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## MATHS

## BOOKS - NEW JYOTHI MATHS (TAMIL ENGLISH)

## STATISTICS

## Examples

1. Consider the following data 4,7,8,9,10,12,13,17.
(i) Find the mean
(ii) Find the mean deviation about the mean.
2. Find the mean deviation about the median for the data

13, 17,16,14,11,13,10,16,11,18,12,17.

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3. Consider following data $35,32,36,34,41,45,28,50,49$
I. Find the median
(ii) Find the mean deviation from the median.

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4. Consider the following frequency table .

| $x$ | 15 | 25 | 35 | 45 | 55 | 65 | 75 | 85 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $f$ | 3 | 1 | 1 | 8 | 17 | 38 | 9 | 3 |

(i) Find the mean
(ii) Find the mean deviation about the mean.

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5. Find the mean deviation about the median for the data

| $x_{1}$ | 5 | 7 | 9 | 10 | 12 | 15 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $f_{1}$ | 8 | 6 | 2 | 2 | 2 | 6 |

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6. Find the mean deviation about the median for the data

| $x_{i}$ | 15 | 21 | 27 | 30 | 35 |
| ---: | ---: | ---: | ---: | ---: | ---: |
| $f_{i}$ | 3 | 5 | 6 | 7 | 8 |

(i) Find median.
(ii) Hence find mean deviation from the median.

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7. A public opinion polling agency surveyed 200 government empolyees . The following table shows the ages of the empolyees interviewed.

| Age | Number of employees |
| :---: | :---: |
| $21-25$ | 20 |
| $26-30$ | 30 |
| $31-35$ | 40 |
| $36-40$ | 50 |
| $41-45$ | 30 |
| $46-50$ | 20 |
| $51-55$ | 10 |

(i) Calculate the mean age of empolyees interviewed.
(ii) Compute the mean deviation of the ages about the mean age.
8. Find the mean deviation about the mean for the data

| Income <br> per day | $0-100$ | $100-200$ | $200-300$ | $300-400$ | $400-500$ | $500-600$ | $600-700$ | $700-800$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Number <br> of persons | 4 | 8 | 9 | 10 | 7 | 5 | 4 | 3 |

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9. Find the mean deviation about median for the following data

| Marks | $0-10$ | $10-20$ | $20-30$ | $30-40$ | $40-50$ | $50-60$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Number of <br> Girls | 6 | 8 | 14 | 16 | 4 | 2 |

10. Find the mean, variance and standard deviation for the frequency distribution.

| $x_{i}$ | 6 | 10 | 14 | 18 | 24 | 28 | 30 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $f_{i}$ | 2 | 4 | 7 | 12 | 8 | 4 | 3 |

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11. Find the mean and standard deviation for the following data.

| $x_{1}$ | 92 | 93 | 97 | 98 | 102 | 104 | 109 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $f_{i}$ | 3 | 2 | 3 | 2 | 6 | 3 | 3 |

12. Find the mean and variance for the frequency distribution.

| Class | $0-10$ | $10-20$ | $20-30$ | $30-40$ | $40-50$ |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Frequency | 5 | 8 | 15 | 16 | 6 |

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13. From the following frequency distribution

| $x_{i}$ | 8 | 11 | 17 | 20 | 25 | 30 | 35 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $f_{i}$ | 2 | 3 | 4 | 1 | 5 | 7 | 3 |

(i) Find mean.
(ii) Calculate variance and standard deviation.

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14. The following data marks of 60 students. Find mean , variance and S.D.

| Marks | $20-30$ | $30-40$ | $40-50$ | $50-60$ | $60-70$ | $70-80$ | $80-90$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| No.of students | 3 | 6 | 13 | 15 | 14 | 5 | 4 |

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15. The mean and standard deviation of six observations are

8 and 4, respectively. If each observation is multiplied by 3, find the new mean and new standard deviation of the resulting observations
16. The variance of 20 observations is 5 . If each observation is multiplied by 2 , find the new variance of the resulting observations.

