MATHS

BOOKS - SELINA MATHS (ENGLISH)

MEASURES OF CENTRAL TENDENCY (MEAN, MEDIAN, QUARTILES AND MODE)

Questions

1. The weights (in kilogram) of 5 persons are 67, 65, 71, 57 and 45. Find the arithmetic mean of their weights.

2. The mean weight of 15 boys is 43 kg. If two boys with weights 34 kg and 35 kg join them, fin the new mean weight.

3. Mean of 40 numbers is 37.5. If one of these numbers is taken as 53 instead of 35, find the correct mean.

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4. In the half yearly examination of class IX of a school, the mean marks scored by the boys is 52 and the mean marks scored by the girls is 48. If on the whole, the mean marks of the calss is 50.5, find the ratio of the number of boys to the number of girls in the class.

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5. Using direct method, find the mean of following frequency distribution:

x	5	15	25	35	445
f	14	16	20	30	20

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6. The weights of 25 students of a class are given in the following table:

Weight (in kg)	65	66	67	68	69
Number of students	8	6	4	4	3

Using short-cut method, find the mean weight.

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7. Using step deviation method, find the mean of following frequency distribution:

x	10	30	50	70	90	110
f	135	187	240	273	124	151

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8. If the mean of the following distribution is 7.5, find the missing frequency f

Variable :	5	6	7	8	9	10	11	12
Frequency :	20	17	f	10	8	6	7	6

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9. Find the value of p, if the mean of following distribution is 20.

x	15	17	19	$20+p$	23
f	6	9	12	$15p$	18

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10. Find the mean of

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

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11. Find mean of the following distribution using short cut method:

C.I.	35-40	40-45	45-50	50-55	55-60
f	7	6	9	5	3

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12. The weights of 50 apples were recorded as given below. Calculate the mean weight, to the nearest gram, by the step Deviation Method.

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13. Find the mean of the following distribution:

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

A. 49.6

B. 40

C. 42.6

D. None

Answer: A

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14. The total number of observations in the following distribution tale is 120 and their mean is 50. Find the values of missing frequencies f_1 and f_2

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15. Find the median of 7,8,4,3 and 10.

A. 6

B. 8

C. 9

D. 5

Answer: Median =7

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16. Find the median of 7,12,15,6,20,8,4 and 10

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17. The following numbers are written in descending order of their values:

$68, 60, 42, x-3, x-8, x-11, 30, 25, 22$ and 20.

If their median is 39, find the value of x.

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18. Find the median weight for following Data

weight in kg 45,46,48,50,52,54,55

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19. Find the median for the following distribution: Class 5–10 10–15 15–20 20–25 25–30 30–35 35–40 40–45 Frequency 5 6 15 10 5 4 2 2

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20. If $\Delta ABC \sim \Delta PQR$, perimeter of $\Delta ABC = 32$ cm, perimeter of $\Delta PQR = 48$ cm and $PR = 6$ cm, then find the length of AC.

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21. $\Delta ABC \sim \Delta DEF$. If $AB = 4$ cm, $BC = 3.5$ cm, $CA = 2.5$ cm and $DF = 7.5$ cm, find the perimeter of ΔDEF

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22. Find the lower quartile, upper quartile and inter quartile range for the date: 9,11,15,19,17,13,7

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23. From the following frequency distribution table find

(i) Lower quartile (ii) Upper quartile (iii) Inter quartile range

C.I.	5-10	10-15	15-20	20-25	25-30	30-35
Frequency	3	4	6	9	7	1

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24. In ΔDEW, $AB \parallel EW$. If $AD = 4$ cm, $DE = 12$ cm and $DW = 24$ cm, then find the value of DB.

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25. Find the mode of data 4,7,4,3,2,7,7,6,4,7 and 8

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26. Find the mode from the following frequency distribution: Class 0-10 10-20 20-30 30-40 40-50 50-60 60-70 Frequency 8 10 10 16 12 6 7

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27. Find the mode of the following frequency distribution of marks obtained by 50 students. Marks obtained 0–10 10–20 20–30 30–40 40–50 No. of students 5 12 20 10 3

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Exercise 24 A

1. Find the mean of the following set of numbers:

6,9,11,12 and 7

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2. Find the mean of the following set of numbers:

11,14,23,25,10,12,18 and 6

3. Marks obtained (in mathematics) by 9 students are given below: 60, 67, 52, 76, 50, 51, 74, 45 and 56

a. Find the arithmetic mean.

b. If marks of each student be increased by 4, what will be the new value of arithmetic mean?

4. Find the mean of natural numbers from 3 to 12.

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5. (a) Find the mean of 7, 11, 6, 5, and 6. (b) If each number given in (a) is diminished by 2, find the new value of mean.

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6. (a) Find the mean of 7, 11, 6, 5, and 6. (b) If each number given in (a) is diminished by 2, find the new value of mean.

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7. If the mean of 6, 4, 7, p and 10 is 8, find the value of p.

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8. If the mean of the number 6,y,7,x and 14 is 8. Express y in terms of x.

