



MATHS

NCERT - FULL MARKS MATHEMATICS(TAMIL)

STATISTICS

Example

1. Find the mean deviation about the mean for the following data:

6, 7, 10, 12, 13, 4, 8, 12



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2. Find the mean deviation about the mean for the following data :

12, 3, 18, 17, 4, 9, 17, 19, 20, 15, 8, 17, 2, 3, 16, 11, 3, 1, 0, 5

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3. Find the mean deviation about the median for the following data:

3, 9, 5, 3, 12, 10, 18, 4, 7, 19, 21.

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4. Find mean deviation about the mean for the following data :

x_i 2 5 6 8 10 12

f_i 2 8 10 7 8 5



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5. Find the variance of the following data:

6, 8, 10, 12, 14, 16, 18, 20, 22, 24



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6. Two plants A and B of a factory show following results about the number of workers and the wages paid to them.

	<i>A</i>	<i>B</i>
No. of workers	5000	6000
Average monthly wages	Rs 2500	Rs 2500
Variance of distribution of wages	81	100

In which plant, A or B is there greater variability in individual wages?



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7. Coefficient of variation of two distributions are 60 and 70, and their standard deviations are 21 and 16, respectively. What are their arithmetic means.

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8. The following values are calculated in respect of heights and weights of the students of a section of Class XI :

	Height	Weight
Mean	162.6 cm	52.36 kg
Variance	127.69cm^2	23.1361kg^2

Can we say that the weights show greater variation than the heights?

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

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11. If each of the observation x_1, x_2, \dots, x_n is increased by 'a', where a is a negative or positive number, show that the

variance remains unchanged.

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12. The mean and standard deviation of 100 observations were calculated as 40 and 5.1, respectively by a student who took by mistake 50 instead of 40 for one observation. What are the correct mean and standard deviation?

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Exercise 15 1

1. Find the mean deviation about the mean for the data in
4, 7, 8, 9, 10, 12, 13, 17



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2. Find the mean deviation about the mean for the data in
38, 70, 48, 40, 42, 55, 63, 46, 54, 44



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3. 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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4. Find the mean deviation about the median for the data
in

36, 72, 46, 42, 60, 45, 53, 46, 51, 49

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

x_i 5 10 15 20 25

f_i 7 4 6 3 5

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

x_i 10 30 50 70 90

f_i 4 24 28 16 8

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7. Find the mean deviation about the median for the data in

x_i	5	7	9	10	12	15
f_i	8	6	2	2	2	6

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

in

x_i	15	21	27	30	35
f_i	3	5	6	7	8

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Exercise 15 2

1. Find the mean and variance for each of the data in

6, 7, 10, 12, 13, 4, 8, 12



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2. Find the mean and variance for each of the data in

First n natural numbers



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3. Find the mean and variance for each of the data in

First 10 multiples of 3



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Exercise 15.3

1. 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 larger amount as monthly wages?

(ii) Which firm, A or B, shows greater variability in individual wages?

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2. The sum and sum of squares corresponding to length x (in cm) and weight y (in gm) of 50 plant products are given

below:

$$\sum_{i=1}^{50} x_i = 212, \quad \sum_{i=1}^{50} x_i^2 = 902.8, \quad \sum_{i=1}^{50} y_i = 261, \quad \sum_{i=1}^{50} y_i^2 = 1457.6$$

Which is more varying, the length or weight?



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Miscellaneous Exercise On Chapter 15

1. 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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2. The mean and variance of seven observations are 8 and 16 respectively. If five of these are 2,4,10,12 and 14, then find the remaining two observations.

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3. 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

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4. Given that \bar{x} is the mean and σ^2 is the variance of n observations x_1, x_2, \dots, x_n . Prove that the mean and σ^2 is the variance of n observations $ax_1, ax_2, ax_3, \dots, ax_n$ are $a\bar{x}$ and $a^2\sigma^2$, respectively, ($a \neq 0$).

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5. 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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6. The mean and standard deviation of marks obtained by 50 students of a class in three subjects, Mathematics, Physics and Chemistry are given below:

Subject	Mathematics	Physics	Chemistry
Mean	42	32	40.9
Standard deviation	12	15	20

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

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7. 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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