



## MATHS

### BOOKS - OBJECTIVE RD SHARMA MATHS VOL I (HINGLISH)

#### MEASURES OF CENTRAL TENDENCY

##### Illustration

1. The arithmetic mean of first  $n$  natural numbers, is

A.  $\frac{\pi}{2}$

B.  $\frac{n+1}{2}$

C.  $\frac{n(n+1)}{2}$

D.  $\frac{n-1}{2}$

**Answer: B**



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2. The arithmetic mean of first  $n$  odd natural numbers, is

A.  $n$

B.  $\frac{n}{2}$

C.  $\frac{n-1}{2}$

D.  $\frac{n+2}{2}$

**Answer: A**



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3. The arithmetic mean of the numbers

$1, 3, 3^2, \dots, 3^{n-1}$ , is

A.  $\frac{3^n - 1}{2}$

B.  $\frac{3^n - 1}{2n}$

C.  $\frac{3^n + 1}{2}$

D.  $\frac{3^n + 1}{2n}$

**Answer: B**



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4. The arithmetic mean of  ${}^nC_0, {}^nC_1, {}^nC_2, \dots, {}^nC_n$ , is

A.  $\frac{1}{n}$

B.  $\frac{2^n}{n}$

C.  $\frac{2^{n-1}}{n}$

D.  $\frac{2^{n+1}}{n}$

**Answer: B**



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5. If the mean of numbers 27, 31, 89, 107, 156, is 82, then the mean of 130, 126, 68, 50, 1 is

A. 80

B. 82

C. 157

D. 75

**Answer: D**



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6. if the mean of first  $n$  natural numbers is,  $\frac{5n}{9}$  then  $n =$

A. 5

B. 4

C. 9

D. none of these

**Answer: C**



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7. If the arithmetic mean of the observations  $x_1, x_2, x_3, \dots, x_n$  is 1, then the arithmetic mean of  $\frac{x_1}{k}, \frac{x_2}{k}, \frac{x_3}{k}, \dots, \frac{x_n}{k}, (k > 0)$  is

- A. greater than 1
- B. Less than 1
- C. equal to 1
- D. none of these

**Answer: D**



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8. The mean of first  $n$  odd natural numbers is  $\frac{n^2}{81}$ , then  $n =$  (a) 9 (b) 81 (c) 27 (d) 18

A. 9

B. 81

C. 27

D. none of these

**Answer: B**

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9. If the mean of  $x + 2$ ,  $2x + 3$ ,  $3x + 4$ ,  $4x + 5$  is  $x + 2$ , find  $x$

A. 0

B. 1

C. -1

D. 2

**Answer: C**

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10. If the mean of the following distribution is 2.6, then the value of  $y$  is

Variable ( $x$ ) : 1 2 3 4 5 Frequency ( $y$ ) : 4 5  $y$  12 (a) 3 (b) 8 (c) 13 (d) 24

A. 3

B. 8

C. 13

D. 24

**Answer: B**



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11. The arithmetic mean of the following frequency distribution:

Variate( $X$ ) : 0 1 2 3 ...  $n$   
Frequency( $f$ ) :  ${}^n C_0$   ${}^n C_1$   ${}^n C_2$   ${}^n C_3$  ...  ${}^n C_n$  is

A.  $\frac{2^n}{n}$

B.  $\frac{2^n}{n+1}$

C.  $\frac{n}{2}$

D.  $\frac{2}{n}$

**Answer: C**



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12. If the mean of the following frequency distribution is 5, then  $b =$

$$x_i : 3 \quad 5 \quad 7 \quad 4$$

$$f_i : 2 \quad a \quad 5 \quad b$$

A. 10

B. 6

C. 8

D. none of these

**Answer: B**



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13. If the arithmetic mean of the following distribution is 8.2, then  $a =$

$$x_i : 1 \quad 3 \quad 5 \quad 9 \quad 11 \quad 13$$

$$f_i : 3 \quad 2 \quad 7 \quad a \quad 4 \quad 8$$

A. 5

B. 6

C. 9

D. none of these

**Answer: B**



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14. The mean of a set of observations is  $a$ . If each observation is multiplied by  $b$  and each product is decreased by  $c$ , then the mean of new set of observations is

A.  $\frac{a}{b} + c$

B.  $ab - c$

C.  $\frac{a}{b} - c$

D.  $ab + c$

**Answer: B**



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15. The average score of boys in an examination of a school is 71 and that of girls is 73. The average score of school in that examinations is 71.8. The ratio of the number of boys to the number of girls appeared in the examination, is

A. 3 : 2

B. 3 : 4

C. 1 : 2

D. 2 : 1

**Answer: A**



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16. The mean weight of 150 students in a certain class is 60 kg. The mean weight of boys in the class is 70 kg and that of girls is 55 kg. What is the number of boys in the class?

