

MATHEMATICS · JEE MAIN

Statistics

Chapter-wise previous year questions, with answer key

86

PYQS

2020–2025

PAPERS

3

TOPICS

Measures of Central Tendency

Measures of Dispersion

Variance and Standard Deviation

- 1 Attempt each question on paper first — they're grouped by topic, newest papers first.
- 2 Check yourself against the answer key at the end.
- 3 Got one wrong? Tap “Step-by-step solution” under it for the full working.

Stuck on a question?

Every question has a free step-by-step solution on PrepWiser — tap “Step-by-step solution” under it.

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Measures of Central Tendency · 13 PYQs

Q1 JEE Main 2025 · 23 Jan · Shift 1

Marks obtained by all the students of class 12 are presented in a frequency distribution with classes of equal width. Let the median of this grouped data be 14 with median class interval 12-18 and median class frequency 12. If the number of students whose marks are less than 12 is 18, then the total number of students is :

- (A) 52 (B) 44
(C) 40 (D) 48

[Step-by-step solution ► prepwisar.in/questions/Oat_8Z9oXO](https://www.prepwisar.in/questions/Oat_8Z9oXO)

Q2 JEE Main 2024 · 9 Apr · Shift 1

The frequency distribution of the age of students in a class of 40 students is given below.

Age	15	16	17	18	19	20
No of Students	5	8	5	12	x	y

If the mean deviation about the median is 1.25, then $4x + 5y$ is equal to :

- (A) 43 (B) 46
(C) 44 (D) 47

[Step-by-step solution ► prepwisar.in/questions/qDJfP43xI6](https://www.prepwisar.in/questions/qDJfP43xI6)

Q3 JEE Main 2024 · 30 Jan · Shift 1

Let M denote the median of the following frequency distribution

Class	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20
Frequency	3	9	10	8	6

Then $20M$ is equal to :

- (A) 104 (B) 52
(C) 208 (D) 416

[Step-by-step solution ► prepwisar.in/questions/4zRgwpvcWs](https://www.prepwisar.in/questions/4zRgwpvcWs)

Q4 JEE Main 2023 · 13 Apr · Shift 1

Let the mean of the data

x	1	3	5	7	9
Frequency (f)	4	24	28	α	8

be 5. If m and σ^2 are respectively the mean deviation about the mean and the variance of the data, then $\frac{3\alpha}{m+\sigma^2}$ is equal to _____

Numerical answer — enter the value.

[Step-by-step solution ► prepwisar.in/questions/gE_1pxNOFP](https://www.prepwisar.in/questions/gE_1pxNOFP)

Q5 JEE Main 2023 · 10 Apr · Shift 1

If the mean of the frequency distribution

Class :	0-10	10-20	20-30	30-40	40-50
Frequency :	2	3	x	5	4

is 28, then its variance is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/6vZxSVNA9m](https://www.prepwiser.in/questions/6vZxSVNA9m)

Q6 JEE Main 2021 · 31 Aug · Shift 1

The mean of 10 numbers $7 \times 8, 10 \times 10, 13 \times 12, 16 \times 14, \dots$ is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/puZLAB5Kwv](https://www.prepwiser.in/questions/puZLAB5Kwv)

Q7 JEE Main 2021 · 26 Aug · Shift 2

Let the mean and variance of four numbers 3, 7, x and y ($x > y$) be 5 and 10 respectively. Then the mean of four numbers $3 + 2x, 7 + 2y, x + y$ and $x - y$ is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/JPwua08kcS](https://www.prepwiser.in/questions/JPwua08kcS)

Q8 JEE Main 2021 · 27 Jul · Shift 2

Let the mean and variance of the frequency distribution

$$\begin{array}{cccc} x : & x_1 = 2 & x_2 = 6 & x_3 = 8 & x_4 = 9 \\ f : & 4 & 4 & \alpha & \beta \end{array}$$

be 6 and 6.8 respectively. If x_3 is changed from 8 to 7, then the mean for the new data will be :

(A) 4

(B) 5

(C) $\frac{17}{3}$

(D) $\frac{16}{3}$

[Step-by-step solution ► prepwiser.in/questions/XXoI0M6arH](https://www.prepwiser.in/questions/XXoI0M6arH)

Q9 JEE Main 2021 · 25 Jul · Shift 1

Consider the following frequency distribution :

Class :	10-20	20-30	30-40	40-50	50-60
Frequency :	α	110	54	30	β

If the sum of all frequencies is 584 and median is 45, then $|\alpha - \beta|$ is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwisers.in/questions/r3LQ9HweKL](https://www.prepwisers.in/questions/r3LQ9HweKL)

Q10 JEE Main 2021 · 22 Jul · Shift 2

Consider the following frequency distribution :

Class :	0-6	6-12	12-18	18-24	24-30
Frequency :	a	b	12	9	5

If mean = $\frac{309}{22}$ and median = 14, then the value $(a - b)^2$ is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwisers.in/questions/byLSSbGfcf](https://www.prepwisers.in/questions/byLSSbGfcf)

Q11 JEE Main 2021 · 18 Mar · Shift 1

The mean age of 25 teachers in a school is 40 years. A teacher retires at the age of 60 years and a new teacher is appointed in his place. If the mean age of the teachers in this school now is 39 years, then the age (in years) of the newly appointed teacher is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwisers.in/questions/yxwom2gjql](https://www.prepwisers.in/questions/yxwom2gjql)

