MATHS

BOOKS - RD SHARMA MATHS (HINGLISH)

MEASURES OF CENTRAL TENDENCY

Others

1. The following observations have been arranged in ascending order. If the median of the data is

63, find the value of x: 29, 32, 48, 50, x, $x + 2$, 72, 78, 84, 95

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2. Find the mode of the following data in each case: 14,25,14,28,18,17,18,14,23,22,14,18

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3. Find the mode for the following series: 7.5, 7.3, 7.2, 7.2, 7.4, 7.7, 7.7, 7.5, 7.3, 7.2, 7.6, 7.2

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4. Find the mode for the following series: 2.5, 2.3 ,2.2, 2.2, 2.4, 2.7, 2.7, 2.5, 2.3, 2.2, 2.6

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5. Find the median of the following values: 37,31,42,43,46,25,39,45,32

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6. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x: 29, 32, 48, 50, x, $x + 2$, 72, 78, 84, 95

7. The sums of the deviations of a set of n values $x_1, x_2, ; x_n$ measured from 15 and $-3 are -90$ and 54 respectively. Find the value of n and mean.

8. Find the values of n and $\overline{X}$ in each of the following cases: (i) $\sum\limits_{i=1}^{n}(x_1 - 12) = -10$ and $\sum\limits_{i=1}^{n}(x_1 - 3) = 62$ (ii) $\sum\limits_{i=1}^{n}(x_1 - 10) = 30$ and $\sum\limits_{i=1}^{n}(x_1 - 6) = 150$

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9. The mean of 5 number is 18. If one numbers is excluded, their mean is 16. Find the excluded number. Solution:

Mean of 5 numbers $= 18$

=>Sum of these 5 numbers $= 18 \times 5 = 90$

Let number that has been excluded be x

New mean = $90 - \dfrac{x}{4} = 16$

Solving this, we get

$90 - x = 64$

Therefore answer is $x = 26$

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10. The mean weight per student in a group of 7 students is 55 kg. The individual weights of 6 of

them (in kg) are 52,54,55,53,56 and 54. Find the weight of the seventh student .

11. The sum of the deviations of a set of n values $x_1, x_2, ...x_n$ measured from 50 is-10 and the sum of deviations of the values from 46 is 70.Find the values of n and the mean.

12. If $x_1, x_2, \ldots\ldots, x_n$ are n values of a variable X such that $\sum\limits_{i=1}^{n} (x_i - 2) = 110$ and $\sum\limits_{i=1}^{n} (x_i - 5) = 20$. Find the value of n and the mean.

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13. If the mean of five observation $x, x + 2, x + 4, x + 6, x + 8$ is 11, find the mean of first three observations.

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14. The mean of 5 number is 18. If one numbers is excluded, their mean is 16. Find the excluded number.

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15. The mean of 16 numbers is 8. If 2 is added to every number, what will be the new mean?

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16. The mean of 10 numbers is 20. If 5 is subtracted from every number, what will be the new mean?

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17. Find the mean of the following distribution: x: 4 6 9 10 15 f: 5 10 10 7 8

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18. If the mean of the following distribution is 6, find the value of p. x: 2 4 6 10 $p+5$ f: 3 2 3 1 2

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19. Find the median of the following data:

25,34,31,23,22,26,35,28,20,32

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20. Find the value of p, if the mean of the following distribution is 7.5. x: 3 5 7 9 11 13 f: 6 8

15 p 8 4

21. Find the missing frequencies in the following frequency distribution if it is known that the mean of the distribution is 1.46. No. of accident

(x)	0	1	2	3
4		5	Total Frequency (f):	
46	?	?	25	10
5	200			

22. The mean of 16 items was found to be30. On rechecking, it was found that two items were wrongly taken as 22 and 18 instead of 32 and 28, respectively. Find correct mean.

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23. The mean monthly salary of 10 members of a group is Rs. 1445, one more member whose monthly salary is Rs. 1500 has joined the group. Find the mean monthly salary of 11 members of the group.

24. Find the mean of the following distribution: x:

4 6 9 10 15 f: 5 10 10 7 8

25. Following table shows the weights of 12

students: Weight (in kgs): 67 70 72 73 75 No. of

Students: 4 3 2 2 1 Find the mean weight.

26. If the mean of n observation $ax_1, ax_2, ax_3, , ax_n$ is $a\overline{X}$, show that

$$\left(ax_1 - a\overline{X}\right) + \left(ax_2 - a\overline{X}\right) + + \left(ax_n - a\overline{X}\right) = 0$$

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

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28. Find the sum of the deviations of the variate values 3,4,6,8, 14 from their mean.

