MATHS

BOOKS - NAGEEN MATHS (HINGLISH)
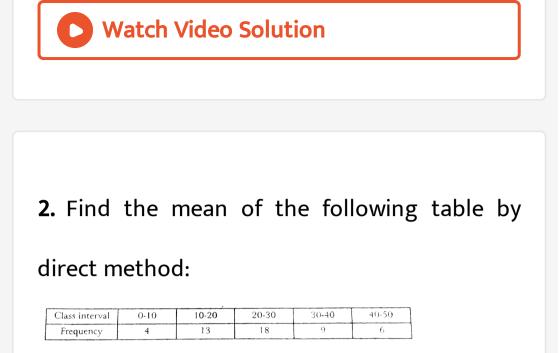
STATISTICS

Solved Examples

1. Find the mean of the following frequency distribution by direct method.

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	10	12	17	15	11	9

2. Find the mean of the following table by direct method:

Class interval	0-10	10-20	20-30	30-40	40-50
Frequency	4	13	18	9	6

3. Find the mean form the following table by direct method :

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	7	14	28	26	16	9

4. If the mean of the following data is 26, then

find the value of p:

Class interval	0-10	10-20	20-30	30-40	40-50
Frequency	6	p	9	4	11

A. 9

B. 10

C. 11

D. 12

Answer: B

5. Find the value of p, if the mean of the following distribution is 18 :

x_i	13	15	17	19	20 + p	23
f_i	8	2	3	4	5p	6

6. Find the mean from the following data :

Marks	5	10	15	20	25	30	35	40
No. of students	3	10	25	49	65	73	78	80

7. Find the mean for the following distribution table by short cut method:

Class interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	4	4	7	10	12	8	5

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8. Find the mean from the following distribution table using short cut method :

Class interval	0-6	6-12	12-18	18-24	24-30
Frequency	6	8	10	9	7

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9. The height of 84 tress is given in the following table. Find the their arithmetic mena by short cut method :

Height (in cm)	25	35	45	55	65	75	85	95
No. of trees	2	4	5	20	46	4	2	1

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10. The age of 40 student of a class is given in the following table. Find their mean short cut

method:

Age (in years)	11	12	13	14	15	16	17
No. of students	2	4	6	-9	8	7	4

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11. Find the mean of the following table by step deviation method :

x_i	4	7	10	13	16	19	22
f_i	20	25	27	30	27	25	20

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12. Find the mean of the following table by step dcviation method :

Marks	5	15	25	35	45
No. of students	2	12	10	8	4

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13. The makes obtained by 30 students are given in the following table. Find their mean by step deviation method :

Class Interval (Marks obtained)	0-10	10-20	20-30	30-40	40-50
No. of students	2	10	8	4	6

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14. Find the mean from the following table using step deviation method :

Class interval	0-10	10-20	20-30	30-40	40-50
Frequency	3	7	22	10	8

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15. Find the mean for the following data by step-deviatiion method :

Marks obtained	Less than 10	Less than 20	Less than 30	Less than 40	Less than 50	Less than 60
No. of students	14	22	37	58	67	75

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16. Find the mean for the following frequency distribution :

Class	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Frequency	14	22	16	6	5	3	4

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17. Find the class limits corresponding to each frequency if the mean of the following distribution is 33 and assumed mean 35 :

Step deviations	-3	-2	-1	0	1	2
Frequency	5	10	25	30	20	10

18. Find the mediaan from the following table :

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	7	12	18	15	10	3

19. Find the median from the following table :

Class interval	10-25	25-40	40-55	55-70	70-85	85-100
Frequency	6	20	44	26	3	1

20. Find the median from the following table :

Class interval	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	3	6	16	19	9	3

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21. Find the median from the following data :

Daily income (below)(in ₹)	30	40	50	60	70	80	90
No. of persons	69	236	436	508	566	593	600

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22. Marks of 40 student in a test out of maximum 50 marks are as follow :

Marks	30	50	45	15	40	20	35	25
No. of students	1	2	3	3	6	8	8	9

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23. Find the median of the following frequency distibution :

Weekly wages (in ₹)	60-68	70-78	80-88	90-98	100-108	110-118
Number of days	5	15	20	30	20	8

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24. Find the median for the following frequency distribution:

Class	160-162	163-165	166-168	169-171	172-174
Frequency	15	117	136	118	14

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25. Find the median for the following data :

Marks obtained	below 10	below 20	below 30	below 40	below 50	below 60
Number of students	5	14	22	35	46	50

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26. Find the missing frequency if the median for the given distribution is 24:

Class	0-10	10-20	20-30	30-40	40-50
Frequency	5	25	25	p	7

27. If the median of the distribution given below is 28.5, find the values of x and y.

Class interval	Frequency
0 - 10	5
10 - 20	x
20 - 30	20
30 - 40	15
40 - 50	y
50 - 60	5
Total	60

