ICSE Class 9 Maths Selina Solutions Chapter 19: Selina Solutions are thought to be quite helpful for ICSE Class 9 maths exam preparation. We present to you here the comprehensive solutions and answers to the Selina Solutions for Class 9 Maths Chapter 19: Mean and Median activities. Experts in the field have created these questions by the CISCE-mandated syllabus for the ICSE.

Here are the comprehensive Class 9 Maths Chapter 19: Mean and Median solutions in PDF format. This page contains the Class 9 Maths Chapter 19 Selina answers in PDF format, which can be seen online or downloaded. Additionally, students can download these Selina solutions for free and use them offline for practice.

ICSE Class 9 Maths Selina Solutions Chapter 19 Overview

Chapter 19 of the ICSE Class 9 Maths Selina textbook focuses on understanding and calculating the mean and median of a data set. The mean, or average, is found by adding up all the values and dividing by the number of values, while the median is the middle value when the data is arranged in ascending or descending order. This chapter includes various problems to help students practice these calculations and understand how to apply them to different types of data.

By studying this chapter, students build essential skills for analyzing data, which are foundational for more advanced mathematical concepts and real-world data handling.

ICSE Class 9 Maths Selina Solutions Chapter 19

Below we have provided ICSE Class 9 Maths Selina Solutions Chapter 19 –

1. Find the mean of 43, 51, 50, 57 and 54.

Solution:

Numbers given are 43, 51, 50, 57 and 54.

Mean of given numbers

$$= \frac{43 + 51 + 50 + 57 + 54}{5}$$

$$= \frac{255}{5}$$

= 51

2. Find the mean of first six natural numbers.

Solution:

First six natural numbers are 1, 2, 3, 4, 5, 6.

Mean of first six natural numbers

$$= \frac{1+2+3+4+5+6}{6}$$

$$= \frac{21}{6}$$

= 3.5

3. Find the mean of first ten odd natural number.

Solution:

First ten odd natural numbers are 1, 3, 5, 7, 9, 11, 13, 15, 17, 19

Mean of first ten odd numbers

$$= \frac{1+3+5+7+9+11+15+17+19}{10}$$

$$= \frac{100}{10}$$

4. Find the mean of all factors of 10.

Solution:

All factors of 10 are 1, 2, 5, 10

Mean of all factors of 10

$$= \frac{1+2+5+10}{4}$$

$$= \frac{18}{4}$$

= 4.5

5. Find the mean of x + 3, x + 5, x + 7, x + 9 and x + 11.

Solution:

Values given are x + 3, x + 5, x + 7, x + 9 and x + 11

Mean of the values

$$= \frac{x+3+x+5+x+7+x+9+x+11}{5}$$

$$= \frac{5x+35}{5}$$

$$= \frac{5(x+7)}{5}$$

= x + 7

6. If the different values of variable x are 9.8, 5.4, 3.7, 1.7, 1.8, 2.6, 2.8, 8.6, 10.5 and 11.1; find

$$(\mathrm{i})\text{the mean } \overline{\mathrm{x}}$$

$$(\mathrm{ii})\text{the value of } \sum_{\mathrm{i}=1}^{10}(\mathrm{x_i}-\overline{\mathrm{x}})$$

Solution:

(i) Numbers given are 9.8, 5.4, 3.7, 1.7, 1.8, 2.6, 2.8, 8.6, 10.5 and 11.1

$$\overline{x} = \frac{x_1 + x_2 + x_3 + x_4 + x_5 + ... + x_n}{n}$$

$$= \frac{9.8+5.4+3.7+1.7+1.8+2.6+2.8+8.6+10.5+11.1}{10}$$

= 5.8

(ii)

$$The\ value\ of \sum_{i=1}^{10}(x_i - \overline{x})$$

$$\sum_{i=1}^{n}(x_i - \overline{x}) = (x_1 - \overline{x}) + (x_2 - \overline{x}) ..... + (x_n - \overline{x}) = 0$$

