Data Handling I (Presentation of Data)

Question: 1

Define the following terms:

(i) Observation

(ii) data

(iii) Frequency of an observation

(iv) Frequency distribution

Solution:

(i) Observation is the active acquisition of information from a primary source.

(ii) A collection of facts such as values measurements are called data.

(iii) Number of times an observation has occurred in a given data.

(iv) A frequency distribution is an arrangement of instances in which a variable takes each of its possible values. A frequency distribution depicts a summarized grouping of data divided into mutually exclusive classes and the number of occurrences in those classes.

Question: 2

The final marks in mathematics of 30 students are as follows:

53, 61, 48, 60, 78, 68, 55, 100, 67, 95

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?

Aakash Institute

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

(viii) How many have scored less than 50?

Solution:

(i) Frequency distribution of the given marks in mathematics of 30 students

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) From the given data we can see that the highest score is 100.

(iii) The above data shows 37 as the lowest score.

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

(v) If 40 is the pass marks, students who have scored led the 40 have failed. So, the students who have scored 37 and 39 have failed.

Therefore number of students that have failed in the exam = 2

(vi) Students who have scored 75, 77, 78, 84, 88, 90, 98 and 100 are the ones to score more than 75

Therefore number of students who scored 75 or more = 8

(vii) The observation 51, 54 and 57 have not appeared in the data range of 50 – 60.

(viii) Students who have scored 37, 39, 44, 48 and 48 are the ones to score less than 50

Therefore number of students who got less than 50 = 5

Question: 3

Aakash Institute

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 kg?

(viii) How many babies weigh 2.8 kg?

Solution:

(i) Arranging the weights of the newborn babies in the descending order, we get 3.1, 3.0, 2.9, 2.9, 2.8, 2.8, 2.7, 2.6, 2.5, 2.5, 2.4, 2.3, 2.2, 2.1,

(ii) In a descending order, the first number is always the highest.

Therefore, highest weight = 3.1 kg.

(iii) In an descending order, the last number is always the lowest

Therefore, lowest weight = 2.1 kg

(iv) Range = Highest weight – lowest weight

= 3.1 kg – 2.1 kg = 1.0 kg

(v) We can count the number of babies born on that particular day by counting the number of observations.

Therefore, number of babies born on that day = 15.

(vi) Babies which weigh 2.1, 2.2, 2.3 and 2.4 kg are the ones to weigh less than 2.5 kg.

(vii) Babies which weigh 2.9, 2.9, 3.0 and 3.1 kg are the ones to weigh more than 2.8 kg.

(viii) Number of babies weighing 2.8 kg = 2

Question: 4

Aakash Institute

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 a frequency distribution.

Solution:

Frequency distribution of the given data:

Number of children	Tally marks	Frequency
0	~~IIII~~	5
1	~~IIII~~ II	7
2	~~IIII~~ ~~IIII~~ I	11
3	~~IIII~~	5
4	~~IIII~~ I	6
5	III	3
6	III	3

Question: 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:

Frequency distribution table of the given scores:

Marks	Tally marks	Frequency
7	II	2

Aakash Institute

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
61	I	1
62	I	1
67	I	1

Aakash Institute

Question: 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

Solution:

Frequency distribution table of the given data:

Scores	Tally marks	Number of times
1	~~IIII~~	5
2	~~IIII~~	5
3	IIII	4
4	III	3
5	IIII	4
6	IIII	4

Question: 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 0 5 3 6 1 5 5 2 6

Prepare a frequency distribution table

Solution:

Frequency distribution table of the given number of accidents per day is given below:

Aakash Institute

Number of accidents	Tally marks	Number of days
0	II	2
1	III	3
2	~~IIII~~ I	6
3	III	3
4	IIII	4
5	~~IIII~~ I	6
6	~~IIII~~ I	6

Question: 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:

Frequency distribution table of the given ages (in years) of 30 students:

Ages (in years)	Tally marks	Number of students
12	IIII	4
13	~~IIII~~ ~~IIII~~ II	12
14	~~IIII~~ IIII	9
15	II	2
16	II	2
17	I	1

Question: 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

Aakash Institute

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

(ii) How many Workers are getting RS 350?

(iii) How many of workers are getting the minimum wages?

Solution:

Frequency distribution of the given weekly wages of 15 workers:

Weekly wages (in Rs)	Tally marks	Number of workers
150	III	3
200	~~IIII~~	5
250	IIII	4
300	II	2
350	I	1

(i) Minimum wages = Rs. 150

Maximum wage = Rs. 350

Therefore, Range = Maximum wage – Minimum wage

= Rs. 350 – Rs. 150

= Rs. 200

(ii) Number of workers getting Rs. 350 = 1 worker

(iii) Here, Minimum wages Rs. 150

Number of workers getting Rs. 150 = 3 workers

Therefore, number of workers getting minimum wages = 3 workers.

Question: 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, 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?

Aakash Institute

(iii) Which mark is occurring more frequently?

Solution:

Frequency distribution of the given marks in mathematics:

Marks obtained in mathematics	Tally marks	Number of students (frequency)
1	II	2
2	III	3
3	III	3
4	~~IIII~~ II	7
5	~~IIII~~ I	6
6	~~IIII~~ II	7
7	~~IIII~~	5
8	IIII	4
9	III	3

(i) Number of students who have obtained marks equal to or more than 7

= Frequency of 7 + frequency of 8 + frequency of 9

= 5 + 4 + 3 = 12

(ii) Numbers of students who have scored below 4

= Frequency of 1 + frequency of 2 + frequency of 3

= 2 + 3 + 3 = 8

Question: 11

Following is the choice of sweets of 30 students of class VI: Ladoo, Barfi, Ladoo, Jalebi, Ladoo, Rasgulla, Jalebi, Ladoo, Barfi, Rasgulla, Ladoo, Jalebi, Jalebi, Rasgulla, Ladoo, Rasgulla, Jalebi, Ladoo, Rasgulla, Ladoo, Rasgulla, Jalebi, Ladoo, Rasgulla, Ladoo, Ladoo, Barfi, Rasgulla, Rasgulla, Ladoo.

(i) Arrange the names of sweets in a table using tally marks

(ii) Which sweet is preferred by most of the students.

Aakash Institute

Solution:

(i) Frequency distribution of the given sweets:

Sweet	Tally marks	Frequency
Ladoo	~~IIII~~ ~~IIII~~ II	12
Barfi	III	3
Jelebi	~~IIII~~ I	6
Rasgulla	~~IIII~~ IIII	9

(ii) The frequency of Ladoo is 12 i.e. maximum

Therefore, Ladoo is the sweet that is preferred by most of the students.

Aakash Institute