

### Exercise

- What is the need of classification?
- Give procedure of frequency distribution of discrete variables.
- Following are the scores in the unit test conducted for 50 students in a class.

8	7	6	9	7	6	5	9	10	2
7	7	5	8	9	9	8	6	6	5
8	8	8	9	9	9	7	7	6	7
10	9	7	6	8	9	9	10	5	4
5	7	8	10	9	8	8	7	7	7

prepare a frequency distribution table.

- The data given below relates to the number of T.V. sets sold by a dealer on 25 working days of a certain month. Prepare a frequency distribution of the number of T.V. sets sold.  
2, 4, 3, 0, 2, 1, 5, 3, 2, 0, 3, 4, 5, 1, 1, 4, 3, 2, 5, 4, 2, 2, 1, 3, 0.
- Heights in cm of 50 students in a class are given below :

167.7	168.2	169.1	166.5	161.5	157.3	168.9
170.1	165.8	168.2	158.7	159.6	168.0	162.6
179.0	170.2	169.3	159.2	171.7	163.7	162.3
171.9	172.6	157.7	158.0	165.2	165.8	167.4
170.1	166.7	160.8	161.3	161.5	168.9	166.3
162.6	162.0	166.7	158.0	167.7	170.1	160.8
163.1	161.5	157.5	167.1	168.9	159.6	172.6
164.0						

Classify the above exclusive method of classification. Take the first class interval as 157-160.

- Prepare a frequency distribution for each of the following :

<b>Class mark</b>	4	8	12	16	20
<b>Frequency</b>	24	45	20	10	1

- Give procedure of classification of continuous frequency distribution.

8. Following is a frequency distribution of heights in cm

Classes	150-154	155-159	160-164	165-169	170-174
Frequency	2	17	29	21	1

Prepare frequency distribution table.

9. Prepare frequency distribution for the following

Marks obtained	0-10	10-20	20-30	30-40	40-50	50-60
No. of students	4	6	20	10	7	3

10. Discuss the importance of graphic representation of a frequency distribution.

11. Explain the following terms : 1) Histogram, 2) Frequency polygon.

12. Draw a histogram of the frequency distribution given below :

Class interval	10-14	15-19	20-29	30-39	40-49	50-74	75-99
Frequency	4	12	20	18	14	25	10

13. Draw the histogram for the following data :

Monthly wages (₹)	10000-13000	13000-15000	15000-17000	17000-19000	19000-21000	21000-23000	23000-25000
No. of workers	6	53	85	56	21	16	8

14. Draw a histogram for the following data -

Age (in years)	2-5	5-11	11-12	12-14	14-15	15-16
No. of boys	6	6	2	5	1	3

15. Draw a frequency polygon for the following data

Marks	0-20	20-40	40-60	60-80	80-100
No. of students	2	18	42	28	5

16. Draw a frequency polygon for the following data :

Mid-values	25	35	45	55	65
Frequencies	5	12	33	13	7

17. Draw a frequency polygon for the following data :

I.Q.	60-69	70-79	80-89	90-99	100-109	110-119	120-129
Frequency	21	37	51	49	21	13	4

18. State the advantages and limitations of graphical representation of data.

19. What is central tendency ? What are the requisites for an ideal measure of central tendency ?

20. What are the measures of central tendency? Define each with necessary formulas.
21. Given below the distribution of marks obtaining for 140 students.

<b>Marks obtained</b>	10	20	30	40	50	60	70	80	90	100
<b>No. of students</b>	7	15	18	25	30	20	16	7	2	0

- Calculate the mean of the distribution.
22. Calculate mean of the following distribution :

C.I.	2.5-7.5	7.5-12.5	12.5-17.5	17.5-22.5	22.5-27.5	27.5-32.5	32.5-37.5	37.5-42.5	42.5-47.5	47.5-52.5	52.5-57.5	57.5-62.5
Frequency	12	28	65	121	175	198	176	120	66	27	9	3

23. Calculate arithmetic mean of the group of students with weights (in kg) given below : 51, 52, 53, 51, 54, 55, 50, 53, 54, 51.

24. If  $n = 10$  and  $\sum(x - 5) = 90$  find the mean.

25. Age distribution of hundred life insurance policy holders as follows :

<b>Age as on nearest birthday</b>	17-19.5	20-25.5	26-35.5	36-40.5	41-50.5	51-55.5	56-60.5
<b>Number</b>	9	16	12	26	14	12	6

calculate arithmetic mean.

