



MATHS

BOOKS - BITSAT GUIDE

STATISTICS

Practice Exercise

1. A student obtain 75%, 80% and 85% marks in three subjects. If the marks of another

subject are added, then his average cannot be less than

A. 60 %

B. 65 %

C. 80 %

D. 90 %

Answer: A



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2. If a variable takes the values $0, 1, 2, \dots, n$ with frequencies proportional to the binomial coefficients ${}^n C_0, {}^n C_1, \dots, {}^n C_n$, then mean of the distribution is

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

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

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

D. None of these

Answer: A



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3. The mean height of 25 male workers in a factory is 161 cm and mean height of 35 female workers in the same factory is 158 cm. The combined mean height of 60 workers in the factory is

A. 159.25

B. 159.5

C. 159.75

D. 158.75

Answer: A



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4. In an English learning classes, there are 8 men, 7 women and 5 children whose mean ages separately are respectively 24, 20 and 6 yr. The mean age of English learning classes candidate is

A. 18.0

B. 18.1

C. 18.2

D. 18.3

Answer: B



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5. The average income of male employees in a financial sector company A was Rs 520 and that of females was Rs 420. The mean income of all the employees was Rs 500. The percentage of male employees is

A. 50 %

B. 80 %

C. 40 %

D. 20 %

Answer: B



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6. If g_1 and g_2 be the geometric means of two series of n_1 and n_2 items. Then the G.M. of the series obtained on combining them is

A. $\left[(g_2)^{n_1} (g_2)^{n_2} \right]^{\frac{1}{n_1 + n_2}}$

B. $(g_1 g_2)^{\frac{n_1}{n_1 + n_2}}$

C. $(g_1 g_2)^{\frac{n_2}{n_1 + n_2}}$

D. $(g_1 g_2)^{\frac{n_1 n_2}{n_1 + n_2}}$

Answer: A



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7. The mean and median of 100 items are 50 and 52, respectively. The value of largest item

is 100. It was later found that, it is 110 not 100.

The true mean and median are

A. 50.10, 51.5

B. 50.10, 52

C. 50, 52

D. None of these

Answer: B



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8. If the difference between mean and mode is 63, then the difference between mean and median is

A. 189

B. 21

C. 31.5

D. 48.5

Answer: B



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9. If a distribution has negative skewness, then in what order (lowest to highest) will the averages be?

A. Mean, mode, median

B. Mean, median, mode

C. Mode, median, mean

D. Median, mode, mean

Answer: B



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10. Which average is the most sensitive to extreme values?

A. Mean

B. Median

C. Mode

D. None

Answer: A



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11. If the median and range of four numbers $\{x, y, 2x+y, x-y\}$, where $0 < y < x < 2y$, are 10 and 28 respectively, then the mean of the numbers is :

A. 18

B. 10

C. 5

D. 14

Answer: D



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12. The quartile deviation of daily wages (in Rs) of 7 persons given 12, 7, 15, 10, 17, 19 and 25 is

A. 14.5

B. 5

C. 9

D. 4.5

Answer: D



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13. If the mean deviation about the median of the numbers $a, 2a, \dots, 50a$ is 50 then $|a|$ equals

A. 3

B. 4

C. 5

D. 2

Answer: B



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14. If the mean deviation of the number $1, 1+d, 1+2d, \dots, 1 + 100d$ from their mean is 255 then d is equal to

A. 10.0

B. 20.0

C. 10.1

D. 20.2

Answer: C



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15. The mean and SD of the marks of 200 candidates were found to be 40 and 15, respectively. Later, it was discovered that a score 40 was wrongly read as 50. The correct mean and SD are respectively

A. 14.98, 39.95

B. 39.95, 14.98

C. 39.95, 224.5

D. None of these

Answer: B

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16. If quartile deviation of a sample is 20, then the most likely value of SD is

A. 30

B. 12

C. 18

D. 13

Answer: A

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17. If $\sum_{i=1}^{18} (x_i - 8) = 9$ and

$\sum_{i=1}^{18} (x_i - 8)^2 = 45$ then the standard

deviation of x_1, x_2, \dots, x_{18} is

A. $\frac{4}{9}$

B. $\frac{9}{4}$

C. $\frac{3}{2}$

D. None of these

Answer: C



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18. In a series of $2n$ observations, half of them are equal to a^2 and the remaining half are equal to $-a^2$. If the standard deviation of the observation is 2, then $|a|$ is equal to

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

B. $\sqrt{2}$

C. 2

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

Answer: C



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19. If σ^2 is the variance of n observations x_1, x_2, \dots, x_n , prove that the variance of n observations ax_1, ax_2, \dots, ax_n is $a^2\sigma^2$, where $a \neq 0$

A. σ^2

B. $\alpha\sigma^2$

C. $\alpha^2\sigma^2$

D. $\frac{\sigma^2}{\alpha^2}$

Answer: C



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20. The mean of five observations is 4 and their variance is 5.2. If three of these observations are 1, 2 and 6, then the other two are

A. 4, 7

B. 2, 9

C. 5, 6

D. 2, 10

Answer: A



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21. Mean of 5 observation is 7. if four of these observation are 6,7,8,10 and one is missing, then the variance of all the five observations is

A. 4

B. 6

C. 8

D. 2

Answer: A



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22. The variance of first 50 even natural numbers is

A. $\frac{833}{4}$

B. 833

C. 437

D. $\frac{437}{4}$

Answer: B



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23. The mean of the numbers $a, b, 8, 5$ is 6 and the variance is 6.80. Then, which one of the following gives possible values of a and b ?