- A. 100 and 50
- B. 50 and 100
- C. 150 and 100
- D. 100 and 150

**Answer: A**

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17. The average marks of boys in a class is 52 and that of girls is 42. The average marks of boys and girls combined is 50. The percentage of boys in the class is (1) 40 (2) 20 (3) 80 (4) 60

A. 80

B. 60

C. 40

D. 20

**Answer: A**



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**18.** 10 is the mean of a set of 7 observations and 5 is the mean of a set of 3 observations, the mean of the combined set is

A. 15

B. 10

C. 8.5

D. none of these

**Answer: C**

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19. A student obtained 60, 75 and 85 marks respectively in three monthly examinations in Physics and 95 marks in the final examination. The three monthly examinations are of equal weightage whereas the final examination is weighted twice as much as a monthly examination. His average marks in Physics are (a) 78.75 (b) 79 (c) 82 (d) 85

A. 80

B. 81

C. 82

D. 85

**Answer: C**

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20. Compute the geometric mean of 2, 4, 8.



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21. The median of the following marks of 9 students in a class, is  
34, 32, 48, 38, 24, 30, 27, 21, 35

A. 32

B. 34

C. 38

D. 30

**Answer: A**



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22. Find the median of the daily wages of ten workers from the following  
data: Rs 20, 25, 17, 18, 8, 15, 22, 11, 9, 14.

A. 15

B. 16

C. 17

D. 14

**Answer: B**



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**23.** The median of 21 observations is 18. If two observations 15 and 24 are included to the observations, then the median of new series is

A. 15

B. 18

C. 24

D. 16

**Answer: B**



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24. The median of the series 8, 12, 15, 7,  $x$ , 19, 22 lies in the interval

A. [12, 15]

B. [7, 15]

C. [15, 17]

D. [9, 12]

**Answer: A**



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25. If the median of the data

$x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8$  is  $\alpha$  and  $x_1 < x_2 < x_3 < x_4 < x_5 < x_6 < x_7 < x_8$

, then the median of  $x_3, x_4, x_5, x_6$  is

A.  $\alpha$

B.  $\frac{\alpha}{2}$



C.  $\frac{\alpha}{3}$

D.  $\frac{\alpha}{4}$

**Answer: A**



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**26.** If the mean of 26 , 19 , 15 , 24 , and x is x , then find the median of the data .

A. 23

B. 22

C. 20

D. 21

**Answer: D**



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27. If  $a, b, c, d$  are non-zero integers such that  $a < b < c < d$  and median of  $a, b, c$  are both equal to zero, then which one of the following is correct?

A.  $b = -c$

B.  $a = -d$

C. both (a) and (b)

D. none of these

**Answer: C**



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28. The mean and median of the data  $a, b$  and  $c$  are 50 and 35, where  $a < b < c$ . If  $c - a = 55$ , then find  $(b - a)$ .

A. 8

B. 7

C. 3

D. 5

**Answer: D**



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29. if  $x < y < 2x$  and the mean and median of  $x, y, 2x$  are 15, 12 respectively then  $x$

A. 7

B. 11

C. 10

D. 8

**Answer: B**



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30. If the mean of the squares of first  $n$  natural numbers is 105, then find the median of the first  $n$  natural numbers .

A. 8

B. 9

C. 10

D. 11

**Answer: B**



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31. The median for the following frequency distribution is :

$x_i$  : 1 2 3 4 5 6 7 8 9

$f_i$  : 8 10 11 16 20 25 15 9 6

A. 6

B. 5

C. 7

D. 4

**Answer: B**



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**32.** The median from the following distribution is

Class:	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	35 –
Frequency:	5	6	15	10	5	4	2

A. 19

B. 19.5

C. 20

D. 18

**Answer: B**



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33. For the following information of wages of 30 workers in a factory, the value of  $Q_1 + Q_2 + Q_3$  is



A. 1187.5

B. 789.5

C. 705

D. 872.5

**Answer: A**



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34. For the following data the value of  $Q_1 + Q_3 - Q_2$ , is