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17. The mean of 5 observations is 4.4 and their varience is 8.24. If three of the observations are 1,2 and 6 , find the other two observations.

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18. If each of the observation $x_{1}, x_{2}, \ldots, x_{n}$ is increased by 'a', where a is a negative or positive number, show that the
variance remains unchanged.

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19. The mean and standard deviation of 10 observations are
found to be 10 and 4 respectively. Later it was found that
one item is mistaken as 10 instead of 12 . Find the correct mean and standard deviation.

## D Watch Video Solution

20. Find the mean and variance of first $n$ natural numbers .

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21. Find the coefficient of variation of the data 6,8,10,12,14,16,18,20,22,24

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22. An analysis of monthly wages paid to workers in two firms $A$ and $B$, belonging to the same industry, gives the following results.

|  | Firm A | Firm B |
| :--- | :--- | :--- |
| No. of wage earners | 586 | 648 |
| Mean of monthly wages | Rs. 5253 | Rs. 5253 |
| Variance of the distribution | 100 | 121 |

(i) Which firm A or B pays out larger amount as monthly wages?
(ii) Which firm A or B shows greater variability in individual wages?
23. The mean and standard deviation of a group of 100 observations were found to be 20 and 3 , respectively. Later on it was found that three observations were incorrect, which were recorded as 21,21 and 18 . Find the mean and standard deviation if the incorrect observations are omitted.

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24. The following values are calculated with respect to the wages of workers in two farms $A$ and $B$.

| Particulars | Farm A | Farm B |
| :--- | :---: | :---: |
| No. of workers | 100 | 120 |
| Mean | 200 | 220 |
| Variance | 4 | 9 |

(i) Find the coeffcient of variation of farm $A$ and farm $B$.
(ii) Which farm shows more variability?
(iii) Which farm shows more consistency?

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25. Variance $\left(\sigma^{2}\right)$ and the coefficient of variation (CV) of two distributions are given below.

|  | $\sigma^{2}$ | CV |
| :--- | :---: | :---: |
| Distribution I | 441 | 60 |
| Distribution II | 256 | 70 |

(i) Compute the standard deviations of the given
distributions.
(ii) What are their means?

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26. The sum and sum of squares corresponding to length $x$
(in cm ) and weight y (in gm ) of 50 plant products are given below:
$\sum_{i=1}^{50} x_{i}=212, \sum_{i=1}^{50} x_{i}^{2}=902.8, \sum_{i=1}^{50} y_{i}=261, \sum_{i=1}^{50} y_{i}^{2}=1457.6$
Which is more varying, the length or weight?

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27. The mean and variance of eight observations are 9 and
9.25 , respectively. If six of the observations are 6,7,10,12,12
and 13 , find the remaining two observations.

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28. The mean and variance of 7 observations are 8 and 16 respectively. If five of the observations are $2,4,10,12,14$, find the remaining two observations.

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29. The mean and standard deviation of 20 observations
are found to be 10 and 2 , respectively. On rechecking, it was
found that an observation 8 was incorrect. Calculate the
correct mean and standard deviation in each of the
following cases:
(i) If wrong item is omitted. (ii) If it is replaced by 12.

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30. The mean and standard deviation of maks obtained by

50 students of a class in three subjects Mathematics,
Physics and Chemistry are given below:

| Subject | Mathematics | Physics | Chemistry |
| :--- | :--- | :--- | :--- |
| Mean | 42 | 32 | 409 |
| Standard |  |  |  |
| deviation | 12 | 15 | 20 |

Which of the three subjects shows the highest variability in marks and which the lowest?