28. Compute the mode for the following frequency distribution :

Class	0-10	10-20	20-30	30-40	40-50
Frequency	25	16	28	20	5

29. Calculate the value of mode for the following frequency distribution :

Class	1-4	5-8	9-12	13-16	17-20	21-24
Frequency	5	8	12	15	14	7

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30. The mode of the following series is 17.3 . Find the missing frequecny :

Age (in years)	0-5	5-10	10-15	15-20	20-25	25-30	30-35
No. of patients	6	11	...	24	17	13	5

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31. A survey reagarding the heights (in cm) of 50 girls of class X of a school was conducted and the following data was obtained.

Heights (in cm)	120-130	130-140	140-150	150-160	160-170	Total
No. of girls	2	8	12	20	8	50

Find the mean, median and mode of the above data.

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32. Find the mean median of the following frequency distrbution :

Class interval	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	10	6	8	12	5	9

Also, find the mode of the following data.

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33. Draw a less than cumuative frequency curve (ogive) for the following distribution :

Marks	5-10	10-15	15-20	20-25	25-30
No. of students	7	9	12	8	6

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34. In a study of the cases of diabetes the following data was obtained.

Age in years	10-20	21-30	31-40	41-50	51-60	61-70
No. of cases	0	2	5	14	12	0

Draw a less than ogive for above data .

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35. Construct a less than ogive and a more than ogive from the following data :

Age in year	0-10	10-20	20-30	30-40	40-50	50-60
No. of persons	3	15	30	35	15	26

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36. During the medical checkup of 35 students of a class their weight were recorded as follows :

Weight (in kg)	38-40	40-42	42-44	44-46	46-48	48-50	50-52
No. of students	3	2	4	5	14	4	3

Draw a less than type a more than type ogive from the given data. Hene obtain the median weigth from the graph.

37. Find the median for the following distribution :

C.L	0-10	10-20	20-30	30-40	40-50
Frequency	5	7	10	8	5

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Problems From Ncert Exemplar

1. To find out the concentration of SO_2 in the air (in parts per million, i.e., ppm), the data was collected for 30 localities in a certain city and

is presented below:

Concentration of SO_2 (in ppm)	Frequency (f)
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

Find the mean concentration of SO_2 in the air.

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2. In a retail market, fruit vendors were selling mangoes kept in packing boxes. These boxes contained varying number of mangoes. The following was the distribution of mangoes

according to the number of boxes. No. of mangoes: 50-52 53-55 56-58 59-61 62-64 No. of boxes: 15 110 135 115 25 Find the mean number of mangoes kept in a packing box. Which method of finding the mean did you choose?

3. The given distribution shows the number of runs scored by some top batsmen of the world in one-day international cricket matches. Find the mode of the data.

4. The following table gives production yield per hectare of wheat of 100 farms of a village.

Production yield (in kg/ha)	50–55	55–60	60–65	65–70	70–75	75–80
Number of farms	2	8	12	24	38	16

Change the distribution, and draw its ogive

Exercise 14 A

1. Find the mean by direct method :

Class	0-10	10-20	20-30	30-40	40-50
Frequency	12	16	6	7	9

2. Find the mean using direct method :

Class	0-100	100-200	200-300	300-400	400-500
Frequency	6	9	15	12	8

3. Find the mean using direct method. :

Class	0-10	10-20	20-30	30-40	40-50
Frequency	3	5	9	5	3

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4. Find the mean using direct method :

Marks	0-40	40-80	80-120	120-160	160-200
No. of students	12	20	35	30	23

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5. The mean of the following distribution is 25 . Find the value of p using direct method :

Class	0-10	10-20	20-30	30-40	40-50
Frequency	5	p	15	16	6

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6. The mean of the following distribution is 54. Find the value of p using direct method :

Class	0-20	20-40	40-60	60-80	80-100
Frequency	7	11	10	p	13

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7. The mean of the following frequency distribution is 62.8 and the sum of all frequencies is 50. Compute the missing frequencies f_1 and f_2:

8. Find the mean from the following table using short cut method. :

Class interval	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	5	8	12	17	12	8	5

9. Find the mean from the following table using short cut method :

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	10	13	17	15	11	9

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10. Find the mean from the following table using short cut method :

Class interval	100-200	200-300	300-400	400-500	500-600	600-700
Frequency	17	20	30	18	8	7

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11. Find the mean from the following table using step deviation method :

Class interval	20-25	25-30	30-35	35-40	40-45
Frequency	11	8	6	10	5

12. Find the mean from the following table using step devitaion method :

Class interval	20-25	25-30	30-35	35-40	40-45	45-50	50-55
Frequency	12	10	8	9	6	3	2

13. Find the mean from the following table using step devitaion method :

Class interval	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	3	7	9	12	6	3

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14. Find the mean from the following table using step deviation method :

Class interval	60-79	80-99	100-119	120-139	140-159	160-179	180-199
Frequency	18	24	26	32	25	19	16

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15. In the following table, the total expenditure of the labourers of a city is given

Expenditure (in ₹)	100-150	150-200	200-250	250-300	300-350	350-400	400-450	450-500
No. of laboures	24	28	34	40	30	22	18	7

Find the average expenditure by deviation method.

