STATISTICS

BASIC CONCEPT OF STATISTICS

EXERCISE

Q.1 Given below are the ages of 25 students of class IX in a school. Prepare a discrete frequency distribution.

15, 16, 16, 14, 17, 17, 16, 15, 15, 16, 16, 17, 15, 16, 16, 14, 16, 15, 14, 15, 16, 16, 15, 14, 15.

Q.2 Form a discrete frequency distribution from the following scores:-

15, 18, 16, 20, 25, 24, 25, 20, 16, 15, 18, 18, 16, 24, 15, 20, 28, 30, 27, 16, 24, 25, 20, 18, 28, 27, 25, 24, 24, 18, 18, 25, 20, 16, 15, 20, 27, 28, 29, 16.

Q.3 The water tax bills (in rupees) of 30 houses in a locality are given below. Construct a grouped frequency distribution with class size of 10.

30, 32, 45, 54, 74, 78, 108, 112, 66, 76, 88, 40, 14, 20, 15, 35, 44, 66, 75, 84, 95, 96, 102, 110, 88, 74, 112, 14, 34, 44.

Q.4 The marks obtained by 40 students of class IX in an examination are given below :

18, 8, 12, 6, 8, 16, 12, 5, 23, 2,16, 23, 2, 10, 20, 12, 9, 7, 6, 5, 3, 5, 13, 21, 13, 15, 20, 24, 1, 7, 21, 16, 13, 18, 23, 7, 3, 18, 17, 16.

Present the data in the form of a frequency distribution using the same class size, one such class being 15-20 (where 20 is not included)

Q.5 The class marks of a distribution are : 47, 52, 57, 62, 67, 72, 77, 82, 87, 92, 97, 102 Determine the class size, the class limits and the true class limits.

Q.6 The class marks of a distribution are 26, 31, 36, 41, 46, 51, 56, 61, 66, 71. Find the true class limits.

Q.7 The marks obtained by 35 students in a class are given below. Construct the cumulative frequency table :

Marks obtained	Number of students
0	1
1	2
2	4
3	4
4	3
5	5
6	4
7	6
8	3
9	2
10	1

Q.8 The distribution of ages (in years) of 40 persons in a colony is given below.

Age (in years)	Number of Persons
20-25	7
25-30	10
30-35	8
35-40	6
40-45	4
45-50	5

(a) Determine the class mark of each class

(b) What is the upper class limit of 4th class

(c) Determine the class size

Q.9 Following is the distribution of marks of 40 students in a class. Construct a cumulative frequency distribution table.

Marks	Number of students
0-10	3
10-20	8
20-30	9
30-40	15
40-50	5

Q.10 The class marks of a distribution are 25, 35, 45, 55, 65 and 75.

Determine the class size and class limit.

ANSWER KEY

1.

Age	Tally marks	Frequency
14	𝍸	4
15	𝍸 | | |	8
16	𝍸 𝍸	10
17	| | |	3
Total		25

2.

Variate	Tally marks	Frequency
15	𝍸	4
16	𝍸 |	6
18	𝍸 |	6
20	𝍸 |	6
24	𝍸	5
25	𝍸	5
27	| | |	3
28	| | |	3
29	|	1
30	|	1
Total		40

3.

Bill (in rupees)	Tally marks	Frequency
14-24	𝍸	4
24-34	| |	2
34-44	| | |	3
44-54	| | |	3
54-64	|	1
64-74	| |	2
74-84	𝍸	5
84-94	| | |	3
94-104	| | |	3
104-114	𝍸	4
Total		30

4.

Marks	Tally marks	Frequency
0-5	𝍸 I	6
5-10	𝍸 𝍸	10
10-15	𝍸 III	8
15-20	𝍸 III	8
20-25	𝍸 III	8
	Total	40

5.

Class marks	Class limits
47	44.5–49.5
52	49.5–54.5
57	54.5–59.5
62	59.5–64.5
67	64.5–69.5
72	69.5–74.5
77	74.5–79.5
82	79.5–84.5
87	84.5–89.5
92	89.5–94.5
97	94.5–99.5
102	99.5–104.5

6. 23.5 – 28.5, 28.5 – 33.5, 33.5 – 38.5,

38.5 – 43.5, 43.5 – 48.5, 48.5 – 53.5

7.

Marks	Frequency	Number of students
0	1	1
1	2	3 (=1 + 2)
2	4	7 (=1 + 2 + 4)
3	4	11 (=1 + 2 + 4 + 4)
4	3	14 (=1 + 2 + 4 + 4 + 3)
5	5	19 (=1 + 2 + 4 + 4 + 3 + 5)
6	4	23 (=1 + 2 + 4 + 4 + 3 + 5 + 4)
7	6	29 (=1 + 2 + 4 + 4 + 3 + 5 + 4 + 6)
8	3	32 (=1 + 2 + 4 + 4 + 3 + 5 + 4 + 6 + 3)
9	2	34 (=1 + 2 + 4 + 4 + 3 + 5 + 4 + 6 + 3 + 2)
10	1	35 (=1 + 2 + 4 + 4 + 3 + 5 + 4 + 6 + 3 + 2 + 1)
	Total = 35	

8. (a) Class marks are

$$\frac{20+25}{2}, \frac{25+30}{2}, \frac{30+35}{2}, \frac{35+40}{2}, \frac{40+45}{2}, \frac{45+50}{2}.$$

$= 22.5, 27.5, 32.5, 37.5, 42.5, 47.5$

(b) The fourth class interval is 35–40. Its upper limit is 40

(c) The class size is $25 - 20 = 5$

9.

Class interval	Frequency	Cumulative Frequency
0–10	3	3
10–20	8	11 (= 3 + 8)
20–30	9	20 (= 3 + 8 + 9)
30–40	15	35 (= 3 + 8 + 9 + 15)
40–50	5	40 (= 3 + 8 + 9 + 15 + 5)
	Total = 40	

10. We need classes of size 10 with class marks as 25, 35, 45, 55, 65, 75

Similarly, the other classes are 30 – 40, 40 – 50, 50 – 60, 60 – 70, 70 – 80