Q12 JEE Main 2020 · 6 Sep · Shift 2

Consider the data on x taking the values

$0, 2, 4, 8, \dots, 2^n$ with frequencies

${}^nC_0, {}^nC_1, {}^nC_2, \dots, {}^nC_n$ respectively. If the

mean of this data is $\frac{728}{2^n}$, then n is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwisers.in/questions/6KV1EwPmfH](https://www.prepwisers.in/questions/6KV1EwPmfH)

Q13 JEE Main 2020 · 4 Sep · Shift 1

The mean and variance of 8 observations are 10 and 13.5, respectively. If 6 of these observations are 5, 7, 10, 12, 14, 15, then the absolute difference of the remaining two observations is :

- (A) 5 (B) 3
(C) 7 (D) 9

Step-by-step solution ► [prepwiser.in/questions/m9I9_UyC6y](https://www.prepwiser.in/questions/m9I9_UyC6y)

Measures of Dispersion · 13 PYQs

Q14 JEE Main 2025 · 4 Apr · Shift 2

Let the mean and the standard deviation of the observation 2, 3, 3, 4, 5, 7, a , b be 4 and $\sqrt{2}$ respectively. Then the mean deviation about the mode of these observations is :

- (A) $\frac{1}{2}$ (B) $\frac{3}{4}$
(C) 1 (D) 2

Step-by-step solution ► [prepwiser.in/questions/Dw6Jst8mal](https://www.prepwiser.in/questions/Dw6Jst8mal)

Q15 JEE Main 2024 · 4 Apr · Shift 1

Let $\alpha, \beta \in \mathbf{R}$. Let the mean and the variance of 6 observations $-3, 4, 7, -6, \alpha, \beta$ be 2 and 23, respectively. The mean deviation about the mean of these 6 observations is :

- (A) $\frac{16}{3}$ (B) $\frac{11}{3}$
(C) $\frac{14}{3}$ (D) $\frac{13}{3}$

Step-by-step solution ► [prepwiser.in/questions/h-Cn7QE1Y1](https://www.prepwiser.in/questions/h-Cn7QE1Y1)

Q16 JEE Main 2024 · 1 Feb · Shift 1

Let the median and the mean deviation about the median of 7 observation 170, 125, 230, 190, 210, a , b be 170 and $\frac{205}{7}$ respectively. Then the mean deviation about the mean of these 7 observations is :

- (A) 31 (B) 28
(C) 30 (D) 32

Step-by-step solution ► [prepwiser.in/questions/E5vLkgoFTq](https://www.prepwiser.in/questions/E5vLkgoFTq)

Q17 JEE Main 2024 · 29 Jan · Shift 1

If the mean and variance of the data 65, 68, 58, 44, 48, 45, 60, $\alpha, \beta, 60$ where $\alpha > \beta$, are 56 and 66.2 respectively, then $\alpha^2 + \beta^2$ is equal to _____.

Numerical answer — enter the value.

Step-by-step solution ► [prepwiser.in/questions/E-XjIbpRDs](https://www.prepwiser.in/questions/E-XjIbpRDs)

Q18 JEE Main 2024 · 29 Jan · Shift 2

If the mean and variance of five observations are $\frac{24}{5}$ and $\frac{194}{25}$ respectively and the mean of the first four observations is $\frac{7}{2}$, then the variance of the first four observations is equal to

- (A) $\frac{5}{4}$ (B) $\frac{4}{5}$
(C) $\frac{105}{4}$ (D) $\frac{77}{12}$

Step-by-step solution ► [prepwiser.in/questions/-dpXjHztNH](https://www.prepwiser.in/questions/-dpXjHztNH)

Q19 JEE Main 2024 · 27 Jan · Shift 2

The mean and standard deviation of 15 observations were found to be 12 and 3 respectively. On rechecking it was found that an observation was read as 10 in place of 12. If μ and σ^2 denote the mean and variance of the correct observations respectively, then $15(\mu + \mu^2 + \sigma^2)$ is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/tJPntUIJj2](https://www.prepwiser.in/questions/tJPntUIJj2)

Q20 JEE Main 2023 · 15 Apr · Shift 1

The mean and standard deviation of 10 observations are 20 and 8 respectively. Later on, it was observed that one observation was recorded as 50 instead of 40. Then the correct variance is :

- (A) 11 (B) 12
(C) 13 (D) 14

[Step-by-step solution ► prepwiser.in/questions/T2QNKm8daa](https://www.prepwiser.in/questions/T2QNKm8daa)

Q21 JEE Main 2023 · 11 Apr · Shift 2

Let the mean of 6 observations 1, 2, 4, 5, x and y be 5 and their variance be 10. Then their mean deviation about the mean is equal to :

- (A) $\frac{10}{3}$ (B) $\frac{8}{3}$
(C) $\frac{7}{3}$ (D) 3

[Step-by-step solution ► prepwiser.in/questions/tQ9utGA8QL](https://www.prepwiser.in/questions/tQ9utGA8QL)

Q22 JEE Main 2023 · 30 Jan · Shift 2

Let S be the set of all values of a_1 for which the mean deviation about the mean of 100 consecutive positive integers $a_1, a_2, a_3, \dots, a_{100}$ is 25. Then S is :

- (A) {9} (B) ϕ
(C) {99} (D) $\mathbb{N}$

[Step-by-step solution ► prepwiser.in/questions/B0D0vtqmzQ](https://www.prepwiser.in/questions/B0D0vtqmzQ)

