10. Statistics

Questions Pg-184

1 A. Question

The number of members in 50 households of a village are listed below.

8	6	9	4	4	2	6	5	4	3
7	3	3	2	3	7	6	3	2	5
5	13	9	9	7	4	4	5	4	3
3	7	2	3	3	10	8	6	6	4
2	4	5	4	3	8	7	5	6	3

Make a frequency table and answer these questions:

How many households have just two members?

Answer

First let us understand what frequency table is and why it is made.

The table that is constructed based on the data values with its corresponding frequency is termed as frequency table. Frequency of a data is nothing but the number of times the data value occurs.

We make frequency table for ease of observation.

Let us try making frequency table using the values given in the question…

First, look at what is already given in the question. That is, the number of members in 50 household of a village is given.

Now,

Number of members	Total count of such number of members in the data (frequency)
2	5
3	11
4	9
5	6
6	6
7	5
8	3
9	3
10	1
13	1
TOTAL	50

Note that, after making frequency table we can easily answer the questions that follows:

To find: Count of households having only 2 members.

Please check in the first column ‘Number of members’ and search for 2.

Now, once you have found number 2, look at the adjacent cell which is 5.

⇒ There are 5 such households having only 2 members.

Here, 5 is called frequency of 2.

Thus, answer is 5.

1 B. Question

The number of members in 50 households of a village are listed below.

8	6	9	4	4	2	6	5	4	3
7	3	3	2	3	7	6	3	2	5
5	13	9	9	7	4	4	5	4	3
3	7	2	3	3	10	8	6	6	4
2	4	5	4	3	8	7	5	6	3

Make a frequency table and answer these questions:

How many households have four or less?

Answer

To find: Count of households having four or less than four members.

Look for 4, 3 and 2 in the first column of the table.

Write down the numbers adjacent to 2, 3 and 4. We have,

Frequency of 2 = 5,

Frequency of 3 = 11,

Frequency of 4 = 9

Add up these numbers. That is, 5 + 11 + 9 = 25

⇒ There are 25 households having four or less members.

Thus, answer is 25.

1 C. Question

The number of members in 50 households of a village are listed below.

8	6	9	4	4	2	6	5	4	3
7	3	3	2	3	7	6	3	2	5
5	13	9	9	7	4	4	5	4	3
3	7	2	3	3	10	8	6	6	4
2	4	5	4	3	8	7	5	6	3

Make a frequency table and answer these questions:

How many households have ten or more?

Answer

To find: Count of households having ten or more members.

Look for numbers 10 and more than 10. We have, 10 and 13.

Note down the numbers adjacent to 10 and 13 from the second column.

Frequency of 10 = 1 &

Frequency of 13 = 1

Adding it up, 1 + 1 = 2

⇒ There are 2 households having ten or more members.

Thus, answer is 2.

1 D. Question

The number of members in 50 households of a village are listed below.

8	6	9	4	4	2	6	5	4	3
7	3	3	2	3	7	6	3	2	5
5	13	9	9	7	4	4	5	4	3
3	7	2	3	3	10	8	6	6	4
2	4	5	4	3	8	7	5	6	3

Make a frequency table and answer these questions:

Households of what size occurs the most?

Answer

To find: Size of household that occurs most.

We will start by searching for the greatest number in the right column of the table above.

So, the greatest number is 11.

Note the number adjacent to the frequency 11 from the first column.

That is, 3.

⇒ The size of the household that occurs most is 3. (Among all 50-household having different count of members, 3 members exist in most of the household)

Thus, answer is 3.

2 A. Question

There are 44 children in class 8B. The list show how far they come from, in kilometres.

6	2	7	12	1	9	2	6
5	7	3	4	1	5	4	4
5	8	6	5	2	5	9	5
11	12	1	9	2	14	4	7
9	6	6	7	3	2	6	3
4	7	9	3				

Make a frequency table and answer these questions:

How many children are from exactly 1 kilometre away?

