STATISTICS

MCQs & A and R WORK SHEET

Test / Exam Name: Statistics **Standard: 10th** **Subject: Mathematics**

Student Name: ..... **Section:** ..... **Roll No.:** .....

Questions: 45 **Time: 01:00 hh:mm** **Negative Marks: 0** **Marks: 45**

Instructions

1. MULTIPLE CHOICE QUESTIONS.

Q1. The relation between mean, mode and median is: **1 Mark**

A Mode = (3 × mean) - (2 × median) **B** Mode = (3 × median) - (2 × mean) **C** Mode = (3 × mean) - (2 × mode)
D Mode = (3 × median) - (2 × mode)

Q2. If the mean of a data is 27 and its median is 33. Then, the mode is: **1 Mark**

A 30 **B** 43 **C** 45 **D** 47

Q3. The arithmetic mean and mode of a data are 24 and 12 respectively, then its median is: **1 Mark**

A 25 **B** 18 **C** 20 **D** 22

Q4. If the difference of mode and median of a data is 24, then the difference of median and mean is: **1 Mark**

A 12 **B** 24 **C** 8 **D** 36

Q5. The arithmetic mean of 1, 2, 3, ..., n is: **1 Mark**

A $\frac{n+1}{2}$ **B** $\frac{n-1}{2}$ **C** $\frac{n}{2}$ **D** $\frac{n}{2}+1$

Q6. The mean of first n odd natural number is: **1 Mark**

A $\frac{n+1}{2}$ **B** $\frac{n}{2}$ **C** n **D** n^2

Q7. To represent the more than type graphically, we plot the _____ on the x-axis. **1 Mark**

A Class marks **B** Lower limits **C** Upper limits **D** Class size

Q8. The mean of first n odd natural numbers is $\frac{n^2}{81}$, then n = **1 Mark**

A 9 **B** 81 **C** 27 **D** 18

Q9. The middle most value of the data is: **1 Mark**

A Mean **B** Mode **C** Median **D** None of these

Q10. $\frac{\text{Upper class limit}+\text{Lower class limit}}{2}$ **1 Mark**

A class size **B** Class mark **C** Frequency **D** None of these

Q11. If $\sum f_i x_i = 625$ and $\sum f_i = 25$ then the value of $\bar{x}$ is: **1 Mark**

A 26 **B** 63 **C** 64 **D** 25

Q12. Choose the correct answer from the given four options: **1 Mark**

Consider the following frequency distribution:

Class	0-5	6-11	12-27	18-23	24-29
Frequency	13	10	15	8	11

The upper limit of the median class is:

A 17 **B** 17.5 **C** 18 **D** 18.5

Q13. In the formula $\bar{x} = a + \frac{\sum f_i d_i}{\sum f_i}$, d_i represents: **1 Mark**

A $a + x_i$ **B** $d_i = x_i - a$ **C** $a - x_i$ **D** $x_1 + a$

Q14. In the formula $\bar{x} = a + h\left(\frac{1}{N}\sum f_i u_i\right)$, for finding the mean of grouped frequency distribution u_i = **1 Mark**

A $\frac{x_i+a}{h}$ **B** $h(x_i - a)$ **C** $\frac{x_i-a}{h}$ **D** $\frac{a-x_i}{h}$

Q15. In formula $\bar{x} = a + h\left(\frac{\sum f_i u_i}{\sum f_i}\right)$,h' stands for: **1 Mark**

A Class size **B** Class mark **C** Mean **D** None of these

Q16. In the formul $\bar{x} = a + h\left(\frac{\sum f_i u_i}{\sum f_i}\right)$ a stands for: **1 Mark**

A Assumed mean **B** Class size **C** Class mark **D** Mean

Q17. The mean of 1, 3, 4, 5, 7, 4 is m. The number 3, 2, 2, 4, 3, 3, p have mean m – 1 and median q. Then p + q = **1 Mark**

A 4 **B** 5 **C** 6 **D** 7

Q18. Mode is: **1 Mark**

A Least frequent value. **B** Middle most value. **C** Most frequent value. **D** None of these.

Q19. If the mean of first n natural numbers is $\frac{5n}{9}$, then n = **1 Mark**

A 5 **B** 4 **C** 9 **D** 10

Q20. The percentage of marks obtained by 100 students in an examination are as follows: **1 Mark**

Mark	30-35	35-40	40-45	45-50	50-55	55-60	60-65
Frequency	10	15	18	22	23	8	4

The median class is:

A 35-40 **B** 45-50 **C** 40-45 **D** 50-55

Q21. Look at the frequency distribution table given below: **1 Mark**

Class interval	35-45	45-55	55-65	65-75
Frequency	8	12	20	10

The median of the above distribution is:

A 56.5 **B** 57.5 **C** 58.5 **D** 59

Q22. For the following distribution: **1 Mark**

Class	60-70	70-80	80-90	90-100	100-110
Frequency	13	10	15	8	11

The lower limit of the modal class is:

A 100 **B** 80 **C** 90 **D** 70

Q23. Mode =? **1 Mark**

A $x_k + h.\left\{\frac{(f_{k-1}-f_k)}{(2f_k-f_{k-1}-f_{k+1})}\right\}$ **B** $x_k + h.\left\{\frac{(f_k-f_{k-1})}{(2f_k-f_{k-1}-f_{k+1})}\right\}$ **C** $x_k + h.\left\{\frac{(f_k-f_{k-1})}{(f_k-2f_{k-1}-f_{k-1})}\right\}$ **D** $x_k + h.\left\{\frac{(f_k-f_{k-1})}{(f_k-f_{k-1}-2f_{k+1})}\right\}$

Q24. In a data, if $l = 60$, $h = 15$, $f_1 = 16$, $f_0 = 6$, $f_2 = 6$, then the mode is: **1 Mark**

A 67.5 **B** 72 **C** 60 **D** 62

Q25. For the following distribution: **1 Mark**

Mark	60-70	70-80	80-90	90-100	100-110
Frequency	10	15	12	20	9

The sum of lower limits of the median class and modal class is:

A 20 **B** 180 **C** 170 **D** 190

Q26. While computing the mean of the grouped data, we assume that the frequencies are: **1 Mark**

A Evenly distributed over the classes. **B** Centred at the class marks of the classes.

