22. Tabular Representation of Statistical Data

Exercise 22.1

1. Question

What do you understand by the word "statistics"?

(i) Singular form

(ii) Plural form

Answer

The word 'Statistics' is used in both singular as well as its plural sense.

(i) Statistics may be defined as the science of collection, presentation, analysis and interpretation of numerical data.

(ii) Statistics means numerical facts or observations collected with definite purpose.

2. Question

Describe some fundamental characteristics of statistics.

Answer

Fundamental characteristics of Statistics are:

(i) A single observation does not form statistics. Statistics is a sum of total number of observations.

(ii) Statistics are expressed quantitatively not qualitatively.

(iii) Statistics are collected with definite purpose.

(iv) Statistics in an experiment are comparable and can be classified into various groups.

3. Question

What are:

(i) Primary data?

(ii) Secondary data?

Which of the two—the primary or the secondary data—is more reliable and why?

Answer

The word 'Data' means information. Statistical data are of two types:

(i) Primary data: When an investigator collects data himself with a definite plan or design in his/her mind is called Primary data.

(ii) Secondary data: Data which are not originally collected rather obtained from published or unpublished sources are known as secondary data.

4. Question

Why do we group data?

Answer

The data obtained in original form are called raw data. Raw data does not give any useful information and is rather confusing. Data is grouped so that it becomes understandable and can be interpreted.

According to various characteristics groups are formed by us. After grouping the data, we are in a position to make calculation of certain values which will help us in describing and analysing data.

5. Question

Explain the meaning of the following terms:

(i) Variable

(ii) Class-interval

(iii) Class-size

(iv) Class-mark

(v) Frequency

(vi) Class limits

(vii) True class limits

Answer

(i) Variable: Any character that can vary from one individual to other is called variable.

(ii) Class-interval: In the data of each group into which raw data is considered is called a Class-interval.

(iii) Class-size: The difference between the upper class limit and the lower class limit is called the class size of the class.

Class-mark: The middle value of the class is called the class-mark.Class mark = $\frac{Upper\ limit+lower\ limit}{2}$

(iv) Frequency: The number of observations corresponding to class is called its frequency.

(v) Class-limit: Each class is bounded by two figures, called the class limits. The figures on the left side of the classes are called lower limits while the figures on the right sides are called the upper limits.

(vi) True class limits: If classes are inclusive e.g., 15-19, 20-24, 25-29, 30-34

Then, true lower limit of class = Lower limit of class – 0.5

And, true upper limit of class = Upper limit of class + 0.5

e.g., True limits of class 15-19 are 14.5-19.5

6. Question

The ages of ten students of a group are given below. The ages have been recorded in years and months:

8-6, 9-0, 8-4, 9-3, 7-8, 8-11, 8-7, 9-2, 7-10, 8-8

(i) What is the lowest age?

(ii) What is the highest age?

(iii) Determine the range?

Answer

The ages of 10 students of a group are given below:

8-6, 9-0, 8-4, 9-3, 7-8, 8-11, 8-7, 9-2, 7-10, 8-8

(i) Lowest age is 7 years 8 months.

(ii) Highest age is 9 years 3 months.

(iii) Range = Highest age – Lowest age

= 9 years 3 months – 7 years 8 months

= 1 year 7 months

7. Question

The monthly pocket money of six friends is given below:

Rs. 45, Rs. 30, Rs. 40, Rs. 50, Rs. 25, Rs. 45

(i) What is the highest pocket money?

(ii) What is the lowest pocket money?

(iii) What the range?

(iv) Arrange the amounts of pocket money in ascending order.

