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MATHEMATICS · JEE MAIN

Statistics

Previous Year Questions with answers

160 questions · **156** papers · **2002–2026** · newest paper first

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What is in this PDF: every Statistics question we hold from past JEE Main and AIEEE papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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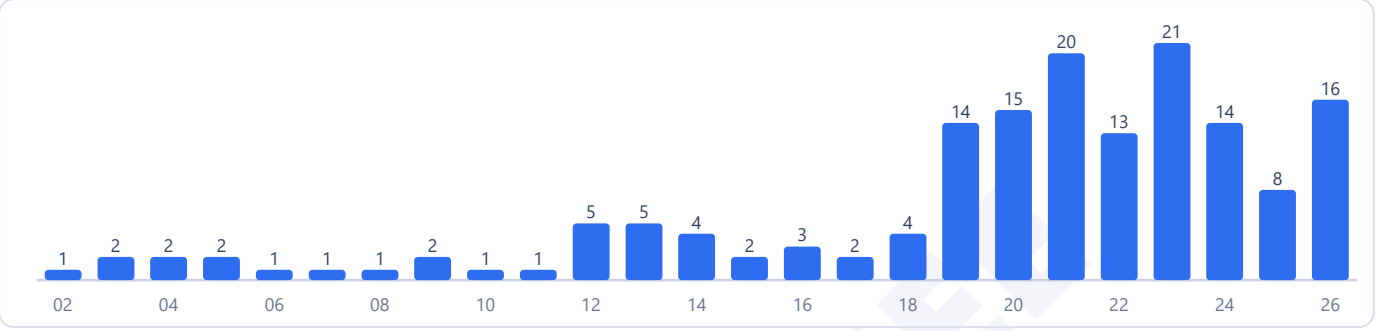
Chapter at a glance

2.6%	160	121 of 162	123 / 37
of Mathematics questions, 2019–2026	questions, 2002–2026	papers asked it, 2019–2026	MCQ / numerical, 2002–2026

Trend. Steady: 0.7 questions per paper in 2024–2026 against 0.8 in 2019–2023.

Questions per year



Counts are the questions we hold: 160 in 156 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2002–2026)

Measures of Dispersion	134
Measures of Central Tendency	26

How often it comes up

Statistics provides formula-driven dispersion and central tendency problems under Unit 13: Statistics and Probability in the Class 11 curriculum, placing it at rank 19 among the 29 chapters in the subject. Across the 162 papers administered between 2019 and 2026, the examination included 121 questions from this chapter, representing 2.6 percent of all mathematics questions. It appeared in 121 of those 162 papers and has been tested every year since 2019. Over the recent 2024 to 2026 examination cycles, it supplied 38 questions across 58 papers, averaging 0.7 questions per paper with a 2.5 percent subject share. Comparing the earlier 2002 to 2018 share of 3.0 percent against 2024 to 2026 shows that its long-term share is down, while comparing 2019 to 2026 with 2024 to 2026 indicates that it is about the same. Across the complete historical record from 2002 to 2026 spanning 200 papers, 160 questions appeared in 156 papers, with 37 numerical answer questions asked between 2019 and 2026.

The annual question totals for 2024, 2025, and 2026 were 14, 8, and 16 questions respectively.

Statistics questions in JEE Main are renowned for following highly repetitive algebraic recipes. Most problems focus on determining two missing observations from given values of the mean and variance, or correcting erroneous data entries, making thorough computational accuracy the decisive success factor.

Most-asked topics

Questions in this chapter divide between two primary areas:

1. **Measures of Dispersion (108 questions, 2019-2026; 134 total, last asked 2026)** The vast majority of questions appear here. Involves calculating the variance and standard deviation of discrete and grouped data, mean deviation about the mean or median, effects of linear transformations on dispersion, and setting up simultaneous equations to identify missing or altered observations.

2. **Measures of Central Tendency (13 questions, 2019-2026; 26 total, last asked 2026)** Focuses on the arithmetic mean, median, and mode for individual data points and grouped frequency distributions. Questions often require solving for unknown frequencies given the overall sample mean or median.

What the questions look like

Examiners test statistics through several structured analytical formats:

- **Two Missing Observations**: A dataset has n observations, of which n minus two values are known explicitly. Given the overall arithmetic mean and variance of the full dataset, candidates set up simultaneous equations for the sum and sum of squares of the two missing values.
- **Data Correction and Modified Entries**: An observation was recorded incorrectly or replaced by a new value. Students determine the correct mean and the revised variance by adjusting the sum of observations and the sum of squared observations.
- **Linear Transformation of Data**: Every observation xi is replaced by a linear function a xi plus b. Candidates apply the scaling rules: the new mean equals a multiplied by the old mean plus b, while the new variance equals a squared multiplied by the old variance.
- **Mean Deviation About the Median**: Evaluating the average of absolute deviations from the median for arithmetic progression sequences or grouped frequency distributions.

How to practise it

Consistency in statistics depends on systematic arithmetic habits:

- **Use the sum of squares variance identity**: Express the variance as one over n multiplied by the sum of xi squared, minus the square of the arithmetic mean. This formulation is far faster and less prone to fractional errors than summing the squares of deviations from the mean.
- **Track the sum and sum of squares separately**: When solving for missing observations, let the unknown values be u and v. The mean gives the linear sum u plus v, while the variance gives the sum of squares u squared plus v squared. Squaring the linear sum and subtracting isolates twice the product uv, converting the problem into a simple quadratic.
- **Remember variance invariance under shifts**: Adding or subtracting a constant to every observation changes the mean by that constant, but leaves the variance and standard deviation completely unchanged. Multiplying by a constant scales the standard deviation by the absolute value of that constant and the variance by its square.
- **Arrange data in order for median calculations**: Never attempt to evaluate mean deviation about the median without sorting the dataset in ascending order first. Identifying the exact middle element or the average of the two central elements is essential before computing absolute differences.

