Exercise 7.1

1. (*i*) What is statistics?
   (*ii*) Distinguish between primary data and secondary data.
2. Define the following terms:
   (*i*) Frequency
   (*ii*) Class Interval
   (*iii*) Cumulative Frequency
   (*iv*) Class mark
3. Fill in the blanks:
   (*i*) The range of 33, 50, 22, 8, 39, 41, 26, 28, 68 and 19 is.....
   (*ii*) If the class marks of a distribution are 28, 34, 40, 46, 52 the class size of the distribution is.....
   (*iii*) The class mark of the class interval 9.5 – 16.5 is.....
   (*iv*) Lower limit of the class interval 6 – 13 is.....
   (*v*) If the class marks in a frequency distribution are 6, 15, 24, 33, 42, 51 then the class size is.....
   (*vi*) The class mark of the class interval 90 – 120 is ..... [*CBSE* 2011]
   (*vii*) The class mark of a particular class is 6.5 and class size is 3, then class interval is..... [*CBSE* 2011]
   (*viii*) In an exclusive series, the upper limit of the first class is the.....of the second class.
   (*ix*) Below 50, the cumulative frequency (c.f.) = 32, and below 45, c.f. = 28, frequency of the interval 45 – 50 is.....
4. The class size of a distribution is 25 and the first class-interval is 200 – 224. There are seven class-intervals.
   (*i*) Write the class intervals.
   (*ii*) Write the class marks of each interval.
5. The weights in grams of 50 apples picked at random from a consignment are as follows :

   106, 107, 76, 82, 109, 107, 115, 93, 187, 195, 123, 125, 111, 92, 86, 70, 126, 68, 130, 129, 139, 119, 115, 128, 100, 186, 84, 99, 113, 204, 111, 141, 136, 123, 90, 115, 98, 110, 78, 90, 107, 81, 131, 75, 84, 104, 110, 80, 118, 82.

   Form the grouped frequency table by dividing the variable range into intervals of equal width, each corresponding to 70 gms in such a way that the mid-value of the first class corresponds to 70 gms.
6. The following is a record of marks obtained by a group of 40 boys in an examination. Present the data in the form of a frequency distribution using the same class size or such class being 10-15 (15 not included).

   3, 20, 13, 1, 21, 13, 3, 23, 16, 13, 5, 24, 15, 7, 10, 18, 18, 7, 17, 21, 12, 5, 23, 2, 12, 20, 2, 10, 16, 23, 18, 21, 6, 9, 7, 3, 5, 16, 8, 8.
7. The maximum and minimum temperature (in degree centigrade) for Delhi for the month of the June in a year are given below:

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Maximum Temperatures (in degrees centigrade) 35.5, 35.9, 36.6, 38.4, 36.6, 40.1, 41.3, 43.3, 42.8, 32.8, 39.6, 38.7, 32.5, 35.6, 33.9, 34.5, 35.3, 35.7, 35.9, 36.4, 33.8, 33.5, 32.7, 32.9, 34.6, 34.7, 38.8, 39.8, 40.2, 41.2.

Minimum Temperatures (in degrees centigrade) 27.8, 23.4, 23.4, 28.5, 26.6, 29.5, 28.7, 23.5, 22.6, 23.9, 25.5, 21.7, 30.5, 31.3, 32.6, 30.2, 29.5, 25.5, 26.3, 24.3, 24.3, 31.2, 33.2, 30.6, 27.5, 28.3, 28.7, 29.6, 30.3, 22.7.

Construct a frequency table for each, using equal class sizes and taking one class as 36-37 (37 excluded) in the first case and one class as 24-25 (25 excluded) in the second case.

8. The weights in grams of 50 apples picked at random from an orchard are as follows:

50, 60, 55, 115, 80, 105, 45, 65, 70, 85, 105, 80, 75, 65, 75, 100, 90, 85, 55, 50, 65, 55, 45, 70, 60, 50, 45, 95, 90, 80, 90, 80, 75, 115, 105, 85, 75, 60, 55, 75, 125, 140, 150, 165, 130, 155, 160, 95, 100, 135.

Construct a cumulative frequency table if one class is 80-100 (100 not included).

9. The following are the monthly rents (in rupees) of 40 shops. Tabulate the data by grouping them in intervals of ₹ 8.

38, 42, 49, 37, 82, 37, 75, 62, 54, 79, 84, 75, 63, 44, 74, 44, 36, 69, 54, 48, 74, 47, 52, 57, 62, 67, 72, 77, 82, 51, 31, 38, 43, 75, 67, 77, 47, 64, 84, 81.

