RD Sharma Solutions For Class 8 Chapter 23 Data Handling – I (Classification and Tabulation of Data)

1. Define the following terms :
(i) Observations
(ii) Raw data
(iii) Frequency of an observation
(iv) Frequency distribution
(v) Discrete frequency distribution
(vi) Grouped frequency distribution
(vii) Class-interval
(viii) Class-size
(ix) Class limits
(x) True class limits

Solution:

(i) Observations:

Observation is the value at a particular period of a particular variable.

(ii) Raw data:

Raw data is the data collected in its original form.

(iii) Frequency of an observation:

Frequency of an observation is the number of times a certain value or a class of values occurs.

(iv) Frequency distribution:

Frequency distribution is the organization of raw data in table form with classes and frequencies.

(v) Discrete frequency distribution:

Discrete frequency distribution is a frequency distribution where sufficiently great numbers are grouped into one class.

(vi) Grouped frequency distribution:

Grouped frequency distribution is a frequency distribution where several numbers are grouped into one class.

(vii) Class-interval:

Class interval is a group under which large number of data is grouped to analyse its Range and Distribution.

(viii) Class-size:

Class size is the difference between the upper and the lower values of a class.

(ix) Class limits:

Class limits are the smallest and the largest observations (data, events, etc.) in a class.

(x) True class limits:

Aakash Institute

True class limits are the actual class limits of a class.

2. The final marks in 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.
Now answer the following:
(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:

The given raw data can be arranged in an ascending order.

The class intervals are 30 – 39, 40 – 49, …, 100 – 109.

Then, take the raw data and place it in the appropriate class intervals.

(i) The marks can be arranged in an ascending order as shown below:

Groups	**Marks in Ascending order**
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

Aakash Institute

100 – 109	100

(ii) The Highest score is 100.

(iii) The Lowest score is 37.

(iv) The Range is 100 – 37 i.e., 63.

(v) If 40 is the passing mark, then the number of students who failed is 2 (i.e. 37, 39).

(vi) The number of students scoring 75 and above is 8 (i.e. 75, 77, 78, 84, 88, 90, 98, 100).

(vii) The marks 51, 54, and 57 do not actually appear between 50 and 60.

(viii) The number of students scoring less than 50 is 5 (i.e. 37, 39, 44, 48, 48).

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 kg?
(viii) How many babies weigh 2.8 kg?

Solution:

(i) The weights of the newly born babies in descending order are as follows: 3.1, 3.0, 2.9, 2.9, 2.8, 2.8, 2.7, 2.7, 2.6, 2.5, 2.4, 2.4, 2.3, 2.2, 2.1

(ii) The highest weight is 3.1 kg

(iii) The lowest weight is 2.1 kg

(iv) The range is 3.1-2.1, i.e. 1 kg

(v) The number of babies born on that day is 15

(vi) The number of babies whose weights are below 2.5 kg is 4 (i.e. 2.4, 2.3, 2.2, 2.1)

(vii) The number of babies whose weights are more than 2.8 kg is 4 (i.e. 3.1, 3.0, 2.9, 2.9)

(viii) The number of babies whose weight is 2.8 kg is 2.

4. Following data gives the number of children in 41 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, 2.
Represent it in the form of a frequency distribution.

Solution:

The data can be put in the form of frequency distribution in the following manner:

Children	**No: of Families**

Akash Institute

0	5
1	7
2	12
3	5
4	6
5	3
6	3

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: The frequency table of 50 students is given below:

Marks	No: of Students	Marks	No: of Students	Marks	No: of Students
7	2	33	2	49	1
14	1	34	1	51	3
16	1	37	4	52	1
17	1	38	2	53	3
19	1	39	4	54	1

Aakash Institute

21	1	41	1	57	1
22	1	42	6	59	2
27	2	43	1	61	1
29	1	44	1	62	1
31	1	47	1	67	1

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:

The frequency of the scores of the die is shown below:

The Die	Frequency
1	5
2	5
3	4
4	3
5	4
6	4

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,

Aakash Institute

0, 5, 4, 6, 1, 6, 0, 5, 3, 6, 1, 5, 5, 2, 6
Prepare a frequency distribution table.

Solution:

Given that,

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

From the above set we can observe that 0 occurs for 2 times,1 occurs for 3times, 2 occurs for 6times, 3 occurs for 3times, 4 occurs for 4times, 5 occurs for 6times, 6 occurs for 6 times.