Answer

The monthly pocket money of 6 friends is given below:

Rs. 45, Rs. 30, Rs. 40, Rs. 50, Rs. 25, Rs. 45

(i) Highest pocket money = Rs. 50

(ii) Lowest pocket money = Rs. 25

(iii) Range = Rs. 50 – Rs. 25

= Rs. 25

(iv) The amount of pocket money in ascending order is:

Rs. 25, Rs. 30, Rs. 40, Rs. 45, Rs. 45, Rs. 50

8. Question

Write the class-size in each of the following:

(i) 0-4, 5-9, 10-14

(ii) 10-19, 20-29, 30-39

(iii) 100-120, 120-140, 160-180

(iv) 0-0.25, 0.25-0.50, 0.50-0.75

(v) 5-5.01, 5.01-5.02, 5.02-5.03

Answer

(i) Class size = Upper limit – Lower limit

= 4 – 0 = 4

(ii) Class size = Upper limit – Lower limit

= 19 – 10 = 9

(iii) Class size = Upper limit – Lower limit

= 120 – 100 = 20

(iv) Class size = Upper limit – Lower limit

= 0.25 – 0 = 0.25

(v) Class size = Upper limit – Lower limit

= 5.01 – 5 = 0.01

9. Question

The final marks in mathematics of 30 students are as follows:

53, 61, 48, 60, 78, 68, 55, 100, 67, 90

75, 88, 77, 37, 84, 58, 60, 48, 62, 56

44, 58, 52, 64, 98, 59, 70, 39, 50, 60

(i) Arrange these marks in the ascending order, 30 to 39 one group, 40 to 49 second group, etc.

Now answer the following:

(ii) What is the highest score?

(iii) What is the lowest score?

(iv) What is the range?

(v) If 40 is the pass mark how many have failed?

(vi) How many have scored 75 or more?

(vii) Which observations between 50 and 60 have not actually appeared?

(vii) How many have scored less than 50?

Answer

(i)

Class Marks	Frequency
30-39	2
40-49	3
50-59	8
60-69	8
70-79	4
80-89	2
90-99	2
100-109	1
	N = 30

(ii) The highest score is 100.

(iii) The lowest score is 37

(iv) Range = Highest score – Lowest score

= 100 – 37

= 63

(v) If the pass marks are 40 2 students are failed.

(vi) 8 people have scored 75 or more.

(vii) The observation between 50 and 60 that are not actually appeared are 51, 54, 57

(viii) Number of students that have scored less than 50 are 5

10. Question

The weights of new born babies (in kg.) in a hospital on a particular day are as follows:

2.3, 2.2, 2.1, 2.7, 2.6, 3.0, 2.5, 2.9, 2.8, 3.1, 2.5, 2.8, 2.7, 2.9, 2.4

(i) Rearrange the highest weight.

(ii) Determine the highest weight.

(iii) Determine the lowest weight.

(iv) Determine the range.

(v) How many babies were born on that day?

(vi) How many babies weigh below 2.5 kg?

(vii) How many babies weigh more than 2.8 kg?

(viii) How many babies weigh 2.8 kg?

Answer

(i) The arrangement according to the highest weight is:

3.1, 3.0, 2.9, 2.8, 2.7, 2.7, 2.6, 2.5, 2.4, 2.4, 2.3, 2.2, 2.1

(ii) The highest weight is 3.1 kg.

(iii) The lowest weight is 2.1 kg.

(iv) Range = Highest weight – Lowest weight

= 3.1 – 2.1

= 1.0 kg

(v) Number of babies that were born on that day were 15.

(vi) 4 babies weigh below 2.5 kg.

(vii) 4 babies weigh more than 2.8 kg.

(viii) 2 babies weigh 2.8 kg.

11. Question

The number of runs scored by a cricket player in 25 inning are as follows :

26, 35, 94, 48, 82, 105, 53, 0, 39, 42, 71, 0, 64, 15, 34, 67, 0, 42, 124, 84, 54, 48, 139, 64, 47

Rearrange these runs in ascending order.

(ii) Determine the player, is highest score.

(iii) How many times did the player not score a run?

(iv) How many centuries dis he score?

(v) How many times did he score more than 50 runs?

