Chapter-21

Data handling-I

Exercise 21.1

Q.1 Define the following terms

(i) observations (ii) data

(iii) Frequency of an observation (iv) frequency polygon

Solution: (i) observations: An observation is a value of something of Interest you are measuring or counting during a study or experiment.

(ii) data: Data is a collection of facts such as values Measurement.

(iii) Frequency of an observation: The number of times an observation occurs in the given data, is called the frequency of the observation.

(iv) frequency distribution: Frequency distribution is a method to present raw data in the form from which one can easily understand the Information Contained in the raw data.

Q.2 The final marks in a mathematics of 30 students are as follows:

53, 61, 48, 60, 78, 68, 55, 100, 67, 90, 75, 88, 77, 37, 84, 58
60, 48, 62, 56, 44, 58, 52, 64, 98, 59, 70, 39, 50, 60

(i) Arrange these marks in the ascending order. 30 to 39 one group, 40 to 49 second group, etc.

(ii) What is the highest score?

(iii) What is the lowest score?

(iv) What is the range?

(v) If 40 is the pass mark, how many have failed?

(vi) How many have scored 75 or more?

(vii) Which observations between 50 and 60 have not actually appeared?

(viii) How many have scored less than 50.

Solution (i) Ascending order of data is as follows:

30 - 39	37, 39
40 - 49	44, 48, 48
50 - 59	50, 52, 53, 55, 56, 58, 58, 59
60 - 69	60, 60, 60, 61, 62, 64, 67, 68
70 - 79	70, 75, 77, 78
80 - 89	84, 88
90 - 99	90, 98
100 - 109	100

(ii) Highest Score = 100

(iii) Lowest Score = 37

(iv) Range = highest score − lowest score
= 100 − 37
= 63

(v) If passing marks are 40, then no. of students scored less than 40 are 37 and 39
Hence, 2 students have failed.

(vi) Number of observations 75 or more are: 75, 77, 78, 84, 88, 90, 98 and 100

∴ There are total 8 students.

(vii) Observations 51, 54 and 57 have have not actually appeared.

(viii) Score less than 50 are: 37, 39, 44, 48, 48

hence, there are total 5 students scoring less than 50.

Q.3 The weights of new born babies (in kg) in a hospital on a particular day are as follows:

2.3, 2.2, 2.1, 2.7, 2.6, 3.0, 2.5, 2.9, 2.8, 3.1, 2.5, 2.8, 2.7
2.9, 2.4

(i) Rearrange the weights in descending order.

(ii) Determine the highest weight.

(iii) Determine the lowest weight.

(iv) Determine the range

(v) How many babies were born on that day?

(vi) How many babies weigh below 2.5 kg?

(vii) How many babies weigh more than 2.8?

(viii) How many babies weigh 2.8 kg?

Solution: (i) Descending order of weight is as follows:

3.1, 3.0, 2.9, 2.9, 2.8, 2.8, 2.7, 2.7, 2.6, 2.5, 2.5, 2.4, 2.3, 2.2, 2.1

(ii) heighest weight = 3.1 kg

(iii) lowest weight = 2.6 kg

(iv) range = highest weight − lowest weight

= 3.1 − 2.6 = 0.5 kg

(v) Total babies born = 15

(vi) babies of weight below 2.5 kg = , 2.4, 2.3, 2.2, 2.1

∴ There are total 4 babies.

(vii) babies of weight More than 2.8 kg = 3.1, 3.0, 2.9, 2.9

There are total 4 babies.

(viii) No. of babies of weight 2.8 kg = 2 babies.

Q.4 Following data gives the number of children in 40 families.

1, 2, 6, 5, 1, 5, 1, 3, 2, 6, 2, 3, 4, 2, 0, 0, 4, 4, 3, 2
2, 0, 0, 1, 2, 2, 4, 3, 2, 1, 0, 5, 1, 2, 4, 3, 4, 1, 6, 2

Represent it in the form of frequency distribution.

Sol:

Number of Children	Tally Marks	Frequency
0	𝍸	5
1	𝍸 II	7
2	𝍸 𝍸 I	11
3	𝍸	5
4	𝍸 I	6
5	III	3
6	III	3

Q.5 Prepare a frequency table of the following scores obtained by 50 students in a test

42	51	21	42	37	37	42	49	38	52
7	33	17	44	39	7	14	27	39	42
42	62	37	39	67	51	53	53	59	41
29	38	27	31	54	19	53	51	22	61
42	39	59	47	33	34	16	37	57	43

Solution

Marks	Tally Marks	Frequency
7	II	2
14	I	1
16	I	1
17	I	1
19	I	1
21	I	1
22	I	1
27	II	2
29	I	1
31	I	1
33	II	2
34	I	1
37	IIII	4
38	II	2
39	IIII	4
41	I	1
42	IIII I	6
43	I	1
44	I	1
47	I	1
49	I	1
51	III	3
52	I	1
53	III	3
54	I	1
57	I	1
59	II	2

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Marks	Tally Marks	Frequency
61	1	1
62	1	1
67	1	1

Q.6 A die was thrown 25 times and following scores were obtained.