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16. The mean of the following frequency distribution is 57.6 and the sum of the observations is 50. Find the missing frquencies

f_1 and f_2 :

Class	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	7	f_1	12	f_2	8	5

17. The mean of the following frequency distribution is 50 :

Classes	0-20	20-40	40-60	60-80	80-100	Total
Frequency	17	f_1	f_2	f_3	19	120

Exercise 14 B

1. Find the median from the following data :

Class Interval	16-19	13-16	10-13	7-10	4-7
Frequency	13	17	0	15	14

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2. Find the median from the following data :

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	8	40	40	12	10

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3. Find the median from the following data :

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency		14	40	15	10	5

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4. Find the median from the following data :

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	31	44	40	20	17	10

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5. Find the median from the following data :

Class Interval	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	5	8	12	17	19	8	5

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6. Find the median from the following data :

Class Interval	0-10	0-20	0-30	0-40	0-50	0-60
Frequency	8	18	25	42	42	45

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7. Find the median from the following data :

Age (below) (in years)	10	20	30	40	50	60
No. of persons	10	22	50	95	130	170

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8. Find the median from the following data :

Class Interval	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	1	6	14	15	7	5	3	2

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9. Find the median of the following frequency table :

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	5	8	10	9	7

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10. Find the median of the following frequency table :

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	4	13	18	9	6

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11. Find the median for the following frequency distribution:

Class Interval	19-25	26-32	33-39	40-46	47-53	54-60
Frequency	35	96	68	102	35	4

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12. Find the median for the following frequency distribution:

Class Interval	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45
Frequency	7	10	16	32	24	16	11	5	2

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13. If the median of the following frequency distribution is 32.5 . Find the value of p :

Class interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	3	5	9	12	p	3	2

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14. If the median of the following frequeny distribution is 32 N =100, then find the values of p and q

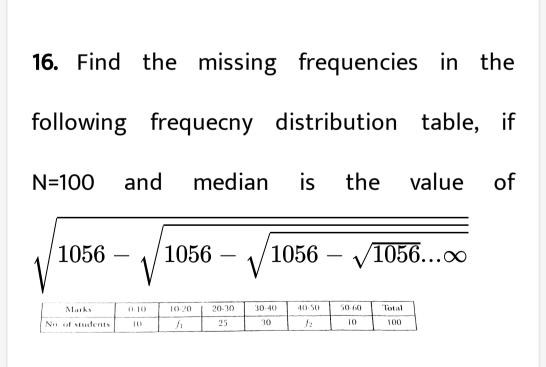| Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	10	p	25	q	16	10

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15. Find the median from the following data :

Marks (below)	10	20	30	40	50	60	70	80
No. of students	12	32	57	80	92	116	164	200

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16. Find the missing frequencies in the following frequecny distribution table, if N=100 and median is the value of

$$\sqrt{1056 - \sqrt{1056 - \sqrt{1056 - \sqrt{1056...\infty}}}}$$

Marks	0-10	10-20	20-30	30-40	40-50	50-60	Total
No. of students	10	f_1	25	30	f_2	10	100

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17. Determine the median for the following income distribution :

Income groups	below 100	100-200	200-300	300-400	400-500	above 500
No. of persons	5	10	18	30	20	17

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Exercise 14 C

1. Find the mode of the following frequency distribution :

Class	0-20	20-40	40-60	60-80	80-100	100-120	120-140
Frequency	6	8	10	12	6	5	3

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2. Computer the mode for the following

Size of items	0-4	4-8	8-12	12-16	16-20	20-24	24-28	28-32	32-36
Frequency	5	7	9	17	12	10	6	3	1

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3. Given below is the frequency distribution of the heights of playces in a school :

Height (in cm)	160-162	163-165	166-168	169-171	172-174
No. of students	15	118	142	127	18

Find the modal height

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4. Find the mode of the following frequency

distribution

Class	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	4	7	9	11	6	2

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5. The following distributions represent the height of 160 studens of a class :

Height (in cm)	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180
No. of students	12	20	30	38	24	16	12	8

Find the modal height

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6. The following table gives the weekly wage of workers in a factory:

Weekly wage (in ₹)	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
No. of workers	5	20	10	10	9	6	12	8

Find the (i) mean (ii) modal class (iii) the mode.