Answer

First let us understand what frequency table is and why it is made.

The table that is constructed based on the data values with its corresponding frequency is termed as frequency table. Frequency of a data is nothing but the number of times the data value occurs.

We make frequency table for ease of observation.

Let us try making frequency table using the values given in the question…

First, look at what is already given in the question. That is, the distance (in km) from where they come.

Now,

Distance (in km)	Total number of children (frequency)
1	3
2	5
3	4
4	5
5	6
6	6
7	5
8	1
9	5
11	1
12	2
14	1
TOTAL	44

Note that, after making frequency table we can easily answer the questions that follows:

(i). To find: students who are exactly 1 km away from school.

Look at the first column ‘Distance’ of the table and locate 1.

Now, you need to note the value in the adjacent column, here it is 3.

⇒ 3 students are exactly 1 km away from school.

Thus, answer is 3.

2 B. Question

There are 44 children in class 8B. The list show how far they come from, in kilometres.

6	2	7	12	1	9	2	6
5	7	3	4	1	5	4	4
5	8	6	5	2	5	9	5
11	12	1	9	2	14	4	7
9	6	6	7	3	2	6	3
4	7	9	3				

Make a frequency table and answer these questions:

How many are from more than 5 kilometres?

Answer

To find: Number of students who live more than 5 km away.

Look at the table for more than 5 km values in the first column. We have 6, 7, 8, 9, 11, 12 and 14.

Note down frequencies of each value from the second column.

Frequency of 6 = 6

Frequency of 7 = 5

Frequency of 8 = 1

Frequency of 9 = 5

Frequency of 11 = 1

Frequency of 12 = 2

Frequency of 14 = 1

Add up the numbers, 6 + 5 + 1 + 5 + 1 + 2 + 1 = 21

⇒ There are 21 students from more than 5 km.

Thus, answer is 21.

2 C. Question

There are 44 children in class 8B. The list show how far they come from, in kilometres.

6	2	7	12	1	9	2	6
5	7	3	4	1	5	4	4
5	8	6	5	2	5	9	5
11	12	1	9	2	14	4	7
9	6	6	7	3	2	6	3
4	7	9	3				

Make a frequency table and answer these questions:

How many are from between 5 and 10 kilometres?

Answer

To find: Number of students who live between 5 to 10 km.

Look at the table for numbers between 5 and 10. We have 6, 7, 8 and 9.

Now, note down frequencies of each value from the second column.

Frequency of 6 = 6

Frequency of 7 = 5

Frequency of 8 = 1

Frequency of 9 = 5

Add up the numbers, 6 + 5 + 1 + 5 = 17

⇒ There are 17 students who live between 5 to 10 km.

Thus, answer is 17.

2 D. Question

There are 44 children in class 8B. The list show how far they come from, in kilometres.

6	2	7	12	1	9	2	6
5	7	3	4	1	5	4	4
5	8	6	5	2	5	9	5
11	12	1	9	2	14	4	7
9	6	6	7	3	2	6	3
4	7	9	3				

Make a frequency table and answer these questions:

How many are from more than 10 kilometres?

Answer

To find: Number of students who lives more than 10 km away.

Look at the table for numbers more than 10 in first column ‘Distance (in km)’. We have 11, 12 and 14.

Now, note down frequencies of each value from second column.

Frequency of 11 = 1

Frequency of 12 = 2

Frequency of 14 = 1

Add up the numbers, 1 + 2 + 1 = 4

⇒ There are 4 students who live more than 10 km away.

Thus, answer is 4.

3 A. Question

The scores of 35 children in a test are given below:

15	10	18	11	19	16	15	17	14	18	13	15
17	16	15	14	15	17	14	15	13	16	11	11
16	20	13	12	10	16	17	13	12	14	12	

Make a frequency table and answer these questions:

How many children scored 20?

Answer

First let us understand what frequency table is and why it is made.

The table that is constructed based on the data values with its corresponding frequency is termed as frequency table. Frequency of a data is nothing but the number of times the data value occurs.