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9. The ages of 40 students are given in the following table: Age(in yrs) 12 13 14 15 16 17 18 Frequency 2 4 6 9 8 7 4 Find the arithmetic mean.

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10. If 69.5 is the mean of 72, 70, x, 62, 50, 71, 90, 64, 58 and 82, find the value of x.

A. 76

B. 72

C. 56

D. None

Answer: A

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11. The following table gives the height of plants in centrimetre. If the mean height of plants is 60.95 cm, find the value of f.

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12. From the data, give below, calculate the mean wage, correct to the nearest rupee.

(i) If the number of workers in each category is doubled, what would be the new mean wage?

(ii) If the wages per day in each category are increased by 60%. What is the new mean wage?

(iii) If the number of workers in each category is doubled and the wages per day per worker are reduced by 40%, what would be the new mean wage?

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13. The contents of 100 match boxes were checked to determine the number of matches

they contain.

(i) Calculate, correct to one decimal place, the mean number of matches per box.

(ii) Determine, how many extra matches would have to be added to the total contents o the 100 boxes to bring the mean up to exactly 39 matches?

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14. If the mean of the following distribution is 3 find the value of p.

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15. In the following table $\sum f = 200$ ad mean =73. Find the missing frequencies f_1, and f_2

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16. Find the arithmetic mean (correct to the nearest whole number) by using step

deviation method.

x	5	10	15	20	25	30	35	40	45	50
y	20	43	75	67	72	45	39	9	8	6

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17. Find the mean (correct to one place of decimal) by using short -cut method.

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Exercise 24 B

1. The following table gives the ages of 50 students of a class. Find the arithmetic mean of their ages.

Age – Years	16 – 18	18 – 20	20 – 22	22- 24	24-26
No. of Students	2	7	21	17	3

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2. The following table gives the weekly wages of workers in a factory. Weekly wages(Rs) 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 18 Calculate the mean, by using Short Cut Method.

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3. Find the mean of the following frequency distribution using step-deviation method. Class 0-10 10-20 20-30 30-40 40-50 Frequency 7 10 15 8 10

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4. Find the mean by step - deviation method:

C.I.	63 – 70	70 – 77	77 – 84	84 – 91	91 – 98	98 – 105	105 – 112
Frequency	9	13	27	38	32	16	15

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5. The mean of the following frequency distribution is $21\frac{1}{7}$. Find the value of f

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6. Using step deviation method, calculate the mean marks of the following distribution.

Class interval	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
Frequency	5	20	10	10	9	6	12	8

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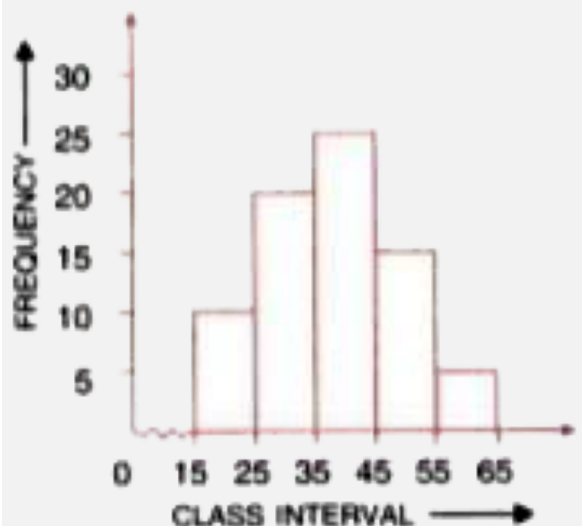
7. Using the information given in the adjoining histogram, calculate the mean.



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8. If the mean of the following observation is 54, find the value of p.

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9. The mean of the following distribution is 62.8 and the sum of all the frequencies is 50. Find the missing frequencies f_1 and f_2

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10. Calculate the mean of the distribution, given below, using the short cut method:

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Exercise 24 C

1. A student got the following marks in 9 questions of a question paper.

3,5,7,3,8,0,1,4 and 6. Find the median of these marks.

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2. The weights (in kg) of 10 students of a class are given below:

21,28.5,20.5,24,25.5, 22, 27.5,28,21 and 24. Find the median of their weights.

3. The marks obtained by 19 students of a class are given below:

27,36,22,31,25,26,33,24,37,32,29,28,36,35,27,26,32,35 and 28. Find

(i) Median (ii) Lower quartile

(iii) Upper quartile (iv) Inter quartile range

4. From the following data: find

(i) Median (ii) Upper quartile (iii) Inter quartile range:

25, 10,40,88,45,60,77,36,18,95,56,65,7,0,38 and 83

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5. The ages of 37 students in a class are given in the following table: Find the median

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6. The weights of 60 boys are given in the following distribution table:Find

(i) Median (ii) Lower quartile (iii) Upper quartile (iv) Inter quartile range

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7. X and Y are points on the sides AB and AC respectively of a triangle ABC such that AX/AB=1/4, AY = 2 cm and YC = 6 cm. Find whether XY || BC or not

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8. A 6.5 m long ladder is placed against a wall such that its foot is at a distance of 2.5 m from the wall. Find the height of the wall where the top of the ladder touches it

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9. If the perimeters of two similar triangles ABC and DEF are 50 cm and 70 cm respectively

and one side of $\Delta ABC = 20$ cm, then find the corresponding side of ΔDEF

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10. A vertical pole of length 8 m casts a shadow 6 cm long on the ground and at the same time a tower casts a shadow 30 m long. Find the height of tower

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Exercise 24 D

1. Find the mode of the following data:

(i) 7,9,8,7,7,6,8,10,7 and 6 (ii) 9,11,8,11,16,9,11,53,11,17 and 8

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2. The following table shows the frequency distribution of heights of 50 boys: Find the mode of heights

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3. Find the mode of following data, using a histogram.

