MATHS

BOOKS - NCERT MATHS (HINGLISH)

STATISTICS

Short Answer Type Questions

1. Find the mean deviation about the mean of the distributon .

Size	20	21	22	23	24
Frequency	6	4	5	1	4

Watch Video Solution

2. Find the mean deviation about the mean of the distributon .

Marks obtained	10	11	12	14	15
Number of students	2	3	8	3	4

View Text Solution

3. Calculate the mean deviation about the mean of the set of first n natural numbers when n is odd natural number.

A. $\frac{2n^2-1}{4n}$

B. $\frac{n^2-1}{4n}$

C. $\frac{n^2-2}{4n}$

D. none of these

Answer: B

Watch Video Solution

4. Calculate the mean deviation about the mean of the set of first n natural numbers when n is even natural number.

Watch Video Solution

5. Find the standard deviation of first n natural numbers.

x_i	1	2	3	4	5	...	...	n
x_i^2	1	4	9	16	25	...	...	n^2

View Text Solution

6. The mean and standard deviation deviation of some data for the time taken to complete a test are calculated with the following results

Number of observation =25,means=18.2 s,standard deviation =3.25 s further another set of 15 obserbvation $x_1, x_2 \ldots x_{15}$ also in seconds is now available and we have $\Sigma_{i=1}^{15} x_i = 279$ and $\Sigma_{i=1}^{15} x_i^2 = 5524$ .Calculate the standard derivation based on all 40 observation .

Watch Video Solution

7. The mean and standard deviation of a set of $n_1$observation are $\bar{x}_1$and s_1 respectively while

the mean and standard deviation of another set of n_2 observations are $\bar{x}_2$ and s_2 respectively . Show that the standard deviation of the combined set of $(n_1 + n_2)$ observations is given by

$$SD = \sqrt{\frac{n_1(s_1)^2 + n_2(s_2)^2}{n_1 + n_2} + \frac{n_1 n_2(\bar{x}_1 - \bar{x}_2)^2}{(n_1 - n_2)^2}}$$

View Text Solution

8. Two sets each of 20 observations have the same standard derivation 5. The first set has a mean 17 and second a mean 22. Then the

standard deviation of the set obtained by combining the given two sets.

Watch Video Solution

9. The frequency distribution

x	A	$2A$	$3A$	$4A$	$5A$	$6A$
f	2	1	1	1	1	1

View Text Solution

10. For the frequency distribution

x	2	3	4	5	6	7
f	4	9	16	14	11	6

View Text Solution

11. For the frequency distribution

Marks	0	1	2	3	4	5
Frequency	$x-2$	x	x^2	$(x+1)^2$	$2x$	$x+1$

View Text Solution

12. The mean life of a sample of 60 bulbs was 650 h and the standard deviation was 8 h, If a second sample of 80 bulbs has a mean life of

660 h and standard deviation 7 h then find the over all standard deviation

View Text Solution

13. If mean and standard deviation of 100 items are 50 and 4 respectively the find the sum of all the item and the sum of the squares of item.

Watch Video Solution

14. If for distribution of 18 observations $\sum(x_i - 5) = 3 and \sum(x_i - 5)^2 = 43,$ find the mean and standard deviation.

Watch Video Solution

15. Find the mean and variance of the frequency distribution given below

x	$1 \le x \le 3$	$3 \le x \le 5$	$5 \le x \le 7$	$7 \le x \le 10$
f	6	4	5	1

Watch Video Solution

Long Answer Type Questions

1. Calculate the mean deviation about the mean for the following freuency distribution

Class interval	0-4	4-8	8-12	12-16	16-20
Frequency	4	6	8	5	2

Watch Video Solution

2. Calulate the mean deviation from the median of the following data

Class interval	0-6	6-12	12-18	18-24	24-30
Frequency	4	5	3	6	2

Watch Video Solution

3. Determine the mean and standard deviation for the following distribution

Marks	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Frequency	1	6	6	8	8	2	2	3	0	2	1	0	0	0	1

View Text Solution

4. The weights of coffee in 70 jars is shown in the following table

Weight (in g)	Frequency
200-201	13
201-202	27
202-203	18
203-204	10
204-205	1
205-206	1

Determine variance and standard deviation of the above distribution

View Text Solution

5. Determine mean and standard deviation of first n terms of an AP whose first term is a and

common difference is d.

x_i	$x_i - a$	$(x_i - a)^2$
a	0	0
$a + d$	d	d^2
$a + 2d$	$2d$	$4d^2$
.....	.....	$9d^2$
.....	.....	.....
.....	.....	.....
$a + (n-1)d$	$(n-1)d$	$(n-1)^2 d^2$
$\Sigma x_i = \frac{n}{2}[2a + (n-1)]$		

Watch Video Solution

6. Following are the marks obtained ,out of 100, by two student Ravi and Hashina in 10 tests

Ravi	25	50	45	30	70	42	36	48	35	60
Hashina	10	70	50	20	95	55	42	60	48	80

Who is more intelligent and who is more consistent ?

View Text Solution

7. Mean and standard deviation of 100 observations were found to be 40 and 10 respectively .If at the time of calculation two observations were wrongly taken as 30 and 70 in place of 3 and 27 respectively , then find the correct standard deviation.

Watch Video Solution

8. While calculating the mean and variance of 10 redings,a student wrongly used the reading 52 for the correct reading 25.He obtained the mean and variance as 45 and 16 respectively .Find the correct mean and the variance .