Q23 JEE Main 2022 · 25 Jul · Shift 2

If the mean deviation about median for the numbers 3, 5, 7, 2k, 12, 16, 21, 24, arranged in the ascending order, is 6 then the median is :

- (A) 11.5 (B) 10.5
(C) 12 (D) 11

[Step-by-step solution ► prepwiser.in/questions/cruMXhOpWZ](https://www.prepwiser.in/questions/cruMXhOpWZ)

Q24 JEE Main 2022 · 26 Jun · Shift 1

The mean of the numbers a, b, 8, 5, 10 is 6 and their variance is 6.8. If M is the mean deviation of the numbers about the mean, then 25 M is equal to :

- (A) 60 (B) 55
(C) 50 (D) 45

[Step-by-step solution ► prepwiser.in/questions/CkcNcV8QcK](https://www.prepwiser.in/questions/CkcNcV8QcK)

Q25 JEE Main 2022 · 25 Jun · Shift 2

If the mean deviation about the mean of the numbers 1, 2, 3,, n, where n is odd, is $\frac{5(n+1)}{n}$, then n is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwisser.in/questions/L8ASNIsqiI](https://www.prepwisser.in/questions/L8ASNIsqiI)

Q26 JEE Main 2021 · 18 Mar · Shift 2

Let in a series of $2n$ observations, half of them are equal to a and remaining half are equal to $-a$. Also by adding a constant b in each of these observations, the mean and standard deviation of new set become 5 and 20, respectively. Then the value of $a^2 + b^2$ is equal to :

- (A) 425 (B) 250
(C) 925 (D) 650

[Step-by-step solution ► prepwisser.in/questions/G_vIs2zq_H](https://www.prepwisser.in/questions/G_vIs2zq_H)

Variance and Standard Deviation · 60 PYQs

Q27 JEE Main 2025 · 7 Apr · Shift 1

The mean and standard deviation of 100 observations are 40 and 5.1, respectively. By mistake one observation is taken as 50 instead of 40. If the correct mean and the correct standard deviation are μ and σ respectively, then $10(\mu + \sigma)$ is equal to

- (A) 447 (B) 445
(C) 449 (D) 451

[Step-by-step solution ► prepwisser.in/questions/HNF3TwD8CN](https://www.prepwisser.in/questions/HNF3TwD8CN)

Q28 JEE Main 2025 · 3 Apr · Shift 2

Let the Mean and Variance of five observations $x_1 = 1, x_2 = 3, x_3 = a, x_4 = 7$ and $x_5 = b, a > b$, be 5 and 10 respectively. Then the Variance of the observations $n + x_n, n = 1, 2, \dots, 5$ is

- (A) 17 (B) 16
(C) 16.4 (D) 17.4

[Step-by-step solution ► prepwisser.in/questions/lu_jXcLJ3U](https://www.prepwisser.in/questions/lu_jXcLJ3U)

Q29 JEE Main 2025 · 2 Apr · Shift 2

If the mean and the variance of 6, 4, a , 8, b , 12, 10, 13 are 9 and 9.25 respectively, then $a + b + ab$ is equal to :

- (A) 103 (B) 106
(C) 100 (D) 105

[Step-by-step solution ► prepwisser.in/questions/MIsYB59-Qc](https://www.prepwisser.in/questions/MIsYB59-Qc)

Q30 JEE Main 2025 · 29 Jan · Shift 1

Let $x_1, x_2, \dots, x_{10}$ be ten observations such that $\sum_{i=1}^{10} (x_i - 2) = 30$, $\sum_{i=1}^{10} (x_i - \beta)^2 = 98$, $\beta > 2$, and their variance is $\frac{4}{5}$. If μ and σ^2 are respectively the mean and the variance of $2(x_1 - 1) + 4\beta, 2(x_2 - 1) + 4\beta, \dots, 2(x_{10} - 1) + 4\beta$, then $\frac{\beta\mu}{\sigma^2}$ is equal to :

- (A) 100
- (B) 90
- (C) 120
- (D) 110

[Step-by-step solution ► prepwiser.in/questions/F0YD_RAxGw](https://www.prepwiser.in/questions/F0YD_RAxGw)

Q31 JEE Main 2025 · 24 Jan · Shift 1

For a statistical data $x_1, x_2, \dots, x_{10}$ of 10 values, a student obtained the mean as 5.5 and $\sum_{i=1}^{10} x_i^2 = 371$. He later found that he had noted two values in the data incorrectly as 4 and 5, instead of the correct values 6 and 8, respectively. The variance of the corrected data is

- (A) 5
- (B) 7
- (C) 9
- (D) 4

[Step-by-step solution ► prepwiser.in/questions/RXkTE6EvXw](https://www.prepwiser.in/questions/RXkTE6EvXw)

Q32 JEE Main 2025 · 23 Jan · Shift 2

The variance of the numbers 8, 21, 34, 47, $\dots$, 320 is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/ntENBkBovF](https://www.prepwiser.in/questions/ntENBkBovF)

Q33 JEE Main 2024 · 9 Apr · Shift 2

If the variance of the frequency distribution

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

is 160, then the value of $c \in N$ is

- (A) 5
- (B) 8
- (C) 6
- (D) 7

[Step-by-step solution ► prepwiser.in/questions/Gpy_3MUdxv](https://www.prepwiser.in/questions/Gpy_3MUdxv)

