

Maharashtra Board Solutions Class 9-Maths

(Part 1): Chapter 7.5- Statistics

BOOK SOLUTIONS
CLASS 9
MATHS

CHAPTER 7.5
Statistics



Maharashtra Board Solutions→

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Maharashtra Board Solutions Class 9-Maths

(Part 1): Chapter 7.5- Statistics

Class 9: Maths Chapter 7.2 solutions. Complete Class 9 Maths Chapter 7.2 Notes.

Maharashtra Board Solutions Class 9-Maths (Part 1): Chapter 7.5- Statistics

Maharashtra Board 9th Maths Chapter 7.2, Class 9 Maths Chapter 7.2 solutions

Question 1.

Yield of soyabean per acre in quintal in Mukund's field for 7 years was 10, 7, 5, 3, 9, 6, 9. Find the mean of yield per acre.

Solution:

$$\begin{aligned}\text{Mean} &= \frac{\text{The sum of all observations in the data}}{\text{Total number of observations}} \\ &= \frac{10 + 7 + 5 + 3 + 9 + 6 + 9}{7} \\ &= \frac{49}{7}\end{aligned}$$

Mean = 7

The mean of yield per acre is 7 quintals.

Question 2.

Find the median of the observations, 59, 75, 68, 70, 74, 75, 80.

Solution:

Given data in ascending order:

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59, 68, 70, 74, 75, 75, 80

$\therefore$ Number of observations(n) = 7 (i.e., odd)

$\therefore$ Median is the middle most observation

Here, 4th number is at the middle position, which is = 74

$\therefore$ The median of the given data is 74.

Question 3.

The marks (out of 100) obtained by 7 students in Mathematics examination are given below. Find the mode for these marks.

99, 100, 95, 100, 100, 60, 90

Solution:

Given data in ascending order:

60, 90, 95, 99, 100, 100, 100

Here, the observation repeated maximum number of times = 100

$\therefore$ The mode of the given data is 100.

Question 4.

The monthly salaries in rupees of 30 workers in a factory are given below.

5000, 7000, 3000, 4000, 4000, 3000, 3000,

3000, 8000, 4000, 4000, 9000, 3000, 5000,

5000, 4000, 4000, 3000, 5000, 5000, 6000,

8000, 3000, 3000, 6000, 7000, 7000, 6000,

6000, 4000

From the above data find the mean of monthly salary.

Solution:

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Monthly salary (x_i)	No. of workers (f_i)	$f_i \times x_i$
3000	8	24000
4000	7	28000
5000	5	25000
6000	4	24000
7000	3	21000
8000	2	16000
9000	1	9000
	$\Sigma f_i = 30$	$\Sigma f_i x_i = 1,47,000$

$$\begin{aligned}\text{Mean } (\bar{x}) &= \frac{\Sigma f_i x_i}{\Sigma f_i} \\ &= \frac{1,47,000}{30} \\ &= ₹ 4900\end{aligned}$$

∴ The mean of monthly salary is ₹ 4900.

Question 5.

In a basket there are 10 tomatoes. The weight of each of these tomatoes in grams is as follows:

60, 70, 90, 95, 50, 65, 70, 80, 85, 95.

Find the median of the weights of tomatoes.

Solution:

Given data in ascending order:

50, 60, 65, 70, 70, 80, 85, 90, 95, 95

∴ Number of observations (n) = 10 (i.e., even)

∴ Median is the average of middle two observations

Here, 5th and 6th numbers are in the middle position

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$$\therefore \text{Median} = 70 + 802$$

$$\therefore \text{Median} = 1502$$

$\therefore$ The median of the weights of tomatoes is 75 grams.

Question 6.

A hockey player has scored following number of goals in 9 matches: 5, 4, 0, 2, 2, 4, 4, 3, 3.

Find the mean, median and mode of the data.

Solution:

i. Given data: 5, 4, 0, 2, 2, 4, 4, 3, 3.

Total number of observations = 9

$$\begin{aligned}\text{Mean} &= \frac{\text{The sum of all observations in the data}}{\text{Total number of observations}} \\ &= \frac{5+4+0+2+2+4+4+3+3}{9} \\ &= \frac{27}{9}\end{aligned}$$

$\therefore$ The mean of the given data is 3.

ii. Given data in ascending order:

0, 2, 2, 3, 3, 4, 4, 4, 5

$\therefore$ Number of observations(n) = 9 (i.e., odd)

$\therefore$ Median is the middle most observation

Here, the 5th number is at the middle position, which is 3.