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29. The mean of 40 observations was 160. It was detected on rechecking that the value of 165 was wrongly copied as 125 for computation of mean. Find the correct mean.

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30. If the heights of 5 persons are 144cm, 152cm, 151cm, 158cm and 155cm respectively. Find the mean height.

31. Find the arithmetic mean of first 6 natural numbers.

32. Find the arithmetic mean of first ten odd natural numbers

33. The weights (in kg) of 15 students are: 31,35,27,29,32,43,37,41,34,28,36,44,45,42,30.   Find the median. If the weight 44kg is replaced by 46 kg and 27kg by 25 kg, find the new median.

34. Find the median of the following data:

19,25,59,48,35,31,30,32,51. If 25 is replaced by 52, what will be the new median.

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35. Find the mode from the following data:

110,120,130,120,110,140,130,120,140,120

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36. If the heights of 5 persons are 144cm, 152cm, 151cm, 158cm and 155cm respectively. Find the mean height.

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37. Find the arithmetic means of first 6 natural numbers.

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38. Find the arithmetic mean of first ten odd natural numbers.

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39. If the mean of n observations ax1, ax2, ax3, ..., axn is aX show that (ax1-aX) + (ax2-aX) + ...+ (axn - aX) = 0

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

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41. Find the sum of the deviations of the variate values 3, 4, 6, 8, 14 from their mean.

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42. The mean of 40 observations was 160. It was detected on rechecking that the value of 165 was

wrongly copied as 125 for computation of mean. Find the correct mean.

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43. The mean of 100 items was found to be 30. If at the time of calculation two items were wrongly taken as 32 and 12 instead of 23 and 11, find the correct mean.

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44. The mean monthly salary of 10 members of a group is Rs. 1445, one more member whose monthly salary is Rs. 1500 has joined the group. Find the mean monthly salary of 11 members of the group.

45. The mean of 10 number is 20. If 5 is subtracted from every number, what will be the new mean?

46. The mean of 16 numbers is 8. If 2 is added to every number, what will be the new mean?

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47. The mean of 5 number is 18. If one numbers is excluded, their mean is 16. Find the excluded number.

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48. If the mean of five observations x , x + 2 , x + 4 , x + 6 , x + 8 is 11, find the mean of first three observations.

49. The sum of the deviations of a set of values measured from and the sum of deviations of the values from 46 to 70. Find the values of and the mean.

50. If the heights of 5 persons are 140cm, 150cm, 152cm, 158cm and 161cm respectively, find the mean height.

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51. Find the mean of 994, 996, 998, 1002 and 1000

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52. Find the mean of first five natural numbers.

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53. Find the mean of all factors of 10.

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54. Find the mean of first 10 even natural numbers.

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55. Find the mean of x, x+2, x+4, x+6, x+8

56. Find the mean of first five multiples of 3.

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57. Following are the weights (in kg) of 10 new born babies in a hospital on a particular day: 3.4, 3.6, 4.2, 4.5, 3.9, 4.1, 3.8, 4.5, 4.4, 3.6. Find the mean .

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58. The percentage of marks obtained by students of a class in mathematics are: 64, 36, 47, 23, 0, 19, 81, 93, 72, 35, 3, 1. Find their mean.

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59. the numbers of children in 10 families of a locality are: 2, 4, 3, 4, 2, 0, 3, 5, 1, 1, 5. Find the mean number of children per family.

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60. Duration of sunshine (in hours) in Amritsar for first 10 days of August 1997 as reported by the Meteorological Department are given below:

9.6, 5.2, 3.5, 1.5, 1.6, 2.4, 2.6, 8.4, 10.3, 10.9 Find the mean Verify that

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61. Explain, by taking a suitable example, how the arithmetic mean alters by (i) adding a constant to each term, (ii) subtracting a constant from each them, (iii) multiplying each term by a

constant and (iv) dividing each term by a non-zero constant

62. The mean of marks scored by 100 students was found to be 40. Later on it was discovered that a score of 53 was misread as 83. Find the correct mean.

63. The traffic police recorded the speed (in km/hr) of 10 motorists as 47, 53, 49, 60, 39, 42, 55, 57, 52, 48. Later on an error in recording instrument was found. Find the correct average speed of the motorists if the instrument recorded 5 km/hr less in each case.

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64. The mean of five numbers is 27. If one number is excluded, their mean is 25.Find the excluded number.