Q34 JEE Main 2024 · 6 Apr · Shift 1

The mean and standard deviation of 20 observations are found to be 10 and 2, respectively. On rechecking, it was found that an observation by mistake was taken 8 instead of 12. The correct standard deviation is

- (A) 1.94
- (B) $\sqrt{3.96}$
- (C) $\sqrt{3.86}$
- (D) 1.8

[Step-by-step solution ► prepwiser.in/questions/uyO5ZPpJFe](https://www.prepwiser.in/questions/uyO5ZPpJFe)

Q35 JEE Main 2024 · 5 Apr · Shift 2

Let the mean and the standard deviation of the probability distribution

X	α	1	0	-3
P(X)	$\frac{1}{3}$	K	$\frac{1}{6}$	$\frac{1}{4}$

be μ and σ , respectively. If $\sigma - \mu = 2$, then $\sigma + \mu$ is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/UIkKXOLGjv](https://www.prepwiser.in/questions/UIkKXOLGjv)

Q36 JEE Main 2024 · 1 Feb · Shift 2

Consider 10 observations $x_1, x_2, \dots, x_{10}$ such that $\sum_{i=1}^{10} (x_i - \alpha) = 2$ and $\sum_{i=1}^{10} (x_i - \beta)^2 = 40$, where α, β are positive integers. Let the mean and the variance of the observations be $\frac{6}{5}$ and $\frac{84}{25}$ respectively. Then $\frac{\beta}{\alpha}$ is equal to :

- (A) 2 (B) 1
(C) $\frac{5}{2}$ (D) $\frac{3}{2}$

[Step-by-step solution ► prepwiser.in/questions/iDKXq1UQ1T](https://www.prepwiser.in/questions/iDKXq1UQ1T)

Q37 JEE Main 2024 · 31 Jan · Shift 2

Let the mean and the variance of 6 observations $a, b, 68, 44, 48, 60$ be 55 and 194, respectively. If $a > b$, then $a + 3b$ is

- (A) 180 (B) 210
(C) 190 (D) 200

[Step-by-step solution ► prepwiser.in/questions/3wykehXvzL](https://www.prepwiser.in/questions/3wykehXvzL)

Q38 JEE Main 2024 · 30 Jan · Shift 2

The variance σ^2 of the data

x_i	0	1	5	6	10	12	17
f_i	3	2	3	2	6	3	3

is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/XGB0TA9vrH](https://www.prepwiser.in/questions/XGB0TA9vrH)

Q39 JEE Main 2024 · 27 Jan · Shift 1

Let $a_1, a_2, \dots, a_{10}$ be 10 observations such that $\sum_{k=1}^{10} a_k = 50$ and $\sum_{\forall k < j} a_k \cdot a_j = 1100$. Then the standard deviation of $a_1, a_2, \dots, a_{10}$ is equal to :

- (A) 5 (B) $\sqrt{115}$
(C) 10 (D) $\sqrt{5}$

[Step-by-step solution ► prepwiser.in/questions/CPpzeKk1GY](https://www.prepwiser.in/questions/CPpzeKk1GY)

Q40 JEE Main 2023 · 13 Apr · Shift 2

The mean and standard deviation of the marks of 10 students were found to be 50 and 12 respectively. Later, it was observed that two marks 20 and 25 were wrongly read as 45 and 50 respectively. Then the correct variance is _____

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/DHBUXriXW5](https://www.prepwiser.in/questions/DHBUXriXW5)

Q41 JEE Main 2023 · 12 Apr · Shift 1

Two dice A and B are rolled. Let the numbers obtained on A and B be α and β respectively. If the variance of $\alpha - \beta$ is $\frac{p}{q}$, where p and q are co-prime, then the sum of the positive divisors of p is equal to :

- (A) 48 (B) 31
(C) 72 (D) 36

[Step-by-step solution ► prepwiser.in/questions/82Xv-1BCGb](https://www.prepwiser.in/questions/82Xv-1BCGb)

Q42 JEE Main 2023 · 11 Apr · Shift 1

Let sets A and B have 5 elements each. Let the mean of the elements in sets A and B be 5 and 8 respectively and the variance of the elements in sets A and B be 12 and 20 respectively. A new set C of 10 elements is formed by subtracting 3 from each element of A and adding 2 to each element of B. Then the sum of the mean and variance of the elements of C is _____.

- (A) 36 (B) 40
(C) 38 (D) 32

[Step-by-step solution ► prepwiser.in/questions/7TH9EhMhaK](https://www.prepwiser.in/questions/7TH9EhMhaK)

Q43 JEE Main 2023 · 10 Apr · Shift 2

Let μ be the mean and σ be the standard deviation of the distribution

x_i	0	1	2	3	4	5
f_i	$k + 2$	$2k$	$k^2 - 1$	$k^2 - 1$	$k^2 + 1$	$k - 3$

where $\sum f_i = 62$. If $[x]$ denotes the greatest integer $\leq x$, then $[\mu^2 + \sigma^2]$ is equal to :

- (A) 9 (B) 8
(C) 6 (D) 7

[Step-by-step solution ► prepwiser.in/questions/XCLO4ol2JO](https://www.prepwiser.in/questions/XCLO4ol2JO)