$\overline{x} = 5.8$

$\sum_{i=1}^{10}(x_i - \overline{x})$

= (9.8 – 5.8) + (5.4 – 5.8) + (3.7 – 5.8) + (1.7 – 5.8) + (1.8 – 5.8) + (2.6 – 5.8) + (8.6 – 5.8) + (10.5 – 5.8) + (11.1 – 5.8)

= 4 – 4 – 2.1 – 4.1 – 4 – 3.2 – 3 + 2.8 + 4.7 + 5.3

= 0

7. The mean of 15 observations is 32. Find the resulting mean, if each observation is:

(i) Increased by 3

(ii) Decreased by 7

(iii) Multiplied by 2

(iv) Divided by 0.5

(v) Increased by 60%

(vi) Decreased by 20%

Solution:

It is given that

Mean of 15 observations is 32

(i) Resulting mean if each observation is increased by 3 = 32 + 3 = 35

(ii) Resulting mean if each observation is decreased by 7 = 32 – 7 = 25

(iii) Resulting mean if each observation is multiplied by 2 = 32 × 2 = 64

(iv) Resulting mean if each observation is divided by 0.5 = 32/0.5 = 64

(v) Resulting mean if each observation is increased by 60% = 32 + 60/100 × 32

= 32 + 19.2

= 51.2

(vi) Resulting mean if each observation is decreased by 20% = 32 – 20/100 × 32

= 32 – 6.4

= 25.6

8. The mean of 5 numbers is 18. If one number is excluded, the mean of remaining number becomes 16. Find the excluded number.

Solution:

It is given that

Mean of 5 numbers is 18

Total sum of 5 numbers = 18 × 5 = 90

Excluding an observation, the mean of the remaining 4 number becomes 16 = 16 × 4 = 64

Sum of remaining 4 observations = Total of 5 observations – Total of 4 observations

= 90 – 64

= 26

9. If the mean of observations x, x + 2, x + 4, x + 6 and x + 8 is 11, find:

(i) The value of x;

(ii) The mean of first three observations.

Solution:

(i) It is given that

Mean of observations x, x + 2, x + 4, x + 6 and x + 8 is 11

We know that

$$Mean = \frac{Observations}{n}$$

$$11 = \frac{x + x + 2 + x + 4 + x + 6 + x + 8}{5}$$

$$11 = \frac{5x + 20}{5}$$

By taking out 5 as common

11 = [5 (x + 4)]/5

11 = x + 4

By transposing we get

x = 11 – 4

x = 7

(ii) Mean of first three observations

$$= \frac{x + x + 2 + x + 4}{3}$$
$$= \frac{3x + 6}{3}$$
$$= \frac{3(7) + 6}{3} [As\ x = 7]$$
$$= \frac{21 + 6}{3}$$

= 9

10. The mean of 100 observations is 40. It is found that an observation 53 was misread as 83. Find the correct mean.

Solution:

It is given that

Mean of 100 observations is 40

$$\frac{\sum x}{n} = \overline{x}$$
$$\frac{\sum x}{n} = 40$$

x = 40 × 100 = 4000

Here the incorrect value of x = 4000

So the correct value of x = Incorrect value of x – Incorrect observation + Correct observation

Substituting the values

= 4000 – 83 + 53

= 3970

We know that

$$\text{Correct mean} = \frac{\text{Correct value of } \sum x}{n}$$

= 3970/100

= 39.7

ICSE Class 9 Maths Selina Solutions Chapter 19 Exercise 19B

1. Find the median of:

(i) 25, 16, 26, 16, 32, 31, 19, 28 and 35

(ii) 241, 243, 347, 350, 327, 299, 261, 292, 271, 258 and 257

(iii) 63, 17, 50, 9, 25, 43, 21, 50, 14 and 34

(iv) 233, 173, 189, 208, 194, 194, 185, 200 and 220.