65. The mean weight per student in a group of 7 students is 55 kg. The individual weights of 6 of them (in kg) are 52, 54, 55, 53, 56 and 54. Find the weight of the seventh student.

66. The mean weight of 8 numbers is 15. If each number is multiplied by 2, what will be the new mean?

67. The mean of 5 numbers is 18. If one number is excluded, their mean is 16. Find the excluded number.

68. The mean of 200 items was 50. Later on, it was discovered that the two items were misread as 92 and 8 instead of 192 and 88. Find the correct mean.

69. Find the sum of the deviations of the variate

values 3, 4, 6, 7, 8, 14 from their mean.

70. Find the mean of the following distribution:

71. Find the mean of the following distribution

72. Find the mean of the following distribution:

73. Candidates of four schools appear in a mathematics test. The data were as follows School, No. of Candidates, Average Score I II III IV, 60 48 Not available 40, 75 80 55 50 If the average score of the candidates of all the four schools is

66, find the number of candidates that appeared from school III.

74. Five coins were simultaneously tossed 1000 times and at each toss the number of heads were observed. The number of tosses during which 0, 1, 2, 3, 4 and 5 heads were obtained are shown in the table below. Find the mean number of heads per toss. No. of heads per toss, No. of tosses 0 1 2 3 4 5, 38 144 342 287 164 25 Total, 1000

75. Find the median of the following data: 25, 34, 31, 23, 22, 26, 35, 28, 20, 32

76. Find the medina of the following values: 37, 31, 42, 43, 46, 25, 39, 45, 32

77. The median of the observation

11, 12, 14, 18, $x + 2$, $x + 4$, 30, 32, 35, 41

arranged in ascending order is 24. Find the

value of x.

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78. Find the median of the following data:

19, 25, 59, 48, 35, 31, 30, 32, 51. If 25 is

replaced by 52, what will be the new median.

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79. Find the median of the following data 83, 37, 70, 29, 45, 63, 41, 70, 34, 54

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80. Find the median of the following data 133, 73, 89, 108, 94, 104, 94, 85, 100, 120

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81. Find the median of the following data 31, 38, 27, 28, 36, 25, 35, 40

82. Find the median of the following data 15, 6, 16,

8, 22, 21, 9, 18, 25

83. Find the median of the following data 41, 43,

127, 99, 71, 92, 71, 58, 57

84. Find the median of the following data 25, 34, 31, 23, 22, 26, 35, 29, 20, 32

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85. Find the median of the following data 12, 17, 3, 14, 5, 8, 7, 15

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86. Find the median of the following data 92, 35, 67, 85, 72, 81, 56, 51, 42, 69

87. Numbers

$50, \ 42, \ 35, \ 2x + 10, \ 2x - 8, \ 12, \ 11, \ 8$ are

written in descending order and their median is

25, find x

88. Find the median of the following

observations: 46, 64, 87, 41, 58, 77, 35, 90, 55, 92,

33. If 92 is replaced by 99 and 41 by 43 in the above data, find the new median?

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89. Find the median of the following data: 41, 43, 127, 99, 61, 92, 71, 58, 57 if 58 is replaced by 85, what will be the new median.

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90. The weights (in kg) of 15 students are: 31, 35, 27, 29, 32, 43, 37, 41, 34, 28, 36, 44, 45, 42, 30. Find

the median. If the weight 44 kg is replaced by 46kg and 27kg by 25kg, find the new median.

91. The following observations have been arranged in ascendingorder. If the median of the data is 63, find the value of x:

$29, \ 32, \ 48, \ 50, \ x, \ x + 2, \ 72, \ 78, \ 84, \ 95$

92. Find the mode from the following data: 110, 120, 130, 120, 110, 140, 130, 120, 140, 120

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93. Find the mode for the following series: 2.5, 2.3, 2.2, 2.4, 2.7, 2.7, 2.5, 2.3, 2.2, 2.6, 2.2

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94. Find out the mode of the following marks obtained by 15 students in a class: Marks: 4, 6, 5,

7, 9, 8, 10, 4, 7, 6, 5, 9, 8, 7, 7

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95. Find the mode from the following data: 125, 175, 225, 125, 225, 175, 325, 125, 375, 225, 125

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96. Find the mode for the following series: 7.5, 7.3, 7.2, 7.2, 7.4, 7.7, 7.7, 7.5, 7.3, 7.2, 7.6, 7.2,br>

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97. Find the mode of the following data in each case: 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18 7, 9, 12, 13, 7, 12, 15, 7, 12, 7, 25, 18, 7

98. The demand of different shirt sizes, as obtained by a survey, is given below: Size:, 38, 39, 40, 41, 42, 43, 44, total No. of Person (wearing it):, 26, 39, 20, 15, 13, 7, 5, 125 Find the modal shirt sizes, as observed from the survey.