Q44 JEE Main 2023 · 8 Apr · Shift 1

Let the mean and variance of 8 numbers $x, y, 10, 12, 6, 12, 4, 8$ be 9 and 9.25 respectively. If $x > y$, then $3x - 2y$ is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/_2WjTnvSPH](https://www.prepwiser.in/questions/_2WjTnvSPH)

Q45 JEE Main 2023 · 8 Apr · Shift 2

Let the mean and variance of 12 observations be $\frac{9}{2}$ and 4 respectively. Later on, it was observed that two observations were considered as 9 and 10 instead of 7 and 14 respectively. If the correct variance is $\frac{m}{n}$, where m and n are coprime, then $m + n$ is equal to :

- (A) 317 (B) 316
(C) 314 (D) 315

Step-by-step solution ► [prepwisser.in/questions/szKaV8O3sz](https://www.prepwisser.in/questions/szKaV8O3sz)

Q46 JEE Main 2023 · 6 Apr · Shift 1

The mean and variance of a set of 15 numbers are 12 and 14 respectively. The mean and variance of another set of 15 numbers are 14 and σ^2 respectively. If the variance of all the 30 numbers in the two sets is 13, then σ^2 is equal to :

- (A) 12 (B) 11
(C) 10 (D) 9

Step-by-step solution ► [prepwisser.in/questions/a6FAzBCbld](https://www.prepwisser.in/questions/a6FAzBCbld)

Q47 JEE Main 2023 · 6 Apr · Shift 2

If the mean and variance of the frequency distribution

x_i	2	4	6	8	10	12	14	16
f_i	4	4	α	15	8	β	4	5

are 9 and 15.08 respectively, then the value of $\alpha^2 + \beta^2 - \alpha\beta$ is _____.

Numerical answer — enter the value.

Step-by-step solution ► [prepwisser.in/questions/SURagDtRLe](https://www.prepwisser.in/questions/SURagDtRLe)

Q48 JEE Main 2023 · 1 Feb · Shift 1

The mean and variance of 5 observations are 5 and 8 respectively. If 3 observations are 1, 3, 5, then the sum of cubes of the remaining two observations is :

- (A) 1792 (B) 1216
(C) 1456 (D) 1072

Step-by-step solution ► [prepwisser.in/questions/RalwyVpUg7](https://www.prepwisser.in/questions/RalwyVpUg7)

Q49 JEE Main 2023 · 31 Jan · Shift 2

Let the mean and standard deviation of marks of class A of 100 students be respectively 40 and $\alpha (> 0)$, and the mean and standard deviation of marks of class B of n students be respectively 55 and $30 - \alpha$. If the mean and variance of the marks of the combined class of $100 + n$ students are respectively 50 and 350, then the sum of variances of classes A and B is :

- (A) 450 (B) 900
(C) 650 (D) 500

Step-by-step solution ► [prepwisser.in/questions/F4YAs_j1Z](https://www.prepwisser.in/questions/F4YAs_j1Z)

Q50 JEE Main 2023 · 30 Jan · Shift 1

The mean and variance of 7 observations are 8 and 16 respectively. If one observation 14 is omitted and a and b are respectively mean and variance of remaining 6 observation, then $a + 3b - 5$ is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/5WLSbzfiEi](https://www.prepwiser.in/questions/5WLSbzfiEi)

Q51 JEE Main 2023 · 29 Jan · Shift 2

Let $X = \{11, 12, 13, \dots, 40, 41\}$ and $Y = \{61, 62, 63, \dots, 90, 91\}$ be the two sets of observations. If $\bar{x}$ and $\bar{y}$ are their respective means and σ^2 is the variance of all the observations in $X \cup Y$, then $|\bar{x} + \bar{y} - \sigma^2|$ is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/PVIOtv8_Pq](https://www.prepwiser.in/questions/PVIOtv8_Pq)

Q52 JEE Main 2023 · 25 Jan · Shift 1

The mean and variance of the marks obtained by the students in a test are 10 and 4 respectively. Later, the marks of one of the students is increased from 8 to 12. If the new mean of the marks is 10.2, then their new variance is equal to :

- | | |
|----------|----------|
| (A) 3.92 | (B) 4.08 |
| (C) 3.96 | (D) 4.04 |

[Step-by-step solution ► prepwiser.in/questions/zfzkM1xNRB](https://www.prepwiser.in/questions/zfzkM1xNRB)

Q53 JEE Main 2023 · 24 Jan · Shift 2

Let the six numbers $a_1, a_2, a_3, a_4, a_5, a_6$, be in A.P. and $a_1 + a_3 = 10$. If the mean of these six numbers is $\frac{19}{2}$ and their variance is σ^2 , then $8\sigma^2$ is equal to :

- | | |
|---------|---------|
| (A) 220 | (B) 210 |
| (C) 105 | (D) 200 |

[Step-by-step solution ► prepwiser.in/questions/Pf4w_8JT7z](https://www.prepwiser.in/questions/Pf4w_8JT7z)

Q54 JEE Main 2022 · 29 Jul · Shift 1

Let the mean and the variance of 20 observations $x_1, x_2, \dots, x_{20}$ be 15 and 9, respectively. For $\alpha \in \mathbb{R}$, if the mean of

$$(x_1 + \alpha)^2, (x_2 + \alpha)^2, \dots, (x_{20} + \alpha)^2$$

is 178, then the square of the maximum value of α is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/er2rmxVdD0](https://www.prepwiser.in/questions/er2rmxVdD0)