Age in years	:	20	30	40	50	60	70	80
No. of members	:	3	61	132	153	140	51	3

A.  $Q_1$

B.  $Q_2$

C.  $Q_3$

D.  $2Q_2$

**Answer: B**



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**35.** For the following data:

Weekly income(in Rs.) : 58 59 60 61 62 63 64 65 66

No. of Workers : 2 3 6 15 10 5 4 3 1

The value of  $\frac{Q_1 + Q_3}{2}$  is equal to

A.  $Q_1$

B.  $Q_2$

C.  $Q_3$

D. none of these

**Answer: D**



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36. The value of  $Q_3$  for the following distribution is

Marks group:	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40
No of Student:	5	6	15	10	5	4	2

A. 15

B. 21.5

C. 25

D. 25.5

**Answer: C**



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37. The mode of the following data :

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

A. 110

B. 120



C. 130

D. 115

**Answer: B**



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**38.** The mode of the following discrete series is:

$x_i$  1 3 5 6 12 15

$f_i$  5 7 3 8 6 5

A. 3

B. 12

C. 8

D. 6

**Answer: D**



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39. If the mode of observations 5, 4, 4, 3, 5,  $x$ , 3, 4, 3, 5, 4, 3, 5 is 3, then median of the observation is

- A. 3
- B. 4
- C. 5
- D. 3.5

**Answer: B**



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40. The mode for the following frequency distribution :



- A. 32.66
- B. 12
- C. 14

D. none of these

**Answer: A**



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**41.** The modal class for the following frequency distribution, is

Marks:	0 – 10	10 – 20	20 – 40	40 – 50	50 – 60	60 – 70
No. of students:	4	6	14	16	14	8

A. 20-40

B. 40-50

C. 50-60

D. 70-90

**Answer: B**



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42. If  $x < 6$  and 17.5 is the mode of the following frequency distribution.

Class-interval: 0 – 5   5 – 10   10 – 15   15 – 20   20 – 25

Frequency:        5        2        3        6         $x$

Then,  $x =$

A. 3

B. 2

C. 4

D. 5

**Answer: A**



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43. If the mode for the following frequency distribution is 22 and

$10 > y > x$ , then  $y =$

Class-interval: 0 – 10   10 – 20   20 – 30   30 – 40   40 – 50   Total

Frequency:        5        8        10         $x$          $y$         30

A. 2

B. 5

C. 3

D. 4

**Answer: B**



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

A. 4:3

B. 7:6

C. 7:8

D. 5:2

**Answer: D**



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

A. 8:9

B. 9:10

C. 9:7

D. 8:11

**Answer: B**



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46. If the difference of mode and median of a data is 24, then the difference of median and mean is (a) 12 (b) 24 (c) 8 (d) 36

A. 12

B. 24

C. 8

D. 36

**Answer: A**



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**47.** The arithmetic mean and mode of a data are 24 and 12 respectively, then find the mediana of the data.

A. 20

B. 18

C. 21

D. 22

**Answer: A**



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48. If a mode exceeds a mean by 12 , then the mode exceeds the median by \_\_\_\_\_.

A. 4

B. 8

C. 6

D. 10

**Answer: B**



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## Section I Solved Mcqs

1. If the arithmetic mean of the first  $n$  natural numbers is 15 , then  $n$  is \_\_\_\_\_ .

A. 15



B. 20

C. 14

D. 29

**Answer: D**



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2. If the arithmetic mean of 7 , 8 , x , 11 , 14 is x , then x is \_\_\_\_\_.

A. 9

B. 9.5

C. 10

D. 10.5

**Answer: C**



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3. The mean of 16 observations is 16 . If one observation 16 is deleted and three observations 5 , 5 and 6 are included , then find the mean of the final observations .

A. 16

B. 15.5

C. 13.5

D. none of these

**Answer: D**



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4. The arithmetic of 12 observations is 15. If two observations 20 and 25 are removed then the arithmetic mean of remaining observations is

A. 14.5

B. 13.5

C. 12.5

D. 13

**Answer: B**



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5. If the average of  $a$ ,  $b$ ,  $c$  and  $d$  is the average of  $b$  and  $c$ , then which one of the following is necessarily true?

