Applied Statistics

Unit – 2 – Descriptive Statistics

Find the Arithmetic Mean of the following data.

1. The intelligence quotients (IQ's) of 10 boys in a class are given below: 70, 120, 110, 101, 88, 83, 95, 98, 107, 100
2. The following is the frequency distribution of the no. of telephone calls received in 245 successive 1-minute interval at an exchange, calculate the mean.

No. of calls	0	1	2	3	4	5	6	7
Frequency	14	21	25	43	51	40	39	12

3. For given frequency distribution, calculate the mean.

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
No. of students	6	5	8	15	7	6	3

4. Find mean using Step – Deviation method.

Class	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59
Frequency	8	8	15	11	8

Find the AM using its properties.

5. The average daily wage of all workers in a factory is Rs. 444 if average daily wage paid to male and female workers are Rs. 480 and Rs. 360 respectively. Find the percentage of male and female workers employed by the factory.
6. The mean of the marks in statistics of 100 students in a class was 72. The mean of boys was 75 while their number was 70. Find the mean of marks of girls.
7. Arithmetic Mean height of 50 students of a college is 5,8 inches. The height of 30 of these is given in frequency distribution below. Arithmetic Mean height of 20 students is to be found.

Height (inch)	5'4"	5'6"	5'8"	5'10"	6'0"
Frequency	4	12	4	8	2

Find the Weighted Arithmetic Mean of the following data.

8. The following are the percentage of marks in an examination.

Subject	Marks (X_i)	Weight (W_i)
English	60	1
Hindi	75	2
Math	63	1
Physics	59	3
Chemistry	55	3

9. Show that the Weighted Arithmetic Mean of the first ‘n’ natural number whose weights are equal to the corresponding number is equal to (2n+1)/3.

Find the missing frequencies.

10. Given mean is 1.46 for the following frequency distribution

No. of accidents	0	1	2	3	4	5	Total
Frequency (No. of Days)	46	?	?	25	10	5	200

11. For the following data given mean is 15.38

Size	10	12	14	16	18	20
Frequency	3	7	?	20	8	5

Find the Median for the following data.

12. 35, 12, 40, 60
13. 35, 12, 40, 60, 50
14. 8 coins are tossed the no. of head results was noted and operation was repeated 256 times.

No. of Heads	0	1	2	3	4	5	6	7	8
Frequency	1	9	26	59	72	52	29	7	1

15. Age distribution of a particular region. Find the median.

Age (in years)	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 and over
No. of persons	2	3	4	3	2	1	0.5	0.1

16. In the frequency distribution of 100 families, given below are the number of families corresponding to expenditure group are missing from the table. Median is known to be 50. Find the missing frequency.

Expenditure	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100

No. of families	14	?	27	?	15

Find the quartiles, deciles and percentile.

17. Q_2, D_8 and P_{85}

Income ('00 Rs)	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40
No. of families	75	250	350	192	68	35	24	6

18. Q_3, D_6 and $P_{70.}$

Class	Less than 10	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79
Frequency	5	13	20	32	60	80	90	100

Mode

19. Find the mode.

X_i	1	2	3	4	5	6	7	8	9
F_i	3	1	18	25	40	30	22	10	6

20. Find the mode for the frequency distribution.

Weight (in kg)	93 – 97	98 – 102	103 – 107	108 – 112	113 – 117	118 – 122	123 – 127	128 – 132
No. of students	3	5	12	17	14	6	3	1

21. Find the mode using grouping method.

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90
F_i	4	2	18	22	21	19	10	3	1

Find the Geometric Mean and Harmonic Mean.

22. Calculate the G.M and H.M of 31 persons.

Weight (in kg)	130	135	140	145	146	148	149	150	157

No. of persons	3	4	6	6	3	5	2	1	1

23. For given frequency distribution, calculate G.M and H.M.

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
No. of students	5	7	15	25	8

Solve the following.

24. Find the Inter Quartile Range, Quartile Deviation and Coefficient of Quartile Deviation.

Class	0 – 15	15 – 30	30 – 45	45 – 60	60 – 75	75 – 90	90 – 105
Frequency	8	26	30	45	20	17	4

25. Find the following for the above data.

- 10 – 90 Percentile Range
- 10 – 90 Semi – Percentile Range
- Coefficient of 10 – 90 Percentile Range

Mean Deviation

26. Calculate the M.D for mean and median.

Class Interval	2 – 4	4 – 6	6 – 8	8 – 10
Frequency	3	4	2	1

27. Calculate the M.D for mean and median.

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Frequency	8	12	10	8	3	2	7

28. Calculate the Standard Deviation and Variance.

Value	90 – 99	80 – 89	70 – 79	60 – 69	50 – 59	40 – 49	30 – 39
Frequency	2	12	22	20	14	4	1

29. Calculate the first four moments about mean for the following and comment the nature of the distribution.

x_i	1	2	3	4	5	6	7	8	9
f_i	1	6	13	25	30	22	9	5	2

30. Plot a Scatter Plot for the following are the heights and weight of 10 students of a class

Height	62	72	68	58	65	70	66	63	60	72
Weight	50	65	63	50	54	60	61	55	54	65

31. Calculate Karl Pearson's Coefficient of correlation between expenditure on advertising and sales from the data given below:

Expenditure ('000 Rs)	39	65	62	90	82	75	25	98	36	78
Sales (Lakh Rs)	47	53	58	86	62	68	60	91	51	84

32. Calculate Spearman's Rank Correlation.

X_i	39	65	62	90	82	75	25	98	36	78
Y_i	47	53	58	86	62	68	60	91	51	89

33. Calculate Line of Regression Equation

Sales (X_i)	91	97	108	121	67	124	51	73	111	57
Purchases (Y_i)	71	75	69	97	70	91	39	61	80	47