Q55 JEE Main 2022 · 27 Jul · Shift 1

The mean and variance of 10 observations were calculated as 15 and 15 respectively by a student who took by mistake 25 instead of 15 for one observation. Then, the correct standard deviation is

_____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/eu8cOagagh](https://www.prepwiser.in/questions/eu8cOagagh)

Q56 JEE Main 2022 · 26 Jul · Shift 2

The mean and standard deviation of 40 observations are 30 and 5 respectively. It was noticed that two of these observations 12 and 10 were wrongly recorded. If σ is the standard deviation of the data after omitting the two wrong observations from the data, then $38\sigma^2$ is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/EwXXImI8p4](https://www.prepwiser.in/questions/EwXXImI8p4)

Q57 JEE Main 2022 · 29 Jun · Shift 1

Let the mean and the variance of 5 observations x_1, x_2, x_3, x_4, x_5 be $\frac{24}{5}$ and $\frac{194}{25}$ respectively. If the mean and variance of the first 4 observations are $\frac{7}{2}$ and a respectively, then $(4a + x_5)$ is equal to:

- (A) 13 (B) 15
(C) 17 (D) 18

[Step-by-step solution ► prepwiser.in/questions/fOQuOLz0s8](https://www.prepwiser.in/questions/fOQuOLz0s8)

Q58 JEE Main 2022 · 29 Jun · Shift 2

The number of values of $a \in \mathbb{N}$ such that the variance of 3, 7, 12, a , 43 — a is a natural number is :

- (A) 0 (B) 2
(C) 5 (D) infinite

[Step-by-step solution ► prepwiser.in/questions/dAwEuhhvWm](https://www.prepwiser.in/questions/dAwEuhhvWm)

Q59 JEE Main 2022 · 28 Jun · Shift 1

The mean and standard deviation of 15 observations are found to be 8 and 3 respectively. On rechecking it was found that, in the observations, 20 was misread as 5. Then, the correct variance is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/BOVhpKo3gk](https://www.prepwiser.in/questions/BOVhpKo3gk)

Q60 JEE Main 2022 · 28 Jun · Shift 2

Suppose a class has 7 students. The average marks of these students in the mathematics examination is 62, and their variance is 20. A student fails in the examination if he/she gets less than 50 marks, then in worst case, the number of students can fail is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/-kZFjCyEwi](https://www.prepwiser.in/questions/-kZFjCyEwi)

Q61 JEE Main 2022 · 27 Jun · Shift 2

The mean and variance of the data 4, 5, 6, 6, 7, 8, x , y , where $x < y$, are 6 and $\frac{9}{4}$ respectively. Then $x^4 + y^2$ is equal to :

- (A) 162 (B) 320
(C) 674 (D) 420

[Step-by-step solution ► prepwiser.in/questions/j_GnSQMpD](https://www.prepwiser.in/questions/j_GnSQMpD)

Q62 JEE Main 2022 · 26 Jun · Shift 2

The mean and standard deviation of 50 observations are 15 and 2 respectively. It was found that one incorrect observation was taken such that the sum of correct and incorrect observations is 70. If the correct mean is 16, then the correct variance is equal to :

- (A) 10 (B) 36
(C) 43 (D) 60

[Step-by-step solution ► prepwiser.in/questions/_1_bSAIbvC](https://www.prepwiser.in/questions/_1_bSAIbvC)

Q63 JEE Main 2021 · 31 Aug · Shift 2

The mean and variance of 7 observations are 8 and 16 respectively. If two observations are 6 and 8, then the variance of the remaining 5 observations is :

- (A) $\frac{92}{5}$ (B) $\frac{134}{5}$
(C) $\frac{536}{25}$ (D) $\frac{112}{5}$

[Step-by-step solution ► prepwiser.in/questions/Cc-rcjekwh](https://www.prepwiser.in/questions/Cc-rcjekwh)

Q64 JEE Main 2021 · 27 Aug · Shift 1

Let n be an odd natural number such that the variance of 1, 2, 3, 4,, n is 14. Then n is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/pSIhRISniC](https://www.prepwiser.in/questions/pSIhRISniC)

Q65 JEE Main 2021 · 27 Aug · Shift 2

An online exam is attempted by 50 candidates out of which 20 are boys. The average marks obtained by boys is 12 with a variance 2. The variance of marks obtained by 30 girls is also 2. The average marks of all 50 candidates is 15. If μ is the average marks of girls and σ^2 is the variance of marks of 50 candidates, then $\mu + \sigma^2$ is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/Qq4GxNluqz](https://www.prepwiser.in/questions/Qq4GxNluqz)

Q66 JEE Main 2021 · 26 Aug · Shift 1

The mean and standard deviation of 20 observations were calculated as 10 and 2.5 respectively. It was found that by mistake one data value was taken as 25 instead of 35. If α and $\sqrt{\beta}$ are the mean and standard deviation respectively for correct data, then (α, β) is :

- (A) (11, 26) (B) (10.5, 25)
(C) (11, 25) (D) (10.5, 26)

[Step-by-step solution ► prepwiser.in/questions/nXG3-q6XZV](https://www.prepwiser.in/questions/nXG3-q6XZV)

Q67 JEE Main 2021 · 27 Jul · Shift 1

If the mean and variance of the following data : 6, 10, 7, 13, a , 12, b , 12 are 9 and $\frac{37}{4}$

respectively, then $(a - b)^2$ is equal to :