A.  $a + d = b + c$

B.  $a + b = c + d$

C.  $a - d = b - c$

D.  $\frac{a + d}{4} = \frac{b + c}{2}$

**Answer: A**



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6. If the arithmetic mean of the following data is 7, then  $a + b =$

$$x_i \quad 4 \quad 6 \quad 7 \quad 9$$

$$f_i \quad a \quad 4 \quad b \quad 5$$

A. 4

B. 2

C. 3

D. cannot be determined

**Answer: D**



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7. The average of  $n$  numbers  $x_1, x_2, \dots, x_n$  is  $M$ . If  $x_n$  is replaced by  $x'$ , then the new average is

A.  $\frac{M - x_n + x'}{n}$

B.  $\frac{(n - 1)M + x'}{n}$

C.  $\frac{nM - x_n + x'}{n}$

D.  $M - x_n + x'$

**Answer: C**



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8. For a symmetrical distribution  $Q_1 = 20$  and  $Q_3 = 40$ . The value of  $50^{th}$  percentile, is

A. 20

B. 30

C. 40

D. none of these

**Answer: B**



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9. The mean of the series  $a, a + d, a + 2d, \dots, a + 2nd$ , is

A.  $a + (n - 1) d$

B.  $a + nd$

C.  $a + (n + 1) d$

D. none of these

**Answer: B**



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10. If the mean of the following data is 5.5, then  $x =$

$$x_i \quad 2 \quad 4 \quad 6 \quad 8$$

$$f_i \quad 3 \quad 5 \quad 6 \quad x$$

A. 6

B. 8

C. 15

D. 11

**Answer: A**



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11. The median of the data 5 , 6 , 7 , 8 , 9 , 10 is \_\_\_\_\_.

A. 7

B. 8

C. 7.5

D. 8.5

**Answer: C**



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12. The Median of the following discrete series is

$x_i$  3 6 5 8 12 7

$f_i$  5 2 4 6 7 6

A. 7

B. 8

C. 9

D. 6

**Answer: A**



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13. The median class in the following frequency distribution is

Class interval : 0 – 10 10 – 20 20 – 30 30 – 40 40 – 50

Frequency : 12 13 25 20 10

A. 10 – 20

B. 20 – 30

C. 30 – 40



D. none of these

**Answer: B**



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14. The number of observations in a group is 40. If the average of first 10 is 4.5 and that of the remaining 30 is 3.5 then the average of the whole group is

A.  $\frac{15}{4}$

B.  $\frac{1}{5}$

C. 8

D. 4

**Answer: A**



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15. GM of the numbers  $3, 3^2, 3^3, \dots, 3^n$  is

A.  $3^{2/n}$

B.  $3^{\frac{n-1}{2}}$

C.  $3^{n/2}$

D.  $3^{\frac{n+1}{2}}$

**Answer: D**



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16. If the median of 25 observations is 45 and if the observations greater than the median are increased by 4, then the median of the new data is

A. 49

B. 41

C. 45

D. none of these

**Answer: C**



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17. The median of a set of  $n$  observations is 20.5. If each of the largest 4 observations of the set is increased by 2, then the median of the new set is

- A. remains the same as that of original set
- B. is increased by 2
- C. is decreased by 2
- D. is two times the original median

**Answer: A**



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18. A boy goes to a school from his home at a speed of  $x$  km/hr and comes back at a speed of  $y$  km/hr, then the average speed is given by

- A. AM
- B. GM
- C. HM
- D. none of these

**Answer: C**



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19. A car complete the first half of its journey with speed  $v_1$ , and the rest half with speed  $v_2$ . The average speed of the car in whole journey:

- A.  $\frac{2v_1v_2}{v_1 + v_2}$
- B.  $\frac{v_1 + v_2}{2}$
- C.  $\sqrt{v_1v_2}$

D. none of these

**Answer: A**



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20. A person purchases 1 kg of tomatoes from each of the 4 places at the rate of 1 kg, 2 kg, 3 kg, 4 kg per rupee respectively. On an average, he has purchased  $x$  kg of tomatoes per rupee. Then the value of  $x$  is (a) 1.92 (b) 2 (c) 2.5 (d) None of these

A. 2

B. 25

C. 1.92

D. none of these

**Answer: C**



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21. The mode of the following distribution is

Class interval :	1 – 5	6 – 10	11 – 15	16 – 20	21 – 25
Frequency :	4	7	10	8	6

A. 14.5

B. 16.5

C. 10.5

D. 13.5

**Answer: D**



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22. The median of 100 observations grouped in classes of equal width is

25. If the median class interval is 20-30 and the number of observations

less than 20 is 45, then the frequency of median class is

A. 20

B. 12

C. 10

D. 15

**Answer: C**



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**23.** The age distribution of 400 persons in a colony having median age 32

is given below:

Age (in years) :	20 – 25	25 – 30	30 – 35	35 – 40	40 – 45	45 – 50
Frequency :	110	$x$	75	55	$y$	30

Then,  $x - y$  is

A. 10

B. 20

C. -10

D. -20

**Answer: C**





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**24.** The mean of the data set comprising of 16 observations is 16. If one of the observation valued 16 is deleted and three new observations valued 3, 4 and 5 are added to the data, then the mean of the resultant data, is : (1) 16.8 (2) 16.0 (3) 15.8 (4) 14.0

A. 15.8

B. 14

C. 16.8

D. 16.0

**Answer: B**



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**Exercise**



1. If the mean of a set of observations  $x_1, x_2, \dots, x_n$  is  $\bar{X}$ , then the mean of the observations  $x_i + 2i, i = 1, 2, \dots, n$  is

A.  $\bar{X} + 2$

B.  $\bar{X} + 2n$

C.  $\bar{X} + (n + 1)$

D.  $\bar{X} + n$

**Answer: C**



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2. If a variate  $X$  is expressed as a linear function of two variates  $U$  and  $V$  in the form  $X = aU + bV$  then the mean  $\bar{X}$  of  $X$  is

A.  $a\bar{U} + b\bar{V}$

B.  $\bar{U} + \bar{V}$

C.  $b\bar{U} + a\bar{U}$

D. none of these

**Answer: A**



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3. The AM of  $n$  numbers of a series is  $\bar{X}$ . If the sum of first  $(n-1)$  terms is  $k$ , then the  $n^{\text{th}}$  number is

A.  $\bar{X} - k$

B.  $n\bar{X} - k$

C.  $\bar{X} - nk$

D.  $n\bar{X} - nk$

**Answer: B**



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4. The means of a set of numbers is  $\bar{X}$ . If each number is divided by 3, then the new mean is

A.  $\bar{X}$

B.  $\bar{X} + 3$

C.  $3\bar{X}$

D.  $\frac{X}{3}$

**Answer: D**



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5. The weighted mean of first  $n$  natural numbers when their weights are equal to corresponding natural number, is

A.  $2n + 1$

B.  $\frac{1}{2}(2n + 1)$

C.  $\frac{1}{3}(2n + 1)$

D.  $\frac{2n + 1}{6}$

**Answer: C**



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6. The A.M. of the series 1, 2, 4, 8, 16, .... ,  $2^n$  is -

A.  $\frac{2^n - 1}{n}$

B.  $\frac{2^{n+1} - 1}{n + 1}$

C.  $\frac{2^n + 1}{n}$

D.  $\frac{2^n - 1}{n + 1}$

**Answer: B**



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7. If the mean of  $n$  observations  $x_1, x_2, x_3 \dots x_n$  is  $\bar{x}$  then the sum of deviations of observations from mean is

A. 0

B.  $\frac{\bar{X}}{n}$

C.  $n\bar{X}$

D. none of these

**Answer: A**



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8. The one which is the measure of the central tendency is

A. mode

B. mean deviation

C. standard deviation

D. coefficient of correlation

**Answer: A**



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**9.** The most stable measure of central tendency is

- A. the mean
- B. the median
- C. the mode
- D. none of these

**Answer: A**



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**10.** The mean of the distribution, in which the values of  $X$  are  $1, 2, \dots, n$  the frequency of each being unity is :

A.  $\frac{n(n+1)}{2}$

B.  $\frac{n}{2}$

C.  $\frac{n+1}{2}$

D. none of these

**Answer: C**



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**11.** 10 is the mean of a set of 7 observations and 5 is the mean of a set of 3 observations, the mean of the combined set is

A. 15

B. 10

C. 8.5

D. 7.5

**Answer: C**

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12. A statistical measure which cannot be determined graphically is

- A. median
- B. mode
- C. harmonic mean
- D. mean

**Answer: C**

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13. The measure which takes into account all the data items is

- A. mean
- B. median
- C. mode



D. none of these

**Answer: A**



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14. An ogive is used to determine

A. mean

B. median

C. mode

D. HM

**Answer: B**



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15. The geometric mean of the series  $1, 2, 4, 8, 16, \dots, 2^n$  is