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Q1 JEE Main 2026 · 8 Apr · Shift 2 MCQ

A set of four observations has mean 1 and variance 13. Another set of six observations has mean 2 and variance 1. Then, the variance of all these 10 observations is equal to :

(A) 5.96
(B) 6.14
(C) 6.04
(D) 6.24

Answer: (C) 6.04 · Official NTA final key

Q2 JEE Main 2026 · 6 Apr · Shift 1 MCQ

A data consists of 20 observations $x_1, x_2, \ldots, x_{20}$. If $\sum_{i=1}^{20}(x_i+5)^2 = 2500$ and $\sum_{i=1}^{20}(x_i-5)^2 = 100$, then the ratio of mean to standard deviation of this data is:

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

Answer: (B) 3:1 · Official NTA final key

Q3 JEE Main 2026 · 6 Apr · Shift 2 MCQ

Let the mean and the variance of seven observations 2, 4, α, 8, β, 12, 14, $\alpha < \beta$, be 8 and 16 respectively. Then the quadratic equation whose roots are $3\alpha+2$ and $2\beta+1$ is :

(A) $x^2 - 35x + 306 = 0$
(B) $x^2 - 41x + 420 = 0$
(C) $x^2 - 45x + 506 = 0$
(D) $x^2 - 37x + 342 = 0$

Answer: (B) $x^2 - 41x + 420 = 0$ · Official NTA final key

Q4 JEE Main 2026 · 5 Apr · Shift 1 MCQ

The mean deviation about the mean for the data

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

is equal to:

(A) $\frac{40}{13}$
(B) $\frac{42}{13}$
(C) $\frac{44}{13}$
(D) $\frac{46}{13}$

Answer: (C) $\frac{44}{13}$ · Official NTA final key

Q5 JEE Main 2026 · 5 Apr · Shift 2 MCQ

A variable X takes values 0, 0, 2, 6, 12, 20, ..., n(n−1) with frequencies ${}^{n}C_0$, ${}^{n}C_1$, ${}^{n}C_2$, ${}^{n}C_3$, ${}^{n}C_4$, ${}^{n}C_5$, ..., ${}^{n}C_n$, respectively. If the mean of this data is 60, then its median is :

(A) 56
(B) 42
(C) 72
(D) 90

Answer: (A) 56 · Official NTA final key

Q6 JEE Main 2026 · 4 Apr · Shift 1 MCQ

Suppose that the mean and median of the non-negative numbers $21, 8, 17, a, 51, 103, b, 13, 67$, $(a > b)$, are 40 and 21, respectively. If the mean deviation about the median is 26, then $2a$ is equal to:

(A) 109
(B) 117
(C) 161
(D) 131

Answer: (D) 131 · Official NTA final key

Q7 JEE Main 2026 · 4 Apr · Shift 2 MCQ

For 10 observations $x_1, x_2, \ldots, x_{10}$, if $\sum_{i=1}^{10}(x_i + 2)^2 = 180$ and $\sum_{i=1}^{10}(x_i - 1)^2 = 90$, then their standard deviation is:

(A) 2
(B) $\sqrt{3}$
(C) $2\sqrt{2}$
(D) 3

Answer: (D) 3 · Official NTA final key

Q8 JEE Main 2026 · 2 Apr · Shift 1 MCQ

If the mean of the data

Class	5-10	10-15	15-20	20-25	25-30	30-35

Frequency	2	k	28	54	k+1	5

is 21, then k is one of the roots of the equation :

(A) $2x^2 - 23x - 10 = 0$

(B) $4x^2 - 35x + 24 = 0$

(C) $2x^2 - 19x - 10 = 0$

(D) $2x^2 - 35x + 98 = 0$

Answer: (C) $2x^2 - 19x - 10 = 0$ · Official NTA final key

Q9 JEE Main 2026 · 2 Apr · Shift 2 MCQ

The mean and variance of n observations are 8 and 16, respectively. If the sum of the first (n−1) observations is 48 and the sum of squares of the first (n−1) observations is 496, then the value of n is :

(A) 21

(B) 16

(C) 13

(D) 7

Answer: (D) 7 · Official NTA final key

Q10 JEE Main 2026 · 28 Jan · Shift 1 MCQ

The mean and variance of 10 observations are 9 and 34.2, respectively. If 8 of these observations are 2, 3, 5, 10, 11, 13, 15, 21, then the mean deviation about the median of all the 10 observations is

(A) 4

(B) 6

(C) 5

(D) 7

Answer: (C) 5 · Official NTA final key

Q11 JEE Main 2026 · 24 Jan · Shift 1 MCQ

The mean and variance of a data of 10 observations are 10 and 2, respectively. If an observations α in this data is replaced by β, then the mean and variance become 10.1 and 1.99, respectively. Then $\alpha + \beta$ equals

(A) 10

(B) 15

(C) 20

(D) 5

Answer: (C) 20 · Official NTA final key

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Q12 JEE Main 2026 · 24 Jan · Shift 2 MCQ

Let $\mathrm{X} = \{x \in \mathbb{N} : 1 \leq x \leq 19\}$ and for some $a, b \in \mathbb{R}$, $\mathrm{Y} = \{ax + b : x \in \mathrm{X}\}$. If the mean and variance of the elements of Y are 30 and 750, respectively, then the sum of all possible values of b is

(A) 60
(B) 80
(C) 100
(D) 20

Answer: (A) 60 · Official NTA final key

Q13 JEE Main 2026 · 23 Jan · Shift 1 MCQ

Let the mean and variance of 8 numbers $-10, -7, -1, x, y, 9, 2, 16$ be $\frac{7}{2}$ and $\frac{293}{4}$, respectively. Then the mean of 4 numbers $x, y, x + y + 1, |x - y|$ is :

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

Answer: (D) 11 · Official NTA final key

Q14 JEE Main 2026 · 23 Jan · Shift 2 MCQ

If the mean and the variance of the data

Class	4-8	8-12	12-16	16-20
Frequency	3	λ	4	7

are μ and 19 respectively, then the value of $\lambda + \mu$ is

(A) 21
(B) 18
(C) 19
(D) 20

Answer: (C) 19 · Official NTA final key

Q15 JEE Main 2026 · 22 Jan · Shift 2 MCQ

If the mean deviation about the median of the numbers k, 2k, 3k, ..., 1000k is 500, then k^2 is equal to :

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(A) 4
(B) 16
(C) 1
(D) 9

Answer: (A) 4 · Official NTA final key

Q16 JEE Main 2026 · 21 Jan · Shift 1 MCQ

Let the mean and variance of 7 observations $2, 4, 10, x, 12, 14, y$, $x > y$, be 8 and 16 respectively. Two numbers are chosen from $\{1, 2, 3, x-4, y, 5\}$ one after another without replacement, then the probability, that the smaller number among the two chosen numbers is less than 4, is :

(A) $\frac{4}{5}$
(B) $\frac{3}{5}$
(C) $\frac{2}{5}$
(D) $\frac{1}{3}$

Answer: (A) $\frac{4}{5}$ · Official NTA final key

Q17 JEE Main 2025 · 7 Apr · Shift 1 MCQ

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 u and σ respectively, then 10(u + σ) is equal to

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

Answer: (C) 449 · Key from source paper

Q18 JEE Main 2025 · 4 Apr · Shift 2 MCQ

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

Answer: (D) 1 · Key from source paper

Q19 JEE Main 2025 · 3 Apr · Shift 2 MCQ

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 $n + x_n, n = 1, 2, \ldots, 5$ is

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

Answer: (C) 16 · Key from source paper

Q20 JEE Main 2025 · 2 Apr · Shift 2 MCQ

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

Answer: (C) 103 · Key from source paper

Q21 JEE Main 2025 · 29 Jan · Shift 1 MCQ

Let $x_1, x_2, \ldots, x_{10}$ 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 $2(x_1 - 1) + 4\beta, 2(x_2 - 1) + 4\beta, \ldots, 2(x_{10} - 1) + 4\beta$, then $\frac{\beta\mu}{\sigma^2}$ is equal to :

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

Answer: (A) 100 · Key from source paper

Q22 JEE Main 2025 · 24 Jan · Shift 1 MCQ

For a statistical data $x_1, x_2, \ldots, x_{10}$ 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) 9
(B) 5
(C) 7
(D) 4

Answer: (C) 7 · Key from source paper

Q23 JEE Main 2025 · 23 Jan · Shift 1 MCQ

Marks obtains by all the students of class 12 are presented in a freqency 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) 48
(C) 44
(D) 40

Answer: (C) 44 · Key from source paper

Q24 JEE Main 2025 · 23 Jan · Shift 2 Numerical

The variance of the numbers $8, 21, 34, 47, \ldots, 320$ is

Numerical value type: the answer is a number.