Solution:

(i) Arrange the numbers in ascending order

16, 16, 19, 25, 26, 28, 31, 32, 35

As n = 9 (odd)

$$Median = Value\ of\ (\frac{n+1}{2})^{th}\ term$$

$$= (\frac{9+1}{2})^{th} term$$

= 5^{th} term

= 26

Hence, the median is 26.

(ii) Arrange the numbers in ascending order

241, 243, 257, 258, 261, 271, 292, 299, 327, 347, 350

As n = 11 (odd)

$$Median = Value\ of\ (\frac{n+1}{2})^{th}\ term$$

$$= (\frac{11+1}{2})^{th} term$$

= 6^{th} term

= 271

Hence, the median is 271.

(iii) Arrange the numbers in ascending order

9, 14, 17, 21, 25, 34, 43, 50, 50, 63

As n = 10 (even)

Median = ½ [value of $(n/2)^{th}$ term + value of $(n/2 + 1)^{th}$ term]

= ½ [value of $(10/2)^{th}$ term + value of $(10/2 + 1)^{th}$ term]

= ½ [25 + 34]

= ½ [59]

= 29.5

Hence, the median is 29.5.

(iv) Arrange the numbers in ascending order

173, 185, 189, 194, 194, 200, 204, 208, 220, 223

As n = 10 (even)

Median = ½ [value of $(n/2)^{th}$ term + value of $(n/2 + 1)^{th}$ term]

= ½ [value of $(10/2)^{th}$ term + value of $(10/2 + 1)^{th}$ term]

= ½ [200 + 194]

= ½ [394]

= 197

Hence, the median is 197.

2. The following data have been arranged in ascending order. If their median is 63, find the value of x.

34, 37, 53, 55, x, x + 2, 77, 83, 89 and 100.

Solution:

Numbers given are 34, 37, 53, 55, x, x + 2, 77, 83, 89 and 100

As n = 10 (even)

Median = ½ [value of $(n/2)^{th}$ term + value of $(n/2 + 1)^{th}$ term]

= ½ [value of $(10/2)^{th}$ term + value of $(10/2 + 1)^{th}$ term]

= ½ [value of 5^{th} term + value of $(5 + 1)^{th}$ term]

= ½ [value of 5^{th} term + value of 6^{th} term]

Substituting the values

63 = ½ [x + x + 2]

[2 + 2x]/2 = 63

Taking 2 as common

x + 1 = 63

x = 62

3. In 10 numbers, arranged in increasing order, the 7^{th} number is increased by 8, how much will the median be changed?

Solution:

We know that for any given set of data, the median is the value of its middle term

Total observations n = 10 (even)

Median = ½ [value of $(n/2)^{th}$ term + value of $(n/2 + 1)^{th}$ term]

= ½ [value of $(10/2)^{th}$ term + value of $(10/2 + 1)^{th}$ term]

= ½ [value of 5^{th} term + value of 6^{th} term]

Therefore, if the 7^{th} number is diminished by 8, there will be no change in the median value.

4. Out of 10 students, who appeared in a test, three secured less than 30 marks and 3 secured more than 75 marks. The marks secured by the remaining 4 students are 35, 48, 66 and 40. Find the median score of the whole group.

Solution:

Total observations n = 10 (even)

Median = = ½ [value of $(10/2)^{th}$ term + value of $(10/2 + 1)^{th}$ term]

= ½ [value of 5^{th} term + value of 6^{th} term]

Substituting the values

Median = ½ [40 + 48]

= 88/2

= 44

Hence, the median score of the whole group is 44.

5. The median of observations 10, 11, 13, 17, x + 5, 20, 22, 24 and 53 (arranged in ascending order) is 18; find the value of x.