A.  $2^{n+1/2}$

B.  $2^{n+1}$

C.  $2^{n/2}$

D.  $2^n$

**Answer: A**



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**16.** If  $G_1, G_2$  are the geometric means for two series of observations and  $G$  is the GM of the ratios of the corresponding observations then  $G$  is equal to

A.  $\frac{G_1}{G_2}$

B.  $\log G_1 - \log G_2$

C.  $\frac{\log G_1}{\log G_2}$

D.  $\log(G_1 \cdot G_2)$

**Answer: A**



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17. If  $G$  is the GM of the product of  $r$  sets of observations with geometric means  $G_1, G_2, \dots, G_r$  respectively, then  $G$  is equal to

A.  $\log G_1 + \log G_2 + \dots + \log G_r$

B.  $G_1 \cdot G_2 \cdot \dots \cdot G_r$

C.  $\log G_1 \cdot \log G_2 \dots \log G_r$

D. none of these

**Answer: B**



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18. A group of 10 items has arithmetic mean 6. If the arithmetic mean of 4 of these items is 7.5, then the mean of the remaining items is

A. 6.5

B. 5.5

C. 4.5

D. 5.0

**Answer: D**



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**19.** The arithmetic mean of a set of observations is  $\bar{X}$ . If each observation is divided by  $\alpha$  and then is increased by 10, then the mean of the new series is

A.  $\frac{\bar{X}}{\alpha}$

B.  $\frac{\bar{X} + 10}{\alpha}$

C.  $\frac{\bar{X} + 10\alpha}{\alpha}$

D.  $\alpha\bar{X} + 10$

**Answer: C**



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**20.** The weighted means of first  $n$  natural numbers whose weights are equal to the squares of corresponding numbers is

A.  $\frac{n + 1}{2}$

B.  $\frac{3n(n + 1)}{2(2n + 1)}$

C.  $\frac{(n + 1)(2n + 1)}{6}$

D.  $\frac{n(n + 1)}{2}$

**Answer: B**



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**21.** If a variable takes value  $0, 1, 2, 3, \dots, n$  with frequencies  $1, C_1, C_2, \dots, C_n$

A.  $n$

B.  $\frac{2^n}{n}$

C.  $n + 1$

D.  $\frac{n}{2}$

**Answer: D**



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**22.** The weighted mean of first  $n$  natural numbers when their weights are equal to corresponding natural number, is

A.  $(n + 1)(2)$

B.  $\frac{2n + 1}{2}$

C.  $\frac{2n + 1}{3}$

D.  $\frac{(2n + 1)(n + 1)}{6}$

**Answer: A**

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23. If the first item is increased by 1, second by 2 and so on, then the new mean is

A.  $\bar{X} + n$

B.  $\bar{X} + \frac{n}{2}$

C.  $\bar{X} + \frac{n + 1}{2}$

D. none of these

**Answer: C**

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24. If  $\bar{X}_1$  and  $\bar{X}_2$  are the means of two series such that  $\bar{X}_1 < \bar{X}_2$  and  $\bar{X}$  is the mean of the combined series, then

A.  $\bar{X} < \bar{X}_1$

B.  $\bar{X} > \bar{X}_2$

C.  $\bar{X} = \frac{\bar{X}_1 + \bar{X}_2}{2}$

D.  $X_1 < \bar{X} < \bar{X}_2$

**Answer: D**



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25. The mean of the series  $x_1, x_2, \dots, x_n$  is  $\bar{X}$ . If  $x_2$  is replaced by  $\lambda$  then the new mean is

A.  $\bar{X} + x_2 + \lambda$

B.  $\frac{\bar{X} - x_2 - \lambda}{n}$

C.  $\frac{(n-1)\bar{X} + \lambda}{n}$

D.  $\frac{n\bar{X} - x_2 + \lambda}{n}$

**Answer: D**



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26. The mean income of a group of workers is  $\bar{X}$  and that of another group is  $\bar{Y}$ . If the number of workers in the second group is 10 times the number of workers in the first group, then the mean income of the combined group is

A.  $\frac{\bar{X} + 10\bar{Y}}{3}$

B.  $\frac{\bar{X} + 10\bar{Y}}{11}$

C.  $\frac{10\bar{X} + \bar{Y}}{Y}$

D.  $\frac{\bar{X} + 10\bar{Y}}{9}$

**Answer: B**



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27. If the variable takes values  $0, 1, 2, \dots, n$  with frequencies  $q^n, {}^n C_1 q^{n-1} p, {}^n C_2 q^{n-2} p^2, \dots, {}^n C_n p^n$ , where  $p + q = 1$ , then the mean is

A. np

B. nq

C.  $n(p + q)$

D. none of these

**Answer: A**

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**28.** The AM of  $n$  observations is  $M$ . If the sum of  $n - 4$  observations is  $a$ , then the mean of remaining 4 observations is

A.  $\frac{nM - a}{4}$

B.  $\frac{nM + a}{2}$

C.  $\frac{nM - a}{2}$

D.  $nM + a$

**Answer: A**

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29. The sum of squares of the deviation of the values of the variable is minimum when taken about their arithmetic mean

- A. AM
- B. GM
- C. HM
- D. median

**Answer: A**

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30. If each of  $n$  numbers  $x_i = i$ , is replaced by  $(i + 1)x_i$ , then the new mean is

A. 
$$\frac{(n + 1)(n + 2)}{n}$$

B.  $n + 1$

C.  $\frac{(n + 1)(n + 2)}{3}$

D. none of these

**Answer: D**



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**31.** The mean age of a combined group of men and women is 25 yrs . If mean age of men is 26 and that of women is 21 , then percentage of men and women in the group , is ,

A. 60, 40

B. 80, 20

C. 20, 80

D. 40, 60

**Answer: B**



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32. In a moderately skewed distribution the values of mean and median are 5 and 6 respectively. The value of mode in such a situation is approximately equal to

- A. 8
- B. 11
- C. 16
- D. none of these

**Answer: A**



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33. One of the methods of determining mode is (a)  $\text{Mode} = 2 \text{ Median} - 3 \text{ Mean}$  (b)  $\text{Mode} = 2 \text{ Median} + 3 \text{ Mean}$  (c)  $\text{Mode} = 3 \text{ Median} - 2 \text{ Mean}$  (d)  $\text{Mode} = 3 \text{ Median} + 2 \text{ Mean}$

A. mode = 2 median - 3 mean

B. mode = 2 median + 3 mean

C. mode = 3 median - 2 mean

D. mode = 3 median + 2 mean

**Answer: C**



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**34.** The positional average of central tendency is

A. GM

B. HM

C. AM

D. Median

**Answer: D**



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35. For dealing with qualitative data the best average is

A. AM

B. GM

C. Mode

D. Median

Answer: D



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36. If a variable takes discrete values

$$x + 4, x - \frac{7}{2}, x - \frac{5}{2}, x - 3, x - 2, x + \frac{1}{2}, x - \frac{1}{2}, x + 5, (x > 0)$$

then the median is

A.  $x - \frac{5}{4}$

B.  $x - \frac{1}{2}$

C.  $x - 2$

D.  $x + \frac{5}{4}$

**Answer: A**

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**37.** Which of the following is not a measure of central tendency

A. mean

B. median

C. mode

D. range

**Answer: D**

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38. If  $y = f(x)$  be a monotonically increasing or decreasing function of  $x$  and  $M$  is the median of variable  $x$ , then the median of  $y$  is

A.  $f(M)$

B.  $M/2$

C.  $f^{-1}(M)$

D. none of these

**Answer: A**



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39. The median can graphically be found from

A. ogive

B. histogram

C. frequency curve

D. none of these

**Answer: A**



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**40.** If in a moderately skewed distribution the values of mode and mean are  $6\lambda$  and  $9\lambda$  respectively, then the value of the median is

A.  $8\lambda$

B.  $7\lambda$

C.  $6\lambda$

D.  $5\lambda$

**Answer: A**



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1. The arithmetic mean of first  $n$  odd natural numbers, is

A.  $n$

B.  $\frac{n+1}{2}$

C.  $n-1$

D. none of these

**Answer: A**



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2. The arithmetic mean of  ${}^nC_0, {}^nC_1, {}^nC_2, \dots, {}^nC_n$ , is

A.  $\frac{2^n}{n}$

B.  $\frac{2^n - 1}{n}$

C.  $\frac{2^n}{n+1}$

D.  $\frac{2^{n-1}}{n+1}$

**Answer: C**



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**3.** The arithmetic mean of the squares of first  $n$  natural numbers is

A.  $\frac{n + 1}{6}$

B.  $\frac{(n + 1)(2n + 1)}{6}$

C.  $\frac{n^2 - 1}{6}$

D. none of these

**Answer: B**



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**4.** Geometric mean of 3, 9 and 27, is