Answer: 8788. · Key from source paper

Q25 JEE Main 2024 · 9 Apr · Shift 1 MCQ

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

Answer: (C) 44 · Key from source paper

Q26 JEE Main 2024 · 9 Apr · Shift 2 MCQ

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) 7

(B) 8

(C) 5

(D) 6

Answer: (A) 7 · Key from source paper

Q27 JEE Main 2024 · 8 Apr · Shift 2 Numerical

Let $\mathrm{a}, \mathrm{b}, \mathrm{c} \in \mathrm{N}$ and $\mathrm{a} < \mathrm{b} < \mathrm{c}$. Let the mean, the mean deviation about the mean and the variance of the 5 observations $9, 25, \mathrm{a}, \mathrm{b}, \mathrm{c}$ be $18, 4$ and $\frac{136}{5}$, respectively. Then $2\mathrm{a} + \mathrm{b} - \mathrm{c}$ is equal to _____

Numerical value type: the answer is a number.

Answer: 33. · Key from source paper

Q28 JEE Main 2024 · 6 Apr · Shift 1 MCQ

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) 1.8

(B) 1.94

(C) $\sqrt{3.96}$

(D) $\sqrt{3.86}$

Answer: (C) $\sqrt{3.96}$ · Key from source paper

Q29 JEE Main 2024 · 4 Apr · Shift 1 MCQ

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) $\frac{13}{3}$

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

(C) $\frac{11}{3}$

(D) $\frac{14}{3}$

Answer: (A) $\frac{13}{3}$ · Key from source paper

Q30 JEE Main 2024 · 1 Feb · Shift 1 MCQ

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

Answer: (C) 30 · Key from source paper

Q31 JEE Main 2024 · 1 Feb · Shift 2 MCQ

Consider 10 observation $x_1, x_2, ...x_{10}$, 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. The $\frac{\beta}{\alpha}$ is equal to:

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

Answer: (A) 2 · Key from source paper

Q32 JEE Main 2024 · 31 Jan · Shift 2 MCQ

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

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

Answer: (C) 180 · Key from source paper

Q33 JEE Main 2024 · 30 Jan · Shift 1 MCQ

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

Answer: (D) 208 · Key from source paper

Q34 JEE Main 2024 · 30 Jan · Shift 2 Numerical

If 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 k then the value of k is _____ {where . denotes the greatest integer funciton}

Numerical value type: the answer is a number.

Answer: 29. · Key from source paper

Q35 JEE Main 2024 · 29 Jan · Shift 1 Numerical

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

Numerical value type: the answer is a number.

Answer: 6344. · Key from source paper

Q36 JEE Main 2024 · 29 Jan · Shift 2 MCQ

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

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

Answer: (C) $\frac{5}{4}$ · Key from source paper

Q37 JEE Main 2024 · 27 Jan · Shift 1 MCQ

Let $a_1, a_2, \ldots, a_{10}$ 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 $a_1, a_2, \ldots, a_{10}$ is equal to :

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

Answer: (B) $\sqrt{5}$ · Key from source paper

Q38 JEE Main 2024 · 27 Jan · Shift 2 Numerical

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 value type: the answer is a number.

Answer: 2521. · Key from source paper

Q39 JEE Main 2023 · 15 Apr · Shift 1 MCQ

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) 13
(C) 12
(D) 14

Answer: (B) 13 · Key from source paper

Q40 JEE Main 2023 · 13 Apr · Shift 1 Numerical

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 value type: the answer is a number.

Answer: 8. · Key from source paper

Q41 JEE Main 2023 · 13 Apr · Shift 2 Numerical

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 value type: the answer is a number.

Answer: 269. · Key from source paper

Q42 JEE Main 2023 · 12 Apr · Shift 1 Numerical

Let the positive numbers a_1, a_2, a_3, a_4 and a_5 be in a G.P. Let their mean and variance be $\frac{31}{10}$ and $\frac{m}{n}$ respectively, where m and n are co-prime. If the mean of their reciprocals is $\frac{31}{10}$ and $a_3 + a_4 + a_5 = 14$, then $m + n$ is equal to _____.

Numerical value type: the answer is a number.

Answer: 211. · Key from source paper

Q43 JEE Main 2023 · 11 Apr · Shift 1 MCQ

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

Answer: (C) 38 · Key from source paper

Q44 JEE Main 2023 · 11 Apr · Shift 2 MCQ

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

Answer: (C) $\frac{8}{3}$ · Key from source paper

Q45 JEE Main 2023 · 10 Apr · Shift 1 Numerical

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 value type: the answer is a number.

Answer: 151. · Key from source paper

Q46 JEE Main 2023 · 10 Apr · Shift 2 MCQ

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 $\Sigma f_i = 62$. If x denotes the greatest integer $\leq x$, then $\mu^2 + \sigma^2$ is equal to

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

Answer: (B) 8 · Key from source paper

Q47 JEE Main 2023 · 8 Apr · Shift 1 Numerical

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 value type: the answer is a number.

Answer: 25. · Key from source paper

Q48 JEE Main 2023 · 8 Apr · Shift 2 MCQ

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 $m + n$ are coprime, then $m + n$ is equal to

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

Answer: (D) 317 · Key from source paper

Q49 JEE Main 2023 · 6 Apr · Shift 1 MCQ

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

Answer: (A) 10 · Key from source paper

Q50 JEE Main 2023 · 6 Apr · Shift 2 Numerical

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 value type: the answer is a number.

Answer: 25. · Key from source paper

Q51 JEE Main 2023 · 1 Feb · Shift 1 MCQ

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

Answer: (A) 1072 · Key from source paper

Q52 JEE Main 2023 · 1 Feb · Shift 2 MCQ

Let $9 = x_1 < x_2 < ... < x_7$ be in an A.P. with common difference d. If the standard deviation of $x_1, x_2..., x_7$ is 4 and the mean is $\overline{x}$, then $\overline{x} + x_6$ is equal to :

(A) $18\left(1+\frac{1}{\sqrt{3}}\right)$
(B) 34
(C) $2\left(9+\frac{8}{\sqrt{7}}\right)$
(D) 25

Answer: (B) 34 · Key from source paper

Q53 JEE Main 2023 · 31 Jan · Shift 1 Numerical

If the variance of the frequency distribution

x_i	2	3	4	5	6	7	8
Frequency f_i	3	6	16	α	9	5	6

is 3, then α is equal to _____

Numerical value type: the answer is a number.

Answer: 5. · Key from source paper

Q54 JEE Main 2023 · 31 Jan · Shift 2 MCQ

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

Answer: (A) 500 · Key from source paper

Q55 JEE Main 2023 · 30 Jan · Shift 1 Numerical

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

Numerical value type: the answer is a number.

Answer: 37. · Key from source paper

Q56 JEE Main 2023 · 30 Jan · Shift 2 MCQ

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

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

Answer: (C) $\mathbb{N}$ · Key from source paper

Q57 JEE Main 2023 · 29 Jan · Shift 2 Numerical

Let $X=\{11,12,13, \ldots, 40,41\}$ and $Y=\{61,62,63, \ldots, 90,91\}$ 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 value type: the answer is a number.

Answer: 603. · Key from source paper

Q58 JEE Main 2023 · 25 Jan · Shift 1 MCQ

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) 4.04
(B) 4.08
(C) 3.96
(D) 3.92

Answer: (C) 3.96 · Key from source paper

Q59 JEE Main 2023 · 24 Jan · Shift 2 MCQ

Let the six numbers $a_1, a_2, \ldots, a_6$ 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) 200
(D) 105

Answer: (B) 210 · Key from source paper

Q60 JEE Main 2022 · 29 Jul · Shift 1 Numerical

Let the mean and the variance of 20 observations $x_1, x_2, \ldots x_{20}$ be 15 and 9, respectively. For $\alpha \in R$, if the mean of $(x_1 + \alpha)^2, (x_2 + \alpha)^2, \ldots, (x_{20} + \alpha)^2$ is 178, then the square of the maximum value of α is equal to _____

Numerical value type: the answer is a number.

Answer: 4. · Key from source paper

Q61 JEE Main 2022 · 28 Jul · Shift 1 Numerical

Let $x_1, x_2, x_3, \ldots .., x_{20}$ be in geometric progression with $x_1 = 3$ and the common ratio $\frac{1}{2}$. A new data is constructed replacing each x_i by $(x_i - i)^2$. If $\bar{x}$ is the mean of new data, then the greatest integer less than or equal to $\bar{x}$ is

Numerical value type: the answer is a number.

Answer: 142. · Key from source paper

Q62 JEE Main 2022 · 27 Jul · Shift 1 Numerical

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 value type: the answer is a number.

Answer: 2. · Key from source paper

Q63 JEE Main 2022 · 26 Jul · Shift 2 Numerical

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 value type: the answer is a number.

Answer: 238. · Key from source paper

Q64 JEE Main 2022 · 25 Jul · Shift 2 MCQ

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

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

Answer: (D) 11 · Key from source paper

Q65 JEE Main 2022 · 29 Jun · Shift 1 MCQ

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 observation are $\frac{7}{2}$ and a respectively, then $(4a + x_5)$ is equal to

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

Answer: (B) 15 · Key from source paper

Q66 JEE Main 2022 · 29 Jun · Shift 2 MCQ

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

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

Answer: (A) 0 · Key from source paper

Q67 JEE Main 2022 · 28 Jun · Shift 1 · Numerical

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 value type: the answer is a number.

Answer: 17. · Key from source paper

Q68 JEE Main 2022 · 28 Jun · Shift 2 · Numerical

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 value type: the answer is a number.

Answer: 0. · Key from source paper

Q69 JEE Main 2022 · 27 Jun · Shift 2 · MCQ

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

Answer: (A) 320 · Key from source paper

Q70 JEE Main 2022 · 26 Jun · Shift 1 · MCQ

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 $25M$ is equal to

(A) 60
(B) 55
(C) 50
(D) 75

Answer: (A) 60 · Key from source paper

Q71 JEE Main 2022 · 26 Jun · Shift 2 · MCQ

Let the mean of 50 observations is 15 and the standard deviation is 2. However, one observation was wrongly recorded. The sum of the correct and incorrect observations is 70. If the mean of the correct set of observations is 16, then the variance of the correct set is equal to

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

Answer: (C) 43 · Key from source paper

Q72 JEE Main 2022 · 25 Jun · Shift 2 Numerical

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

Numerical value type: the answer is a number.

Answer: 21. · Key from source paper

Q73 JEE Main 2021 · 31 Aug · Shift 1 Numerical

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

Numerical value type: the answer is a number.

Answer: 398. · Key from source paper

Q74 JEE Main 2021 · 31 Aug · Shift 2 MCQ

The mean and variance of 7 observations are 8 and 16 respetively. 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) $\frac{112}{5}$
(D) $\frac{536}{25}$

Answer: (D) $\frac{536}{25}$ · Key from source paper

Q75 JEE Main 2021 · 27 Aug · Shift 1 Numerical

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

Numerical value type: the answer is a number.

Answer: 13. · Key from source paper

Q76 JEE Main 2021 · 27 Aug · Shift 2 Numerical

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 value type: the answer is a number.

Answer: 25. · Key from source paper

Q77 JEE Main 2021 · 26 Aug · Shift 1 MCQ

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) $(10.5, 26)$
(B) $(10.5, 25)$
(C) $(11, 25)$
(D) $(11, 26)$

Answer: (A) $(10.5, 26)$ · Key from source paper

Q78 JEE Main 2021 · 26 Aug · Shift 2 Numerical

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 value type: the answer is a number.

Answer: 12. · Key from source paper

Q79 JEE Main 2021 · 27 Jul · Shift 1 MCQ

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

Answer: (D) 16 · Key from source paper

Q80 JEE Main 2021 · 27 Jul · Shift 2 MCQ

Let the mean and variance of the frequency distribution
$x : x_1 = 2, x_2 = 6, x_3 = 8, x_4 = 9$
$f : 4, 4, \alpha, \beta$
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) $\frac{16}{3}$

Answer: (C) $\frac{17}{3}$ · Key from source paper

Q81 JEE Main 2021 · 25 Jul · Shift 1 Numerical

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 value type: the answer is a number.

Answer: 164. · Key from source paper

Q82 JEE Main 2021 · 25 Jul · Shift 2 MCQ

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

Answer: (C) 4 · Key from source paper

Q83 JEE Main 2021 · 22 Jul · Shift 1 Numerical

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 value type: the answer is a number.