7. The following data gives the distribution of total household expendilture (in $Rs.$) of workers is a city :

Expenditure (in ₹)	1000-1500	1500-2000	2000-2500	2500-3000	3000-3500	3500-4000
Frequency	24	40	33	28	30	22

Find the average expenditure which is being done by maximum number of manual workers.

8. The mode of the following series is 36. Find the missing frequency in it :

Class interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	8	10	...	16	12	6	7

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9. Compute the mode of the following data :

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Exercise 14 D

1. Find the mean, median and mode of the following data :

Class	0-20	20-40	40-60	60-80	80-100	100-120	120-140
Frequency	6	8	10	12	6	5	3

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2. 100 surnames were randomly picked up from a local telephone directory and the frequency distribution of the number of letters in the English alphabets in the

surnames was obtained as follows: Determine

the median number of letters in the surname

3. The following table given the daily income

of 50 workers of a factory :

Daily income (in ₹)	100-120	120-140	140-160	160-180	180-200
No. of surnames	12	14	8	6	10

Find the mean, mode nad median of above

data.

4. A survery regrding the heights (in cm) of 50 girls of a class conducted and the following data was obatained.

Height in cm	120-130	130-140	140-150	150-160	160-170
No. of girls	2	8	12	20	8

Find the mean, and mode of above data.

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5. The table below shows the daily expenditure on food of 30 households in a locality:

Daily expenditure (in ₹)	100-150	150-200	200-250	250-300	300-350
No. of households	6	7	12	3	2

Find the mean and median daily expenditure on food.

Revision Exercise Very Short Answer Questions

1. A data has 19 observation arranged in ascending order. Which observation reprsent the median.

2. Write the median class of the following distribution:

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	7	6	8	10	12	5

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3. Write the modal class of the following distribution :

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	3	5	12	7	6	8

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4. Write the comulative frequency of class interval 30-40

Class	0-10	10-20	20-30	30-40	40-50
Frequency	3	7	6	8	5

A. 21

B. 24

C. 28

D. 8

Answer: B

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5. In the following data, find the values of a and b . Find the median class modal class :

Class	0-50	50-100	100-150	150-200	200-250	250-300	300-350	350-400
Frequency	5	9	8	11	10	6	8	3
Cumulative frequency	5	a	22	33	b	49	57	60

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6. For a certain distribution, mode and median were found to be 1000 and 1250 respectively. Find mean for this distribution using an empirical relation

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7. While calculating mean the following enteries were found $\sum fx = 600$. $\sum f = 50$. Find the mean.

A. 12

B. 60

C. 50

D. 15

Answer: A

8. While calculating median of grouped data the following entries were found l=860, h=20 cf= frequency of preceding class 40 N N=50 and median =868, find the frequency of the median class.

9. While calculating mode the following observation are found. Lower limit of modal

class =40, frequency of modal class =20, frequency of previous class =12 , frequency of preceding class =11 and width of the class =10, find mode .

10. If mode and mean of data are found 28 and 24 respectively, find median using empirical formula.

1. Find the mean of following data :

Marks	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
No. of students	5	8	19	25	27	20	10	6

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2. Find the mean of the following distribution :

Class	24-49	50-74	75-99	100-124	125-149
Frequency	15	25	30	20	10

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3. If the mean of the following data is 5.6, find

p :

x	2	4	6	8	10
f	7	4	p	5	4

4. Find the median for the following data :

Marks	Below 10	Below 20	Below 30	Below 40	Below 50	Below 60
No. of students	6	15	29	41	60	70

5. Find the mode of following distribution. :

Marks	Less than 10	Less than 20	Less than 30	Less than 40	Less than 50	Less than 60	Less than 70	Less than 80
No. of students	2	21	34	46	66	77	92	100

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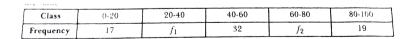## Revision Exercise Long Answer Questions

1. Find the mean percentage of the work completed for a presect in a country from the following frequency idstribution by step

deviation method. :

Percentage of work completed	under 20	under 40	under 60	under 80	under 100
No. of districts	15	60	75	92	100

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2. The total number of observations in the following distribution table is 120 and their mean is 50. Find the value of missing frequencies f_1 and f_2 :

Class	0-20	20-40	40-60	60-80	80-100
Frequency	17	f_1	32	f_2	19

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3. The marks obtained by 200 students in an examination are given below. : Draw a less than ogive for the above distribution and use less than ogive to find median.

4. Find the mean, median and mode of the following data :

5. Find the mode of the following series:

Size	45-55	55-65	65-75	75-85	85-95	95-105	105-115
Frequency	7	12	17	30	32	6	10

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