

# RG CLASSES

EDUCATING FOR BETTER FUTURE...

## GRADE X

### Question Bank (MATHEMATICS)

#### Chapter-13 STATISTICS

##### 1 marks:

- For some data  $x_1, x_2, x_3, \dots, x_n$  with respective frequencies  $f_1, f_2, f_3, \dots, f_n$ , the value of  $\sum f_i(x_i - \bar{x})$  is equal to **[BOARD 2024]**  
a)  $n\bar{x}$       b) 1      c)  $\sum f_i$       d) 0
- The middle most observation of every data arranged in order is called **[BOARD 2024]**  
a) mean      b) median      c) mode      d) deviation
- If the value of each observation in a data is increased by 2, then median of the new data **[BOARD 2024]**  
a) Increases by 2      c) increases by  $2n$   
b) Remains same      d) decreases by 2
- If the value of each observation of a statistical data is increased by 3, then mean of the data **[BOARD 2023]**  
a) Remains unchanged      c) increase by 3  
b) Increase by 6      d) increase by  $3n$
- After an examination, a teacher wants to know the marks obtained by maximum number of the students in her class. She requires to calculate \_\_\_\_\_ of marks. **[BOARD 2024]**  
a) mean      b) median      c) mode      d) range
- The mean of 5 observations is 15. If the mean of first three observations is 14 and that of the last three observations is 17, then the third observation is  
a) 20      b) 19      c) 18      d) 17
- If the mean of five observations  $x, x + 2, x + 4, x + 6$  and  $x + 8$  is 11, then the value of  $x$  is **[BOARD 2024]**  
a) 4      b) 7      c) 11      d) 6
- For the data  $2, 9, x + 6, 2x + 3, 5, 10, 5$  if the mean is 7, then the value of  $x$  is **[BOARD 2024]**  
a) 9      b) 6      c) 5      d) 3
- The mean of 5 numbers is 15. If we include one more number, the mean of six numbers becomes 17. The included number is **[BOARD 2024]**

a) 27      b) 37      c) 17      d) 25s

10. The empirical relation between the mode, median and mean of a distribution is

**[BOARD 2023]**

a) Mode = 3 Median – 2 Mean      c) Mode = 3 Mean – 2 Median  
 b) Mode = 2 Median – 3 Mean      d) Mode = 2 Mean – 3 Median

11. If the difference of mode and median of a data is 24, then the difference of its median and mean is

**[BOARD 2024]**

a) 12      b) 24      c) 8      d) 36

12. If the mean and mode of a data are 24 and 12 respectively, then its median is

**[BOARD 2024]**

a) 25      b) 18      c) 20      d) 22

13. If the mean and median of a data are 12 and 15 respectively, then its mode is

**[BOARD 2023]**

a) 13.5      b) 21      c) 6      d) 14

14. If the mean of 6, 7, p, 8, q, 14 is 9 then

**[BOARD 2024]**

a)  $p - q = 19$       b)  $p + q = 19$       c)  $p - q = 21$       d)  $p + q = 21$

15. If the mean of the first n natural numbers is  $\frac{5n}{9}$  then the value of n is

**[BOARD 2024]**

a) 5      b) 4      c) 9      d) 10

16. The distribution below gives the marks obtained by 80 students on a test:

Marks	Less than 10	Less than 20	Less than 30	Less than 40	Less than 50	Less than 60
Number of students	3	12	27	57	75	80

The modal class of this distribution is

**[BOARD 2023]**

a) 10-20      b) 20-30      c) 30-40      d) 50-60

17. For the following distribution:

Class	0-5	5-10	10-15	15-20	20-25
Frequency	10	15	12	20	9

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

**[BOARD 2023]**

a) 15      b) 25      c) 30      d) 35

18. In a frequency distribution, the mid value of a class is 10 and the width of the class is 6. The lower limit of the class is

- a) 6
- b) 7
- c) 8
- d) 12

## **Options for Assertion and Reasoning Questions:**

- 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

**2 marks:**

1. The mode of the following frequency distribution is 36. Find the missing frequency  $f$ .

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	8	10	f	16	12	6	7

**3 marks:**

1. In a test, the marks obtained by 100 students (out of 50) are given below.

<b>Marks obtained</b>	0-10	10-20	20-30	30-40	40-50
<b>Number of students</b>	12	23	34	25	6

Find the mean marks of the students.

[BOARD 2024]

2. Find the mean of the following:

[BOARD 2023]

<b>Class</b>	0-15	15-30	30-45	45-60	60-75	75-90
<b>Frequency</b>	17	20	18	21	15	9

3. Find the median of the following data:

<b>Height (in cm)</b>	Less than 120	Less than 140	Less than 160	Less than 180	Less than 200
<b>Number of students</b>	12	26	34	40	50

4. Find the mean of the following distribution:

Height (in cm)	No of students
Less than 75	5
Less than 100	11
Less than 125	14
Less than 150	18
Less than 175	21
Less than 200	28
Less than 225	33
Less than 250	37
Less than 275	45
Less than 300	50

**5 marks:**

1. The following table shows the ages of the patients admitted in a hospital during a year.

Age ( in years)	5-15	15-25	25-35	35-45	45-55	55-65
Number of patients	6	11	21	23	14	5

Find the mode and mean of the data given above.

**[BOARD 2024]**

2. Find the mean of the following frequency distribution:

**[BOARD 2024]**

Class	25-30	30-35	35-40	40-45	45-50	50-55	55-60
Frequency	14	22	16	6	5	3	4

3. The following distribution shows the daily pocket allowance of children of a locality. The mean daily pocket allowance is Rs 36.10. Find the missing frequency f.

