

Statistics

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

Frequency distribution.

Frequency distribution is define a whenever

- (i) The values which the variate takes
- (ii) The frequencies are the no. of ~~times~~ times each variate value is taken and both specify

ex: consider first an example where the marks obtained by BA/BSC IIIrd yr 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, 23, 10, 34, 29, 26, 16, 25, 33, 36, 10, 24, 22, 26, 19, 14, 26, 18, 25, 21, 33, 35, 25, 18, 28, 25, 17, 38, 10, 03, 31, 24, 3, 12, 16, 33, 18, 26, 29, 27, 29, 28, 35, 26, 27.

Marks in statistics	No. of students marks / tally marks	cummulative frequency.
0	1 = 1	1
2	1 = 1	2
3	11 = 2	4
9	1 = 1	5
10	111 = 3	8
12	1 = 1	9
13	11 = 2	11
14	1	12
15	2	14
16	2	16
17	2	18
18	4	22
19	1	23
21	2	25
22	1	26
24	2	28
25	4	32
26	4	36
27	3	39
28	2	41
29	3	44
31	2	46
33	4	50
34	1	51
35	2	53
36	2	55
38	2	57
42	1	58
47	1	59

Marks in Statistics	Number of Student (frequency)	C.F.
^{Lower limit} 20 - 5 ^{upper limit}	IIII - 4	4
C.I ← 6 - 10	IIII - 4	8
11 - 15	IIII - 6	14
Midpoint ← 16 - 20	IIIIII - 9	23
of the c.I is 18	IIIIIIII - 9	32
o.p. ← 21 - 25	IIIIIIII - 9	41
26 - 30	IIIIIIIIII - 12	53
31 - 35	IIIIIIII - 9	57
36 - 40	IIII - 4	58
41 - 45	I - 1	59
46 - 50	I - 1	60

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, 168, 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.

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.

Weight in grams	NO. of apples	Cumulative frequency
68	1	1
70	1	2
75	1	3
76	1	4
78	1	5
80	1	6
82	2	8
84	2	10
86	1	11
90	2	13
92	1	14
93	1	15
95	1	16
98	1	17
99	1	18
100	1	19
104	1	20
106	1	21
107	3	24
109	1	25
		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

weight in grms

No. of apples

Grades of weights	No. of apples	Commulative frequencies
65 - 70	2	2
71 - 75	1	3
76 - 80	3	6
81 - 85	5	11
86 - 90	3	14
91 - 95	3	17
96 - 100	3	20
101 - 105	1	21
106 - 110	7	28
111 - 115	6	34
116 - 120	2	36
121 - 125	3	39

126 - 130	4	43
131 - 135	1	44
136 - 140	2	46
141 - 145	1	47
146 - 150		
151 - 155		
156 - 160		
161 - 165		
166 - 170		
171 - 175		
176 - 180		
181 - 185		
186 - 190		
191 - 195	2	49
196 - 200		
201 - 205	1	50

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,

Grade of wages	No. of wages	Cumulative frequency.
11	1	1
12	2	3
13	1	4
14	3	7
15	2	9
16	3	12
17	3	15
18	3	18
19	2	20
20	3	23
21	2	25
22	2	27
23	2	29
24	1	30

Grade of wages	No. of wages	Cumulative frequency.
11-15	9	9
16-20	14	23
21-25	7	30
26-30		



Handwritten notes at the bottom of the page, including the phrase "The number of wages" and some illegible scribbles.

Graphical representation:

types of diagram:

one dimensional or bar diagrams / bar

two dimensional or area diagram.

three dimensional or volume diagrams.

Pictograms and cartograms

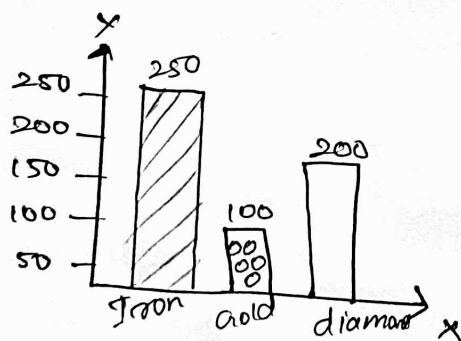
one dimensional or bar diagram.

This type of diagram consists of a series of rectangular bars standing on a common base. The length of the bars is proportional to the magnitude of variable.

1) Simple bar diagrams

It represents the magnitude of a single variable like population, sale, production, profits etc.

Ex:



2) Multiple bar diagrams

It is used to compare two or more sets of statistical data

Ex: