13. Statistics - Board Exam Questions

The detailed solution for all the questions can be found at
pschool.in/math/ncert/g10/chap-13

1 Mark Questions (MCQ)

1) If the mean and mode of a data are 12 and 21 respectively, then its median is:
2) The mean and median of a frequency distribution are 43 and 43.4 respectively. The mode of the distribution is:
3) The median and mode of a distribution are 25.2 and 26.1 respectively. The mean of the distribution is:
4) Mean and Median of a frequency distribution are 43 and 40 respectively. The value of mode is
5) While calculating mean of a grouped frequency distribution, step deviation method was used $\left(\frac{x-a}{h}=u\right)$. It was found that $\bar{x}=64$, h = 5 and a = 62.5. The value of $\bar{u}$ is
6) The mean age of a combined group of men and women is 35 years. If the mean ages of the men and women are 38 years and 30 years respectively, then the percentage of women in the group is:
7) The mean and median of the data are 35.5 and 32 respectively. The value of mode for this data is:
8) Mode and Mean of a data are 15x and 18x, respectively. Then the median of the data is:
9) If the mean of 2, 9, x + 6, 2x + 3, 5, 10, 5 is 7, then the value of x is:
10) The cumulative frequency for calculating median is obtained by adding the frequencies of all the:
    (a) classes up to the median class
    (b) classes following the median class
    (c) classes preceding the median class
    (d) all classes

11) If mean and median of given set of observations are 10 and 11 respectively, then the value of mode is:

12) If x median + y mean = z mode; is the empirical relationship between mean, median and mode, then the value of x + y + z is

13) Following data shows the marks obtained by 100 students in a class test:
Marks obtained: 20, 29, 28, 33, 42, 38, 43, 25
Number of students: 6, 28, 24, 15, 2, 4, 1, 20
The median will be the average of which two observations?

14) If the mode of some observations is 10 and sum of mean and median is 25, then the mean and median respectively are

15) If the maximum number of students has obtained 52 marks out of 80, then
(a) 52 is the mean of the data
(b) 52 is the median of the data
(c) 52 is the mode of the data
(d) 52 is the range of the data

16) The median of a set of 9 distinct observations is 20.5. If each of the observations of a set is increased by 2, then the median of a new set
(a) is increased by 2 (b) is decreased by 2
(c) is two times the original number
(d) Remains same as that of original observations

17) For some data $x_1, x_2, \ldots, x_n$ with respective frequencies $f_1, f_2, \ldots, f_n$, the value of $\sum_{1}^{n} f_i(x_i - \bar{x})$ is equal to:

18) The middle most observation of every data arranged in order is called:
(a) mode (b) median
(c) mean (d) deviation

19) If value of each observation in a data is increased by 2, then median of the new data
(a) increases by 2 (b) increases by 2n
(c) remains same (d) decreases by 2

20) 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.
(a) median (b) mode
(c) mean (d) range

21) The mean of five 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

22) If the difference of mode and median of a data is 24, then the difference of its median and mean is:

23) Consider the frequency distribution of 45 observations.
Class: 0–10, 10–20, 20–30, 30–40, 40–50
Frequency: 5, 9, 15, 10, 6
The upper limit of median class is

24) Which of the following gives the middle most observation of the data?
(a) Median (b) Mean
(c) Range (d) Mode

25) 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:

26) If the value of each observation of a statistical data is increased by 3, then the mean of the data
(a) remains unchanged (b) increases by 3
(c) increases by 6 (d) increases by 3n

27) The empirical relation between the mode, median and mean of a distribution is:

28) If the mean and the median of a data are 12 and 15 respectively, then its mode is:

29) If every term of the statistical data consisting of n terms is decreased by 2, then the mean of the data:
(a) decreases by 2 (b) remains unchanged
(c) decreases by 2n (d) decreases by 1

30) The upper limit of the modal class of the given distribution is:
Height (in cm): Below 140, Below 145, Below 150, Below 155, Below 160, Below 165
Number of girls: 4, 11, 29, 40, 46, 51

31) For the following distribution,
Class: 0–5, 5–10, 10–15, 15–20, 20–25
Frequency: 10, 15, 12, 20, 9
the sum of the lower limits of the median and modal class is

3 Mark Questions

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

Marks obtained	0–10	10–20	20–30	30–40	40–50
Number of students	12	23	34	25	6

2) The length of 40 leaves of a plant are measured correct to nearest millimetre, and the data obtained is represented in the following table. Find the mean length of the leaves.

Length (in mm)	Number of leaves
118–126	3
127–135	5
136–144	9
145–153	12
154–162	5
163–171	4
172–180	2

3) Find the mean of the following frequency distribution:

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

4 Mark Questions

1) A school conducted a weekly test for Class X students, before the commencement of the pre-board examination and recorded their scores (out of 50). To analyse performance patterns, the academic coordinator grouped the marks into intervals. The grouped frequency distribution is as below:

Marks Obtained	0–10	10–20	20–30	30–40	40–50
Number of students	3	6	12	15	14

The academic coordinator computed the central tendencies to judge overall learning level, the most common performance range and to understand consistency across the batch for planning the remedial sessions.
(i) Identify the class with the most common performance range. (1)
(ii) Find the class interval containing the median. (1)
(iii) What is the average performance of the students? (2)
OR Find the mode of the data.

2) 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 premises. The time taken by a group of students to run 100 m, was noted as follows:

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

(i) What is the median class of the above given 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.
(iii) How many students took time less than 60 seconds? (1)

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

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

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

4) 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.

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

(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.

