## EXERCISE 14.2

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 are the most common and which is the rarest blood group among these students?

| BLOOD GROUP | FREQUENCY |
|---|---|
| A | 9 |
| B | 6 |
| AB | 3 |
| O | 12 |
| TOTAL<br>Most common blood group is O and Rarest blood group is AB | 30 |

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 the tabular distribution?

| **Distance (km)** | **Frequency** |
|---|---|
| 0-5 | 5 |
| 5-10 | 11 |
| 10-15 | 11 |
| 15-20 | 9 |
| 20-25 | 1 |
| 25-30 | 1 |
| 30-35 | 2 |
| TOTAL | 40 |

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?

Solution:

(i)

| Relative humidity (in %) | 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) The data may be taken during rainy season.

(iii) 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 1583 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?

| Heights (in cm) | Frequency |
|---|---|
| 150-155 | 12 |
| 155-160 | 9 |

| | |
|---|---|
| 160-165 | 14 |
| 165-170 | 10 |
| 170-175 | 5 |
| Total | 50 |

(ii) More than 50 % of the student is 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 0.03 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?

| **Concentration of Sulphur dioxide** | **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) The concentration of sulphur dioxide was more than 0.11ppm for 8 days

6. Three coins were tossed 30 times simultaneously. Each time then 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.

Solution:

| **Number of Heads** | **FREQUENCY** |
|---|---|
| 0 | 6 |
| 1 | 10 |

| | |
|---|---|
| 2 | 9 |
| 3 | 5 |
| **Total** | **30** |

7. The value of π up to 50 decimal places is given below:
   3.14159265358979323846264338327950288419769399375 10

| **Digits** | **Frequency** |
|---|---|
| 0 | 2 |
| 1 | 5 |
| 2 | 5 |
| 3 | 8 |
| 4 | 4 |
| 5 | 5 |
| 6 | 4 |
| 7 | 4 |
| 8 | 5 |
| 9 | 8 |
| Total | 50 |

8. Thirty children were asked about the number of hours they watched TV programs 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?
   Solution:

| **Number of Hours** | **FREQUENCY** |
|---|---|
| 0-5 | 10 |
| 5-10 | 13 |
| 10-15 | 5 |
| 15-20 | 2 |
| **Total** | **30** |

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

Solution:

| **Life of Batteries (in years)** | **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 |