Answer: 4. · Key from source paper

Q84 JEE Main 2021 · 20 Jul · Shift 1 MCQ

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) $1, 20$

Answer: (A) $10, 11$ · Key from source paper

Q85 JEE Main 2021 · 20 Jul · Shift 2 MCQ

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

Answer: (D) 1 · Key from source paper

Q86 JEE Main 2021 · 18 Mar · Shift 1 Numerical

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 value type: the answer is a number.

Answer: 35. · Key from source paper

Q87 JEE Main 2021 · 18 Mar · Shift 2 MCQ

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) 650
(C) 250
(D) 925

Answer: (A) 425 · Key from source paper

Q88 JEE Main 2021 · 17 Mar · Shift 2 Numerical

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 the 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 value type: the answer is a number.

Answer: 68. · Key from source paper

Q89 JEE Main 2021 · 16 Mar · Shift 1 MCQ

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) $b^2 = 3\left(a^2 + c^2\right) + 9d^2$

(B) $b^2 = a^2 + c^2 + 3d^2$

(C) $b^2 = 3\left(a^2 + c^2 + d^2\right)$

(D) $b^2 = 3\left(a^2 + c^2\right) - 9d^2$

Answer: (D) $b^2 = 3\left(a^2 + c^2\right) - 9d^2$ · Key from source paper

Q90 JEE Main 2021 · 16 Mar · Shift 2 Numerical

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 value type: the answer is a number.

Answer: 5. · Key from source paper

Q91 JEE Main 2021 · 26 Feb · Shift 2 Numerical

Let $X_1, X_2, \ldots, X_{18}$ 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 value type: the answer is a number.

Answer: 4. · Key from source paper

Q92 JEE Main 2021 · 24 Feb · Shift 2 Numerical

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

Numerical value type: the answer is a number.

Answer: 11. · Key from source paper

Q93 JEE Main 2020 · 6 Sep · Shift 1 MCQ

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 $x_1, x_2, \ldots, x_n$ is

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

Answer: (D) $\sqrt{(a-1)}$ · Key from source paper

Q94 JEE Main 2020 · 6 Sep · Shift 2 Numerical

Consider the data on x taking the values 0, 2, 4, 8, ..., 2^n with frequencies ${}^nC_0$, ${}^nC_1$, ${}^nC_2$, ..., ${}^nC_n$ respectively. If the mean of this data is $\frac{728}{2^n}$, then n is equal to _____.

Numerical value type: the answer is a number.

Answer: 6. · Key from source paper

Q95 JEE Main 2020 · 5 Sep · Shift 1 MCQ

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

Answer: (C) 2 · Key from source paper

Q96 JEE Main 2020 · 5 Sep · Shift 2 MCQ

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

(A) $x^2 - 10x + 18 = 0$
(B) $2x^2 - 20x + 19 = 0$
(C) $x^2 - 10x + 19 = 0$
(D) $x^2 - 20x + 18 = 0$

Answer: (C) $x^2 - 10x + 19 = 0$ · Key from source paper

Q97 JEE Main 2020 · 4 Sep · Shift 1 MCQ

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

Answer: (D) 7 · Key from source paper

Q98 JEE Main 2020 · 4 Sep · Shift 2 Numerical

If the variance of the following frequency distribution:
Class: $10-20$, $20-30$, $30-40$
Frequency: 2, x, 2
is 50, then x is equal to _____

Numerical value type: the answer is a number.

Answer: 4. · Key from source paper

Q99 JEE Main 2020 · 3 Sep · Shift 1 MCQ

For the frequency distribution: Variate $(x): x_1,\ x_2,\ x_3, \ldots, x_{15}$
Frequency $(f): f_1,\ f_2,\ f_3, \ldots, f_{15}$
where $0 < x_1 < x_2 < x_3 < \ldots < x_{15} = 10$ and $\sum_{i=1}^{15} f_i > 0$, the standard deviation cannot be

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

Answer: (C) 6 · Key from source paper

Q100 JEE Main 2020 · 3 Sep · Shift 2 MCQ

Let $\mathrm{x_i}(1 \le \mathrm{i} \le 10)$ be ten observation of a random variable X. If $\sum_{i=1}^{10}(\mathrm{x_i} - \mathrm{p}) = 3$ and $\sum_{i=1}^{10}(\mathrm{x_i} - \mathrm{p})^2 = 9$ where $0 \ne \mathrm{p} \in \mathrm{R}$, then the standard deviation of these observations is:

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

Answer: (C) $\frac{9}{10}$ · Key from source paper

Q101 JEE Main 2020 · 2 Sep · Shift 1 MCQ

Let $X = \{x \in N : 1 \le x \le 17\}$ and $Y = \{ax + b : x \in X \text{ and } a, b \in R, a > 0\}$. If mean and variance of elements of Y are 17 and 216 respectively then $a + b$ is equal to

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

Answer: (B) -7 · Key from source paper

Q102 JEE Main 2020 · 2 Sep · Shift 2 Numerical

If the variance of the terms in an increasing $A.P.$ $b_1 b_2, b_3, \ldots\ldots\ldots, b_{11}$ is 90 then the common difference of this $A.P.$ is

Numerical value type: the answer is a number.

Answer: 3. · Key from source paper

Q103 JEE Main 2020 · 9 Jan · Shift 1 MCQ

Let the observation $x_i (1 \leq i \leq 10)$ satisfy the equations $\sum_{i=1}^{10}(x_i - 5) = 10$, $\sum_{i=1}^{10}(x_i - 5)^2 = 40$. If μ and λ are the mean and the variance of the observations, $x_1 - 3, x_2 - 3, \ldots, x_{10} - 3$, then the ordered pair (μ, λ) is equal to:

(A) $(3, 3)$
(B) $(6, 3)$
(C) $(6, 6)$
(D) $(3, 6)$

Answer: (A) $(3, 3)$ · Key from source paper

Q104 JEE Main 2020 · 8 Jan · Shift 1 MCQ

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) -5
(B) 10
(C) -20
(D) -10

Answer: (C) -20 · Key from source paper

Q105 JEE Main 2020 · 8 Jan · Shift 2 MCQ

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) 3.99
(B) 4.01
(C) 4.02
(D) 3.98

Answer: (A) 3.99 · Key from source paper

Q106 JEE Main 2020 · 7 Jan · Shift 1 Numerical

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

Numerical value type: the answer is a number.

Answer: 18. · Key from source paper

Q107 JEE Main 2020 · 7 Jan · Shift 2 Numerical

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 value type: the answer is a number.