A. $a = 3, b = 4$

B. $a = 0, b = 7$

C. $a = 5, b = 2$

D. $a = 1, b = 6$

Answer: A



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24. Let x_1, x_2, \dots, x_n be n observations, such that $\sum x_i^2 = 400$ and $\sum x_i = 80$. The, the possible values of n among the following is

A. 12

B. 9

C. 16

D. 15

Answer: C



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25. One set containing five numbers has mean 8 and variance 24 and the second set containing three numbers has mean 8 and

variance 24. Then, the variance of the combined set is

A. 42

B. 24

C. 20

D. 25

Answer: B



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26. The first of two samples has 100 items with mean 15 and $SD = 3$. If the whole group has 250 items with mean 15.6 and $SD = \sqrt{13.44}$, then SD of the second group is

- A. 4
- B. 5
- C. 6
- D. 3.52

Answer: A



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27. A sample of 90 values has standard deviation 3 and their mean is 55. A second sample of 110 values has mean 60 and its standard deviation is 2. The combined variance is equal to

A. 12.44

B. 13.24

C. 16.42

D. 13.65

Answer: A



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28. The standard deviation of 25 numbers is 40. If each of the numbers is increased by 5, then the new standard deviation will be -

A. 40

B. 45

C. $40 + (21 / 25)$

D. None of these

Answer: A



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29. If the standard deviation of the observations

$-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5$ is

$\sqrt{10}$. The standard deviation of the

observations $15, 16, 17, 18, 19, 20, 21, 22, 23, 24,$

25 will be

A. $\sqrt{10} + 20$

B. $\sqrt{10} + 10$

C. $\sqrt{10}$

D. None of these

Answer: C



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30. v0

A. 81

B. 122

C. 144

D. None

Answer: C



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31. If s.d. of X is σ then s.d. of the variable

$U = \frac{aX + b}{c}$ where a, b, c are constants is

A. $\left(\frac{a}{c}\right)\sigma$

B. $\left|\frac{a}{c}\right|\sigma$

C. $\left(\frac{a^2}{c^2}\right)\sigma$

D. None of these

Answer: B



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32. The SD of 15 items is 6 and each item is decreased by 1, then standard deviation will be

A. 5

B. 7

C. $\frac{91}{15}$

D. 6

Answer: D



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33. The standard deviation of a variable x is 10. Then the standard deviation of $50+5x$ is :

A. 50

B. 550

C. 10

D. 500

Answer: A



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34. Suppose population A has 100 observations 101, 102, ..., 200 and another population B has 100 observations 151, 152, ..., 250. If V_A and V_B represent the

variances of the two populations respectively,

then $\frac{V_A}{V_B}$ is

A. $\frac{9}{4}$

B. $\frac{4}{9}$

C. $\frac{2}{3}$

D. 1

Answer: D



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35. All the students of a class performed poorly in Mathematics. The teacher decided to give grace marks of 12 to the entire class. Which of the following statistical measures will not change even after the grace marks were given?

A. Mean

B. Median

C. Mode

D. Variance

Answer: D



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36. If the standard deviation of x_1, x_2, \dots, x_n is "3.5," then the standard deviation of $-2x_1 - 3, -2x_2 - 3, \dots, -2x_n - 3$ is

A. -7

B. 9

C. 7

D. 2.45

Answer: C



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37. The best statistical measure used for comparing two series is

- A. mean deviation
- B. range
- C. coefficient of variation
- D. None of these

Answer: C



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38. Coefficients of variation of two distributions are 50 and 60, and their arithmetic means are 30 and 25, respectively. Difference of their standard deviations is

A. 0

B. 1

C. 1.5

D. 2.5

Answer: A



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39. The sum of squares of deviations of 10 items about mean 50 is 250. The coefficient of variation is

A. 10 %

B. 40 %

C. 50 %

D. None of these

Answer: A



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1. The mean of n items is \bar{X} . 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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2. A sample of 35 observations has the means 80 and SD. As 4. A second sample of 65 observations from the same population has

mean 70 and S.D.3. The S.D. of the combined sample is -

A. 5.85

B. 5.58

C. 34.2

D. None of these

Answer: A



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3. The mean life of a sample of 60 bulbs was 650 and the standard deviation was 8 h. A second sample of 80 bulbs has a mean life of 660 h and standard deviation 7h. Find the over all standard deviation.

A. 8.97

B. 8.98

C. 8.94

D. None of these

Answer: C



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4. If x_1 and x_2 are the means of two distributions such that $x_1 < x_2$ and \bar{x} is the mean of the combined distribution, 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. $\bar{x}_1 < \bar{x} < \bar{x}_2$

Answer: D



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