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1. The A. M first ' $n$ ' natural numbers is
A. $\frac{n}{2}$
B. $\frac{n(n+1)}{2}$
C. $\frac{n+1}{2}$
D. $\frac{n}{2}+1$

## Answer:

## - Watch Video Solution

2. The mean of $1,2,3 \ldots . . \mathrm{n}$ is $\frac{6 n}{11}$, then $\mathrm{n}=$
A. 10
B. 11
C. 12
D. 13

## Answer:

## D Watch Video Solution

3. The weighted $A$. $M$ of first ' $n$ ' natural numbers whose weights are equal to the corresponding
A. $\frac{1}{2}(n+1)$
B. $\frac{1}{2}(2 n+1)$
C. $\frac{1}{3}(2 n+1)$
D. $\frac{1}{6}(2 n+1)$

## Answer:

## - Watch Video Solution

4. If the mean of $7+x, 1+x, 9+x, 2+x, 6+x$ is 5 , then the mean of $13+x, 12+x, 8+x, 5+x, 2+x$ is
A. 7
B. 15
C. 8
D. 6
5. The $A M$ of the squares of the first ' $n$ ' natural numbers is

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6. If $\bar{X}_{1}, \bar{X}_{2}$ are the means of two distributions such that
$\bar{X}_{1}<\bar{X}_{2}$ and $\bar{X}$ is 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. $\bar{X}_{1}<\bar{X}<\bar{X}_{2}$

## - Watch Video Solution

7. A variable $X$ is expressed as a linear function of two
variables $u$ and $v$ in the form $X=a u+b v$.
Then the mean $\bar{X}$ of X is
A. $a \bar{u}+b \bar{v}$
B. $\bar{u}+\bar{v}$
C. $b \bar{u}+a \bar{v}$
D. $a b(\bar{u}+\bar{v}),(a+b)(\bar{u}+\bar{v})$

## Answer:

8. The mean of a set of numbers is $\bar{x}$. If each number is increased by $\lambda$, the mean of the new set is
A. $\bar{x}$
B. $\bar{x}+\lambda$
C. $N \bar{x}$
D. $\bar{x}-\lambda$

Answer:

- Watch Video Solution

9. The mean of a set of numbers is $\bar{x}$. If each observation is divided by $\alpha$ (where $\alpha \neq 0$ ) and then increased by 10 , the mean of the new set 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:

## - Watch Video Solution

10. The algebraic sum of the deviations from the mean is
A. maximum
B. zero
C. minimum
D. always positive

## Answer:

## - Watch Video Solution

11. The median of the series is 10 . Two additional observations 7 and 20 is added to the series. The median of the new series will be
A. 9
B. 20
C. 7
D. 10

## Answer:

## - Watch Video Solution

12. The range of the data $41,68,7,53,4,75,11,89,47$ is
A. 71
B. 73
C. 85
D. 82
13. The mean and variance of 7 observations are 8 and 16 respectively. If five of the observations are $2,4,10,12,14$, find the remaining two observations.
A. 6 and 4
B. 8 and 4
C. 8 and 6
D. 10 and 6

## Answer:

14. Variance is independent of
A. origin only
B. scale only
C. origin and scale
D. neither origin nor scale

## Answer:

## - Watch Video Solution

15. If the S.D of $0,1,2, \ldots .9$ is a, then the S.D of $10,11,12, \ldots . .19$ is
A. a
B. 10a
C. $c . a+10$
D. $a \sqrt{10}$

## Answer:

## - Watch Video Solution

16. The mode of the obeservations $3,5,1,7,9,1,12$ is
A. 1
B. 3
C. 7
D. 12
17. The AM of $1,2,4,8 \ldots . . .2^{n}$ 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:

- Watch Video Solution

18. If a variable takes the values $0,1,2, \ldots . . \mathrm{N}$ with frequencies 1 , ${ }^{n} C_{1},{ }^{n} C_{2}, \ldots \ldots .{ }^{n} C_{n}$ then AM is
A. n
B. $\frac{2^{n}}{n}$
C. $\mathrm{n}+1$
D. $\frac{n}{2}$