- (A) 24 (B) 12
(C) 32 (D) 16

[Step-by-step solution ► prepwiser.in/questions/dlO3ZrTT5j](https://www.prepwiser.in/questions/dlO3ZrTT5j)

Q68 JEE Main 2021 · 25 Jul · Shift 2

The first of the two samples in a group has 100 items with mean 15 and standard deviation 3. If the whole group has 250 items with mean 15.6 and standard deviation $\sqrt{13.44}$, then the standard deviation of the second sample is :

- (A) 8 (B) 6
(C) 4 (D) 5

[Step-by-step solution ► prepwiser.in/questions/cL2aJ1I9tU](https://www.prepwiser.in/questions/cL2aJ1I9tU)

Q69 JEE Main 2021 · 20 Jul · Shift 2

If the mean and variance of six observations 7, 10, 11, 15, a, b are 10 and $\frac{20}{3}$, respectively, then the value of $|a - b|$ is equal to :

- (A) 9 (B) 11
(C) 7 (D) 1

[Step-by-step solution ► prepwiser.in/questions/IZOrx8FEsG](https://www.prepwiser.in/questions/IZOrx8FEsG)

Q70 JEE Main 2021 · 20 Jul · Shift 1

The mean of 6 distinct observations is 6.5 and their variance is 10.25. If 4 out of 6 observations are 2, 4, 5 and 7, then the remaining two observations are :

- (A) 10, 11 (B) 3, 18
(C) 8, 13 (D) 1, 20

[Step-by-step solution ► prepwiser.in/questions/i9hbmQwkNq](https://www.prepwiser.in/questions/i9hbmQwkNq)

Q71 JEE Main 2021 · 17 Mar · Shift 2

Consider a set of $3n$ numbers having variance 4. In this set, the mean of first $2n$ numbers is 6 and the mean of the remaining n numbers is 3. A new set is constructed by adding 1 into each of first $2n$ numbers, and subtracting 1 from each of the remaining n numbers. If the variance of the new set is k , then $9k$ is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/B4LdnGpJE3](https://www.prepwiser.in/questions/B4LdnGpJE3)

Q72 JEE Main 2021 · 16 Mar · Shift 1

Consider three observations a , b , and c such that $b = a + c$. If the standard deviation of $a + 2$, $b + 2$, $c + 2$ is d , then which of the following is true?

- (A) $b^2 = 3(a^2 + c^2) + 9d^2$
(B) $b^2 = 3(a^2 + c^2) - 9d^2$
(C) $b^2 = 3(a^2 + c^2 + d^2)$
(D) $b^2 = a^2 + c^2 + 3d^2$

[Step-by-step solution ► prepwiser.in/questions/GUeeNUcjo2](https://www.prepwiser.in/questions/GUeeNUcjo2)

Q73 JEE Main 2021 · 16 Mar · Shift 2

Consider the statistics of two sets of observations as follows :

	Size	Mean	Variance
Observation I	10	2	2
Observation II	n	3	1

If the variance of the combined set of these two observations is $\frac{17}{9}$, then the value of n is equal to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/3w8jrPXvIr](https://www.prepwiser.in/questions/3w8jrPXvIr)

Q74 JEE Main 2021 · 26 Feb · Shift 2

Let $X_1, X_2, \dots, X_{18}$ be eighteen observations such

that $\sum_{i=1}^{18} (X_i - \alpha) = 36$ and $\sum_{i=1}^{18} (X_i - \beta)^2 = 90$, where α and β are distinct real numbers. If the standard deviation of these observations is 1, then the value of $|\alpha - \beta|$ is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/KQZ9Qk3GqI](https://www.prepwiser.in/questions/KQZ9Qk3GqI)

Q75 JEE Main 2021 · 24 Feb · Shift 2

If the variance of 10 natural numbers 1, 1, 1, ..., 1, k is less than 10, then the maximum possible value of k is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/5qQrb_cEg6](https://www.prepwiser.in/questions/5qQrb_cEg6)

Q76 JEE Main 2020 · 6 Sep · Shift 1

If $\sum_{i=1}^n (x_i - a) = n$ and $\sum_{i=1}^n (x_i - a)^2 = na$

($n, a > 1$) then the standard deviation of n observations $x_1, x_2, \dots, x_n$ is :

(A) $a - 1$

(B) $n\sqrt{a - 1}$

(C) $\sqrt{n(a - 1)}$

(D) $\sqrt{a - 1}$

[Step-by-step solution ► prepwiser.in/questions/tjFepmd6l4](https://www.prepwiser.in/questions/tjFepmd6l4)

Q77 JEE Main 2020 · 5 Sep · Shift 2

If the mean and the standard deviation of the data 3, 5, 7, a, b are 5 and 2 respectively, then a and b are the roots of the equation :

(A) $x^2 - 20x + 18 = 0$

(B) $2x^2 - 20x + 19 = 0$

(C) $x^2 - 10x + 18 = 0$

(D) $x^2 - 10x + 19 = 0$

[Step-by-step solution ► prepwiser.in/questions/2J8f4DBOe_](https://www.prepwiser.in/questions/2J8f4DBOe_)

Q78 JEE Main 2020 · 5 Sep · Shift 1

The mean and variance of 7 observations are 8 and 16, respectively. If five observations are 2, 4, 10, 12, 14, then the absolute difference of the remaining two observations is :