Answer

The number of runs scored by a player in 25 inning are:

26, 35, 94, 48, 82, 105, 53, 0, 39, 42, 71, 0, 64, 15, 34, 67, 0, 42, 124, 84, 54, 48, 139, 64, 47

(i) Runs in ascending order are:

0, 0, 0, 15, 26, 34, 35, 39, 42, 42, 47, 48, 48, 53, 54, 64, 64, 67, 71, 82, 84, 94, 105, 124, 139

(ii) The highest number = 139

(iii) The player did not scored any run 3 times.

(iv) He scored 3 centuries.

(v) He scored more than 50 runs 12 times.

12. Question

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.

Answer

Given, Class size = 25

First class interval = 200-224

(i) Seven class intervals are: 200-240, 225-249, 250-274, 275-299, 300-324, 325-349, 350-374

(ii) Class marks of 200-224: $\frac{200+224}{2} = \frac{424}{2} = 212$

Class marks of 225-249 = $\frac{225+249}{2} = \frac{474}{2} = 237$

Class marks of 250-274 = $\frac{250+274}{2} = \frac{524}{2} = 262$

Class marks of 275-299 = $\frac{275+299}{2} = \frac{574}{2} = 287$

Class marks of 300-324 = $\frac{300+324}{2} = \frac{624}{2} = 312$

Class marks of 325-349 = $\frac{325+349}{2} = \frac{674}{2} = 337$

Class marks of 350-374 = $\frac{350+374}{2} = \frac{724}{2} = 362$

13. Question

Write the class size and class limits in each of the following:

(i) 104, 114, 124, 134, 144, 154 and 164

(ii) 47, 52, 57, 62, 67, 72, 77, 82, 87, 92, 97 and 102

(iii) 12.5, 17.5, 22.5, 27.5, 32.5, 37.5, 42.5, 47.5

Answer

(i) 104, 114, 124, 134, 144, 154 and 164

Class size = 114 – 104 = 10

Class mark	Lower class limit	Upper class limit	Class limit
104	99	109	99-109
114	109	119	109-119
124	119	129	119-129
134	129	139	129-139
144	139	149	139-149
154	149	159	149-159
164	159	169	159-169

(ii) 47, 52, 57, 62, 67, 72, 77, 82, 87, 92, 97 and 102

Class mark = 52 – 47 = 5

Class mark	Lower class limit	Upper class limit	Class- limit
47	44.5	49.5	44.5-49.5

52	49.5	54.5	49.5-54.5
57	54.5	59.5	54.5-59.5
62	59.5	64.5	59.5-64.5
67	64.5	69.5	64.5-69.5
72	69.5	74.5	69.5-74.5
77	74.5	79.5	74.5-79.5
82	79.5	84.5	79.5-84.5
87	84.5	89.5	84.5-89.5
92	89.9	94.5	89.9-94.5
97	94.5	99.5	94.5-99.5
102	99.5	104.5	99.5-104.5

(iii) 12.5, 17.5, 22.5, 27.5, 32.5, 37.5, 42.5, 47.5

Class mark = 17.5 – 12.5 = 5

Class mark	Lower class limit	Upper class limit	Class limit
12.5	10	15	10-15
17.5	15	20	15-20
22.5	20	25	20-25
27.7	25	30	25-30
32.5	30	35	30-35
37.5	35	40	35-40
42.5	40	45	40-45
47.5	45	50	45-50

14. Question

Following data gives the number of children in 40 families:

1, 2, 6, 5, 1, 5, 1, 3, 2, 6, 2, 3, 4, 2, 0, 0, 4, 4, 3, 2, 2, 0, 0, 1, 2, 2, 4, 3, 2, 1, 0, 5, 1, 2, 4, 3, 2, 1, 6, 2, 2.

Represent it in the form of a frequency distribution.