## Answer:

## - Watch Video Solution

19. The GM of $2,2^{2}, 2^{3} \ldots \ldots .2^{n}$ is
A. $2^{\frac{2}{n}}$
B. $2^{\frac{n}{2}}$
C. $2^{\frac{n-1}{2}}$
D. $2^{\frac{n+1}{2}}$

## Answer:

## - Watch Video Solution

20. The mean mark in statistics of 100 students in a class
was 72 . The mean mark of boys was 75 while their number was 75 . The mean mark of girls in the class was
A. 69
B. 63
C. 66
D. 62

## Answer:

## - Watch Video Solution

21. The AM of the nnumbers $x_{1}, x_{2} \ldots \ldots x_{n}$ is $M$. If $x_{1}$ is replaced by $x$ then the new $A M$ is
A. $M-x_{1}+x$
B. $\frac{M-x_{1}+x}{n}$
C. $\frac{(n-1) M-x_{1}+x}{n}$
D. $\frac{n M-x_{1}+x}{n}$

Answer:
22. The MD from the median for the observed values $-1,0,4$
is
A. $\sqrt{\frac{14}{3}}$
B. 2
C. $\frac{2}{3}$
D. $\frac{5}{3}$

Answer:
( Watch Video Solution
23. If each observation of a raw data whose variance $\sigma^{2}$ is multiplied by $\lambda$, then the variance of the new set is
A. $\sigma^{2}$
B. $\lambda^{2} \sigma^{2}$
C. $\lambda+\sigma^{2}$
D. $\lambda^{2}+\sigma^{2}$

## Answer:

## - Watch Video Solution

24. If each observation of a new data where variance is $\sigma^{2}$ increased by $\lambda$, then the variance of the new data is
A. $\sigma^{2}$
B. $\lambda^{2} \sigma^{2}$
C. $\lambda+\sigma^{2}$
D. $\lambda^{2}+\sigma^{2}$

## Answer:

## D Watch Video Solution

25. M.D for the observations $a, a+d, a+2 d, \ldots . . ., a+2 n d$ is
A. $n(n+1) d$
B. $\frac{n(n+1) d}{2 n+1}$
C. $\frac{n(n+1) d}{2 n}$
D. $\frac{n(n-1) d}{2 n+1}$

## Answer:

## - Watch Video Solution

26. The sum of squares of deviations of 10 observations
taken from the mean 50 is 250 The coefficient of variation is
A. $50 \%$
B. $10 \%$
C. $40 \%$
D. $20 \%$
27. The median and S.D of a distribution are 20 and 4 respectively. If each item is increased by 2 , the new median and new S.D will be
A. 20,4
B. 20,6
C. 22,4
D. 22,6

## Answer:

28. If the S.D of a variate x is $\sigma$, then the S.D of $\frac{a x+b}{c}$ where $\mathrm{a}, \mathrm{b}$ c are constants is
A. $\left|\frac{c}{a}\right| \sigma$
B. $\left|\frac{c^{2}}{a^{2}}\right| \sigma$
C. $\left|\frac{b}{c}\right| \sigma$
D. $\left|\frac{a}{c}\right| \sigma$

## Answer:

## - Watch Video Solution

29. If the S.D of $x_{1}, x_{2}, x_{3}, \ldots \ldots . x_{n}$ is 6 , then the S.D of $-x_{1},-x_{2}, \ldots \ldots,-x_{n}$ is
A. 0
B. 6
C. -6
D. 1

Answer:
A. $\sqrt{\frac{n^{2}-1}{4 n}}$
B. $\sqrt{\frac{n^{2}+1}{4 n}}$
C. $\sqrt{\frac{n^{2}+1}{1^{2} n}}$
D. $\sqrt{\frac{n^{2}-1}{12}}$