Answer: 54. · Key from source paper

Q108 JEE Main 2019 · 12 Apr · Shift 1 MCQ

If the data $x_1, x_2, \ldots x_{10}$ is such that the mean of first four of these is 11, the mean of the remaining six is 16 and the sum of squares of all of these is 2000, then the standard deviation of this data is:

(A) $2\sqrt{2}$
(B) 4
(C) 2
(D) $\sqrt{2}$

Answer: (C) 2 · Key from source paper

Q109 JEE Main 2019 · 10 Apr · Shift 1 MCQ

If for some $x \in \mathrm{R}$, the frequency distribution of the marks obtained by 20 students in a test is:
Marks 2 3 5 7
Frequency distribution $(x+1)^2$ $(2x-5)$ x^2-3x x
Then the mean of the marks is :

(A) 3.0
(B) 2.5
(C) 3.2
(D) 2.8

Answer: (D) 2.8 · Key from source paper

Q110 JEE Main 2019 · 10 Apr · Shift 2 MCQ

If both the mean and the standard deviation of 50 observations $x_1,\ x_2,\ \ldots,\ x_{50}$ are equal to 16, then the mean of $x_1 - 4^2,\ x_2 - 4^2,\ \ldots, x_{50} - 4^2$ is

(A) 525
(B) 480
(C) 400
(D) 380

Answer: (C) 400 · Key from source paper

Q111 JEE Main 2019 · 9 Apr · Shift 1 MCQ

If the standard deviation of the numbers -1, 0, 1, k is $\sqrt{5}$ where $k > 0$, then k is equal to

(A) $\sqrt{6}$
(B) $4\sqrt{\frac{5}{3}}$
(C) $2\sqrt{\frac{10}{3}}$
(D) $2\sqrt{6}$

Answer: (D) $2\sqrt{6}$ · Key from source paper

Q112 JEE Main 2019 · 9 Apr · Shift 2 MCQ

The mean and the median of the following ten numbers in increasing order 10, 22, 26, 29, 34, x, 42, 67, 70, y are 42 and 35 respectively, then $\frac{y}{x}$ is equal to:

(A) $\frac{9}{4}$
(B) $\frac{7}{3}$
(C) $\frac{7}{2}$
(D) $\frac{8}{3}$

Answer: (B) $\frac{7}{3}$ · Key from source paper

Q113 JEE Main 2019 · 8 Apr · Shift 1 MCQ

The mean and variance for seven observations are 8 and 16 respectively. If 5 of the observations are 2, 4, 10, 12, 14, then the product of the remaining two observations is

(A) 48
(B) 45
(C) 49
(D) 40

Answer: (A) 48 · Key from source paper

Q114 JEE Main 2019 · 8 Apr · Shift 2 MCQ

A student scores the following marks in five tests: 45,54,41,57,43. His score is not known for the sixth test. If the mean score is 48 in the six tests, then the standard deviation of the marks in six tests is:

(A) $\frac{10}{3}$
(B) $\frac{100}{3}$
(C) $\frac{10}{\sqrt{3}}$
(D) $\frac{100}{\sqrt{3}}$

Answer: (C) $\frac{10}{\sqrt{3}}$ · Key from source paper

Q115 JEE Main 2019 · 12 Jan · Shift 1 MCQ

If the sum of the deviations of 50 observations from 30 is 50, then the mean of these observations is :

(A) 30
(B) 51
(C) 50
(D) 31

Answer: (D) 31 · Key from source paper

Q116 JEE Main 2019 · 12 Jan · Shift 2 MCQ

The mean and the variance of five observations are 4 and 5.20, respectively. If three of the observations are 3, 4 and 4; then the absolute value of the difference of the other two observations, is :

(A) 3
(B) 5
(C) 7
(D) 1

Answer: (C) 7 · Key from source paper

Q117 JEE Main 2019 · 11 Jan · Shift 1 MCQ

The outcome of each of 30 items was observed; 10 items gave an outcome $\frac{1}{2}-$ d each, 10 items gave outcome $\frac{1}{2}$ each and the remaining 10 items gave outcome $\frac{1}{2}+$ d each. If the variance of this outcome data is $\frac{4}{3}$ then |d| equals:

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

Answer: (D) $\sqrt{2}$ · Key from source paper

Q118 JEE Main 2019 · 10 Jan · Shift 1 MCQ

The mean of five observations is 5 and their variance is 9.20. If three of the given five observations are 1, 3 and 8, then a ratio of other two observations is

(A) 10 : 3
(B) 4 : 9
(C) 6 : 7
(D) 5 : 8

Answer: (B) 4 : 9 · Key from source paper

Q119 JEE Main 2019 · 10 Jan · Shift 2 MCQ

If the mean and standard deviation of 5 observations $x_1,\ x_2,\ x_3,\ x_4,\ x_5$ are 10 and 3, respectively, then the variance of 6 observations $x_1,\ x_2,\ \ldots,\ x_5$ and -50 is equal to

(A) 582.5
(B) 507.5
(C) 509.5
(D) 586.5

Answer: (B) 507.5 · Key from source paper

Q120 JEE Main 2019 · 9 Jan · Shift 1 MCQ

5 students of a class have an average height $150\ cm$ and variance $18\ cm^2$. A new student, whose height is $156\ cm$, joined them. The variance in cm^2 of the height of these six students is:

(A) 22
(B) 16
(C) 18
(D) 20

Answer: (D) 20 · Key from source paper

Q121 JEE Main 2019 · 9 Jan · Shift 2 MCQ

A data consists of n observations: $x_1, x_2, \ldots, x_n$. If $\sum_{i=1}^{n}(x_i+1)^2 = 9n$ and $\sum_{i=1}^{n}(x_i-1)^2 = 5n$, then the standard deviation of this data is

(A) 5
(B) $\sqrt{7}$
(C) $\sqrt{5}$
(D) 2

Answer: (C) $\sqrt{5}$ · Key from source paper

Q122 JEE Main 2018 · 16 Apr · Online MCQ

The mean and the standard deviation (S. D.) of five observations are 9 and 0, respectively. If one of the observation is increased such that the mean of the new set of five observations becomes 10, then their S. D. is

(A) 0
(B) 2
(C) 4
(D) 1

Answer: (B) 2 · Key from source paper

Q123 JEE Main 2018 · 15 Apr · Shift 1 MCQ

The mean of a set of 30 observations is 75 . If each other observation is multiplied by a nonzero number λ and then each of them is decreased by 25 , their mean remains the same. The λ is equal to equal to $\{0\}$

(A) $\frac{10}{3}$
(B) $\frac{4}{3}$
(C) $\frac{1}{3}$
(D) $\frac{2}{3}$

Answer: (B) $\frac{4}{3}$ · Key from source paper

Q124 JEE Main 2018 · 15 Apr · Shift 2 MCQ

If the mean of the data: $7, 8, 9, 7, 8, 7, \lambda, 8$ is 8 , then the variance of this data is

(A) $\frac{9}{8}$
(B) 2
(C) $\frac{7}{8}$
(D) 1

Answer: (D) 1 · Key from source paper

Q125 JEE Main 2018 · 8 Apr · Offline MCQ

If $\sum_{i=1}^{9}(x_i - 5) = 9$ and $\sum_{i=1}^{9}(x_i - 5)^2 = 45$, then the standard deviation of the 9 items $x_1, x_2, \ldots, x_9$ is

