

Tarun Classes of Mathematics

IIT-JEE Mains | CBSE | PU-CET | NDA

Talwara Township, Hoshiarpur | +91 9463672753 | tarunclasses.in

Statistics

Subjects : Maths

Previous Year Questions

Maths - Section A (MCQ.)

1. 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) $2x^2 - 35x + 98 = 0$
2. 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
3. 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
4. For 10 observations $x_1, x_2, \dots, x_{10}$, 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
5. 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) $\frac{46}{13}$
6. A variable X takes values $0, 0, 2, 6, 12, 20, \dots, n(n - 1)$ with frequencies ${}^nC_0, {}^nC_1, {}^nC_2, {}^nC_3, {}^nC_4, {}^nC_5, \dots, {}^nC_n$, respectively. If the mean of this data is 60, then its median is :
A) 56 B) 42 C) 72 D) 90
7. A data consists of 20 observations $x_1, x_2, \dots, x_{20}$. 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

8. Let the mean and the variance of seven observations $2, 4, \alpha, 8, \beta, 12, 14$, $\alpha < \beta$, 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) $x^2 - 37x + 342 = 0$

9. 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

10. 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) 5 B) 4 C) 6 D) 7

11. The mean and variance of a data of 10 observations are 10 and 2, respectively. If an observation 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) 5 D) 20

12. Let $X = \{x \in \mathbb{N} : 1 \leq x \leq 19\}$ and for some $a, b \in \mathbb{R}$, $Y = \{ax + b : x \in X\}$. 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) 20 B) 80 C) 100 D) 60

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

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

14. 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) 18 B) 21 C) 20 D) 19

15. 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) 11 B) 9 C) 10 D) 12

16. 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) $\frac{3}{5}$ B) $\frac{4}{5}$ C) $\frac{2}{5}$ D) $\frac{1}{3}$

17. 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) 1 B) $\frac{3}{4}$ C) 2 D) $\frac{1}{2}$

18. 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) 445 B) 451 C) 447 D) 449

19. 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) 16.4 C) 17.4 D) 16

20. 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) 105 B) 103 C) 100 D) 106

21. 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) 120 C) 110 D) 90

22. 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) 9 B) 5 C) 7 D) 4

23. The variance of the numbers 8, 21, 34, 47, ..., 320 is

- A) 8788 B) 8777 C) 8766 D) 8755

24. 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) 48 C) 44 D) 40

25. If the variance of the frequency distribution is 160, then the value of $c \in \mathbb{N}$ is

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

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

26. 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) 44 C) 47 D) 46

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

- A) 39 B) 18 C) 35 D) 33

28. From a lot of 12 items containing 3 defectives, a sample of 5 items is drawn at random. Let the random variable X denote the number of defective items in the sample. Let items in the sample be drawn one by one without replacement. If variance of X is $\frac{m}{n}$, where $\gcd(m, n) = 1$, then $n - m$ is equal to

- A) 71 B) 34 C) 72 D) 76

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

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

30. Let $a, b \in \mathbb{R}$. Let the mean and the variance of 6 observations $-3, 4, 7, -6, a, b$ 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) $\frac{14}{3}$

31. Let M denote the median of the following frequency distribution then $20M$ is equal to :

Class	0 – 4	4 – 8	8 – 12	12 – 16	16 – 20
Freq	3	9	10	8	6

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

32. The variance σ^2 of the data is

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

- A) 28 B) 29 C) 27 D) 25

33. 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 is equal to

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

34. 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

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

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

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11 - D	12 - D	13 - B	14 - D	15 - A	16 - B	17 - A	18 - D	19 - D	20 - B
21 - A	22 - C	23 - A	24 - C	25 - C	26 - B	27 - D	28 - A	29 - C	30 - A
31 - D	32 - B	33 - C	34 - C	35 - A					

