

CBSE Class 9 Mathematics
NCERT Solutions
CHAPTER 14
Statistics(Ex. 14.2)

1. The blood groups of 30 students of a 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?

Ans. The frequency distribution table for the given data is as follows:

Blood group	Tally Marks	Frequency (Number of students)
A		9
B		6
O		12
AB		3
Total		30

From the table we observe that most common blood groups is O (12 times maximum) and the rarest group is AB (3 times least).

2. Distance (in km) of 40 engineers from their place of 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?

Ans. The grouped frequency distribution table for the given data is as follows:

Distances (in km)	Tally Marks	Frequency (Number of female engineer's)
0 – 5		5
5 – 10		11
10 – 15		11
15 – 20		9
20 – 25		1
25 – 30		1
30 – 35		2
Total		40

From the above table we observe that out of 40 female engineers 36 (5 + 11 + 11 + 9) engineers i.e., 90% of the total female engineers reside less than 20 km from their place of work.

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?

Ans. (i) The grouped frequency distribution table for the given data is as follows:

Relative humidity (in %)	Tally marks	Frequency (Number of days)
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) From the data we observe that relative humidity is high. So data appears to be taken in the rainy season.

(iii) From the data, we observe that

Highest relative humidity = 99.2%

Lowest relative humidity = 84.9%

Range = $(99.2 - 84.9)\% = 14.3\%$

4. The heights of 50 students, measured to the nearest centimeters 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?

Ans. (i) The grouped frequency distribution table for the given data is as follows:

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

(ii) From the frequency distribution table drawn above, we conclude that more than 50% of the students are shorter than 165 cm.

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 0.01 – 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.

Ans. (i) The grouped frequency distribution table for the given data is as follows:

Concentration of Sulphur dioxide (in ppm)	Tally marks	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) From the above frequency distribution we observe that the concentration of Sulphur dioxide was more than 0.11 ppm for 8 days.

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 for the data given above.

Ans. (i) The grouped frequency distribution table for the given data is as follows:

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

7. The value of π up to 50 decimal places is given below:

3.14159265358979323846264338327950288419716939937510.

(a) Make a frequency distribution of the digits after the decimal point list the digits from 0 to 9 in your first column.

(b) What are the most and the least frequency occurring digits?

Ans. (a) The value of π up to 50 decimal places is given as table:

3.14159265358979323846264338327950288419716939937510.

The frequency distribution table of the digits after the decimal point in the value of π is as follows:

Digits	Tally Marks	Frequency
0		2
1		5
2		5
3		8
4		4
5		5
6		4
7		4
8		5
9		8
Total		50

(b) Maximum frequency is 8, Hence 3 and 9 are the most frequently occurring digits.

Least frequency is 2, Hence 0 is the least occurring digit.

8. Thirty children were asked about the number of hours they watched TV programmers 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 frequency distribution table for this data, taking class width 5 and one of the class interval 5 – 10.

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

Ans. (i) Frequency distribution table for the given data is as follows:

Number of hours (in a week)	Tally Marks	Number of children (Frequency)
0 – 5		10
5 – 10		13
10 – 15		5
15 – 20		2
Total		30

(ii) From the frequency table we observe that number of children in the class interval 15 – 20 is 2.

So 2 children view television for 15 hours or more than 15 hours a week.

9. A company manufactures car-batteries of 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.

Ans. Grouped frequency distribution table for the given data is as follows:

Life of batteries (in years)	Tally Marks	Frequency
2.0 – 2.5		2
2.5 – 3.0		4
3.0 – 3.5		5
3.5 – 4.0		5
4.0 – 4.5		4
4.5 – 5.0		3
Total		40