Answer

No. of children	Tally marks	Frequency
0	~~IIII~~	5
1	~~IIII~~ II	7
2	~~IIII~~ ~~IIII~~ III	13
3	~~IIII~~	5
4	~~IIII~~	5
5	III	3
6	III	3
		Total = 41

15. Question

The marks scored by 40 students of class IX in mathematics are given below:

81, 56, 68, 79, 85, 13, 29, 68, 54, 73, 47, 35, 72, 64, 95, 44, 50, 77, 64, 35, 79, 52, 45, 54, 70, 83, 62, 64, 72, 92, 84, 76, 63, 43, 54, 38, 73, 68, 52, 54.

Prepare a frequency distribution with class size of 10 marks.

Answer

Marks	Tally marks	Frequency
20-30	I	1
30-40	III	4
40-50	~~IIII~~	5
50-60	~~IIII~~ III	7
60-70	~~IIII~~ III	7
70-80	~~IIII~~ IIII	8
80-90	IIII	4
90-100	II	2
		Total = 40

16. Question

The heights (in cm) of 30 students of class IX are given below:

155, 158, 154, 158, 160, 148, 149, 150, 153, 159, 161, 148, 157, 153, 157, 162, 159, 151, 154, 156, 152, 156, 160, 152, 147, 155, 163, 155, 157, 153

Prepare a frequency distribution table with 160-164 as one of the class intervals.

Answer

Height (in cm)	Tally marks	Frequency
145-149	IIII	4
150-154	~~IIII~~ IIII	9
155-159	~~IIII IIII~~ II	12
160-164	~~IIII~~	5
		Total = 30

17. Question

The monthly wages of 30 workers in a factory are given below:

83.0, 835, 890, 810, 835, 836, 869, 845, 898, 890, 820, 860, 832, 833, 855, 845, 804, 808, 812, 840, 885, 835, 836, 878, 840, 868, 890, 806, 840, 890

Represent the data in the form of a frequency distribution with class size 10.

Answer

Height (in cm)	Tally marks	Frequency
800-810	IIII	3
810-820	II	2
820-830	I	1
830-840	~~IIII~~ III	8
840-850	~~IIII~~	5
850-860	I	1
860-870	III	3
870-880	I	1
880-890	I	1
890-900	~~IIII~~	5

		Total = 30

18. Question

The daily maximum temperatures (in degree Celsius) recorded in a certain city during the month of November are as follows:

25.8, 24.5, 25.6, 20.7, 21.8, 20.5, 20.6, 20.9, 22.3, 22.7, 23.1, 22.8, 22.9, 21.7, 21.3, 20.5, 20.9, 23.1, 22.4, 21.5, 22.7, 22., 22.0, 23.9, 24.7, 22.8, 23.8, 24.6, 23.9, 21.1

Represent them as a frequency distribution table with class size 1°C.

Answer

Maximum temperature (in ^oC)	Tally marks	Frequency
20.0-21.0	~~IIII~~ I	6
21.0-22.0	~~IIII~~	5
22.0-23.0	~~IIII~~ IIII	9
23.0-24.0	~~IIII~~	5
24.0-25.0	III	3
25.0-26.0	II	2
		Total = 30

19. Question

Construct a frequency table with equal class intervals from the following data on the monthly wages (in rupees) of 28 labourers working in a factory, taking one of the class intervals as 210-230 (230 not included) :

220, 268, 258, 242, 210, 268, 272, 242, 311, 290, 300, 320, 319, 304, 302, 318, 306, 292, 254, 278, 210, 240, 280, 316, 306, 215, 256, 236

Answer

Monthly wages (in rupees)	Tally marks	Frequency
210-230	IIII	4
230-250	IIII	4
250-270	~~IIII~~	5
270-290	III	3
290-310	~~IIII~~ II	7
310-330	~~IIII~~	5
		Total = 28

20. Question

The daily minimum temperature in degrees Celsius recorded in a certain Arctic region are as follows:

-12.5, -10.8, -18.6, -8.4, -10.8, -4.2, -4.8, -6.7, -13.2, -11.8, -2.3, 1.2, 2.6, 0, 2.4, 0, 3.2, 2.7, 3.4, 0, -2.4, -2.4, 0, 3.2, 2.7, 3.4, 0, -2.4, -5.8, -8.9, -14.6, -12.3, -11.5, -7.8, -2.9.