The frequency table for the number of accidents per day for a period of 30 days is shown below:

Number of Accidents	Frequency
0	2
1	3
2	6
3	3
4	4
5	6
6	6

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:

The frequency table of the ages of 30 students of class VII in the school is shown below:

Aakash Institute

Age (In years)	No: of Students
12	4
13	12
14	9
15	2
16	2
17	1

9. Following figures relate to 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:

The frequency table shows the weekly wages of 15 workers in a factory:

Wages in Rs	No: of Workers
150	3
200	5
250	4
300	2

Aakash Institute

350	1

(i) The range of wages (in Rs) is 350-150 i.e. 200.

(ii) From the frequency table, we can see that the number of workers earning Rs 350 is 1.

(iii) Here, the minimum wage is 150. Hence, the number of workers earning the minimum wage is 3.

10. Construct a frequency distribution table for the following marks obtained by 25 students in a history test in class VIII of a school :
9, 7, 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 occurring more frequently?

Solution:

The frequency distribution table is given below:

Marks	No: of Students
9	6
12	4
17	4
18	2
19	4
20	3
25	2

(i) The range of marks is 25-9, i.e. 16.

(ii) The highest mark is 25.

(iii) The mark that occurs most frequently is 9. It occurs 6 times.

Aakash Institute

EXERCISE 23.2 PAGE NO: 23.14

1. The marks obtained by 40 students of class VIII in an examination are given below :
16, 17, 18, 3, 7, 23, 18, 13, 10, 21, 7, 1, 13, 21, 13, 15, 19, 24, 16, 3, 23, 5, 12, 18, 8, 12, 6, 8, 16, 5, 3, 5, 0, 7, 9, 12, 20, 10, 2, 23.
Divide the data into five groups namely 0-5, 5-10, 10-15, 15-20 and 20-25 and prepare a grouped frequency table.

Solution:

The frequency table for the marks of 40 students of class VIII in an examination is shown below:

Range of Marks	No: of Students
0-5	9
5-10	9
10-15	7
15-20	9
20-25	6

2. The marks scored by 20 students in a test are given below:
54, 42, 68, 56, 62, 71, 78, 51, 72, 53, 44, 58, 47, 64, 41, 57, 89, 53, 84, 57.
Complete the following frequency table:

(Marks in class intervals)	Tally marks	Frequency (No. of children)
40-50		
50-60		
60-70		
70-80		
80-90		

Aakash Institute

What is the class interval in which the greatest frequency occurs?

Solution:

The frequency table can be completed as follows:

Marks in Class Interval	Tally Marks	No: of Children
40 – 50	IIII	4
1. – 60	 III	8
60 – 70	III	3
70 – 80	III	3
80 – 90	II	2

The class interval with the greatest frequency (8) is 50-60.

3. The following is the distribution of weights (in kg) of 52 persons:

Weight in kg	Persons
30 – 40	10
40 – 50	15
50 – 60	17
60 – 70	6
70 – 80	4

(i) What is the lower limit of class 50-60?
(ii) Find the class marks of the classes 40-50, 50-60.
(iii) What is the class size?

Aakash Institute

Solution:

(i) The lower limit of the class 50-60 is 50.

(ii) Class mark for the class 40-50:

i.e., (40+50) / 2 = 90/2 = 45

Again, Class mark for the class 50-60:

i.e., (50+60) / 2 = 110/2 = 55

(iii) Here the class size is 40-30, i.e. 10.

4. Construct a frequency table for the following weights (in gm) of 35 mangoes using the equal class intervals, one of them is 40-45 (45 not included) :
30, 40, 45, 32, 43, 50, 55, 62, 70, 70, 61, 62, 53, 52, 50, 42, 35, 37, 53, 55, 65, 70, 73, 74, 45, 46, 58, 59, 60, 62, 74, 34, 35, 70, 68.
(i) What is the class mark of the class interval 40-45?
(ii) What is the range of the above weights?
(iii) How many classes are there?

