MATHS

BOOKS - NAGEEN MATHS (HINGLISH)

STATISTICS

Example Type

1. Find the mean deviation using arithmetic mean of the following data:

16,22,26,14,12,15,13,18,

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2. Find the deviation using median of the following observations:

15,19,20,28,16.

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3. Find the mean deviation using arithmetic mean from the folloiwng observations:

x_i	5	15	25	35	45
f_i	5	6	15	16	6.

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4. Find the mean deviation using meadian from the following data:

Term	10	20	30	40	50	60	70	80
frequency	10	15	20	50	40	30	20	10.

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5. Find the mean deviation using arithmetic mean from the following table:

Class-interval	0–10	10–20	20–30	30–40	40–50
Frequency	5	6	15	16	6

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6. Find the mean deviation using median:

Class-interval	0–10	10–20	20–30	30–40	40–50
Frequency	5	12	20	9	4

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7. Find the mean deviation by short cut method.

Class-interval	Frequency
10–20	2
20–30	3
30–40	8
40–50	14
50–60	8
60–70	3
70–80	2

Solution

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8. Find the standard deviation of 8,11,14,17,20,23,26.

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9. Find the variance and standard deviation from the following data:

x_i	2	4	6	8	10
f_i	7	5	7	3	2

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10. Find the standard deviation from the following observations:

15,18,13,20,17,10,16,19,22,20.

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11. Find the standard deviation from the following data:

x_i	1	2	3	4	5
f_i	16	21	10	7	8

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12. Find the standard deviation by using 20 as assumed mean.

Class-interval	0–10	10–20	20–30	30–40	40–50
Frequency	3	6	13	10	5

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13. The arithmetic means of two distributions are 10 and 15 and their S.D. are 2 and 2.5 respectively. Find their coefficient of variation.

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14. The mean and S.D. of the income of the employers of two banks are as follows:

Bank	Mean income (in ₹)	S.D. (in ₹)
A	3200	160
B	3500	140

Compare the coefficient of variation of the income of the employees of the two banks.

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Exercise

1. Find the mean deviation using arithmetic mean for the following observations:

(a) 68,32,49,54,21,38,59,41,66,76

(b) 28,12,17,35,22,18,5,32

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2. Find the mean deviation using median for the following observations:

(a) 17,25,9,12,18,26,21

(b) 6,10,11,15,9,7,15,16,5

(c) 2,4,6,8,10,9,15,12,3,7

(d) 28,32,31,25,22,12,17,26

(e) 5,7,17,9,19,11,18

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3. Find the mean deviation using arithmetic mean for the following

(a)

x_i	10	20	30	40	50
f_i	1	2	3	3	1

(b)

x_i	10	15	20	30	40	50
f_i	8	12	15	10	3	2

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4. Find the mean deviation using median for the following datas:

(a)

x_i	13	14	15	16	17	18	19	20
f_i	1	2	3	4	5	4	3	2

(b)

x_i	21	22	23	24	25	26	27	28	29	30
f_i	7	9	8	5	6	4	4	3	0	1

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5. Find the mean deviation using mean for the following datas:

(a)

Class-interval	f_i
40-50	19
50-60	25
60-70	36
70-80	72
80-90	51
90-100	47

(b)

Class-interval	0-10	10-20	20-30	30-40	40-50
f_i	12	15	14	6	3

(c)

Class-interval	0-20	20-40	40-60	60-80	80-100
f_i	8	11	9	7	5

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6. Find the mean deviation from median for the following tables:

(a)

Class-interval	f_i
20-27	9
27-34	16
34-41	12
41-48	26
48-55	14
55-62	12
62-69	11

(b)

Class-interval	f_i
25-30	18
30-35	27
35-40	39
40-45	42
45-50	33
50-55	21

(c)

Class-interval	f_i
0-20	6
20-40	8
40-60	14
60-80	16
80-100	4
100-120	2

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7. Find the mean deviation from the short cut method.

(a)

Class-interval	f_i
0-10	7
10-20	12
20-30	18
30-40	32
40-50	17
50-60	14

(b)

Class-interval	f_i
0-50	12
50-100	18
100-150	25
150-200	21
200-250	16
250-300	8

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8. Find the standard deviation from the followig datas:

(a) 10,20,30,40,50,60

(b) 80,85,100,110,82,97,93,95,88,140

(c) 5,15,25,35,40,45,55,60

(d) 4,5,7,4,3,2,4,8,4

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9. Find the standard deviation from the following datas:

(a)

x_i	0	2	4	6	8	10
f_i	3	2	5	6	3	1

(b)

x_i	6	7	8	9	10	11	12
f_i	3	6	9	13	8	7	4

(c)

x_i	5	10	15	20	25
f_i	5	6	12	16	11

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10. Find the standard deviation from the following datas, using assumed mean:

(a) 112,117,121,125,130

(b) 37,43,48,34,41,39,46,40

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11. Find the standard deviation from the following datas, using assumed mean:

(a)

x_i	8	12	16	20	24	28
f_i	9	11	17	14	6	3

(b)

x_i	5	10	15	20	25	30	35	40
f_i	12	17	24	21	14	6	4	2

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12. Find the standard deviation from the following datas, using assumed mean:

(a)

Class-interval	Frequency
10-30	7
30-50	11
50-70	12
70-90	6
90-110	14

(b)

Class-interval	Frequency
18-24	13
24-30	18
30-36	26
36-42	15
42-48	11
48-54	7

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13. The mean and variance of 5 observations are respectively 4.4 and 8.24. If three

observation are 1,2 and 4 then find the remaining two observations.

