1. 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:

(1) $\frac{9}{4}$ (2) $\frac{7}{3}$

(3) $\frac{7}{2}$ (4) $\frac{8}{3}$

2. 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

(1) 11 (2) 13

(3) 12 (4) 14

3. 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

4. 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 _____ .

5. 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

(1) ϕ (2) $\{99\}$

(3) $\mathbb{N}$ (4) $\{9\}$

6. 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

(1) 11.5 (2) 10.5

(3) 12 (4) 11

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

8. 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 _____.

9. 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 co-prime, then $m + n$ is equal to

(1) 315 (2) 316

(3) 314 (4) 317

10. 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 _____.

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

(1) $18\left(1 + \frac{1}{\sqrt{3}}\right)$ (2) 34

(3) $2\left(9 + \frac{8}{\sqrt{7}}\right)$ (4) 25

12. 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 $a + 3\ b - 5$ is equal to _____

13. 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 _____.

14. 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:

(1) 8 (2) 6

(3) 4 (4) 5

15. 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

(1) $a - 1$ (2) $n\sqrt{(a-1)}$

(3) $\sqrt{n(a-1)}$ (4) $\sqrt{(a-1)}$

16. 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 _____.

17. 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 _____.

18. 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 _____.

19. 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 $\left[\mu^2+\sigma^2\right]$ is equal to

(1) 9 (2) 8

(3) 7 (4) 6

20. 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

(1) 500 (2) 450

(3) 650 (4) 900