

RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.1: In RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.1, Mean, Median, Mode of Grouped Data, students learn to calculate statistical measures for grouped data sets.

The chapter covers methods to find the mean, median, and mode when data is presented in grouped frequency distributions. It emphasizes understanding the concepts of central tendency and how to interpret them in real-world contexts.

Through comprehensive exercises, students practice applying these formulas and interpreting results, enhancing their ability to analyze data effectively.

RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.1 Overview

The RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.1 have been prepared by experts from Physics Wallah. These solutions help students understand how to find the mean, median, and mode for grouped data.

They are designed with clear explanations and examples to make learning easier. By using these solutions, students can improve their understanding of statistics and feel more confident solving problems involving data analysis.

RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.1 PDF

The PDF link for RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.1 is available below. This PDF provides detailed solutions for calculating mean, median, and mode of grouped data, helping students grasp these statistical concepts effectively.

By accessing this PDF, students can enhance their understanding and practice solving problems related to data analysis in a structured manner.

RS Aggarwal Solutions for Class 10 Maths Chapter 9 Mean Median Mode Of Grouped Data Cumulative Frequency Graph And Ojive Exercise 9.1

Here we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.1 for the ease of students so that they can prepare better for their exams.

Q. If the mean of 5 observations x , $x + 2$, $x + 4$, $x + 6$ and $x + 8$ is 11, find the value of x .

Solution:

Mean of the observation is given by –

$$\text{Mean} = \frac{\text{Sum of the given observations}}{\text{Total number of observations}}$$

So, adding the given observations, we get

$$\begin{aligned}\text{Sum of the given observations} &= x + (x + 2) + (x + 4) + (x + 6) \\ &+ (x + 8)\end{aligned}$$

$$= x + x + 2 + x + 4 + x + 6 + x + 8$$

$$= 5x + 20$$

$$\text{Total number of observations} = 5$$

$$\text{Mean} = 11 \text{ (Given)}$$

$$\text{Mean} = \frac{5x + 20}{5}$$

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

$$\Rightarrow 55 = 5x + 20$$

$$\Rightarrow 5x = 55 - 20 = 35$$

$$\Rightarrow x = 7$$

$$\text{Thus, } x = 7$$

Q. If the mean of 25 observations is 27 and each observation is decreased by 7, what will be the new mean?

Mean of the observation is given by –

$$\text{Mean} = \frac{\text{Sum of the given observations}}{\text{Total number of observations}}$$

Total number of observations = 25

Mean of 25 observation = 27 (Given)

We get

$$27 = \frac{\text{Sum of 25 observations}}{25}$$

$$\Rightarrow \text{Sum of 25 observations} = 27 \times 25 = 675$$

If each observation is decreased by 7, the Sum gets affected.

$$\text{New Sum} = 675 - (25 \times 7) = 675 - 175 = 500$$

$$\text{New mean} = \frac{500}{25} = 20$$

Thus, new mean = 20

Q. Compute the mean of the following data:

Class	1 – 3	3 – 5	5 – 7	7 – 9
Frequency	12	22	27	19

For equal class intervals, we will solve by finding mid points of these classes using direct method.

CLASS	MID - POINT(x_i)	FREQUENCY(f_i)	$f_i x_i$
1 - 3	2	12	24
3 - 5	4	22	88
5 - 7	6	27	162
7 - 9	8	19	152
TOTAL		80	426

We have got

$$\Sigma f_i = 80 \text{ \& \; } \Sigma f_i x_i = 426$$

\therefore mean is given by

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\Rightarrow \bar{x} = \frac{426}{80}$$

$$\Rightarrow \bar{x} = 5.325$$

Thus, mean is 5.325

Q. Find the mean of the following data, using direct method:

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Frequency	7	5	6	12	8	2

Solution:

For equal class intervals, we will solve by finding mid points of these classes using direct method.

CLASS	MID - POINT(x_i)	FREQUENCY(f_i)	$f_i x_i$
0 - 10	5	7	35
10 - 20	15	5	75
20 - 30	25	6	150
30 - 40	35	12	420
40 - 50	45	8	360
50 - 60	55	2	110
TOTAL		40	1150

We have got

$$\Sigma f_i = 40 \text{ \& } \Sigma f_i x_i = 1150$$

\therefore mean is given by

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\Rightarrow \bar{x} =$$

$$\frac{1150}{40}$$

$$=$$

$$\Rightarrow \bar{x} = 28.75$$

Thus, mean is 28.75

Q. Calculate the mean of the following data, using direct method:

Class	25 - 35	35 - 45	45 - 55	55 - 65	65 - 75
Frequency	6	10	8	12	4

Solution:

For equal class intervals, we will solve by finding mid points of these classes using direct method.