A. 18

B. 6

C. 9

D. none of these

**Answer: C**



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5. If for a moderately skewed distribution, mode = 60 and mean = 66, then median =

A. 60

B. 64

C. 68

D. none of these

**Answer: B**



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6. the median of 10, 14, 11, 9, 8, 12, 6 is

A. 14

B. 11

C. 10

D. 12

**Answer: C**



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7. The mean of discrete observations  $y_1, y_2, \dots, y_n$  is given by

A.  $\frac{\sum_{i=1}^n y_i f_i}{\sum_{i=1}^n f_i}$

B.  $\frac{\sum_{i=1}^n y_i f_i}{n}$

C.  $\frac{\sum_{i=1}^n y_i}{n}$

D.  $\frac{\sum_{i=1}^n y_i}{\sum_{i=1}^n i}$

**Answer: C**



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8. The average of 50 numbers is 38. If the numbers 45 and 55 are discarded, then the average of the remaining numbers is (a) 36.5 (b) 37 (c) 37.5 (d) 37.52

A. 36

B. 36.5

C. 37.5

D. 38.5

**Answer: C**



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9. The geometric mean of numbers  $7, 7^2, 7^3, \dots, 7^n$ , is

A.  $7^{7/4}$

B.  $7^{4/7}$

C.  $7^{\frac{n-1}{2}}$

D.  $7^{\frac{n+1}{2}}$

**Answer: D**



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**10.** The sum of deviations of  $n$  observations about 25 is 25 and sum of deviations of the same  $n$  observations about 35 is -25 . The mean of observations is

A. 25

B. 30

C. 35

D. 40



**Answer: B**



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11. If the sum of the mode and mean of a certain frequency distribution is 129 and the median of the observations is 63, mode and median are respectively

- A. 69 and 60
- B. 65 and 64
- C. 68 and 61
- D. none of these

**Answer: A**



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12. The mean weight of 9 items is 15. If one more item is added to the series the mean becomes 16. The value of 10th item is (a) 35 (b) 30 (c) 25 (d) 20

A. 35

B. 30

C. 25

D. 20

**Answer: C**



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13. The mode of the data 6, 4, 3, 6, 4, 3, 4, 6, 3,  $x$  can be

A. only 5

B. both 4 and 6

C. both 3 and 6

D. 3, 4 or 6

**Answer: D**



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14. If the difference between the mode and median is 2, then the difference between the median and mean is (in the given order)

A. 2

B. 4

C. 1

D. 0

**Answer: C**



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15. If the mean of the following distribution is 13, then  $p =$

$$x_i: 5 \quad 10 \quad 12 \quad 17 \quad 16 \quad 20$$

$$f_i: 9 \quad 3 \quad P \quad 8 \quad 7 \quad 5$$

A. 6

B. 7

C. 10

D. 4

**Answer: B**



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16. The mean of a certain number of observations is  $m$ . If each observation is divided by  $x$  ( $\neq 0$ ) and increased by  $y$ , then

A.  $mx + y$

B.  $\frac{mx + y}{x}$

C.  $\frac{m + xy}{x}$

D.  $m + xy$

**Answer: C**



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17. The frequency distribution of marks obtained by 28 students in a test carrying 40 marks is given below:

Marks:	0 – 10	10 – 20	20 – 30	30 – 40
Number of students:	6	$x$	$y$	6

If the mean of the above data is 20, then the difference between  $x$  and  $y$  is

A. 3

B. 2

C. 1

D. 0

**Answer: D**



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18. If the median of  $\frac{x}{2}, \frac{x}{3}, \frac{x}{4}, \frac{x}{5}, \frac{x}{6}$  (where  $x > 0$ ) is 6 then  $x =$

- A. 6
- B. 18
- C. 12
- D. 24

**Answer: D**



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19. If the median of the scores 1, 2,  $x$ , 4, 5 (where  $1 < 2 < x < 4 < 5$ ) is 3, then the mean of the scores is

- A. 2
- B. 3
- C. 4
- D. 5

**Answer: B**



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**20.** Mode of a certain series is  $x$ . If each score is decreased by 3, then mode of the new series is

A.  $x$

B.  $x - 3$

C.  $x + 3$

D.  $3x$

**Answer: B**



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

A. 30

B. 31

C. 29

D. 32

**Answer: A**



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