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	5	12	20	9	4

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4. The following table shows the expenditure of 60 boys on books. Find the mode of their expenditure:

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5. Find the median and the mode for the set of numbers : 2,2,3,5,5,5,6,8 and 9.

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6. A boy scored the following marks in various class tests during a term, each test being marked out of 20.

15,17,16,7,10,12,14,16,19,12 and 16.

(i) What are his modal marks. (ii) What are his

median marks?

(iii) What are his total marks? (iv) What are his mean marks?

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7. Find the mean, median and mode of the following marks obtained by 16 students in a class test marked out of 10 marks:

0,0,2,2,3,3,3,4,5,5,5,5,6,6,7 and 8

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8. At a shooting competition the scores of a competitor were as given below: (i) What was his modal score?

(ii) What was his median score?

(iii) What was his total score? (iv) What was his mean score?

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Exercise 24 E

1. $\Delta ABC \sim \Delta PQR$. AD is the median to BC and PM is the median to QR. Prove that $AB/PQ=AD/PM$

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2. In the given figure, if DE || BC, AE = 8 cm, EC = 2 cm and BC = 6 cm, then find DE

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3. The mean of 1,7,5,3,4 and 4 is m. The numbers 3,2,4,2,3,3 and p have mean m-1 and median q. Find p and q

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4. In a malaria epidemic, the number of cases diagnosed were as follows:

Date (July)	1	2	3	4	5	6	7	8	9	10	11	12
Number	5	12	20	27	46	30	31	18	11	5	0	1

On what days do the mode, the upper and the lower quartiles occur?

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5. In the given figure, XY || QR, PQ/XQ=7/3 and PR = 6.3 cm, find YR

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6. The marks of 20 students in a test were as follows,

2,6,8,9,10,11,11,12,13,13,14,14,15,15,15,16,16,18,19 and 20.

Calculate (i) the mean (ii) the median (iii) the mode.

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7. If PQR is an equilateral triangle and PX ⊥ QR, find the value of PX^2.

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8. The sides AB and AC and the perimeter P, of ΔABC are respectively three times the

corresponding sides DE and DF and the perimeter P, of ΔDEF. Are the two triangles similar? If yes, find ar(△ABC)/ar(△DEF)

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9. The distribution given below, shows the marks obtained by 25 students in an aptitude test. Find the median and mode of the distribution.

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10. The mean of the following distribution is 52 and the frequency of class interval 30-40 is f. Find f.

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11. In the figure, EF || AC, BC = 10 cm, AB = 13 cm and EC = 2 cm, find AF

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12. A Mathematics aptitude test of 50 students was recorded as follows:

Marks	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100
No. of Students	4	8	14	19	5

Draw a histogram for the above data using a graph paper and locate the mode:

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13. In the figure ABC and DBC are two right triangles. Prove that AP × PC = BP × PD

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14. Marks obtaind by 40 students in a short assessment is given below, where a and b are two missing data. If the mean of the distribution is 7.2 find a and b

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15. Find the mode and the median of the following data 13, 16, 12, 14, 19, 12, 14, 13, 14

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16. The median of the following observation 11, 12, 14, (x - 2), (x + 4), (x + 9), 32, 38, 47 arranged in ascending order is 24. Find the value of x and hence find the mean.

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17. The numbers 6, 8, 10 ,12, 13, and x are arranged in an ascending order. If the mean of the observation is equal to the median, find the value of x.

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18. (Use a graph paper for this question). The daily pocket expenses of 200 students in a school are given below:

Pocket expenses (in ₹)	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
No. of students (frequency)	10	14	28	42	50	30	14	12

Draw a histogram representing the above distribution and estimate the mode from the graph.

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19. In the given figure, QA ⊥ AB and PB ⊥ AB. If

AO = 20 cm, BO = 12 cm, PB = 18 cm, find AQ

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20. The mean of the following numbers is 68.

Find the value of 'x'.

45, 52, 60, x, 69, 70, 26, 81 and 94.

Hence, estimate the median.

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21. The marks of 10 students of a class in an examination arranged in ascending order are as follows :

13, 35, 43, 46, x, x + 4, 55, 61, 71, 80

If the median marks is 48, find the value of x. Hence find the mode of the given data.

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22. In the given figure, CD || LA and DE || AC. Find the length of CL if BE = 4 cm and EC = 2

cm

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23. The histogram below represents the scores obtained by 25 students in a Mathematics mental test. Use the data to,

(i) Frame a frequency distribution table

(ii) To calculate mean

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