CLASS	MID - POINT(x_i)	FREQUENCY(f_i)	$f_i x_i$
25 - 35	30	6	180
35 - 45	40	10	400
45 - 55	50	8	400
55 - 65	60	12	720
65 - 75	70	4	280
TOTAL		40	1980

We have got

$$\Sigma f_i = 40 \text{ \& } \Sigma f_i x_i = 1980$$

\therefore mean is given by

$$\bar{x} =$$

$$\frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\Rightarrow \bar{x} =$$

$$\frac{1980}{40}$$

$$49.5$$

$$\Rightarrow \bar{x} = 49.5$$

Thus, mean is 49.5

Q. Compute the mean of the following data, using direct method:

Class	0 - 100	100 - 200	200 - 300	300 - 400	400 - 500
Frequency	6	10	8	12	4

For equal class intervals, we will solve by finding mid points of these classes using direct method.

CLASS	MID - POINT(x_i)	FREQUENCY(f_i)	$f_i x_i$
0 - 100	50	6	300
100 - 200	150	9	1350
200 - 300	250	15	3750
300 - 400	350	12	4200

We have got

$$\Sigma f_i = 50 \text{ \& } \Sigma f_i x_i = 13200$$

'∴' mean is given by

$$\bar{x} =$$

$$\frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\Rightarrow \bar{x} =$$

$$\frac{13200}{50}$$

$$\Rightarrow \bar{x} = 264$$

$$\Rightarrow \bar{x} = 264$$

Thus, mean is 264

Q. Using an appropriate method, find the mean of the following frequency distribution:

Class interval	84 - 90	90 - 96	96 - 102	102 - 108	108 - 114	114 - 120
Frequency	8	10	16	23	12	11

Which method

did you use and why?

For equal class intervals, we will solve by finding mid points of these classes using direct method.

CLASS	MID - POINT(x_i)	FREQUENCY(f_i)	$f_i x_i$
84 - 90	87	8	696
90 - 96	93	10	930
96 - 102	99	16	1584
102 - 108	105	23	2415
108 - 114	111	12	1332
114 - 120	117	11	1287
TOTAL		80	8244

We have got

$$\Sigma f_i = 80 \text{ \& } \Sigma f_i x_i = 8244$$

∴ mean is given by

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\Rightarrow \bar{x} = \frac{8244}{80}$$

$$\Rightarrow \bar{x} = 103.05$$

Thus, mean is 103.05

Here, the method being used is direct method as it is easy to calculate the mid - points of the class intervals and the rest calculations were simple and easy.

Q. If the mean of the following frequency distribution is 24, find the value of p.

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Frequency	3	4	p	3	2

Solution:

For equal class intervals, we will solve by finding mid points of these classes using direct method.

CLASS	MID - POINT(x_i)	FREQUENCY(f_i)	$f_i x_i$
0 - 10	5	3	15
10 - 20	15	4	60
20 - 30	25	p	25p
30 - 40	35	3	105
40 - 50	45	2	90
TOTAL		12 + p	270 + 25p

We have got

$$\Sigma f_i = 12 + p \text{ \& } \Sigma f_i x_i = 270 + 25p$$

\therefore mean is given by

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\Rightarrow 24 =$$

$$\frac{270 + 25p}{12 + p}$$

$$12 + p$$

$$\Rightarrow 288 + 24p = 270 + 25p$$

$$\Rightarrow 25p - 24p = 288 - 270$$

$$\Rightarrow p = 18$$

Thus, p is 18

Q. The following distribution shows the daily pocket allowance of children of a locality. If the mean pocket allowance is Rs. 18, find the missing frequency f.

Daily pocket allowance(in Rs)	11 - 13	13 - 15	15 - 17	17 - 19	19 - 21	21 - 23	23 - 25
Frequency	7	6	9	13	f	5	4

Solution:

For equal class intervals, we will solve by finding mid points of these classes using direct method.