(A) 3
(B) 9
(C) 4
(D) 2

Answer: (D) 2 · Key from source paper

Q126 JEE Main 2017 · 9 Apr · Online MCQ

The sum of 100 observations and the sum of their squares are 400 & 2475, respectively. Later on, three observations 3, 4 & 5 were found to be incorrect. If the incorrect observations are omitted, then the variance of the remaining observations is

(A) 8.25
(B) 8.50
(C) 9.00
(D) 8.00

Answer: (C) 9.00 · Key from source paper

Q127 JEE Main 2017 · 8 Apr · Online MCQ

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

(A) 35
(B) 40
(C) 25
(D) 30

Answer: (A) 35 · Key from source paper

Q128 JEE Main 2016 · 10 Apr · Online MCQ

The mean of 5 observations is 5 and their variance is 12.4. If three of the observations are $1, 2 \ \& \ 6$; then the value of the remaining two is :

(A) $1, 11$
(B) $5, 5$
(C) $5, 11$
(D) None of these

Answer: (C) $5, 11$ · Key from source paper

Q129 JEE Main 2016 · 9 Apr · Online MCQ

If the mean deviation of the numbers $1,\ 1+d,\ \ldots,\ 1+100d$ from their mean is 255, then a value of d is :

(A) 10.1
(B) 5.05
(C) 20.2
(D) 10

Answer: (A) 10.1 · Key from source paper

Q130 JEE Main 2016 · 3 Apr · Offline MCQ

If the standard deviation of the numbers 2, 3, a and 11 is 3.5, then which of the following is true ?

(A) $3a^2 - 34a + 91 = 0.$
(B) $3a^2 - 23a + 44 = 0.$
(C) $3a^2 - 26a + 55 = 0.$
(D) $3a^2 - 32a + 84 = 0.$

Answer: (D) $3a^2 - 32a + 84 = 0.$ · Key from source paper

Q131 JEE Main 2015 · 10 Apr · Online MCQ

A factory is operating in two shifts, day and night, with 70 and 30 workers, respectively.If per day mean wage of the day shift workers is, ₹ 54 and per day mean wage of all the workers is ₹ 60, then per day mean wage of the night shift workers (in ₹) is :

(A) 75
(B) 74
(C) 69
(D) 66

Answer: (B) 74 · Key from source paper

Q132 JEE Main 2015 · 4 Apr · Offline MCQ

The mean of a data set comprising of 16 observations is 16. If one of the observation value 16 is deleted and three new observations valued 3 , 4 and 5 are added to the data, then the mean of the resultant data is

(A) 14.0
(B) 16.8
(C) 16.0
(D) 15.8

Answer: (A) 14.0 · Key from source paper

Q133 JEE Main 2014 · 19 Apr · Online MCQ

Let $\overline{x}$, M and σ^2 be respectively the mean, mode and variance of n observations $x_1,\ x_2, \ldots,\ x_n$ and $d_i = -x_i - a,\ i = 1,\ 2, \ldots,\ n$, where a is any number.
Statement I: Variance of $d_1,\ d_2, \ldots,\ d_n$ is σ^2.
Statement II: Mean and mode of $d_1,\ d_2, \ldots,\ d_n$ are $-\overline{x} - a$ and $-M - a$, respectively.

(A) **Statement I** and **Statement II** are both true
(B) **Statement I** and **Statement II** are both false
(C) **Statement I** is true and **Statement II** is false
(D) **Statement I** is false and **Statement II** is true

Answer: (A) Statement I and **Statement II** are both true · Key from source paper

Q134 JEE Main 2014 · 12 Apr · Online MCQ

Let $\bar{X}$ and M.D. be the mean and the mean deviation about $\bar{X}$ of n observations $\mathrm{x_i}, \mathrm{i} = 1, 2,$n. If each of the observations is increased by 5 , then the new mean and the mean deviation about the new mean, respectively, are :

(A) $\bar{X}$, M.D.
(B) $\overline{\mathrm{X}} + 5$, M.D.
(C) $\bar{X}$, M.D. $+5$
(D) $\overline{\mathrm{X}} + 5$, M.D. $+5$

Answer: (B) $\overline{\mathrm{X}} + 5$, M.D. · Key from source paper

Q135 JEE Main 2014 · 9 Apr · Online MCQ

In a set of $2n$ distinct observations, each of the observation below the median of all the observations is increased by 5 and each of the remaining observations is decreased by 3. Then, the mean of the new set of observations :

(A) Increases by 2 .
(B) Increases by 1 .
(C) Decreases by 2 .
(D) Decreases by 1 .

Answer: (B) Increases by 1 . · Key from source paper

Q136 JEE Main 2014 · 6 Apr · Offline MCQ

The variance of the first 50 even natural numbers is :

(A) 437
(B) $\frac{437}{4}$
(C) $\frac{833}{4}$
(D) 833

Answer: (D) 833 · Key from source paper

Q137 JEE Main 2013 · 25 Apr · Online MCQ

In a set of $2n$ observations, half of them are equal to ' a ' and the remaining hall are equal to ' $-$a' '. If the standard deviation of all the observations is 2 ; then the value of $|a|$ is :

(A) 2
(B) $\sqrt{2}$
(C) 4
(D) $2\sqrt{2}$

Answer: (A) 2 · Key from source paper

Q138 JEE Main 2013 · 23 Apr · Online MCQ

If the median and the range of four numbers $\{x, y, 2x+y, x-y\}$, where $0 < y < x < 2y$, are 10 and 28 respectively, then the mean of the numbers is :

(A) 18
(B) 10
(C) 5
(D) 14

Answer: (D) 14 · Key from source paper

Q139 JEE Main 2013 · 22 Apr · Online MCQ

Mean of 5 observations is 7 . If four of these observations are $6, 7, 8, 10$ and one is missing then the variance of all the five observations is :

(A) 4
(B) 6
(C) 8
(D) 2

Answer: (A) 4 · Checked by our team

Q140 JEE Main 2013 · 9 Apr · Online MCQ

The mean of a data set consisting of 20 observations is 40 . If one observation 53 was wrongly recorded as 33 , then the correct mean will be:

(A) 41
(B) 49
(C) 40.5
(D) 42.5

Answer: (A) 41 · Key from source paper

Q141 JEE Main 2013 · 7 Apr · Offline MCQ

All the students of a class performed poorly in Mathematics. The teacher decided to give grace marks of 10 to each of the students. Which of the following statistical measures will not change even after the grace marks were given ?

(A) mode
(B) variance
(C) mean
(D) median

Answer: (B) variance · Key from source paper

Q142 AIEEE 2012 · 26 May · Online MCQ

Statement 1: The variance of first n odd natural numbers is $\frac{n^2-1}{3}$ Statement 2: The sum of first n odd natural number is n^2 and the sum of square of first n odd natural numbers is $\frac{n(4n^2+1)}{3}$.