We make frequency table for ease of observation.

Let us try making frequency table using the values given in the question…

First, look at what is already given in the question. That is, the scores of 35 children in a test.

Now,

Scores of children	Occurrence of the score in the data (frequency)
10	2
11	3
12	3
13	4
14	4
15	6
16	5
17	4
18	2
19	1
20	1
TOTAL	44

Note that, after making frequency table we can easily answer the questions that follows:

To find: Number of children who scored 20.

Look at the first column ‘Scores of children’ of the table and locate 20.

Now, you need to note the value in the adjacent column, here it is 1.

⇒ 1 student is there who scored 20.

Thus, answer is 1.

3 B. Question

The scores of 35 children in a test are given below:

15	10	18	11	19	16	15	17	14	18	13	15
17	16	15	14	15	17	14	15	13	16	11	11
16	20	13	12	10	16	17	13	12	14	12	

Make a frequency table and answer these questions:

How many children got scores between 10 and 20?

Answer

To find: Number of children who got scores between 10 and 20.

Look at the table for numbers between 10 and 20 in the first column. We have 11, 12, 13, 14, 15, 16, 17, 18 and 19.

Note down frequencies of each value from the second column.

Frequency of 11 = 3

Frequency of 12 = 3

Frequency of 13 = 4

Frequency of 14 = 4

Frequency of 15 = 6

Frequency of 16 = 5

Frequency of 17 = 4

Frequency of 18 = 2

Frequency of 19 = 1

Add up the numbers, 3 + 3 + 4 + 4 + 6 + 5 + 4 + 2 + 1 = 32

⇒ There are 32 children who got score between 10 and 20.

Thus, answer is 32.

3 C. Question

The scores of 35 children in a test are given below:

15	10	18	11	19	16	15	17	14	18	13	15
17	16	15	14	15	17	14	15	13	16	11	11
16	20	13	12	10	16	17	13	12	14	12	

Make a frequency table and answer these questions:

How many scored less than 10?

Answer

To find: Number of students who scored less than 10.

Look at the table for numbers less than 10. We see that there is no number less than 10 in the first column of the table.

If there is no value in the first column less than 10, then frequency will obviously be 0.

⇒ There are 0 students who scored less than 10.

Thus, answer is 0.

3 D. Question

The scores of 35 children in a test are given below:

15	10	18	11	19	16	15	17	14	18	13	15
17	16	15	14	15	17	14	15	13	16	11	11
16	20	13	12	10	16	17	13	12	14	12	

Make a frequency table and answer these questions:

What is the score most number of children got?

Answer

To find: Score that most of the children got.

For this, we need to find highest frequency in the second column. The highest frequency in the second column is 6.

Now look for the adjacent number in the first column. The number is 15.

⇒ 15 is the score the most of the children got (that is, 6 children got 15 score).

Thus, answer is 15.

Questions Pg-188

1. Question

Given below are the highest temperatures (in degree Celsius) one day in 40 towns. Make a frequency table.

41	23	32	40	25	30	38	47	40	39
26	31	37	32	36	41	30	25	27	30
29	40	38	36	43	37	28	27	32	36
38	36	33	32	28	27	23	26	28	31

Answer

First let us understand what frequency table is and why it is made.

The table that is constructed based on the data values with its corresponding frequency is termed as frequency table. Frequency of a data is nothing but the number of times the data value occurs.

We make frequency table for ease of observation.

Let us try making frequency table using the values given in the question…

First, look at what is already given in the question. That is, the highest temperature of one day in 40 towns.

Now,

Temperature (in degree Celsius)	Number of towns for that temperature (frequency)
23	2
25	2
26	2
27	3
28	3
29	1
30	3
31	2
32	4
33	1
36	4
37	2
38	3
39	1
40	3
41	2
43	1
47	1
TOTAL	40

This is the frequency table we want.

2. Question

The heights (in centimeters) of 45 people who look part in a physical fitness test are given below.