Watch Video Solution

Objective Type Question

1. The mean deviation of the data 3,10,10,4,7,10,5 from the mean is

A. 2

B. 2.57

C. 3

D. 3.75

Answer: B

Watch Video Solution

2. Mean deviation for n observation $x_1, x_2, \ldots . x_n$ from their mean $\bar{x}$ is given by

A. $\sum_{i=1}^{n} (x_i - \bar{x})$

B. $\frac{1}{n} \sum_{i=1}^{n} |x_i - \bar{x}|$

C. $\sum_{i=1}^{n} (x_i - \bar{x})^2$

D. $\frac{1}{n} \sum_{i=1}^{n} (x_i - \bar{x})^2$

Answer: B

Watch Video Solution

3. When tested the lives (in hours) of 5 bulbs were noted as follows 1357,1090,1666,1494,1623 The mean deviations (in hours) from their mean is

A. 178

B. 179

C. 220

D. 356

Answer: A

 Watch Video Solution

4. Following are the marks obtained by 9 student in a mathematics test

$50, 69, 20, 33, 53, 39, 40, 65, 59,$

The mean deviation from the median is

A. 9

B. 10.5

C. 12.67

D. 14.76

Answer: C

Watch Video Solution

5. The standard deviation of data $6, 5, 9, 13, 12, 8$ and 10 is

A. $\sqrt{\frac{52}{7}}$

B. $\frac{52}{7}$

C. $\sqrt{6}$

D. 6

Answer: A

Watch Video Solution

6. If $x_1, x_2 \ldots\ldots\ldots x_n$ be n observation and $\bar{x}$ be their arithmetic mean .Then formula of the standard deviation is given by

A. $\Sigma(x_i - x^-)^2\Big)$

B. $\dfrac{\Sigma(x_i - \bar{x})^2}{n}$

C. $\sqrt{\dfrac{\Sigma(x_i - \bar{x})^2}{n}}$

D. $\sqrt{\frac{\Sigma x^2 i}{n} + \bar{x}^{-2}}$

Answer: C

Watch Video Solution

7. If the mean of 100 observations is 50 and their standard deviations is 5, than the sum of all squares of all the observations is

A. 50000

B. 250000

C. 252500

D. 255000

Answer: C

Watch Video Solution

8. Let $a, b, c, d, e,$ be the observations with mean m and standard deviation s. The standard deviation of the observations $a + k, b + k, c + k, d + k, e + k$ is

A. s

B. ks

C. $s + k$

D. $\frac{s}{k}$

Answer: A

Watch Video Solution

9. If, s is the standard deviation of the observations x_1, x_2, x_3, x_4 and x_5 then the

standard deviation of the observations kx_1, kx_2, kx_3, kx_4 and kx_5 is

A. $k + s$

B. $\frac{s}{k}$

C. ks

D. s

Answer: C

Watch Video Solution

10. Let $x_1, x_2 \ldots . x_n$ be n obervations .Let $w_i = lx_i + k \quad \text{for} \quad i = 1, 2 \ldots . n$, where l and k are constants. If the mean of x_i is 48 and their standard deviation is 12 the mean of w_i 's is 55 and standard deviation of w_i is 15 then the value of l and k should be

A. $l = 1.25, k = \ -5$

B. $l = \ -1.25, k = 5$

C. $l = 2.5, k = \ -5$

D. $l = 2.5, k = 5$

Answer: A

11. The standard deviation for first natural number is

A. 5.5

B. 3.87

C. 2.97

D. 2.87

Answer: D

12. Consider the number $1, 2, 3, 4, 5, 6, 7, 8, 9$ and 10.If 1 is added to each number the variance of the number so obtained is

A. 6.5

B. 2.87

C. 3.87

D. 8.25

Answer: D

Watch Video Solution

13. Consider the first 10 positive integers .If we multiply each number by -1 and then add 1 to each number, the variance of the number so obtained

A. 8.25

B. 6.5

C. 3.87

D. 2.87

Answer: A

Watch Video Solution

14. If for a sample of size 60, we have the following information $\sum (x_i)^2 = 18000$ and $\sum x_i = 960$, then the variance is

A. 6.63

B. 16

C. 22

D. 44

Answer: D

Watch Video Solution

15. If the coefficient of variation of two distribution are $50, 60$ and their arithmetic means are 30 and 25 respectively then the difference of their standard deviation is

A. 0

B. 1

C. 1.5

D. 2.5

Answer: A

Watch Video Solution

16. The standard deviation of some temperature data in $.^{\circ} C$ is 5 .If the data were converted into $.^{\circ} F$ then variance would be

A. 81

B. 57

C. 36

D. 25

Answer: A

Fillers

1. Coefficient of variaton $= \frac{\cdots}{\text{Mean}} \times 100$

A. SD

B. MD

C. MEDIAN

D. none of these

Answer: A

Watch Video Solution

2. If $\bar{x}$is at mean of n values of x, then $\Sigma_{i=1}^{n}(x_i - \bar{x}) = 0$ and if a has value other than

$\bar{x}$ then $\Sigma_{i=1}^{n}(x_i - \bar{x})^2$ is less than $\Sigma(x_i - a)^2$

Watch Video Solution

3. If the variance of a data is 121 , then the standard deviation of the data is ..... .

A. 11

B. 12

C. 10

D. 9

Answer: A

 Watch Video Solution

4. The standard deviaton of a data is ..... Of any change in origin but is .....of change of scale .

 Watch Video Solution

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

6. The mean deviation of the data is ..... When measured from the meadian

7. The standard deviation is ..... To the mean deviation taken from the arithmetic mean