Represent them as frequency distribution table taking -19.9 to -15 as the first class interval.

Answer

Since, first class interval is - 19.0 to 15

Frequency distribution with lower limit included an upper limit excluded is:

Temperature	Tally marks	Frequency
-19.9 to -15	II	2
-15 to -10.1	~~IIII~~ II	7
-10.1 to -5.2	~~IIII~~	5
-5.2 to -0.3	IIII	4
-0.3 to 4.6	~~IIII~~ ~~IIII~~ ~~IIII~~ II	17
		Total = 35

21. Question

The blood groups of 30 students of class VIII are recoded 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. Find out which is the most common and which is the rarest blood group among these students.

Answer

Here 9 students have blood groups A, 6 has B, 3 has AB and 12 has O.

Blood group	No. of students
A	9
B	6
AB	3
O	12
	Total = 30

As 12 students have the blood group O and 3 have their blood group AB. Clearly, the most common blood among these students is O and the rarest blood group among these students is AB.

22. Question

Three coins were tossed 30 times. 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

By observing the data given above following frequency distribution table can be constructed.

No. of Heads	No. of times (Frequency)
0	6
1	10
2	9
3	5
	Total = 30

23. Question

Thirty children were asked about the number of hours they watched T.V. 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

(i) Class intervals will be 0-5, 5-10, 10-15,…

The grouped frequency distribution table is as follows:

Hours	No. of children
0-5	10
5-10	13
10-15	5
15-20	2
	Total = 30

(ii) The number of children, who watch T.V. for 15 or more hours a week is 2 (i.e. no. of children in class interval 15-20)

CCE - Formative Assessment

1. Question

Tally marks are used to find

A. Class intervals

B. Range

C. Frequency

D. Upper limits

Answer

Tally marks, also called hash marks, are a unary numeral system. They are a form of numeral used for counting. They are most useful in counting or tallying on going results, such as the score in a game or sport, as no intermediate results need to be erased or discarded.

2. Question

The difference between the highest and lowest values of the observations is called

A. Frequency

B. Mean

C. Range

D. Class-intervals

Answer

Range is the area of variation between upper and lower limits on a particular scale.

3. Question

The difference between the upper and the lower class limits is called

A. Mid points

B. Class size

C. Frequency

D. Mean

Answer

The difference between the upper and the lower limit is called a class size.

The lower limit for every class is the smallest value in that class. On the other hand, the upper limit for every class is the greatest value in that class.

4. Question

In the class intervals 10-20, 20-30, 20 is taken in

A. The interval 10-20

B. The interval 20-30

C. Both intervals 10-20, 20-30

D. None of the intervals

Answer

Since, 20 is included in the class interval 20-30.

5. Question

In a frequency distribution, the mid value of a class is 15 and the class interval is 4. The lower limit of the class is

A. 10

B. 12

C. 13

D. 14

Answer

Mid value = $\frac{(Upper\ limit+Lower\ limit)}{2}$

15 = $\frac{(x+y)}{2}$

30 = (x + x -4)

34 = 2x

x = 17

Lower class limit = 17 -4 = 13

6. Question

The mid-value of a class interval is 42. If the class size is 10, then the upper and lower limits of the class are:

A. 47 and 37

B. 37 and 47

C. 37.5 and 47.5

D. 47.5 and 37.5

Answer

Let the upper limit and lower limit of the class be x, y

Then $\frac{(x+y)}{2}$ = 42

Or x + y = 84

x - y = 10

Solving equations x = 47, y = 37

7. Question

The number of times a particular item occurs in a given data is called its

A. Variation

B. Frequency

C. Cumulative frequency

D. Class-size

Answer

The rate at which something occurs over a particular period of time or in a given sample is called its frequency.