Make frequency table.

160	145	168	156	168.4	170	163	177	143	175	169	154
163	176	160.3	164	150	168	166	148	154	159	164.5	
165	155	148.2	158	174	169	168	165	170	141	172.7	
179	167	171	159	167	171	165	171	167	162	171	

Answer

First let us understand what frequency table is and why it is made.

The table that is constructed based on the data values with its corresponding frequency is termed as frequency table. Frequency of a data is nothing but the number of times the data value occurs.

We make frequency table for ease of observation.

Let us try making frequency table using the values given in the question…

First, look at what is already given in the question. That is, the height of 45 people who took part in a physical fitness test.

Try to list the numbers in an order (either ascending or descending), this will make our frequency table presentable and neat.

Now,

Height (in cm)	Number of people for that height (frequency)
141	1
143	1
145	1
148	1
148.2	1
150	1
154	2
155	1
156	1
158	1
159	2
160	1
160.3	1
162	1
163	2
164	1
164.5	1
165	3
166	1
167	3
168	3
168.4	1
169	2
170	2
171	4
172.7	1
174	1
175	1
176	1
177	1
179	1
TOTAL	45

This is the frequency table we want.

Questions Pg-190

1. Question

The table shows the times 30 children took to complete a long distance race. Draw a histogeam of this.

Time (min)	Number of children
10-13	2
13-16	5
16-19	12
19-22	8
22-25	3

Answer

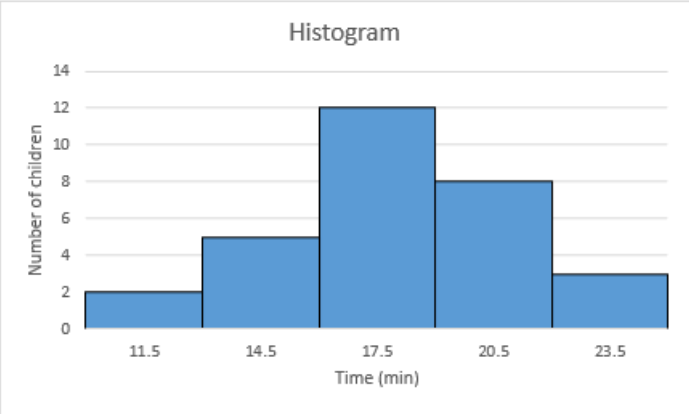
Let us understand what a histogram is.

A *histogram* is a diagram of statistical information that uses rectangles to show the frequency of data items in successive numerical intervals of equal size.

Represent the data in tabular form showing midpoints of the intervals.

Time (min)	Midpoints	Number of children (frequency)
10 – 13	11.5	2
13 – 16	14.5	5
16 – 19	17.5	12
19 – 22	20.5	8
22 – 25	23.5	3

Take these midpoints in x-axis and number of children in y-axis, then plot on a graph paper preferably.



This is the histogram we are looking for.

2. Question

The table shows the daily incomes of 60 households in a locality.

Daily income (Rs.)	Number of households
200-250	3
250-300	7
300-350	15
350-400	20
400-450	9
450-500	6

Draw a histogram.

Answer

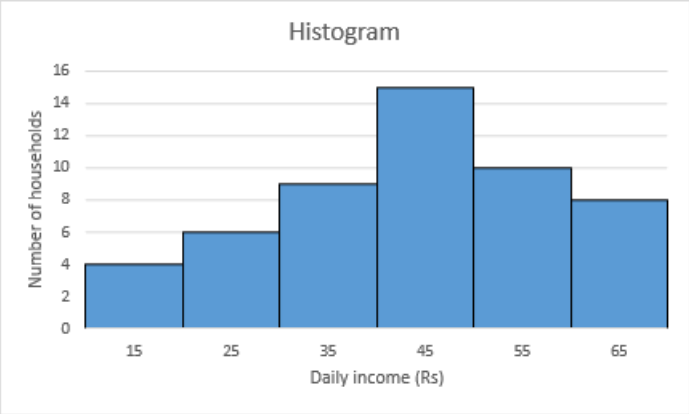
Let us understand what a histogram is.