$\therefore$ The median of the given data is 3.

iii. Given data in ascending order:

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0, 2, 2, 3, 3, 4, 4, 4, 5

Here, the observation repeated maximum number of times = 4

∴ The mode of the given data is 4.

Question 7.

The calculated mean of 50 observations was 80. It was later discovered that observation 19 was recorded by mistake as 91. What Was the correct mean?

Solution:

Here, mean = 80, number of observations = 50

Mean = $\frac{\text{The sum of all observations}}{\text{Total number of observations}}$

∴ The sum of all observations = Mean x Total number of observations

∴ The sum of 50 observations = 80×50

= 4000

One of the observation was 19. However, by mistake it was recorded as 91.

Sum of observations after correction = sum of 50 observation + correct observation – incorrect observation

= $4000 + 19 - 91$

= 3928

∴ Corrected mean

$$= \frac{\text{Sum of observations after correction}}{\text{Total number of observations}}$$

$$= \frac{3928}{50}$$

= 78.56

∴ The corrected mean is 78.56.

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Question 8.

Following 10 observations are arranged in ascending order as follows. 2, 3, 5, 9, $x + 1$, $x + 3$, 14, 16, 19, 20. If the median of the data is 11, find the value of x .

Solution:

Given data in ascending order :

2, 3, 5, 9, $x + 1$, $x + 3$, 14, 16, 19, 20.

$\therefore$ Number of observations (n) = 10 (i.e., even)

$\therefore$ Median is the average of middle two observations

Here, the 5th and 6th numbers are in the middle position.

$$\therefore \text{Median} = \frac{(x+1) + (x+3)}{2}$$

$$\therefore 11 = \frac{2x + 4}{2}$$

$$\therefore 22 = 2x + 4$$

$$\therefore 22 - 4 = 2x$$

$$\therefore 18 = 2x$$

$$\therefore x = 9$$

Question 9.

The mean of 35 observations is 20, out of which mean of first 18 observations is 15 and mean of last 18 observations is 25. Find the 18th observation.

Solution:

Mean = $\frac{\text{The sum of all observations}}{\text{Total number of observations}}$

$\therefore$ The sum of all observations

= Mean $\times$ Total number of observations

The mean of 35 observations is 20

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$\therefore$ Sum of 35 observations = $20 \times 35 = 700$...(i)

The mean of first 18 observations is 15

Sum of first 18 observations = 15×18

= 270 ...(ii)

The mean of last 18 observations is 25 Sum of last 18 observations = 25×18

= 450 ...(iii)

$\therefore$ 18th observation = (Sum of first 18 observations + Sum of last 18 observations) – (Sum of 35 observations)

= $(270 + 450) - (700)$... [From (i), (ii) and (iii)]

= $720 - 700 = 20$

The 18th observation is 20.

Question 10.

The mean of 5 observations is 50. One of the observations was removed from the data, hence the mean became 45. Find the observation which was removed.

Solution:

Mean = $\frac{\text{The sum of all observations}}{\text{Total number of observations}}$

$\therefore$ The sum of all observations = Mean $\times$ Total number of observations

The mean of 5 observations is 50

Sum of 5 observations = $50 \times 5 = 250$...(i)

One observation was removed and mean of remaining data is 45.

Total number of observations after removing one observation = $5 - 1 = 4$

Now, mean of 4 observations is 45.

$\therefore$ Sum of 4 observations = $45 \times 4 = 180$...(ii)

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$\therefore$ Observation which was removed

= Sum of 5 observations – Sum of 4 observations = $250 - 180 \dots$ [From (i) and (ii)]

= 70

$\therefore$ The observation which was removed is 70.

Question 11.

There are 40 students in a class, out of them 15 are boys. The mean of marks obtained by boys is 33 and that for girls is 35. Find out the mean of all students in the class.

Solution:

Total number of students = 40

Number of boys = 15

$\therefore$ Number of girls = $40 - 15 = 25$

The mean of marks obtained by 15 boys is 33

Here, sum of the marks obtained by boys

= 33×15

= 495 ... (i)

The mean of marks obtained by 25 girls is 35 Sum of the marks obtained by girls = 35×25

= 875 ... (ii)

Sum of the marks obtained by boys and girls = $495 + 875 \dots$ [From (i) and (ii)]

= 1370

$\therefore$ Mean of all the students

$$= \frac{\text{Sum of the marks of all the students}}{\text{Total number of students}}$$
$$= \frac{1370}{40}$$

$$= 34.25$$

∴ The mean of all the students in the class is 34.25.