## Answer:

## - Watch Video Solution

31. The standard deviation of the numbers $31,32,33$,

46,47 is
A. $\sqrt{a^{2}+d^{2}}$
B. $\sqrt{\frac{n^{2}-1}{n}}$
C. $\sqrt{\frac{n^{2}-1}{12}}$
D. $\frac{1}{d} \sqrt{\frac{n^{2}-1}{n}}$

Answer:
32. The standard deviation of $3,7,11,15,19,23,27,31,35,39$ is
A. $\sqrt{33}$
B. $\sqrt{\frac{33}{2}}$
C. $2 \sqrt{33}$
D. $4 \sqrt{33}$

## Answer:

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33. The variance of the population of the observation
A. 101
B. 100
C. 1
D. 2

Answer:

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34. The mean deviation of the first 19 natural numbers
about the median is
A. $\frac{90}{19}$
B. $\frac{19}{90}$
C. $\frac{1}{19}$
D. 9

## Answer:

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## Questions From Competitive Exams

1. The mean mark in Statistics of 100 students in a class was

72 .The mean mark of boys was 75 , while their number was
70. The mean mark of girls in the class was
A. 69
B. 60
C. 66
D. 62

## Answer:

## - Watch Video Solution

2. If the mean of numbers $27+x, 156+x$ is 82 , then the mean of $130+x, 126+x, 68+x, 50+x, 1+x$ is
A. 79
B. 157
C. 82
D. 80

Answer:
3. If $\mu$ us the mean of distribution $\left\{y_{1}, f_{1}\right\}$, then
$\sum f_{1}\left(i_{1}-\mu\right)$ is equal to
A. MD
B. SD
C. 0
D. relative frequency

Answer:
4. A batsman score runs in 10 innings
$38,70,48,34,42,55,63,46,54$ and 44 . Then the mean deviation from the median is .
A. 8.6
B. 6.4
C. 10.6
D. 9.6

Answer:
5. The average weight of students in a class of 35 students is 40 kgs . If the weight of the teacher be included, the average rieses by $1 / 2 \mathrm{~kg}$. The weight of the teacher is
A. 40.5
B. 41
C. 40
D. 58

Answer:
6. Standard deviation of the first $2 n+1$ natural numbers is equal to

$$
\begin{aligned}
& \text { A. } \sqrt{\frac{n(n+1)}{2}} \\
& \text { B. } \sqrt{\frac{n(n+1)(2 n+1)}{3}} \\
& \text { C. } \sqrt{\frac{n(+1)}{3}} \\
& \text { D. } \sqrt{\frac{n(n-1)}{2}}
\end{aligned}
$$

## Answer:

## - Watch Video Solution

7. Mean marks scored by the students of a class is 53 . The mean mark of the girls is 55 and the mean mark of the boys
is 50. What is the percentage of girls in the class?
A. 60
B. 40
C. 50
D. 45

## Answer:

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8. The average monthly salary of workers in a factory is Rs. 206 . If the average monthly salary of males females are Rs. 210 and Rs. 190 respectively, the percentage of female empolyed in the factory is
A. 20
B. 50
C. 30
D. 40

Answer:

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9. 

For
the
arithmetic
progression
$a,(a+d),(a+2 d),(a+3 d), \ldots \ldots,(a+2 n d)$, the mean deviation from mean is
A. $\frac{n(n+1) d}{2 n-1}$
B. $\frac{n(n+1) d}{2 n+1}$
C. $\frac{n(n-1) d}{2 n+1}$
D. $\frac{(n+1) d}{2}$

## Answer:

## - Watch Video Solution

10. The standard deviation of n obervations $x_{1}, x_{2} \ldots, x_{n}$ is 2. If $\sum_{i=1}^{n} x_{i}=20$ and $\sum_{i=1}^{n} x_{i}^{2}=100$, then n is
A. 10 or 20
B. 5 or 10
C. 5 or 20
D. 5 or 15

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11. The standard deviation of the numbers $31,32,33$,