Solution:

Weight (in grams)	No: of Mangoes
30 – 35	5
35 – 40	2
40 – 45	4
45 – 50	3
50 – 55	5
55 – 60	3
60 – 65	5
65 – 70	5

Aakash Institute

70 – 75	3

(i) Class mark for the class interval 40 – 45:

Class mark = (40+45) / 2 = 85/2 = 42.5

(ii) Range of the above weights:

Range = Highest value – Lowest value

Range = 74 – 30 = 44

(iii) Number of classes = 9

5. Construct a frequency table with class-intervals 0-5 (5 not included) of the following marks obtained by a group of 30 students in an examination :
0, 5, 7, 10, 12, 15, 20, 22, 25, 27, 8, 11, 17, 3, 6, 9, 17, 19, 21, 29, 31, 35, 37, 40, 42, 45, 49, 4, 50, 16.

Solution:

The frequency table with class intervals 0 – 5, 5 – 10, 10 – 15, . . . , 45 – 50 is shown below:

Marks	No: of Students
0 – 5	3
5 – 10	5
10 – 15	3
15 – 20	5
20 – 25	3
25 – 30	3
30 – 35	1

Aakash Institute

35 – 40	2
40 – 45	2
45 – 50	2
50 – 55	1

6. The marks scored by 40 students of class VIII in mathematics are given below :
81, 55, 68, 79, 85, 43, 29, 68, 54, 73, 47, 35, 72, 64, 95, 44, 50, 77, 64, 35, 79, 52, 45, 54, 70, 83, 62, 64, 72, 92, 84, 76, 63, 43, 54, 38, 73, 68, 52, 54.
Prepare a frequency distribution with class size of 10 marks.

Solution:

The frequency table of the marks scored by 40 students of class VIII in mathematics is shown below:

Marks	Frequency Distribution
20 – 30	1
30 – 40	3
40 – 50	5
50 – 60	8
60 – 70	9
70 – 80	8
80 – 90	34

Aakash Institute

90 – 100	2

7. The heights (in cm) of 30 students of class VIII are given below :
155, 158, 154, 158, 160, 148, 149, 150, 153, 159, 161, 148, 157, 153, 157, 162, 159, 151, 154, 156, 152, 156, 160, 152, 147, 155, 163, 155, 157, 153.
Prepare a frequency distribution table with 160-164 as one of the class intervals.

Solution:

The frequency distribution table is shown below:

Height (in cm)	No: of Students
145 – 149	4
150 – 154	9
155 – 159	12
160 – 164	5

8. The monthly wages of 30 workers in a factory are given below:

830, 835, 890, 810, 835, 836, 869, 845, 898, 890, 820, 860, 832, 833, 855, 845, 804, 808, 812, 840, 885, 835, 836, 878, 840, 868, 890, 806, 840, 890.
Represent the data in the form of a frequency distribution with class size 10.

Solution:

The frequency table of the monthly wages of 30 workers in a factory is shown below:

Wages	No: of Workers
800 – 809	3
810 – 819	2
820 – 829	1

Aakash Institute

830 – 839	8
840 – 849	5
850 – 859	1
860 – 869	3
870 – 879	1
880 – 889	1
890 – 899	5

9. Construct a frequency table with equal class intervals from the following data on the monthly wages (in rupees) of 28 labourers working in a factory, taking one of the class intervals as 210-230 (230 not included) :
220, 268, 258, 242, 210, 268, 272, 242, 311, 290, 300, 320, 319, 304, 302, 318, 306, 292, 254, 278, 210, 240, 280, 316, 306, 215, 256, 236.

Solution:

The frequency table of the monthly wages of 28 laborers working in a factory is shown below:

Wages	No: of Workers
210 – 230	4
230 – 250	4
250 – 270	5
270 – 290	3

Aakash Institute

290 – 310	7
310 – 330	5

10. The daily minimum temperatures in degrees Celsius recorded in a certain Arctic region are as follows :
– 12.5, -10.8, -18.6, -8.4, -10.8, -4.2, -4.8, -6.7, -13.2, -11.8, -2.3, 1.2, 2.6, 0, -2.4, 0, 3.2, 2.7, 3.4, 0, -2.4, -2.4, 0, 3.2, 2.7, 3.4, 0, -2.4, -5.8, -8.9, -14.6, -12.3, -11.5, -7.8, -2.9
Represent them as frequency distribution table taking -19.9 to -15 as the first class interval.

Solution:

The frequency table of the daily minimum temperatures is shown below:

Temperature	Frequency Distribution
–19.9 to –15	1
–15 to –11.1	6
–11.1 to –6.2	6
–6.2 to –1.3	9
–1.3 to 3.6	13

Aakash Institute