99. If the ratio of mean and median of a certain data is 2:3, then find the ratio of its mode and mean.

100. If the ratio of mode and median of a certain data is 6:5, then find the ratio of its mean and median.

101. If the mean of

$x + 2, \ 2x + 3, \ 3x + 4, \ 4x + 5 \ is \ x + 2,$ find x

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102. The arithmetic mean and mode of a data are

24 and 12 respectively, then find the medina of

the data.

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103. If the difference of mode and median of a data is 24, then find the difference of medina and mean.

104. If the median of scores $\dfrac{x}{2}, \dfrac{x}{3}, \dfrac{x}{4}, \dfrac{x}{5}$ and $\dfrac{x}{6}$ $(where\ x > 0)\ is\ 6$, then find the value of $\dfrac{x}{6}$

105. If the mode of scores

3, 4, 3, 5, 4, 6, 6, x is 4 , find the value of x.

106. If the median of 33, 28, 20, 25, 34, x is 29 , find the maximum possible value of x.

107. If the median of the scores `1,\ 2,\ x ,\ 4,\ 5\ (w

h e r e\ 1<2

108. Which one of the following is not a measure of central value: Mean   (b) Range   (c) Median   (d) Mode

109. The mean of n observations is $x.$ If k is added to each observation, then the new mean is X (b) $X + k$ (c) $X - k$ (d) kX

110. The mean of n observations is X. If each observation is multiplied by k, the mean of new observation is kX (b) $\dfrac{X}{k}$ (c) $X + k$ (d) $X - k$

111. The mean of a set of seven numbers is 81. If one of the numbers is discarded, the mean of the remaining numbers is 78. The value of discarded number is 98 (b) 99 (c) 100 (d) 101

112. For which set of numbers do the mean, median and mode all have the same value? 2, 2, 2, 2,4 (b) 1,3, 3, 3, 5 1, 2, 3, 5, 6 (d) 1, 1, 1, 2, 5

113. For the set of numbers 2, 2, 4, 5 and 12, which of the following statements is true? Mean =

Median   (b) Mean > Mode Mean <

Mode   (d) Mode=Median

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114. If the arithmetic mean of

$7, \ 5, \ 13, \ x \ and \ 9 \ is \ 10,$ then the value of x is 10

(b) 12 (c) 14 (d) 16

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115. If the mean of five observations

$x, \ x+2, \ x+4, \ x+6, \ x+8 \ is \ 11,$ then the

mean of first three observations is 9 (b) 11 (c) 13

(d) none of these

116. Mode is least frequent value   (b) middle

most value most frequent value   (d) none of

these

117. The following is the data of wages per day: 5,

4, 7, 5, 8, 8, 8, 5, 7, 9, 5, 7, 9, 10, 8. The mode of the

data is: 7   (b) 5   (c) 8   (d) 10

118. The empirical relation between mean, mode and median is $Mode = 3\, Median - 2\, Mean$

$Mode = 2\, Median - 3\, Mean$

$Median = 3\, Mode - 2\, Mean$

$Mean = 3\, Median - 2\, Mode$

119. The median of the following data:

$0, 2, 2, 2, -3, 5, -1, 5, 5, -3, 6, 6, 5, 6$

is 0 (b) $-1. 5$ (c) 2 (d) 3.5

120. The mean of a, b, c, d and e is 28. If the mean of $a, c,$ and e is 24 , what is the mean of b and d? 31 (b) 32 (c) 33 (d) 34

121. The algebraic sum of the deviations of a set of n values from their mean is 0 (b) $n - 1$ (c) n (d) $n + 1$

122. A, B, C are three sets of values of x:

$A: 2,\ 3,\ 7,\ 1,\ 3,\ 2,\ 3,\quad B: 7,\ 5,\ 9,\ 12,\ 5,\ 3,\ 8$

$C: 4,\ 4,\ 11,\ 7,\ 2,\ 3,\ 4$ Which   one   of   the following   statements   is   correct?

$Mean\ of\ A = Mode\ of\ C$

$Mean\ of\ C = Median\ of\ B$

Median of B = Mode of A

Mean, Median and Mode of A are equal

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