46,47 is
A. $\sqrt{\frac{17}{12}}$
B. $\sqrt{\frac{47^{2}-1}{12}}$
C. $2 \sqrt{6}$
D. $4 \sqrt{3}$

Answer:
12. The standard deviation for the scores $1,2,3,4,5,6$, and 77
is 2 . Then the standard deviation of $12,23,34,45,56,67$ and 78
is
A. 2
B. 4
C. 22
D. 11

Answer:
13. If the variance of $1,2,3,4,5, \ldots ., 10$ is $\frac{99}{12}$, then the standard deviation of $3,6,9,12, \ldots . ., 30$ is
A. $\frac{297}{4}$
B. $\frac{3}{2} \sqrt{33}$
C. $\frac{3}{2} \sqrt{99}$
D. $\sqrt{\frac{99}{12}}$

Answer: 44

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14. If ${ }^{n} C_{8}={ }^{n} C_{2}$, find ${ }^{n} C_{2}$.
A. $\frac{n+1}{2}$
B. $\frac{n-1}{2}$
C. $\frac{2^{n}-1}{2}$
D. $\frac{2^{n}+1}{2}$

## Answer:

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15. The arithmetic mean of 7 consecutive integers starting with 'a' is m . Then the arithmetic mean of 11 consecutive integers starting with ' $a+2$ ' is
A. 2 a
B. 2 m
C. $a+4$

## D. $m+4$

## Answer:

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16. The mean and variance of $n$ observations
$x_{1}, x_{2}, x_{3}, \ldots x_{n}$ are 5 and 0 respectively.
If $\sum_{i=1}^{n} x_{i}^{2}=400$, then the value of n is equal to
A. 80
B. 25
C. 20
D. 16

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17. If the standard deviation of $3,8,6,10,12,9,11,10,12,7$ is 2.71 ,
then the standard deviation of 30,
$80,60,100,120,90,110,100,120,70$ is
A. 2.71
B. 27.1
C. $(2.71) \sqrt{10}$
D. $(2.71) \sqrt{2}$

Answer:
18. The A.M of 9 terms is 15 . If one more term is added to this series, then the A.M becomes 16. .The value of the added term is
A. 30
B. 27
C. 25
D. 23

## Answer:

19. If the average of the numbers $1,2,3, \ldots, 98,99, x$ is 100 x , then the value of x is
A. $\frac{51}{100}$
B. $\frac{50}{99}$
C. $\frac{1}{2}$
D. $\frac{51}{99}$

Answer:

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20. If the median of $\frac{x}{5}, x, \frac{x}{4}, \frac{x}{2}, \frac{x}{3}(x>0)$ is 8 , then the value of $x$ is
A. 24
B. 32
C. 8
D. 16

Answer:

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21. The mean of five numbers is 0 and their variance is 2 . If three of those numbers are $-1,1$ and 2 , then the other two numbers are
A. -5 and 3
B. -4 and 2
C. -3 and -1
D. -2 and 0

## Answer:

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22. A batsman in his $16^{\text {th }}$ innings makes a score of 70 runs and thereby increases his average by 2 runs. If he had never been not out , then his average after $16^{\text {th }}$ innings is
A. 36
B. 38
C. 40
D. 42

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23. If the variance of $1,2,3,4,5, \ldots ., x$ is 10 , then the value of $x$ is
A. 9
B. 13
C. 12
D. 10

Answer:
24. Mean of 10 observations is 50 and their standard deviation is 10 If each observation is subtracted by 5 and then divided by 4 , then the new mean and standard deviation are
A. 22.5,2.5
B. $11.25,2.5$
C. 11.5,2.5
D. $11,2.5$

## Answer:

25. If $\sum_{i=1}^{9}\left(x_{i}-5\right)=9$ and $\sum_{i=1}^{9}\left(x_{i}-5\right)^{2}=45$, then the standard deviation of the 9 items $x_{1}, x_{2}, \ldots \ldots, x_{9}$ is
A. 9
B. 4
C. 3
D. 2