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

5) The India Meteorological Department observes seasonal and annual rainfall every year in different sub-divisions of our country. It helps them to compare and analyse the results.
The table below shows sub-divisions wise seasonal (monsoon) rainfall (in mm) in 2023.
(i) Write the modal class. (1)
(ii) (a) Find the median of the given data. (2)

Rainfall (mm)	No. of Sub-divisions
200–400	3
400–600	4
600–800	7
800–1000	4
1000–1200	3
1200–1400	3

OR (b) Find the mean rainfall in the season.
(iii) If a sub-division having at least 800 mm rainfall during monsoon season is considered a good rainfall sub-division, then how many sub-divisions had good rainfall? (1)

6) India meteorological department observes seasonal and annual rainfall every year in different sub-divisions of our country. It helps them to compare and analyse the results. The table given below shows sub-division wise seasonal (monsoon) rainfall (mm) in 2018:
(I) Write the modal class. (1)
(II) Find the median of the given data. (2)
OR Find the mean rainfall in this season.
(III) If sub-division having at least 1000 mm rainfall during monsoon season, is considered good rainfall sub-division, then

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

how many sub-divisions had good rainfall? (1)

5 Mark Questions

1) The mean of the following frequency distribution is 35. Find the values of x and y, if the sum of frequencies is 25:

Class	0–10	10–20	20–30	30–40	40–50	50–60	60–70
Frequency	1	x	5	7	y	3	1

2) The mean of the following frequency distribution is 28. If sum of all frequencies is 100, then find the values of p and q:

Class Interval	0–10	10–20	20–30	30–40	40–50	50–60
Frequency	12	p	27	20	q	6

3) Find the missing frequency 'f' in the following table, if the mean of the given data is 18. Hence find the mode.

Daily Allowance	11–13	13–15	15–17	17–19	19–21	21–23	23–25
Number of Children	7	6	9	13	f	5	4

4) The monthly expenditure on milk in 200 families of a Housing Society is given below. Find the value of x and also find the mean expenditure.

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

5) Find the Mean and Mode of the following frequency distribution:

Class	0–10	10–20	20–30	30–40	40–50	50–60	60–70
Frequency	8	7	15	20	12	8	10

6) Find mean and mode of the following distribution:

Class	0–10	10–20	20–30	30–40	40–50	50–60	60–70
Frequency	3	6	11	10	13	3	4

7) Find mean and mode of the following distribution:

Class	0–15	15–30	30–45	45–60	60–75	75–90	90–105
Frequency	4	8	11	14	10	7	6

8) The following table shows the number of patients of different age group who were discharged from the hospital in a particular month. Find the 'mean' and the 'mode' of the above data.

Age (in years)	Number of Patients Discharged
5–15	6
15–25	11
25–35	21
35–45	23
45–55	14
55–65	5
Total	80

9) The median of the following data is 50 and sum of all frequencies is 90. Find the values of p and q.

Class	20–30	30–40	40–50	50–60	60–70	70–80	80–90
Frequency	p	15	25	20	q	8	10

10) The median of the following data is 50. Find the values of 'p' and 'q', if the sum of all frequencies is 90. Also find the mode of the data.

Marks obtained	20–30	30–40	40–50	50–60	60–70	70–80	80–90
Number of students	p	15	25	20	q	8	10

11) The median of the following data is 137. Find the values of x and y, given that total of frequencies is 68.

Class	Frequency
65–85	4
85–105	5
105–125	x
125–145	20
145–165	14
165–185	y
185–205	4

12) Following distribution shows the marks of 230 students in a particular subject. If the median marks are 46, then find the values of x and y.

Marks	10–20	20–30	30–40	40–50	50–60	60–70	70–80
Number of Students	12	30	x	65	y	25	18

13) The median of the following data is 525. Find the values of x and y, if the total frequency is 100.

Class interval	Frequency
0–100	2
100–200	5
200–300	x
300–400	12
400–500	17
500–600	20
600–700	y
700–800	9
800–900	7
900–1000	4

14) 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.

Number of cars	Frequency (periods)
0–10	7
10–20	14
20–30	13
30–40	12
40–50	20
50–60	11
60–70	15
70–80	8

15) Find the mean and median of the following data:

Class	85–90	90–95	95–100	100–105	105–110	110–115
Frequency	15	22	20	18	20	25

16) The monthly expenditure on milk in 200 families of a Housing Society is given below. Find the value of x and also, find the median and mean expenditure on milk.

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

17) Medical check-up was carried out for 35 students of a class and their weights were recorded as follows. Find the difference

between the mean weight and the median weight.

Weight (in kg)	38–40	40–42	42–44	44–46	46–48	48–50	50–52
Number of Students	3	2	4	5	14	4	3

18) Find median and mode of the following distribution:

Class Interval	0–15	15–30	30–45	45–60	60–75	75–90	90–105
Frequency	15	10	12	9	8	10	6

19) A survey regarding heights (in cm) of 51 girls of class X of a school was conducted and the following data was obtained. Find the median height of girls. If mode of the above distribution is 148.05, find the mean using empirical formula.

Heights (in cm)	Number of girls
less than 140	04
less than 145	11
less than 150	29
less than 155	40
less than 160	46
less than 165	51

20) An SBI health insurance agent found the following data for distribution of ages of 100 policy holders. The health insurance policies are given to persons of age 15 years and onwards, but less than 60 years. Find the modal age and median age of the policy holders.

Age (in yrs)	Number of policy holders
15–20	2
20–25	4
25–30	18
30–35	21
35–40	33
40–45	11
45–50	3
50–55	6
55–60	2

21) If the mode of the following distribution is 55, then find the value of x. Hence, find the mean.

Class Interval	0–15	15–30	30–45	45–60	60–75	75–90
Frequency	10	7	x	15	10	12

22) 250 apples of a box were weighed and the distribution of masses of the apples is given in the following table:

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)