Solution:

Total observations n = 9 (odd)

As n is odd

$$Median = (\frac{n+1}{2})^{th} term$$

$$Median = (\frac{9+1}{2})^{th} term$$

= 5^{th} term

= x + 5

It is given that, Median = 18

x + 5 = 18

x = 13

ICSE Class 9 Maths Selina Solutions Chapter 19 Exercise 19C

1. Find the mean of 8, 12, 16, 22, 10 and 4. Find the resulting mean, if each of the observations, given above be:

(i) Multiplied by 3.

(ii) Divided by 2.

(iii) Multiplied by 3 and then divided by 2.

(iv) Increased by 25%.

(v) Decreased by 40%.

Solution:

Mean of the given data

$$= \frac{8+12+16+22+10+4}{6}$$

$$= \frac{72}{6}$$

= 12

(i) Multiplied by 3

If $\bar{x}$ is the mean of n number of observations $x_1, x_2, x_3, \ldots\ldots x_n$,

Mean of $ax_1, ax_2, ax_3, \ldots\ldots, ax_n$ is $a\bar{x}$

When each of the given data is multiplied by 3, then mean is also multiplied by 3

Mean of the original data = 12

Therefore, the new mean = 12 × 3 = 36

(ii) Divided by 2

If $\bar{x}$ is the mean of n number of observations $x_1, x_2, x_3, \ldots\ldots x_n$,

Mean of $x_1/a, x_2/a, x_3/a, \ldots\ldots x_n/a$ is $\bar{x}/a$

When each of the given data is divided by 2, the mean is also divided by 2.

Mean of the original data = 12

Therefore, the new mean = 12/2 = 6

(iii) Multiplied by 3 and then divided by 2

If $\bar{x}$ is the mean of n number of observations $x_1, x_2, x_3, \ldots\ldots x_n$,

Mean of $a/b\ x_1, a/b\ x_2, a/b\ x_3, \ldots.. a/b\ x_n$ is $a/b\ \bar{x}$

When each of the given data is multiplied by 3/2, the mean is also multiplied by 3/2.

Mean of original data = 12

Therefore, the new mean = 3/2 × 12 = 36/2 = 18

(iv) Increased by 25%

We know that

New mean = Original mean + 25% of original mean

New mean = 12 + 25% of 12

New mean = 12 + 25/100 × 12

So we get

New mean = 12 + ¼ × 12

New mean = 12 + 3

New mean = 15

(v) Decreased by 40%

We know that

New mean = 12 – 40% of 12

New mean = 12 – 40/100 × 12

So we get

New mean = 12 – 2/5 × 12

New mean = 12 – 0.4 × 12

New mean = 12 – 4.8

New mean = 7.2

2. The mean of 18, 24, 15, 2x + 1 and 12 is 21. Find the value of x.

Solution:

We know that

Mean of given data

$$= \frac{18 + 24 + 15 + 2x + 1 + 12}{5}$$

$$21 = \frac{70 + 2x}{5}$$

By cross multiplication

5 × 21 = 70 + 2x

105 = 70 + 2x

On further calculation

2x = 105 – 70

2x = 35

x = 35/2 = 17.5

3. The mean of 6 numbers is 42. If one number is excluded, the mean of remaining number is 45. Find the excluded number.

Solution:

If $\bar{x}$ is the mean of n number of observations x_1, x_2, x_3, ……. x_n

$$Mean\ of\ given\ data = \frac{x_1 + x_2 + x_3 + ... + x_n}{n}$$

It is given that mean of 6 numbers is 42

$$\frac{x_1 + x_2 + x_3 + ... + x_6}{6} = 42$$

$x_1 + x_2 + x_3 + …… + x_6 = 42 × 6$

$x_1 + x_2 + x_3 + x_4 + x_5 = 252 – x_6$ …… (1)

It is also given that the mean of 5 numbers is 45

$$\frac{x_1 + x_2 + x_3 + x_5}{5} = 45$$

$x_1 + x_2 + x_3 + x_4 + x_5 = 45 \times 5$

$x_1 + x_2 + x_3 + x_4 + x_5 = 225$ …… (2)

