



Unit - I

Statistical Data Representations :

Statistics :

Statistics is the science of collecting, organizing, interpreting and analyzing data in order to make decisions.

Frequency Distributions :

A frequency distribution is defined whenever

- i) the values which the variate takes
- ii) the frequencies are the number of times each variate value is taken or both specified.

Example : consider first an example where the marks obtained B.A/B.Sc third year students of 60 students in a statistics paper the maximum marks allotted to the paper being 50 are 22, 47, 9, 42, 31, 17, 13, 15, 18, 13, 2, 21, 27, 38, 15, 0, 33, 10, 34, 29, 26, 16, 25, 33, 36, 10, 24, 22, 26, 19, 14, 36, 25, 21, 33, 35, 25, 18, 28, 25, 17, 38, 10, 3, 31, 24, 3, 12, 16, 33, 18, 26, 29, 27, 29, 28, 35, 26, 27.

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Marks in statistics	No. of student marks/ tally marks	Cummulative frequencies
0	1	1
2	1	2
3	2	4
9	1	5
10	3	8
12	1	9
13	2	11
14	1	12
15	2	14
16	2	16
17	2	18
18	3	21
19	1	22
21	1	23
22	2	25
24	2	27
25	4	31
26	4	35
27	3	38
28	2	40
29	3	43
31	2	45
33	4	49
34	1	50
35	2	52
36	2	54
38	1	55
42	1	56
47	1	57



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Grouped Distribution Frequency :

Marks in Statistics	Number of student (Frequency)	C.F
0 - 5	IIII = 4	4
(6 - 10]	IIII = 4	8
11 - 15	IIII = 6	14
[16 - 20]	IIIIII = 8	22
21 - 25	IIIIII = 9	31
26 - 30	IIIIIIII = 12	43
31 - 35	IIIIIIII = 10	53
36 - 40	III = 3	56
41 - 45	I = 1	57
46 - 50	I = 1	58

upper limit → 0 - 5 → upper limit
class interval ← (6 - 10]
midpoint ← (16 - 20) is (18)

[Class interval value = upper limit - lower limit
example - (31 - 35) = 35 - 31 = 4]



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Exercises

- 1) Make a frequency table having grades of wages with class-interval of two rupees each from the following data of daily wages received by 30 labourers in a certain factory. Daily wages in rupees are : 14, 16, 16, 14, 22, 13, 15, 24, 12, 23, 14, 20, 17, 21, 22, 18, 18, 19, 20, 17, 16, 15, 11, 12, 21, 20, 17, 18, 19, 23.

Rupees in Statistics	No. of Labourers (Frequency)	Cumulative Frequency
11-12	= 3	3
13-14	= 4	7
15-16	= 5	12
17-18	= 6	18
19-20	= 5	23
21-22	= 4	27
23-24	= 3	30

- 2) The weights in grams of 50 apples picked out at random from a consignment are as follows : 106, 107, 76, 82, 109, 107, 115, 93, 187, 95, 123, 125, 111, 92, 86, 70, 126, 68, 130, 129, 139, 119, 115, 128, 100, 186, 84, 99, 113, 204, 111, 141, 136, 123, 90, 115, 98, 110, 78, 90, 107, 81, 131, 75, 84, 104, 110, 80, 118, 82.



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Form the grouped frequency table by dividing the variate range into intervals of equal width, each corresponding to 20 grams, in such a way that the mid-value of the first class corresponds to 70 grams.

Grams in Statistics	No. of apples (Frequency)	Cumulative Frequency
68	1	1
70	1	2
75	1	3
76	1	4
78	1	5
80	1	6
81	1	7
82	2	9
84	2	11
86	1	12
90	2	14
92	1	15
93	1	16
95	1	17
98	1	18
99	1	19



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100	1	20
104	1	21
106	1	22
107	3	25
109	1	26
110	2	28
111	2	30
113	1	31
115	3	34
118	1	35
119	1	36
123	2	38
125	1	39
126	1	40
128	1	41
129	1	42
130	1	43
131	1	44
136	1	45
139	1	46
141	1	47
186	1	48
187	1	49
204	1	50