26. For a certain frequency table which has only been partly reproduced here. The mean was found to be 1.46.

<b>No. of accidents</b>	0	1	2	3	4	5
<b>Frequency (No. of days)</b>	46	-	-	25	10	5

$$N = \Sigma f = 200$$

Calculate missing frequency

27. Mean daily salary of 50 employees in a firm is ₹ 88.40. Frequency distribution of salaries of these employees in which some frequencies are missing is given below :

<b>Salary</b>	40-60	60-80	80-100	100-120	120-140
<b>Frequency</b>	6	-	17	-	5

Find missing frequency.

28. Give properties of arithmetic mean.

29. State and prove any two properties of arithmetic mean.

30. Find the weighted arithmetic mean of first  $n$  natural numbers with the same numbers and weights.

31. Scores of students along with weights are given below :

Test	Written	Viva-voce	Group discussion
Scores out of 100	75	60	65
Weights	2	1	2

Find the weighted arithmetic mean of scores.

32. Mean monthly salary of 77 workers in a certain factory is 1560/- . Mean salary of 32 of them is 1500/- and that of the next 25 of the remaining is 1640/- . What is the mean salary of the remaining 20 workers ?

33. Given :

Group 1	Group 2
$n_1 = 100$	$n_2 = 100$
$\Sigma(x - 19) = 68$	$\Sigma(y - 35) = 250$

Find  $\bar{X}$ ,  $\bar{Y}$  and combine arithmetic mean of two groups.

34. State the merit and demerits of A. M.  
 35. Compute the median of the following frequency distribution

x	1	2	3	4	5
y	2	7	15	5	2

36. Compute the median of the following frequency distribution :

Wages (in ₹)	above 30	above 40	above 50	above 60	above 70	above 80	above 90
No. of workers	520	470	399	210	105	45	7

37. Obtain median from the following table :

Class	0-100	100-200	200-300	300-400	400-500	500-600	600-700
Frequency	9	15	18	21	18	14	5

38. In a factory employing 3000 persons, in a day 5 percent work less than 3 hours, 580 work from 3.01 to 4.50 hours, 30 percent work from 4.51 to 6.00 hours. 500 work from 6.01 to 7.50 hours, 20 percent work from 7.51 to 9.00 hours and the rest work 9.01 or more hours. What is the median hours of work ?

39. An incomplete frequency distribution is given as follows :

Variable	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	12	30	"	65	"	25	18

$$\text{Total frequency} = \Sigma f = N = 229$$

Given that the median value is 46. Determine the missing frequencies, using the median formula.

40. Given merits and demerits of median.

41. Daily expenditure of 100 families on transport is given below :

Expenditure	20-29	30-39	40-49	50-59	60-69
No. of families	14		27		15

If the mode of the distribution is 43.5, find the missing frequencies.

42. Obtain the mode from following frequency distribution.

Marks	0-4	4-8	8-12	12-14	14-18	18-20	20-24	24-28
No. of students	10	12	18	7	5	3	4	6

43. Age distribution of hundred life insurance policy holders is as follows :

Age	17-19	20-22	23-25	26-28	29-31	32-34	35-37	38-40
Number	9	16	12	26	14	12	6	5

Calculate mode.

44. Obtain mode from following frequency distribution :

x	1	2	3	4	5	6	7	8	9	10
f	3	15	45	57	50	36	25	12	9	15

45. What are the merits and demerits of mode.

46. Find the geometric mean 5, 10, 17, 0, 256.

47. Monthly consumption of electricity in units of a certain family in a year is given below : 210, 207, 315, 250, 240, 232, 216, 208, 209, 215, 300, 290. Calculate geometric mean.

48. Define geometric mean and harmonic mean and state the formula for each, in case of individual observations and frequency distributions.

49. A variable takes values  $a, ar, ar^2, \dots, ar^{n-1}$  find G.M.

50. Compute weighted A. M. of index numbers from the following table

Index number	300	200	250	150	250
Weight	62	4	6	12	16

51. Arithmetic mean and geometric mean of two items are 5 and 2.5 respectively. Find the harmonic mean.

52. What are the merits and demerits of G. M.

53. What are the merits and demerits of H. M.

54. Compare the method of G. M. and H. M. on the basis of their merits.

55. Calculate H.M. of the following series : 15, 250, 15.7, 157, 1.57, 105.7, 10.5, 1.06, 25.7 and 0.257.