



PES University, Bangalore

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UE19CS203 – STATISTICS FOR DATA SCIENCE

Unit - 3 - Probability Distributions

QB SOLVED

Normal Probability Plot

Exercises for Section 4.10

1. As part of a quality-control study aimed at improving a production line, the weights (in ounces) of 50 bars of soap are measured. The results are as follows, sorted from smallest to largest.

11.6	12.6	12.7	12.8	13.1	13.3	13.6	13.7	13.8	14.1
14.3	14.3	14.6	14.8	15.1	15.2	15.6	15.6	15.7	15.8
15.8	15.9	15.9	16.1	16.2	16.2	16.3	16.4	16.5	16.5
16.5	16.6	17.0	17.1	17.3	17.3	17.4	17.4	17.4	17.6
17.7	18.1	18.3	18.3	18.3	18.5	18.5	18.8	19.2	20.3

Construct a normal probability plot for these data. Do these data appear to come from an approximately normal distribution?

[Text Book Exercise – Section 4.10 – Q. No. 2 – Pg. No. 289]

Solution:

Let's construct the probability plot for the given data,

A normal probability plot can be constructed by using the formula, $(i - 0.5)/n$.

i	x_i	$(i - 0.5)/n$
1	11.6	0.01
2	12.6	0.03
3	12.7	0.05
4	12.8	0.07
5	13.1	0.09
6	13.3	0.11
7	13.6	0.13
8	13.7	0.15
9	13.8	0.017

10	14.1	0.19
11	14.3	0.21
12	14.3	0.23
13	14.6	0.25
14	14.8	0.27
15	15.1	0.29
16	15.2	0.31
17	15.6	0.33
18	15.6	0.35
19	15.7	0.37
20	15.8	0.39
21	15.8	0.41
22	15.9	0.43
23	15.9	0.45
24	16.1	0.47
25	16.2	0.49
26	16.2	0.51
27	16.3	0.53
28	16.4	0.55
29	16.5	0.57
30	16.5	0.59
31	16.5	0.61
32	16.6	0.63
33	17.0	0.65
34	17.1	0.67
35	17.3	0.69
36	17.3	0.71
37	17.4	0.73
38	17.4	0.75
39	17.4	0.77
40	17.6	0.79
41	17.7	0.81
42	18.1	0.83
43	18.3	0.85
44	18.3	0.87
45	18.3	0.89
46	18.5	0.91
47	18.5	0.93
48	18.8	0.95
49	19.2	0.97
50	20.3	0.99