8. Question

The width of each of nine classes in a frequency distribution is 2.5 and the lower class boundary of the lowest class 10.6. Then the upper class boundary of the highest class is

A. 35.6

B. 33.1

C. 30.6

D. 28.1

Answer

Upper class boundary of the highest class = (9 × 2.5) + 10.6

= 22.5 + 10.6

= 33.1

9. Question

Let *l* be the lower class limit of a class-interval in a frequency distribution and *m* be the mid-point of the class. Then, the upper class limit f the class is:

A. $m+\frac{l+m}{2}$

B. $l+\frac{m+l}{2}$

C. 2*m* - *l*

D. *m* – 2*l*

Answer

We know,

$\frac{(Upper\ class\ limit+Lower\ class\ limit)}{2}$ = Mid points

Now we substitute given values and get,

$\frac{(Upper\ class\ limit+l)}{2}$ = m

Upper class limit = 2m - *l*

10. Question

The following marks were obtained by the students in a test:

81, 72, 90, 86, 85, 92, 70, 71, 83, 89, 95, 85, 79, 62

The range of the marks is

A. 9

B. 17

C. 27

D. 33

Answer

Maximum marks = 95

Minimum marks = 62

Range = Maximum marks - Minimum marks

= 95 – 62

= 33

11. Question

Tally are usually marked in a bunch of

A. 3

B. 4

C. 5

D. 6

Answer

After a bunch of 4 they are cut with a slant line symbolizing it as 5.

Exercise 22.2

1. Question

Define cumulative frequency distribution.

Answer

A table which displays the manner in which cumulative frequencies are distributed over various classes is called cumulative frequency distribution or cumulative frequency distribution table.

2. Question

Explain the difference between a frequency distribution and a cumulative frequency distribution.

Answer

Frequency table or frequency distribution is a method to represent raw data in the form which, one can easily understand the information contained in a raw data, where as a table which plays the manner in which cumulative frequencies are distributed over various classes is called a cumulative frequency distribution.

3. Question

The marks scored by 55 students in a test given below:

Marks:	0-5	5-10	10-15	15-20	20-25	25-30	30-35
No. of students	2	6	13	17	11	4	2

Prepare a cumulative frequency table.

Answer

Marks	No. of students	Marks	Cumulative frequency
0-5	2	Less than 5	2
5-10	6	Less than 10	8
10-15	13	Less than 15	21
15-20	17	Less than 20	38
20-25	11	Less than 25	49
25-30	4	Less than 30	53
30-35	2	Less than 35	55
	N = 55		

4. Question

Following are the ages of 360 patients getting medical treatment in a hospital on a day:

Age (in years)	10-20	20-30	30-40	40-50	50-60	60-70
No. of patients :	90	50	60	80	50	30

Construct a cumulative frequency distribution.

Answer

Age (in years)	No. of patients	Age (in years)	Cumulative frequency
10-20	90	Less than 20	90
20-30	50	Less than 30	140
30-40	60	Less than 40	200
40-50	80	Less than 50	280
50-60	50	Less than 60	330
60-70	30	Less than 70	360
	N = 360		

5. Question

The water bills (in rupees) of houses in a certain street for the period 1.1.98 to 31.3.98 are given below:

56, 43, 32, 38, 56, 24, 68, 85, 52, 47, 35, 58, 63, 74, 27, 84, 69, 35, 44, 75, 55, 30, 54, 65, 45, 67, 95, 72, 43, 65, 35, 59

Tabulate the data and present the data as a cumulative frequency table using 70-79 as one of the class intervals.