- (A) 2 (B) 3
(C) 1 (D) 4

[Step-by-step solution ► prepwisar.in/questions/h7v-KW5sbk](https://www.prepwisar.in/questions/h7v-KW5sbk)

Q79 JEE Main 2020 · 3 Sep · Shift 2

Let x_i ($1 \leq i \leq 10$) be ten observations of a random variable X. If

$$\sum_{i=1}^{10} (x_i - p) = 3 \text{ and } \sum_{i=1}^{10} (x_i - p)^2 = 9$$

where $0 \neq p \in \mathbb{R}$, then the standard deviation of these observations is :

- (A) $\frac{7}{10}$ (B) $\frac{9}{10}$
(C) $\frac{4}{5}$ (D) $\sqrt{\frac{3}{5}}$

[Step-by-step solution ► prepwisar.in/questions/yX3Yqh3ZkM](https://www.prepwisar.in/questions/yX3Yqh3ZkM)

Q80 JEE Main 2020 · 3 Sep · Shift 1

For the frequency distribution :

Variate (x) : $x_1 \ x_2 \ x_3 \dots x_{15}$

Frequency (f) : $f_1 \ f_2 \ f_3 \dots f_{15}$

where $0 < x_1 < x_2 < x_3 < \dots < x_{15} = 10$ and

$\sum_{i=1}^{15} f_i > 0$, the standard deviation cannot be :

- (A) 6 (B) 1
(C) 4 (D) 2

[Step-by-step solution ► prepwisar.in/questions/2Jd-B9owk2](https://www.prepwisar.in/questions/2Jd-B9owk2)

Q81 JEE Main 2020 · 2 Sep · Shift 1

Let $X = \{x \in \mathbb{N} : 1 \leq x \leq 17\}$ and

$Y = \{ax + b : x \in X \text{ and } a, b \in \mathbb{R}, a > 0\}$. If mean and variance of elements of Y are 17 and 216 respectively then $a + b$ is equal to :

- (A) 7 (B) 9
(C) -7 (D) -27

[Step-by-step solution ► prepwisar.in/questions/izjZB1PjzY](https://www.prepwisar.in/questions/izjZB1PjzY)

Q82 JEE Main 2020 · 9 Jan · Shift 1

Let the observations x_i ($1 \leq i \leq 10$) satisfy the equations, $\sum_{i=1}^{10} (x_i - 5) = 10$ and $\sum_{i=1}^{10} (x_i - 5)^2 = 40$.

If μ and λ are the mean and the variance of the observations, $x_1 - 3, x_2 - 3, \dots, x_{10} - 3$, then the ordered pair (μ, λ) is equal to :

(A) (6, 6)

(B) (3, 3)

(C) (3, 6)

(D) (6, 3)

[Step-by-step solution ► prepwisser.in/questions/IK9_XF6TwO](https://www.prepwisser.in/questions/IK9_XF6TwO)

Q83 JEE Main 2020 · 8 Jan · Shift 1

The mean and the standard deviation (s.d.) of 10 observations are 20 and 2 respectively. Each of these 10 observations is multiplied by p and then reduced by q , where $p \neq 0$ and $q \neq 0$. If the new mean and new s.d. become half of their original values, then q is equal to

(A) 10

(B) -20

(C) -10

(D) -5

[Step-by-step solution ► prepwisser.in/questions/xc5JK3U5_3](https://www.prepwisser.in/questions/xc5JK3U5_3)

Q84 JEE Main 2020 · 8 Jan · Shift 2

The mean and variance of 20 observations are found to be 10 and 4, respectively. On rechecking, it was found that an observation 9 was incorrect and the correct observation was 11. Then the correct variance is

(A) 3.98

(B) 3.99

(C) 4.01

(D) 4.02

[Step-by-step solution ► prepwisser.in/questions/0lx6khuZpR](https://www.prepwisser.in/questions/0lx6khuZpR)

Q85 JEE Main 2020 · 7 Jan · Shift 2

If the mean and variance of eight numbers 3, 7, 9, 12, 13, 20, x and y be 10 and 25 respectively, then $x \cdot y$ is equal to ____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwisser.in/questions/7QIvFjhrUV](https://www.prepwisser.in/questions/7QIvFjhrUV)

Q86 JEE Main 2020 · 7 Jan · Shift 1

If the variance of the first n natural numbers is 10 and the variance of the first m even natural numbers is 16, then $m + n$ is equal to ____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwisser.in/questions/DwUHA-efoc](https://www.prepwisser.in/questions/DwUHA-efoc)

Answer key — Statistics

Numbers match the question numbers above. For full working, open the solution link under each question.

1	B	2	C	3	C	4	8	5	151	6	398	7	12	8	C
9	164	10	4	11	35	12	6	13	C	14	C	15	D	16	C
17	6344	18	A	19	2521	20	C	21	B	22	D	23	D	24	A
25	21	26	A	27	C	28	B	29	A	30	A	31	B	32	8788
33	D	34	B	35	5	36	A	37	A	38	29	39	D	40	269
41	A	42	C	43	B	44	25	45	A	46	C	47	25	48	D
49	D	50	37	51	603	52	C	53	B	54	4	55	2	56	238
57	B	58	A	59	17	60	0	61	B	62	C	63	C	64	13
65	25	66	D	67	D	68	C	69	D	70	A	71	68	72	B
73	5	74	4	75	11	76	D	77	D	78	A	79	B	80	A
81	C	82	B	83	B	84	B	85	54	86	18				

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