A *histogram* is a diagram of statistical information that uses rectangles to show the frequency of data items in successive numerical intervals of equal size.

Represent the data in tabular form showing midpoints of the intervals.

Daily income (Rs.)	Midpoints	Number of households (frequency)
200 – 250	225	3
250 – 300	275	7
300 – 350	325	15
350 – 400	375	20
400 – 450	425	9
450 – 500	475	6

Take these midpoints in x-axis and number of households in y-axis, then plot on a graph paper preferably.



This is the histogram we are looking for.

3. Question

Detail of rainfall in June and July are given in the table below. Draw a histogram.

Rainfall (mm)	Days
10-20	4
20-30	6
30-40	9
40-50	15
50-60	10
60-70	8
70-80	5
80-90	3
90-100	1

Answer

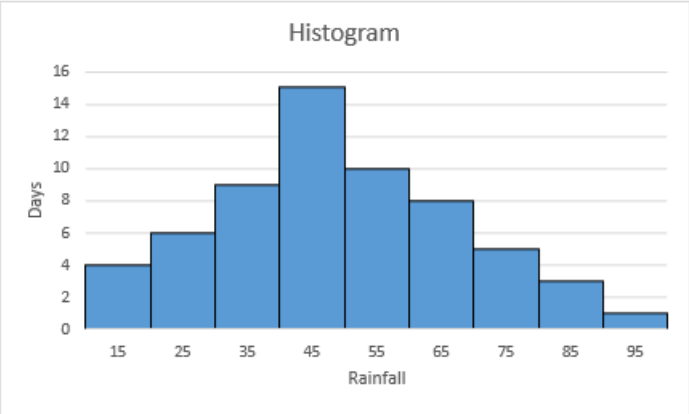
Let us understand what a histogram is.

A *histogram* is a diagram of statistical information that uses rectangles to show the frequency of data items in successive numerical intervals of equal size.

Represent the data in tabular form showing midpoints of the intervals.

Rainfall (mm)	Midpoints	Days (frequency)
10 – 20	15	4
20 – 30	25	6
30 – 40	35	9
40 – 50	45	15
50 – 60	55	10
60 – 70	65	8
70 – 80	75	5
80 – 90	85	3
90 – 100	95	1

Take these midpoints in x-axis and days in y-axis, then plot on a graph paper preferably.



This is the histogram we are looking for.

4. Question

The time taken by 25 women and 23 men to complete a race are given in the table below. Draw separte histograms for men and women.

Time (sec)	Number	
	Women	Men
30-40	2	3
40-50	6	7
50-60	8	5
60-70	5	5
70-80	4	3

Answer

Let us understand what a histogram is.

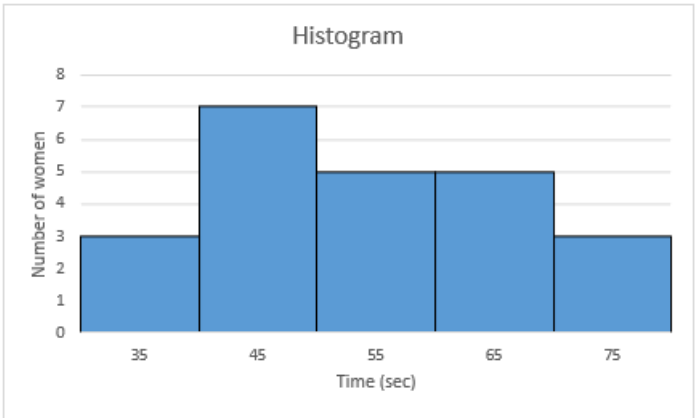
A *histogram* is a diagram of statistical information that uses rectangles to show the frequency of data items in successive numerical intervals of equal size.

Represent the data in tabular form showing midpoints of the intervals.