10. Present the following as a frequency distribution table:

Marks Below	*Number of students*
10	4
20	10
30	19
40	25
50	27

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11. The following is the weight (in kg.) of 40 persons:

127, 95, 110, 115, 108, 87, 82, 96, 75, 84, 107, 96, 129, 63, 65, 87, 86, 75, 79, 113, 115, 127, 91, 95, 67, 77, 66, 73, 91, 84, 80, 69, 110, 112, 73, 65, 107, 111, 97, 102.

(*i*) Using suitable class intervals of equal size construct a cumulative frequency table.

(*ii*) How many persons have weight less than 90 kilograms?

12. Following is the distribution of ages (in years) of 35 teachers in a secondary school.

Age (in years)	*No. of teachers*
24 – 32	4
32 – 40	9
40 – 48	11
48 – 56	3
56 – 64	2
64 – 72	6

(*i*) Find the class marks of the classes.

(ii) Construct the cumulative frequency table.

(iii) How many teachers are below 48 years of age?

13. For a particular year, the following is the distribution of the ages (in years) of primary school teachers in Himachal Pradesh:

Age (in years)	*Number of teachers*
16 – 20	11
21 – 25	32
26 – 30	51
31 – 35	49
36 – 40	27
41 – 45	6
46 – 50	4

(i) Write the lower limit of the first class interval.

(ii) Determine the class limits of the fourth class interval.

(iii) Find the class mark of the seventh class interval.

(iv) Determine the class size.

(v) Construct a cumulative frequency table.

14. The following table gives the monthly earnings in rupees of employees in a certain factory:

Monthly earning (in rupees)	*Number of workers*
200 – 300	15
300 – 400	10
400 – 500	5
500 – 600	8
600 – 700	6
700 – 800	6
800 – 900	7
900 – 1000	3

(i) Write the lower limit of the first class interval.

(ii) Determine the class limits of the fifth class interval.

(iii) Find the class mark of the seventh class interval.

(iv) Determine the class size.

Answers

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3. (i) 60 (ii) 6 (iii) 13
(iv) 6 (v) 9
(vi) 105 (vii) 5 – 8
(viii) lower limit (ix) 4

4. The class intervals are
200–224, 225–249, 250–274, 275–299, 300–324, 325–349, 350–374
The class marks are
212, 237, 262, 287, 312, 337, 362

10. *Frequency Distribution Table*

Classes-Interval	*Cumulative frequency*	*Frequency*
0 – 10	4	4
10 – 20	10	10 – 4 = 6
20 – 30	19	19 – 10 = 9
30 – 40	25	25 – 19 = 6
40 – 50	27	27 – 25 = 2
	Total	27

11. (*i*) Cumulative Frequency Table

Weight (in kg)	*No. of persons (frequency)*	*Cumulative frequency*
60 – 70	6	6
70 – 80	6	(6 + 6) = 12
80 – 90	7	(12 + 7) = 19
90 – 100	7	(19 + 7) = 26
100 – 110	4	(26 + 4) = 30
110 – 120	7	(30 + 7) = 37
120 – 130	3	(37 + 3) = 40
Total	40	

(*ii*) 20

12. (*i*) Class marks of the classes are 28, 36, 44, 52, 60, 68.

(*ii*) Cumulative Frequency Table

Age (in years)	*No. of teachers (frequency)*	*Cumulative frequency*
24 – 32	4	4
32 – 40	9	(4 + 9)= 13
40 – 48	11	(13+ 11) = 24
48 – 56	3	(24+ 3) = 27
56 – 64	2	(27 + 2) = 29
64 – 72	6	(29 + 6) = 35
Total	35	

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(*iii*) 24

13. (*i*) 16 (*ii*) lower class limit = 31, upper class limit = 35

(*iii*) 48 (*iv*) 5

(*v*) *Cumulative Frequency Table*

Age (in years)	*No. of Teachers (frequency)*	*Cumulative frequency*
16 – 20	11	11
21 – 25	32	(11 + 32) = 43
26 – 30	51	(43 + 51) = 94
31 – 35	49	(94 + 49) = 143
36 – 40	27	(143 + 27) = 170
41 – 45	6	(170 + 6) = 176
46 – 50	4	(176 + 4) = 180

14. (*i*) 200 (*ii*) Lower limit = 600; Upper limit = 700

(*iii*) 850 (*iv*) 100

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