1	5	2	4	3
6	1	4	2	5
1	6	2	6	3
5	4	1	3	2
3	6	1	5	2

Prepare a frequency table of the scores.

Solution :

Scores	Tally Marks	Frequency
1	𝍸	5
2	𝍸	5
3	𝍸	4
4	𝍸	3
5	𝍸	4
6	𝍸	4

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Q.7 In a study of number of accidents per day, the observations for 30 days were obtained as follows

6	3	5	6	4	3	2	5	4	2
4	2	1	2	2	0	5	4	6	1
6	2	5	2	6	1	5	5	2	6

Prepare a frequency distribution table.

Solution

No. of accidents	Tally Marks	Frequency
0	II	2
1	III	3
2	~~HH~~ I	6
3	III	3
4	IIII	4
5	~~HH~~ I	6
6	~~HH~~ I	6

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Q.8 Prepare a frequency table of the following ages (in years) of 30 students of class VIII in your school.

13, 14, 13, 12, 14, 13, 14, 15, 13, 14, 13, 14, 16, 12, 14
13, 14, 15, 16, 13, 14, 13, 12, 17, 13, 12, 13, 13, 13, 14

Solution :

Solution:

Ages (In yrs)	Tally Marks	Frequency
12	IIII	4
13	IIII IIII II	12
14	IIII IIII	9
15	II	2
16	II	2
17	I	1

Q.9 Following figures relate the weekly wages (In Rs.) of 15 workers in a factory:

300, 250, 200, 250, 200, 150, 350, 200, 250, 200, 150, 300 150, 200, 250

Prepare a frequency table.

(i) What is the range in wages (In Rs.)?

(ii) How many workers are getting Rs. 350?

(iii) How many workers are getting the minimum wages.

Solution

Weekly wages	Tally Marks	No. of Workers
150	III	3
200	IIII	5
250	IIII	4
300	II	2
350	I	1

(i) Range in wages = Maximum wage − Minimum wage
= 350 − 150
= Rs. 200

(ii) 1 worker is getting Rs. 350.

(iii) As Rs 150 is Minimum wage, so 3 workers are getting minimum wage.

Q.10 Construct a frequency distribution table for the following marks obtained by 25 students in a history test in class VI of a school.

9, 17, 12, 20, 9, 18, 25, 17, 19, 9, 12, 9, 12, 18, 17, 19, 20, 25
9, 12, 17, 19, 19, 20, 9

(i) What is the range of Marks.
(ii) What is the highest Mark
(iii) Which Mark is occuring max frequently.

Solution: Here, highest marks = 25
(i) lowest Marks = 9
∴ Range of Marks = highest Mark − lowest Mark
= 25 − 9
= 16

(ii) The highest mark is 25.

(iii) From the frequency table, observation 9 occurs Max frequently.

Q.11 In a Mathematics test following marks were obtained by 40 students of class VI. Arrange these marks in a table using, tally marks

8	1	3	7	6	5	5	4	4	2
4	9	5	3	7	1	6	5	2	7
7	3	8	4	2	8	9	5	8	6
7	4	5	6	9	6	4	4	6	6

(I) Find how many students obtained marks equal to or more than 7.?

(II) How many students obtained marks below 4?

Solution

Marks	Tally Marks	Frequency
1	II	2
2	III	3
3	III	3
4	⧻ II	7
5	⧻ I	6
6	⧻ II	7
7	⧻	5
8	IIII	4
9	III	3

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(i) No. of students getting Marks equal to or More Than 7 = 5+4+3
= 12 students

(ii) No. of students getting Marks below 4 = 2+3+3
= 8 students.

Q.12 Following is the choice of Sweets of 30 students of class VI: Ladoo, Barfi, Ladoo, Jalebi, Ladoo, Rasgulla, Jalebi, Ladoo, Barfi, Rasgulla, Laddoo, Jalebi, Jalebi, Rasgulla, Ladoo, Rasgulla, Jalebi, Ladoo, Rasgulla, Ladoo, Rasgulla, Jalebi, Ladoo, Rasgulla, Ladoo, Ladoo, Barfi, Rasgulla, Rasgulla, Ladoo.

(i) Arrange the name of Sweets in a table using tally marks.

(ii) which sweet is prefered by Most of students.

Sol: (i)

Sweets	Tally Marks	Frequency
Ladoo	𝍸 𝍸 ||	12
Barfi	|||	3
Jalebi	𝍸 |	6
Rasgulla	𝍸 ||||	9

(ii) Ladoo is the sweet which is prefered by Most of students.