Question 12.

The weights of 10 students (in kg) are given below:

40, 35, 42, 43, 37, 35, 37, 37, 42, 37. Find the mode of the data.

Solution:

Given data in ascending order:

35, 35, 37, 37, 37, 37, 40, 42, 42, 43

∴ The observation repeated maximum number of times = 37

∴ Mode of the given data is 37 kg

Question 13.

In the following table, the information is given about the number of families and the siblings in the families less than 14 years of age. Find the mode of the data.

No. of siblings	1	2	3	4
Families	15	25	5	5

Solution:

Here, the maximum frequency is 25.

Since, Mode = observations having maximum frequency

∴ The mode of the given data is 2.

Question 14.

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Find the mode of the following data.

Marks	35	36	37	38	39	40
No. of students	09	07	09	04	04	02

Solution:

Here, the maximum frequency is 9.

Since, Mode = observations having maximum frequency

But, this is the frequency of two observations.

$\therefore$ Mode = 35 and 37

Question 1.

The first unit test of 40 marks was conducted for a class of 35 students. The marks obtained by the students were as follows. Find the mean of the marks.

40, 35, 30, 25, 23, 20, 14, 15, 16, 20, 17, 37, 37, 20, 36, 16, 30, 25, 25, 36, 37, 39, 39, 40, 15, 16, 17, 30, 16, 39, 40, 35, 37, 23, 16.

(Textbook pg, no. 123)

Solution:

Here, we can add all observations, but it will be a tedious job. It is easy to make frequency distribution table to calculate mean.

Marks (x_i)	No. of students (f_i)	$f_i \times x_i$
14	1	$14 \times 1 = 14$
15	2	$15 \times 2 = 30$
16	5	$16 \times 5 = 80$
17	2	$17 \times 2 = 34$
20	3	$20 \times 3 = 60$
23	2	$23 \times 2 = 46$
25	3	$25 \times 3 = 75$
30	3	$30 \times 3 = 90$
35	2	$35 \times 2 = 70$
36	2	$36 \times 2 = 72$
37	4	$37 \times 4 = 148$
39	3	$39 \times 3 = 117$
40	3	$40 \times 3 = 120$
	N = 35	$\Sigma f_i x_i = 956$

$$\begin{aligned}\text{Mean } (\bar{x}) &= \frac{\Sigma f_i x_i}{N} \\ &= \frac{956}{35}\end{aligned}$$

= 27.31 marks (approximately)

∴ The mean of the mark is 27.31.



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The Maharashtra State Board of Secondary and Higher Secondary Education or MSBSHSE (Marathi: महाराष्ट्र राज्य माध्यमिक आणि उच्च माध्यमिक शिक्षण मंडळ), is an **autonomous and statutory body established in 1965**. The board was amended in the year 1977 under the provisions of the Maharashtra Act No. 41 of 1965.

The Maharashtra State Board of Secondary & Higher Secondary Education (MSBSHSE), Pune is an independent body of the Maharashtra Government. There are more than 1.4 million students that appear in the examination every year. The Maha State Board conducts the board examination twice a year. This board conducts the examination for SSC and HSC.

The Maharashtra government established the Maharashtra State Bureau of Textbook Production and Curriculum Research, also commonly referred to as Ebalbharati, in 1967 to take up the responsibility of providing quality textbooks to students from all classes studying under the Maharashtra State Board. MSBHSE prepares and updates the curriculum to provide holistic development for students. It is designed to tackle the difficulty in understanding the

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concepts with simple language with simple illustrations. Every year around 10 lakh students are enrolled in schools that are affiliated with the Maharashtra State Board.

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As of now, the MSCERT and Balbharti are responsible for the syllabus and textbooks of Classes 1 to 8, while Classes 9 and 10 are under the Maharashtra State Board of Secondary and Higher Secondary Education (MSBSHSE).

How many state boards are there in Maharashtra?

The Maharashtra State Board of Secondary & Higher Secondary Education, conducts the HSC and SSC Examinations in the state of Maharashtra through its nine Divisional Boards located at Pune, Mumbai, Aurangabad, Nasik, Kolhapur, Amravati, Latur, Nagpur and Ratnagiri.

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