Answer

The minimum bill is Rupees 24

And, the maximum bill is Rupees 95

Range = Maximum bill – Minimum bill

= 95 – 24 = 71

Given, class interval is 70-79. So, class size = 79 – 70

= 9

Therefore, Number of classes = $\frac{Range}{Class\ size} = \frac{71}{9}$

= 7.80 = 8

The cumulative frequency distribution table is as follows:

Bills	No. of houses (Frequency)	Cumulative frequency
16-25	1	1
25-34	3	4
34-43	5	9
43-52	4	13
52-61	7	20
61-70	6	26
70-79	3	29
79-88	2	31
88-97	1	32

6. Question

The number of books in different shelves of a library are as follows:

30, 32, 28, 24, 20, 25, 38, 37, 40, 45, 16, 20

19, 24, 27, 30, 32, 34, 35, 42, 27, 28, 19, 34

38, 39, 42, 29, 24, 27, 22, 29, 31, 19, 27, 25

28, 23, 24, 32, 34, 18, 27, 25, 37, 31, 24, 23,

43, 32, 28, 31, 24, 23, 26, 36, 32, 29, 28, 21

Prepare a cumulative frequency distribution table using 45-49 as the last class0interval.

Answer

Minimum number of book shelves is 16 and maximum number of book shelves is 45.

Range = Maximum number of book shelves – Minimum number of book shelves

= 45 – 16

= 29

Given, Class interval is 45-49. So, class size = 49 – 45

= 4

Therefore, No. of classes = $\frac{Range}{Class\ size}$

= $\frac{29}{4}$ = 7.25

Number of classes = 8

The cumulative distribution frequency is as follows:

No. of books	No. of shelves (Frequency)	Cumulative frequency
13-17	1	1
17-21	6	7
21-25	11	18
25-29	15	33
29-33	12	45
33-37	5	50
37-41	6	56
41-45	3	59
45-49	1	60

7. Question

Given below are the cumulative frequencies showing the weights of 685 students of a school. Prepare a frequency distribution table.

Weights (in kg)	No. of students
Below 25	0
Below 30	24
Below 35	78
Below 40	183
Below 45	294
Below 50	408
Below 55	543
Below 60	621
Below 65	674
Below 70	685

Answer

Weight (in kg)	No. of students	Class interval	Frequency
Below 30	24	25-30	24
Below 35	78	30-35	54
Below 40	183	35-40	105
Below 45	294	40-45	111
Below 50	408	45-50	114
Below 55	543	50-55	135
Below 60	621	55-60	78
Below 65	674	60-65	53
Below 70	685	65-70	11

8. Question

The following cumulative frequency distribution table shows the daily electricity consumption (in KV) of 40 factories in an industrial state:

Consumption (in KV)	No. of Factories
Below 240	1
Below 270	4
Below 300	8
Below 330	24
Below 360	33
Below 390	38
Below 420	40

(i) Represent this as a frequency distribution table.

(ii) Prepare a cumulative frequency table.

Answer

Consumption (Kw)	No. of factories	Class interval	Frequency
Below 240	1	0-240	1
Below 270	4	240-270	3
Below 300	8	270-300	4
Below 330	24	300-330	16
Below 360	33	330-360	9
Below 390	38	360-390	5
Below 420	40	390-420	2

(ii)

Class interval	Frequency	Consumption (in Kw)	No. of factories
0-240	1	More than 0	40
240-270	3	More than 240	39
270-300	4	More than 270	36
300-330	16	More than 300	32
330-360	9	More than 330	16
360-390	5	More than 360	7
390-420	2	More than 390	2
		More than 420	0
	N = 40		

9. Question

Given below is a cumulative frequency distribution table showing the ages of people living in a locality:

Age in years	No. of persons
Above 108	0
Above 96	1
Above 84	3
Above 72	5
Above 60	20
Above 48	158
Above 36	427
Above 24	809
Above 12	1026
Above 0	1124

Prepare a frequency distribution table.

Answer

Age (in years)	No. of persons	Class interval	Frequency
Above 0	1124	0-12	98
Above 12	1026	12-24	217
Above 24	809	24-36	382
Above 36	427	36-48	269
Above 48	158	48-60	138
Above 60	20	60-72	15
Above 72	5	72-84	2
Above 84	3	84-96	2
Above 96	1	96-108	1