DAILY POCKET ALLOWANCE (Rs.)	MID - POINT(x_i)	NUMBER OF CHILDREN (f_i)	$f_i x_i$
11 - 13	12	7	84
13 - 15	14	6	84
15 - 17	16	9	144

17 - 19	18	13	234
19 - 21	20	f	20f
21 - 23	22	5	110
23 - 25	24	4	96
TOTAL		44 + f	752 + 20f

We have got

$$\Sigma f_i = 44 + f \text{ and } \Sigma f_i x_i = 752 + 20f$$

\therefore mean is given by

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\Rightarrow 18 = \frac{752 + 20f}{44 + f} \quad (\because \text{given: mean of pocket allowance is 18})$$

$$\Rightarrow 792 + 18f = 752 + 20f$$

$$\Rightarrow 20f - 18f = 792 - 752$$

$$\Rightarrow 2f = 40$$

$$\Rightarrow f = 20$$

Thus, f is 20.

Q. If the mean of the following frequency distribution is 54, find the value of p.

Class	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100
Frequency	7	p	10	9	13

Solution:

For equal class intervals, we will solve by finding mid points of these classes using direct method.

CLASS	MID - POINT(x_i)	FREQUENCY(f_i)	$f_i x_i$
0 - 20	10	7	70
20 - 40	30	p	30p
40 - 60	50	10	500
60 - 80	70	9	630
80 - 100	90	13	1170
TOTAL		39 + p	2370 + 30p

We have got

$$\Sigma f_i = 39 + p \text{ and } \Sigma f_i x_i = 2370 + 30p$$

\therefore mean is given by

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\Rightarrow 54 = \frac{2370 + 30p}{39 + p} \quad (\because \text{given: mean of pocket allowance is 54})$$

$$\Rightarrow 2106 + 54p = 2370 + 30p$$

$$\Rightarrow 54p - 30p = 2370 - 2106$$

$$\Rightarrow 24p = 264$$

$$\Rightarrow p = 11$$

Thus, p is 11.

Q. The mean of the following data is 42. Find the missing frequencies x and y if the sum of frequencies is 100.

Class interval	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
Frequency	7	10	x	13	y	10	14	9

Solution:

For equal class intervals, we will solve by finding mid points of these classes using direct method.

CLASS	MID - POINT(x_i)	FREQUENCY(f_i)	$f_i x_i$
0 - 10	5	7	35
10 - 20	15	10	150
20 - 30	25	x	$25x$
30 - 40	35	13	455
40 - 50	45	y	$45y$
50 - 60	55	10	550
60 - 70	65	14	910
70 - 80	75	9	675

TOTAL		$63 + x + y$	$2775 + 25x + 45y$
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We have got

$$\Sigma f_i = 63 + x + y \text{ and } \Sigma f_i x_i = 2775 + 25x + 45y$$

\therefore mean is given by

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\Rightarrow 42 = \frac{2775 + 25x + 45y}{63 + x + y} \quad (\because \text{given: mean of pocket allowance is 42})$$

$$\Rightarrow 2646 + 42x + 42y = 2775 + 25x + 45y$$

$$\Rightarrow 42x - 25x + 42y - 45y = 2775 - 2646$$

$$\Rightarrow 17x - 3y = 129 \dots(i)$$

As given in the question, frequency(Σf_i) = 100

And as calculated by us, frequency (Σf_i) = $63 + x + y$

Equalizing them, we get

$$63 + x + y = 100$$

$$\Rightarrow x + y = 37 \dots(ii)$$

We will now solve equations (i) and (ii), multiply eq.(ii) by 3 and then add it to eq.(i), we get

$$(17x - 3y) + [3(x + y)] = 129 + 111$$

$$\Rightarrow 17x - 3y + 3x + 3y = 240$$

$$\Rightarrow 20x = 240$$

$$\Rightarrow x = 12$$

Substitute $x = 12$ in equation (ii),

$$12 + y = 37$$

$$\Rightarrow y = 37 - 12$$

$$\Rightarrow y = 25$$

Thus, $x = 12$ and $y = 25$.

Benefits of RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.1

- **Clarity in Concepts:** The solutions provide clear explanations and step-by-step methods for calculating mean, median, and mode of grouped data helping students understand the concepts better.
- **Practice:** Students get ample practice with various types of problems, enhancing their proficiency in applying statistical measures to real-world data sets.
- **Structured Learning:** The solutions are organized systematically making it easier for students to follow and apply the methods taught in the chapter.
- **Improved Problem-Solving Skills:** By using these solutions, students can develop stronger problem-solving skills, crucial for tackling mathematical problems in exams and beyond.
- **Confidence Building:** Through thorough practice and understanding gained from these solutions, students gain confidence in their ability to handle statistical calculations effectively.