C Centred at the lower limits of the classes. **D** Centred at the upper limits of the classes.

Q27. Median =? **1 Mark**

A $l + \left\{h \times \frac{\left(\frac{N}{2}-cf\right)}{f}\right\}$ **B** $l + \left\{h \times \frac{\left(cf-\frac{N}{2}\right)}{f}\right\}$ **C** $l - \left\{h \times \frac{\left(\frac{N}{2}-cf\right)}{f}\right\}$ **D** None of these.

Q28. If the mode of the data : 16, 15, 17, 16, 15, x, 19, 17, 14 is 15, then x = **1 Mark**

A 15 **B** 16 **C** 17 **D** 19

Q29. The mode of a frequency distribution can be determined graphically from: **1 Mark**

A Histogram. **B** Frequency polygon. **C** Ogive. **D** Frequency curve.

Q30. If 35 is removed from the data : 30, 34, 35, 36, 37, 38, 39, 40, then the median increases by: **1 Mark**

A 2 **B** 1.5 **C** 1 **D** 0.5

Q31. Choose the correct answer from the given four options: **1 Mark**

The times, in seconds, taken by 150 atheletes to run a 110 m hurdle race are tabulated below:

Class	13.8-14	14-14.2	14.2-14.4	14.4-14.6	14.6-14.8	14.8-15

Frequency	2	4	5	71	48	20

The number of atheletes who completed the race in less then 14.6 seconds is:

A 11 **B** 71 **C** 82 **D** 130

Q32. If the mean of observations $x_1, x_2, \ldots, x_n$ is $\bar{x}$, then the mean of $x_1 + a, x_2 + a, \ldots, x_n + a$ is **1 Mark**

A $a\bar{x}$ **B** $\bar{x} - a$ **C** $\bar{x} + a$ **D** $\frac{\bar{x}}{a}$

Q33. Which one of the following is not a measure of central tendency? **1 Mark**

A Arithmetic mean **B** Median **C** Mode **D** Variance

Q34. The percentage of marks obtained by 100 students in an examination are as follows: **1 Mark**

Mark	130-135	135-140	140-145	145-150	150-155	155-160	160-165
Frequency	14	16	18	23	18	8	3

The cumulative frequency of the class interval 140-145 is:

A 52 **B** 48 **C** 50 **D** 40

Q35. If the mean of frequency distribution is 8.1 and $\sum f_i x_i = 132 + 5k, \sum f_i = 20$, then k = **1 Mark**

A 3 **B** 4 **C** 5 **D** 6

Q36.. The mean of the first 10 natural numbers is- **1 Mark**

A 5.5 **B** 5 **C** 6 **D** 4.5

Q37. If the median of the data: 24, 25, 26, $x + 2$, $x + 3$, 30, 31, 34 is 27.5, then x = **1 Mark**

A 27 **B** 25 **C** 28 **D** 30

Q38. Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason (R).Mark the correct choice as: **1 Mark**

Assertion: If the value of mode and mean is 60 and 66 respectively, then the value of median is 64.

Reason: Median = (mode + 2 mean)

A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true.

D Assertion (A) is false but reason (R) is true.

Q39. Assertion: If for a certain frequency distribution, $l = 24.5, h = 4, f_0 = 14, f_1 = 14, f_2 = 15$ then the value of mode is 25. **1 Mark**

Reason: Mode of a frequency distribution is given by:

$$\text{Mode} = l + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times h$$

A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true.

Q40. Assertion: If the value of mode and mean is 60 and 66 respectively, then the value of median is 64. **1 Mark**

Reason: Median = (mode + 2 mean)

A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true.

D Assertion (A) is false but reason (R) is true.

Q41. Assertion: Consider the following frequency distribution: **1 Mark**

Class interval	3-6	6-9	9-12	12-15	15-18	18-21
Frequency	2	5	21	23	10	12

he mode of the above data is 12.4.

Reason: The value of the variable which occurs most often is the mode.

A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true.

Q42.Assertion: If the value of mode and mean is 60 and 66 respectively, then the value of median is 64. **1 Mark**

Reason: Median = (mode + 2 mean)

A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true.

Q43.Assertion: Consider the following frequency distribution: **1 Mark**

Class interval	0-4	4-8	8-12	12-16	16-20
Frequency	6	3	5	20	10

The median class is 12-16.

Reason: Let $n = \sum f_i$ Then, the class whose cumulative frequency is just lesser than $\left(\frac{n}{2}\right)$ is the median class.

A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true.

Q44.Assertion: The arithmetic mean of the following frequency distribution is 25. **1 Mark**

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	5	18	15	16	6

Reason: Mean $(\bar{x}) = \frac{\sum f_i x_i}{\sum f_i}$ where $x_i = \frac{1}{2}$ (Lower limit+Upper limit) of the i^{th} class interval and f_i is its frequency.

A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true.

Q45.Assertion: Consider the following frequency distribution: **1 Mark**

Class interval	10-15	15-20	20-25	25-30	30-35
Frequency	5	9	12	6	8

Reason: The class having maximum frequency is called the modal class.

A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true.