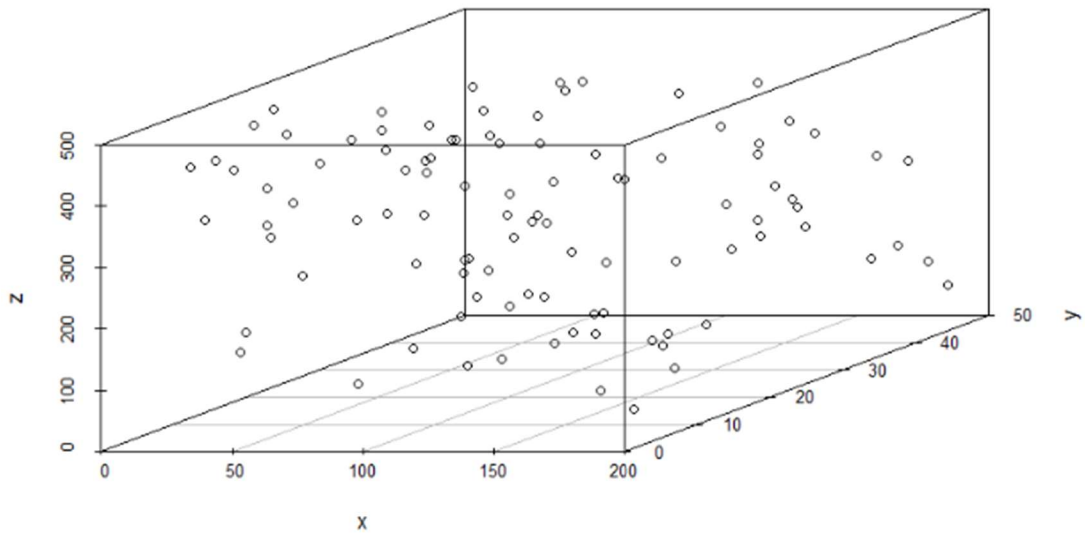
24 121 49 216
25 134 8 384
26 167 38 350
27 144 24 74
28 69 18 88
29 71 13 466
30 66 18 378
31 62 37 211
32 123 33 26
33 194 16 332
34 55 3 355
35 64 16 420
36 45 32 367
37 178 5 205
38 175 15 126
39 48 22 291
40 84 23 192
41 36 7 162
42 151 36 441
43 20 12 108
44 149 11 277
45 124 10 457
46 22 42 125
47 38 31 317
48 169 18 55
49 12 22 308
50 164 36 251
51 184 7 38
52 46 36 395
53 68 45 109
54 2 15 407
55 116 22 491
56 42 30 399
57 122 16 314
58 200 39 300
59 172 3 181
60 101 17 439
61 113 50 128
62 8 18 452
63 86 46 273
64 58 47 275
65 193 47 63
66 89 28 423
67 118 37 419
68 104 12 166
69 29 34 234
70 50 12 416
71 131 8 115
72 16 18 477
73 41 13 228
74 158 49 97
75 186 12 257
76 112 10 95
77 127 41 147
78 37 21 414
79 114 31 306
80 60 30 119
81 133 2 282
82 15 18 268
83 180 31 260

```
84   1 45 278
85  75 23 331
86  14 46 391
87  76 16 235
88  74 18 394
89 140 10 458
90  23  6 351
91 108 29  62
92 117 14 174
93  18 19 433
94  59 14  48
95 185 43 146
96  31  7 428
97 136 12 199
98 109 44  11
99 130 50 143
100 156 29 400
```

# Correlation coefficient

```
> cor(d)
          x          y          z
x  1.00000000 -0.03146706 -0.2778385
y -0.03146706  1.00000000 -0.1489482
z -0.27783852 -0.14894819  1.0000000
```

# Scatter plot in 3D



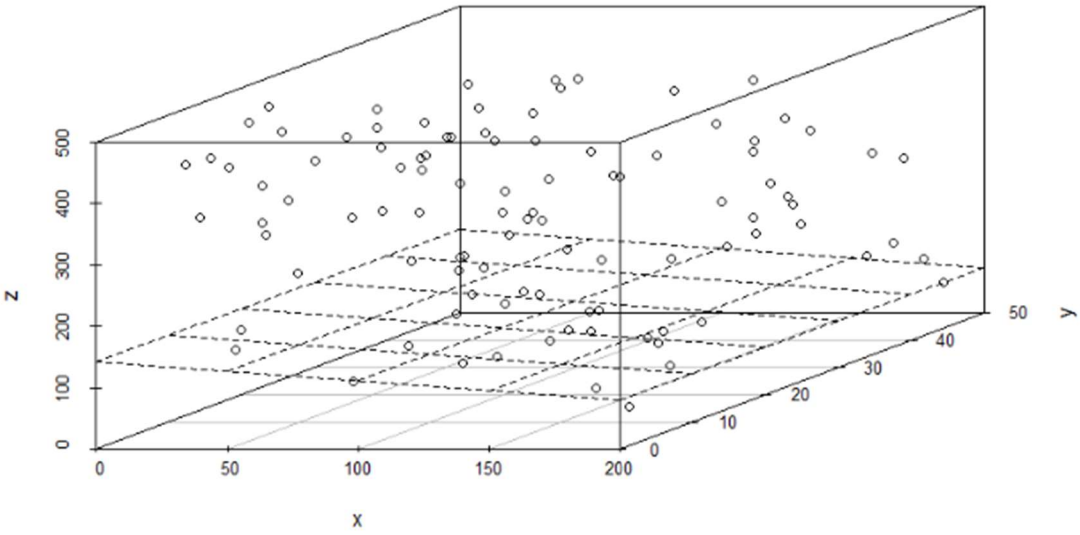
# Best fit for the set of random samples

```
lm(x~y+z)

Call:
lm(formula = x ~ y + z)

Coefficients:
(Intercept)           y           z
   142.2271     -0.3085     -0.1308

> scatterplot3d(x,y,z)
> s<-scatterplot3d(x,y,z)
> s$plane3d(lm(x~y+z))
```