Time (sec)	Midpoints	Number of women	Number of men
30 – 40	35	2	3
40 – 50	45	6	7
50 – 60	55	8	5
60 – 70	65	5	5
70 – 80	75	4	3

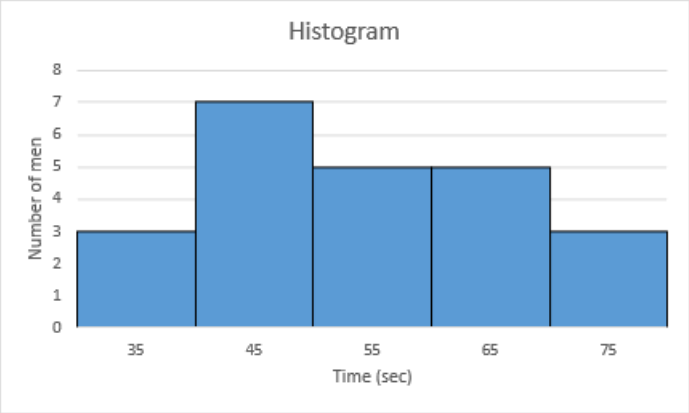
First making histogram of number of women.

Take these midpoints in x-axis and number of women in y-axis, then plot on a graph paper preferably.



Now, making histogram of number of men.

Take these midpoints in x-axis and number of men in y-axis, then plot on a graph paper preferably.



These are the histograms we are looking for.

5. Question

The wights of 45 chilren in a class are listed below.

41,	31,	48,	34,	75,	39,	45,	41,	55
52,	40,	57,	43,	61,	47,	64,	56,	47
41,	59,	46,	67,	45,	64,	48,	52,	58
53,	64,	59,	43,	50,	62,	54,	68,	59
69,	57,	57,	53,	52,	56,	61,	55,	59

Make a frequency table and draw a histogram

Answer

First let us understand what frequency table is and why it is made.

The table that is constructed based on the data values with its corresponding frequency is termed as frequency table. Frequency of a data is nothing but the number of times the data value occurs.

We make frequency table for ease of observation.

Let us try making frequency table using the values given in the question...

First, look at what is already given in the question. That is, the weight of 45 children in a class.

Try to list the numbers in an order (either ascending or descending), this will make our frequency table presentable and neat.

Now,

Weight	Number of children for that weight (frequency)
31	1
34	1
39	1
40	1
41	3
43	2
45	2
46	1
47	2
48	2
50	1
52	3
53	2

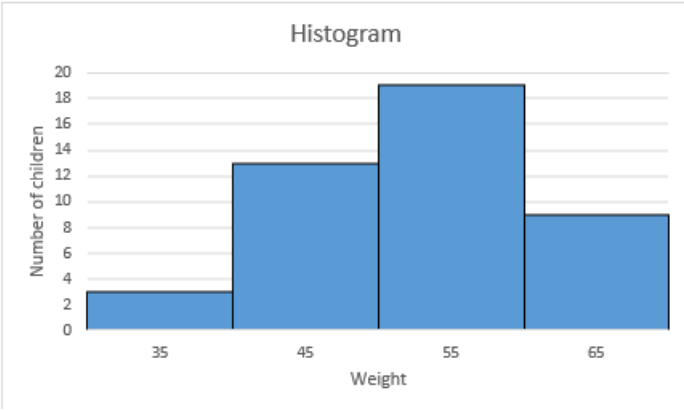
54	1
55	2
56	2
57	3
58	1
59	4
61	2
62	1
64	3
67	1
68	1
69	1
75	1

For histogram, represent it into a tabular form consisting of class intervals and midpoints.

Take class width of 10 and frequency is given by number of children.

Weight	Midpoints	Number of children
30 – 40	35	3
40 – 50	45	13
50 – 60	55	19
60 – 70	65	9
70 – 80	75	1

Take these midpoints in x-axis and number of children in y-axis, then plot on a graph paper preferably.



This is the histogram we are looking for.