**[BOARD 2024]**

Daily pocket allowance (in Rs)	20-25	25-30	30-35	35-40	40-45	45-50	50-55
Number of children	7	6	9	13	f	5	4

4. A student noted the number of cars passing through a spot on a road for 100 periods each of 3 minutes and summarised it in the table given below. Find the mean and median of the following data.

**[BOARD 2023]**

Number of cars	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency (periods)	7	14	13	12	20	11	15	8
Class Interval	0-15	15-30	30-45	45-60	60-75	75-90	Total	
Frequency	6	7	a	15	10	b	51	

5. The mode of the following frequency distribution is 55. Find the missing frequencies 'a' and 'b'.

**[BOARD 2023]**

Class Interval	0-15	15-30	30-45	45-60	60-75	75-90	Total
Frequency	6	7	a	15	10	b	51

6. The monthly expenditure on milk in 200 families of a housing society is given below:

**[BOARD 2023]**

Monthly Expenditure (in Rs)	1000-1500	1500-2000	2000-2500	2500-3000	3000-3500	3500-4000	4000-4500	4500-5000
Number of families	24	40	33	x	30	22	16	7

Find the value of x and also find median and mean expenditure on milk.

7. 250 apples of a box were weighed and the distribution of masses of the apples is given in the following table:

**[BOARD 2023]**

Mass (in grams)	80-100	100-120	120-140	140-160	160-180
Number of Apples	20	60	70	x	60

(i) Find the value of x and the mean mass of the apples. **3**

(ii) Find the modal mass of the apples. **2**

8. The mean of the following distribution is 48 and sum of all the frequency is 50. Find the missing frequencies x and y.

Class	20-30	30-40	40-50	50-60	60-70
Frequency	8	6	x	11	y

9. If the median of the following frequency distribution is 32.5. Find the values of x and y.

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	Total
Frequency	x	5	9	12	y	3	2	40

**Case Based Questions:**

1. BINGO is game of chance. The host has 75 balls numbered 1 through 75. Each player has a BINGO card with some numbers written on it. The participants cancels the number on the card when called out a number written on the ball selected at random. Whosoever cancels all the numbers on his/her card, says BINGO and wins the game.

**[BOARD 2024]**



The table given below, shows the data of one such game where 48 balls were used before Tara said 'BINGO'.

Numbers announced	Number of times
0-15	8
15-30	9
30-45	10
45-60	12
60-75	9

**Based on the above information, answer the following questions:**

(i) Write the median class. 1  
 (ii) (a) Find the median of the given data. 2

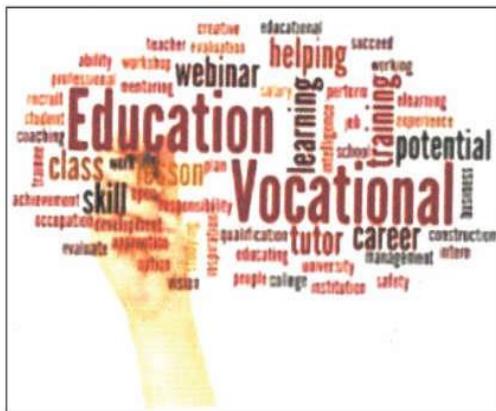
**OR**

(b) Find the mode of the given data. 2  
 (iii) When first ball was picked up, what was the probability of calling out an even number? 1

2. Vocational training complements traditional education by providing practical skills and hands-on experience. While education equips individuals with a broad knowledge base, vocational training focuses on job-specific skills, enhancing employability thus making the student self-reliant. Keeping this in view, a teacher

made the following table giving the frequency distribution of students/adults undergoing vocational training from the training institute. **[BOARD 2024]**

[BOARD 2024]



<b>Age (in years)</b>	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54
<b>Number of participants</b>	62	132	96	37	13	11	10	4

**From the above answer the following:**

(i) What is the lower limit of the modal class of the above data? **1**

(ii) (a) Find the median class of the above data? **2**

OR

(b) Find the number of participants of age less than 50 years who undergo vocational training. 2

(iii) Write the empirical relationship between mean, median and mode. 1

3. Activities like running or cycling reduce stress and the risk of mental disorders like depression. Running helps build endurance. Children develop stronger bones and muscles and are less prone to gain weight. The physical education teacher of a school has decided to conduct an inter school running tournament in his school p to run 100 m, was noted as follows.



[BOARD 2024]

For Classes I to XII (Science, Commerce, Humanities), NEET, JEE

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Time (in seconds)	0-20	20-40	40-60	60-80	80-100
Number of students	8	10	13	6	3

**From the above answer the following:**

(i) What is the median class of the above data? **1**  
 (ii) (a) Find the mean time taken by the students to finish the race. **2**

**OR**

(b) Find the mode of the above given data. **2**  
 (iii) How many students took time less than 60 seconds? **1**

4. India meteorological department observes seasonal and annual rainfall every year in different sub divisions of our country. **[BOARD 2023]**



Rainfall (mm)	Number of Sub-divisions
200-400	2
400-600	4
600-800	7
800-1000	4
1000-1200	2
1200-1400	3
1400-1600	1
1600-1800	1

It helps them to compare and analyze the results. The table given above shows sub division wise seasonal (monsoon) rainfall (mm) in 2018.

**Based on the above information, answer the following questions:**

(i) Write the modal class. **1**  
 (ii) (a) Find the median of the given data. **2**

**OR**

(b) Find the mean rainfall in this season. **2**  
 (iii) If subdivision having at least 1000 mm rainfall during monsoon season, is considered good rainfall subdivision, then how many subdivisions had good rainfall? **1**