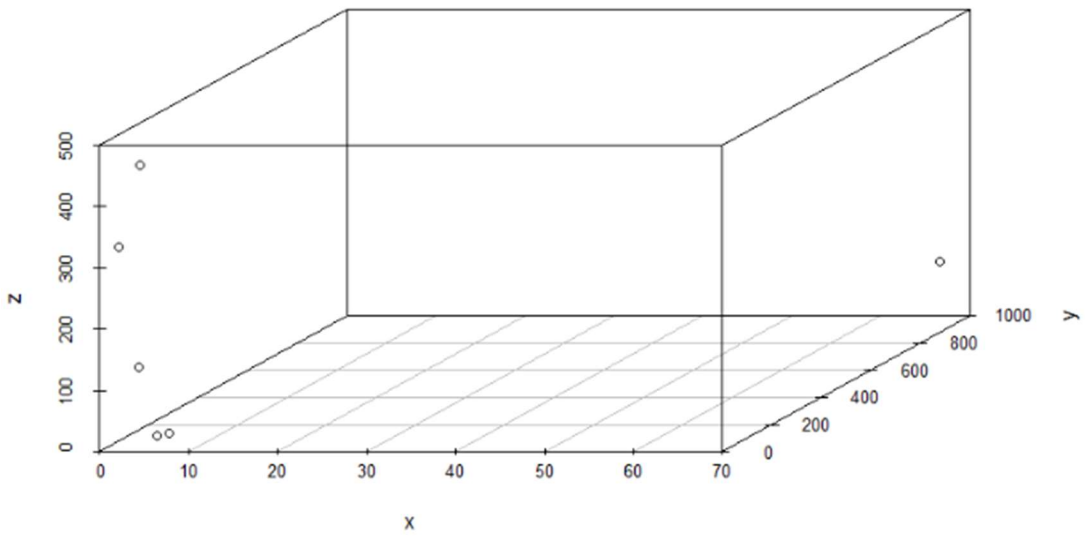



# Create a dataset or import data set and obtain the followi ng

```
x<-c(1,2,3,4,5,67)
> x
[1]  1  2  3  4  5 67
> y<-c(123,4,56,87,98,987)
> y
[1] 123   4  56  87  98 987
> z<-c(111,334,456,7,8,90)
> z
[1] 111 334 456   7   8  90
```

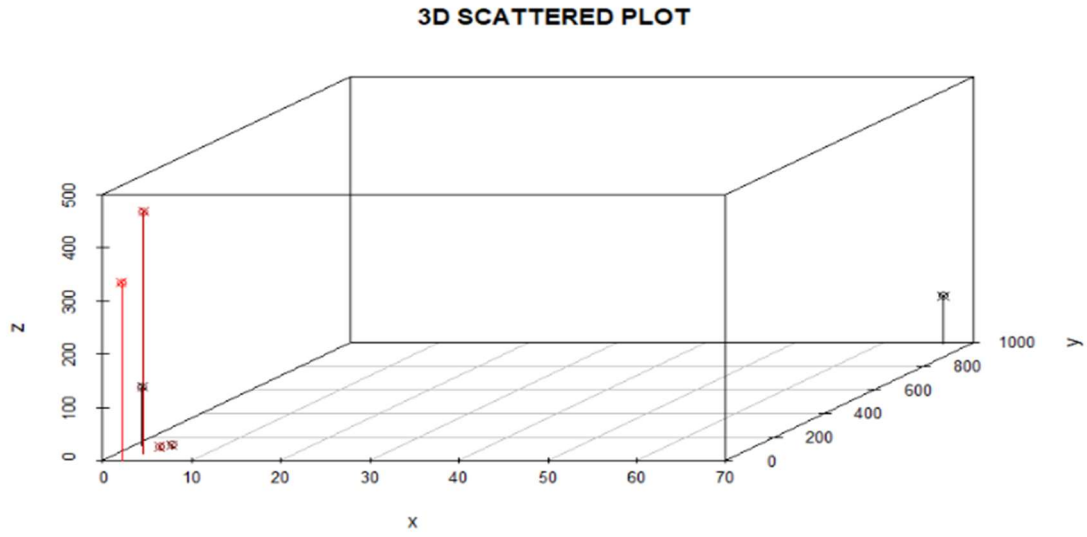
# Scatter plot in 3D

```
> scatterplot3d(x,y,z)
```




# Scatterplot in 3D with heading, colouring and vertical lines

```
> scatterplot3d(x,y,z,pch=13,highlight.3d=TRUE,type='h',main="3D SCATTERED PLOT")
```




# Best fit for the imported dataset

```
lm(x~y+z)
```

```
Call:
lm(formula = x ~ y + z)

Coefficients:
(Intercept)            y            z
  -3.458773     0.070302     0.007448
```

```
> scatterplot3d(x,y,z)
> s1<-scatterplot3d(x,y,z)
> s1$plane3d(lm(x~y+z))
```

# DIAGRAM: