Mathematics

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(Chapter – 14)(Statistics)
(Class – 9)

Exercise 14.2

Question 1:

The blood groups of 30 students of Class VIII are recorded as follows:

A, B, O, O, AB, O, A, O, B, A, O, B, A, O, O,
A, AB, O, A, A, O, O, AB, B, A, O, B, A, B, O.

Represent this data in the form of a frequency distribution table. Which is the most common, and which is the rarest, blood group among these students?

Answer 1:

According to data, 9 students have blood group A, 6 students have blood group B, 3 students have blood group AB and 12 students have blood group O.

The frequency distribution table of 30 students is given below:

Blood Groups	Number of students
A	9
B	6
AB	3
O	12
Total	30

Out of these four groups, O is most common and AB is the rarest group.

Question 2:

The distance (in km) of 40 engineers from their residence to their place of work were found as follows:

5	3	10	20	25	11	13	7	12	31
19	10	12	17	18	11	32	17	16	2
7	9	7	8	3	5	12	15	18	3
12	14	2	9	6	15	15	7	6	12

Construct a grouped frequency distribution table with class size 5 for the data given above taking the first interval as 0-5 (5 not included). What main features do you observe from this tabular representation?

Answer 2:

To construct the grouped frequency distribution table, the first interval should be 0 – 5 (5 not included). Here the minimum distance is 2 km and the maximum distance is 32 km. Therefore the intervals are 0 – 5, 5 – 10, 10 – 15, etc.

Therefore, the grouped frequency distribution table is given below:

Distance (in km)	Tally Marks	Number of Engineers
0 – 5	𝍸	5
5 – 10	𝍸 𝍸 |	11
10 – 15	𝍸 𝍸 |	11
15 – 20	𝍸 ||||	9
20 – 25	|	1
25 – 30	|	1
30 – 35	||	2
Total		**40**

According to distribution table, most of the engineers are living with in the 20 km from the place of work. Only few are living on longer distance.

Question 3:

The relative humidity (in %) of a certain city for a month of 30 days was as follows:

98.1	98.6	99.2	90.3	86.5	95.3	92.9	96.3	94.2	95.1
89.2	92.3	97.1	93.5	92.7	95.1	97.2	93.3	95.2	97.3
96.2	92.1	84.9	90.2	95.7	98.3	97.3	96.1	92.1	89

(i) Construct a grouped frequency distribution table with classes 84 - 86, 86 - 88, etc.

(ii) Which month or season do you think this data is about?

(iii) What is the range of this data?

Answer 3:

(i) Here, according to data, the minimum humidity is 84.9 and the maximum is 99.2. Therefore, the class intervals are 84 – 86, 86 – 88, 88 – 90, etc. The grouped frequency distribution table is given below:

Relative humidity (in %)	Number of days (Frequency)
84 – 86	1
86 – 88	1
88 - 90	2
90 – 92	2
92 – 94	7
94 – 96	6
96 – 98	7
98 – 100	4
Total	**30**

(ii) These data is related to rainy season because the relative humidity is more.

(iii) Range = Maximum humidity – Minimum humidity = 99.2 – 84.9 = 14.3

Question 4:

The heights of 50 students, measured to the nearest centimetres, have been found to be as follows:

161	150	154	165	168	161	154	162	150	151
162	164	171	165	158	154	156	172	160	170
153	159	161	170	162	165	166	168	165	164
154	152	153	156	158	162	160	161	173	166
161	159	162	167	168	159	158	153	154	159

(i) Represent the data given above by a grouped frequency distribution table, taking the class intervals as 160 - 165, 165 - 170, etc.

(ii) What can you conclude about their heights from the table?

Answer 4:

(i) According to given data, the minimum height is 150 cm and the maximum height is 173 cm. Therefore, the class intervals are 150 – 155, 155 – 160, 160 – 165, etc. The grouped frequency distribution table is given below:

Height (in cm)	Number of students (Frequency)
150 – 155	12
155 – 160	9
160 – 165	14
165 – 170	10
170 – 175	5
Total	**50**

(ii) More than 50% students have height less than 165 cm.