(A) Statement 1 is true, Statement 2 is false.
(B) Statement 1 is true, Statement 2 is true; Statement 2 is not a correct explanation for Statement 1.
(C) Statement 1 is false, Statement 2 is true.
(D) Statement 1 is true, Statement 2 is true, Statement 2 is a correct explanation for Statement 1.

Answer: (A) Statement 1 is true, Statement 2 is false. · Key from source paper

Q143 AIEEE 2012 · 19 May · Online MCQ

The median of 100 observations grouped in classes of equal width is 25 . If the median class interval is 20-30 and the number of observations less than 20 is 45 , then the frequency of median class is

(A) 10
(B) 20
(C) 15
(D) 12

Answer: (A) 10 · Key from source paper

Q144 AIEEE 2012 · 12 May · Online MCQ

If the mean of $4, 7, 2, 8, 6$ and a is 7, then the mean deviation from the median of these observations is

(A) 8
(B) 5
(C) 1
(D) 3

Answer: (D) 3 · Key from source paper

Q145 AIEEE 2012 · 7 May · Online MCQ

The frequency distribution of daily working expenditure of families in a locality is as follows:

Expenditure in ₹. (x):	0-50	50-100	100-150	150-200	200-250
No. of families (f):	24	33	37	b	25

If the mode of the distribution is Rs. 140, then the value of b is

(A) 34
(B) 31
(C) 26
(D) 36

Answer: (D) 36 · Key from source paper

Q146 AIEEE 2012 · Offline MCQ

Let $\mathrm{x}_1, \mathrm{x}_2, \ldots\ldots, \mathrm{x}_\mathrm{n}$ be n observations, and let $\bar{\mathrm{x}}$ be their arithematic mean and σ^2 be their variance. Statement 1: Variance of $2x_1, 2x_2, \ldots\ldots, 2x_n$ is $4\sigma^2$. Statement 2: Arithmetic mean of $2\mathrm{x}_1, 2\mathrm{x}_2, \ldots\ldots, 2\mathrm{x}_\mathrm{n}$ is $4\bar{\mathrm{x}}$.

(A) Statement 1 is false, statement 2 is true
(B) Statement 1 is true, statement 2 is true; statement 2 is a correct explanation for statement 1
(C) Statement 1 is true, statement 2 is true; statement 2 is not a correct explanation for statement 1
(D) Statement 1 is true, statement 2 is false

Answer: (D) Statement 1 is true, statement 2 is false · Key from source paper

Q147 AIEEE 2011 MCQ

If the mean deviation about the median of the numbers a, 2a, . . . , 50a is 50 , then $|a|$ equals

(A) 3
(B) 4
(C) 5
(D) 2

Answer: (B) 4 · Key from source paper

Q148 AIEEE 2010 MCQ

For two data sets, each of size 5 , the variances are given to be 4 and 5 and the corresponding means are given to be 2 and 4 , respectively. The variance of the combined data set is

(A) $\frac{11}{2}$
(B) 6
(C) $\frac{13}{2}$
(D) $\frac{5}{2}$

Answer: (A) $\frac{11}{2}$ · Key from source paper

Q149 AIEEE 2009 MCQ

If the mean deviation of number $1, 1+d, 1+2d, \ldots, 1+100d$ from their mean is 255 , then the d is equal to

(A) 10.0
(B) 20.0
(C) 10.1
(D) 20.2

Answer: (C) 10.1 · Key from source paper

Q150 AIEEE 2009 MCQ

Statement-1 : The variance of first n even natural numbers is $\frac{n^2-1}{4}$ Statement-2 : The sum of first n natural numbers is $\frac{n(n+1)}{2}$ and the sum of squares of first n natural numbers is $\frac{n(n+1)(2n+1)}{6}$

(A) Statement-1 is true, Statement-2 is true; Statement-2 is a correct explanation for Statement-1
(B) Statement-1 is true, Statement-2 is true; Statement-2 is not a correct explanation for Statement-1
(C) Statement-1 is true, Statement-2 is false
(D) Statement-1 is false, Statement-2 is true

Answer: (D) Statement-1 is false, Statement-2 is true · Key from source paper

Q151 AIEEE 2008 MCQ

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) $a = 0, b = 7$
(B) $a = 5, b = 2$
(C) $a = 1, b = 6$
(D) $a = 3, b = 4$

Answer: (D) $a = 3, b = 4$ · Key from source paper

Q152 AIEEE 2007 MCQ

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) 40
(B) 20
(C) 80
(D) 60

Answer: (C) 80 · Key from source paper

Q153 AIEEE 2006 MCQ

Suppose a population A has 100 observations $101, 102, \ldots, 200$, and another population B has 100 observations $151, 152, \ldots, 250$. If V_A and V_B represent the variances of the two populations, respectively, then $\frac{V_A}{V_B}$ is

(A) 1
(B) 9/4
(C) 4/9
(D) 2/3

Answer: (A) 1 · Key from source paper

Q154 AIEEE 2005 MCQ

If in a frequently distribution, the mean and median are 21 and 22 respectively, then its mode is approximately

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(A) 22.0
(B) 20.5
(C) 25.5
(D) 24.0

Answer: (D) 24.0 · Key from source paper

Q155 AIEEE 2005 MCQ

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 of n among the following is

(A) 15
(B) 18
(C) 9
(D) 12

Answer: (B) 18 · Key from source paper

Q156 AIEEE 2004 MCQ

Consider the following statements: Mode can be computed from histogram Median is not independent of change of scale Variance is independent of change of origin and scale.

(A) only (a)
(B) only (b)
(C) only (a) and (b)
(D) (a), (b) and (c)

Answer: (C) only (a) and (b) · Key from source paper

Q157 AIEEE 2004 MCQ

In a series of $2n$ observations, half of them equal a and remaining half equal $-a$. If the standard deviation of the observations is 2, then $|a|$ equals

(A) $\frac{1}{n}$
(B) $\sqrt{2}$
(C) 2
(D) $\frac{\sqrt{2}}{n}$

Answer: (C) 2 · Key from source paper

Q158 AIEEE 2003 MCQ

The median of a set of 9 distinct observations is 20.5. If each of the largest 4 observations of the set is increased by 2 , then median of the new set

(A) remains the same as that of the original set
(B) is increased by 2
(C) is decreased by 2
(D) is two times the original median

Answer: (A) remains the same as that of the original set · Key from source paper

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Q159 AIEEE 2003 MCQ

In an experiment with 15 observations on x, the following results were available: $\Sigma x^2 = 2830$, $\Sigma x = 170$ One observation that was 20 was found to be wrong and was replaced by the correct value 30 . The corrected variance is

(A) 8.33
(B) 78.00
(C) 188.66
(D) 177.33

Answer: (B) 78.00 · Key from source paper

Q160 AIEEE 2002 MCQ

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: (B) 65 · Key from source paper

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