From equating both the equations

$252 – x_6 = 225$

$x_6 = 252 – 225 = 27$

4. The mean of 10 numbers is 24. If one more number is included, the new mean is 25. Find the included number.

Solution:

If $\bar{x}$ is the mean of n number of observations $x_1, x_2, x_3, \ldots\ldots x_n$

$$Mean\ of\ given\ data = \frac{x_1 + x_2 + x_3 + \ldots + x_n}{n}$$

It is given that the mean of 10 numbers is 24

$$\frac{x_1 + x_2 + x_3 + \ldots\ldots + x_{10}}{10} = 24$$

$x_1 + x_2 + x_3 + \ldots\ldots + x_{10} = 24 \times 10$

$x_1 + x_2 + x_3 + x_4 + \ldots\ldots + x_{10} = 240$

$x_1 + x_2 + x_3 + x_4 + \ldots\ldots + x_{10} = 240 + x_{11} \ldots\ldots$ (1)

It is also given that the mean of 11 numbers is 25.

$$\frac{x_1 + x_2 + x_3 + \ldots\ldots + x_{10} + x_{11}}{11} = 25$$

$x_1 + x_2 + x_3 + x_4 + \ldots\ldots + x_{10} + x_{11} = 11 \times 25$

$x_1 + x_2 + x_3 + x_4 + \ldots\ldots + x_{10} + x_{11} = 275 \ldots..$ (2)

From equating both the equations

$240 + x_{11} = 275$

$x_{11} = 275 - 240 = 35$

5. The following observations have been arranged in ascending order. If the median of the data is 78, find the value of x.

44, 47, 63, 65, x + 13, 87, 93, 99, 110.

Solution:

The data given is

44, 47, 63, 65, x + 13, 87, 93, 99, 110

Total number of observations (n) = 9 which is odd

$$Median = (\frac{n+1}{2})^{th} term$$

$$Median = (\frac{9+1}{2})^{th} term$$

$= 5^{th}$ term

$= x + 13$

It is given that the median is 78

x + 13 = 78

x = 78 – 13 = 65

Benefits of ICSE Class 9 Maths Selina Solutions Chapter 19

The "ICSE Class 9 Maths Selina Solutions Chapter 19: Mean and Median" focuses on understanding and solving problems related to measures of central tendency, specifically the mean and median. Here are some benefits of thoroughly studying this chapter and utilizing Selina Solutions for it:

1. **Clear Understanding of Concepts**

Mean and Median: Gain a deep understanding of how to calculate and interpret the mean (average) and median (middle value) of a data set.

Practical Applications: Learn how these concepts are used in real-world scenarios and data analysis.

2. **Structured Approach to Problem-Solving**

Step-by-Step Solutions: Selina Solutions provide detailed, step-by-step methods for solving problems, which helps in understanding the process and reduces the likelihood of errors.

Varied Problem Sets: Exposure to a wide range of problems enhances problem-solving skills and prepares students for different types of questions.

3. **Improved Mathematical Skills**

Calculation Techniques: Regular practice with mean and median helps in honing calculation techniques and accuracy.

Data Interpretation: Develop skills to interpret and analyze data sets, which are valuable for higher-level statistics and data handling.

4. **Enhanced Exam Preparation**

ICSE Exam Focus: Solutions are tailored to the ICSE syllabus, making it easier to align your study with exam requirements.

Practice for Test Situations: Practicing with Selina Solutions helps in familiarizing oneself with the format and style of exam questions.

5. **Concept Reinforcement**

Clarification of Doubts: Solutions often include explanations and clarifications for common doubts, reinforcing concepts and ensuring a thorough understanding.

Reinforcement Through Examples: Examples provided help in cementing the concepts by showing their application in various contexts.