## Answer:

## - Watch Video Solution

26. The standard deviation of $9,16,23,30,37,44,51$ is
A. 7
B. 9
C. 12
D. 14

## Answer:

## ( Watch Video Solution

27. In a class of 100 students there are 70 boys whose average marks in a subject are 75. If the average marks of the complete class is 72 , then what is the average of the girls?
A. 73
B. 65
C. 68
D. 74

## Answer:

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28. In an experiment with 15 observation on $x$, the following results were available. $\sum x^{2}=2830, \sum x=170$ One observation 20 was found to be wrong and was replaced by the correct value 30 . Then the corrected variance is
A. 188.66
B. 177.33
C. 8.33

## Answer:

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29. The median of a set of a set of 9 distinct observations is
20.5 . If each of the largest 4 observations of the set increased by 2 , then the median of the new set
A. is decreased by 2
B. is two times the original median
C. remains the same as that of the original set
D. is increased by 2

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30. Consider the following statements.
(i) Mode can be computed from histogram
(ii) Median is not independent of change of scale
(iii) Variance is independent of change of origin and scale.

Which of these is/are correct ?
A. only (i) and (ii)
B. only (ii)
C. only (i)
D. (i),(ii) and (iii)

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31. In a series of $2 n$ observations, half of them equal a and remaining half equal - a. If the standard deviation of the observations is 2 , then $|a|$ equals
A. 2
B. $\sqrt{2}$
C. $\frac{1}{n}$
D. $\sqrt{\frac{2}{n}}$

## Answer:

32. In a frequency distribution, the mean and median are 21
and 22 respectively, then its mode is approximately
A. 20.5
B. 22
C. 24
D. 25.5

Answer:
(D) Watch Video Solution
33. Let $x_{1}, x_{2}, \ldots . x_{n}$ be n observations such that $\sum x_{i}^{2}=400$ and $\sum x_{i}=80$. Then a possible value if n among the following is
A. 18
B. 15
C. 12
D. 9

Answer:
34. Suppose a population $A$ has 100 observations $101,102, \ldots, 200$, and another population $B$ has 100 observations $151,152, \ldots \ldots, 250$. If $V_{A}$ and $V_{B}$ represent the variances of the populations respectively, then $\frac{V_{A}}{V_{B}}$ is
A. 1
B. $\frac{9}{4}$
C. $\frac{4}{9}$
D. $\frac{2}{3}$

## Answer:

35. 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
A. 80
B. 60
C. 40
D. 20

Answer:

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36. The mean of the numbers $a, b, 8,5,10$ 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:
37. If the mean deviation of number $1,1+d, 1+2 d, \ldots, 1+100 d$ from their mean is 255 , then $d$ is equal to
A. 20
B. 10.1
C. 20.2
D. 10

## Answer:

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38. For two data sets, each of size 5 , the variances are given to be 4 and 5 and the correcponding means are given to be

2 and 4, respectively. The variance of the combined data set is
A. $\frac{5}{2}$
B. $\frac{11}{2}$
C. 6
D. $\frac{13}{2}$

## Answer:

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39. If the mean deviation about the median of the numbers
a, 2a,......, 50a is 50 , then $|a|$ equals
A. 4
B. 5
C. 2
D. 3

## Answer:

## D Watch Video Solution

40. Let $x_{1}, x_{2}, \ldots . x_{n}$ be n observations such that $\sum x_{i}^{2}=400$ and $\sum x_{i}=80$. Then a possible value if n among the following is
A. Statement
(i) is true
Statement
(ii) is true ,

Statement (ii) is not a correct explanation for

Statement (i).
B. Statement (i) is true , Statement (ii) is false.
C. Statement (i) is false , Statement (ii) is true.
D. Statement (i) true ,Statement (ii) is true , Statement
(ii) is a correct explanation for Statement (i)

## Answer:

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