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14. The mean and variance of 8 observations are respectively 9 and 9.25. If six observations are 4,6,7,8,12 and 13 then find the remaining two observations.

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15. 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 sand standard deviation?

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16. The mean and standard deviation of 20 observations are found to be 10 and 2, respectively. One 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

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17. Calculate the mean and standard deviation of first natural numbers.

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18. Find the mean, variance and standard deviation of first n natural numbers.

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19. Find out the standard deviation from the following distribution table:

Class-interval	0-10	10-20	20-30	30-40	40-50
Frequency	6	9	12	8	15

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20. If the coefficients of variations for two distributions are 40 and 50 and their S.D. are 16 and 25 respectively. Find their means.

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21. Find which group is more variable:

Class-interval	Group *A*	Group *B*
0-10	15	18
10-20	17	20
20-30	22	24
30-40	18	22
40-50	14	17
50-60	10	12
60-70	4	7

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22. The arithmetic means of two distributions are 20 and 35 and their S.D. are 5 and 7 respectively. Find their coefficient of variation.

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23. Find which group is more variable:

Class-interval	Group X	Group Y
0-5	6	4
5-10	12	8
10-15	17	15
15-20	13	11
20-25	9	8
25-30	3	4

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24. In the following table, the mean and S.D. of the income of the employees of two factories are given. Find the variability of their average

income.

Factory	Mean (in ₹)	S.D. (in ₹)
P	1200	150
Q	1600	160

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Ncert Questions

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

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2. Find the mean deviation about the mean for the data is Question: 38,70,48,40,42,55,63,45,54,44

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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 :

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

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5. Find the mean deviation about the mean for the data is Question:

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 is Question:

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 Question

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 Question

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

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9. Find the mean deviation about the mean for the data in Question:

Income per day	0-100	100-200	200-300	300-400	400-500	500-600	600-700	700-800
Number of persons	4	8	9	10	7	5	4	3

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10. Find the mean deviation about the mean for the data in Question:

Height (in cm)	95-105	105-115	115-125	125-135	135-145	145-155
Number of boys	9	13	26	30	12	10

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11. 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 girls	6	8	14	16	4	2

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12. Calculate the mean deviatioin about median age for the age distribution of 100

persons given below:

Age in years	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55
Number	5	6	12	14	26	12	16	9

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13. Find the mean and variance for each of the data : $6, 7, 10, 12, 13, 4, 8, 12$

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14. Find the mean and variance for each of the data : First n natural numbers

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15. Find the mean and variance for each of the data : First 10 multiples of 3.

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16. Find the mean and variance for each of the data in Question:

x_i	6	10	14	18	24	28	30
f_i	2	4	7	12	8	4	3

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17. Find the mean and variance for each of the data in Question:

x_i	92	93	97	98	102	104	109
f_i	3	2	3	2	6	3	3

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18. Find the mean and standard deviation using shout-cut method.

x_i	60	61	62	63	64	65	66	67	68
f_i	2	1	12	29	25	12	10	4	5

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19. Find the mean and variance for the following frequency distributions in

Classes	0-30	30-60	60-90	90-120	120-150	150-180	180-210
Frequencies	2	3	5	10	3	5	2

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20. Find the mean and variance for the following frequency distributions in

Classes	0-10	10-20	20-30	30-40	40-50
Frequencies	5	8	15	16	6

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21. Find the mean variance and standard deviation using short-cut method

Height (in cm)	70-75	75-80	80-85	85-90	90-95	95-100	100-105	105-110	110-115
No. of children	3	4	7	7	15	9	6	6	3

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22. The diameter of circles (in mm) drawn in a design are given below:

Diameters	33-36	37-40	41-44	45-48	49-52
No. of circles	15	17	21	22	25

Calculate the standard deviation and mean diameter of the circles.

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23. From the data given below state which group is more variable A or B?

Marks	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Group A	9	17	32	33	40	10	c
Group B	10	20	30	25	43	15	7

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24. From the prices of shares X and Y below, find out which is more stable in value

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25. An analysis of monthly wages paid to workers intwo 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	₹ 5253	₹ 5253
Variance of the distribution	100	121 of wages

(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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26. The following is ht record of goals scored by team A in a football session For the team b, mean number of goals scored per match was 2 with a standard deviation 1.25 goals. Find which team may be considered more consistent?

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27. The sum and sum of square 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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Miscellaneous Exercise

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 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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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

$x_1, x_2,$ â€¦. x_n. Prove that the mean and variance of the observations $ax_1, ax_2, ax_3,$ â€¦. 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. One 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

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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 are recorded as 21, 21 and 18. Find the mean and standard deviation if the

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