Question 5:

A study was conducted to find out the concentration of sulphur dioxide in the air in parts per million (ppm) of a certain city. The data obtained for 30 days is as follows:

0.03	0.08	0.08	0.09	0.04	0.17
0.16	0.05	0.02	0.06	0.18	0.20
0.11	0.08	0.12	0.13	0.22	0.07
0.08	0.01	0.10	0.06	0.09	0.18
0.11	0.07	0.05	0.07	0.01	0.04

(i) Make a grouped frequency distribution table for this data with class intervals as 0.00 - 0.04, 0.04 - 0.08, and so on.

(ii) For how many days, was the concentration of sulphur dioxide more than 0.11 parts per million?

Answer 5:

(i) According to the given data, the minimum concentration is 0.01 and the maximum concentration is 0.22. Therefore, the class intervals are 0.00 – 0.04, 0.04 – 0.08, 0.08 – 0.12, etc. Frequency table is given below:

Concentration of Sulphur dioxide (in ppm)	Number of days (Frequency)
0.00 – 0.04	4
0.04 – 0.08	9
0.08 – 0.12	9
0.12 – 0.16	2
0.16 – 0.20	4
0.20 – 0.24	2
Total	**30**

(ii) In 8 days, the concentration of sulphur dioxide was more than 0.11 parts per million.

Question 6:

Three coins were tossed 30 times simultaneously. Each time the number of heads occurring was noted down as follows:

0	1	2	2	1	2	3	1	3	0
1	3	1	1	2	2	0	1	2	1
3	0	0	1	1	2	3	2	2	0

Prepare a frequency distribution table for the data given above.

Answer 6:

The frequency table is given below:

Number of heads	Frequency
0	6
1	10
2	9
3	5
Total	**30**

Question 7:

The value of π upto 50 decimal places is given below:

3.14159265358979323846264338327950288419716939937510

(i) Make a frequency distribution of the digits from 0 to 9 after the decimal point.

(ii) What are the most and the least frequently occurring digits?

Answer 7:

(i) The frequency table is given below:

Number	Frequency
0	2
1	5
2	5
3	8
4	4
5	5
6	4
7	4
8	5
9	8
Total	**50**

(ii) 3 and 9 are the most occurring digits and 0 is the least occurring digit.

Question 8:

Thirty children were asked about the number of hours they watched TV programmes in the previous week. The results were found as follows:

1	6	2	3	5	12	5	8	4	8
10	3	4	12	2	8	15	1	17	6
3	2	8	5	9	6	8	7	14	12

(i) Make a grouped frequency distribution table for this data, taking class width 5 and one of the class intervals as 5 - 10.

(ii) How many children watched television for 15 or more hours a week?

Answer 8:

(i) According to data, the least time is 1 hour and the most time is 17 hours. Therefore, the class intervals are 0 – 5, 5 – 10, 10 – 15, etc. The grouped frequency distribution table is given below:

Time for watching TV (in hours)	Number of children (Frequency)
0 – 5	4
5 – 10	9
10 – 15	9
15 – 20	2
Total	**30**

(ii) Only 2 children watched television for 15 or more hours a week.

Question 9:

A company manufactures car batteries of a particular type. The lives (in years) of 40 such batteries were recorded as follows:

2.6	3.0	3.7	3.2	2.2	4.1	3.5	4.5
3.5	2.3	3.2	3.4	3.8	3.2	4.6	3.7
2.5	4.4	3.4	3.3	2.9	3.0	4.3	2.8
3.5	3.2	3.9	3.2	3.2	3.1	3.7	3.4
4.6	3.8	3.2	2.6	3.5	4.2	2.9	3.6

Construct a grouped frequency distribution table for this data, using class intervals of size 0.5 starting from the interval 2 - 2.5.

Answer 9:

According to data, the minimum life time is 2.2 years and the maximum life time is 4.6 years. Therefore, the class intervals are 2.0 – 2.5, 2.5 – 3.0, 3.0 – 3.5, etc. The grouped frequency distribution is given below:

Lives of batteries (in years)	Number of batteries (Frequency)
2.0 – 2.5	2
2.5 – 3.0	6
3.0 – 3.5	14
3.5 – 4.0	11
4.0 – 4.5	4
4.5 – 5.0	3
Total	**40**