

**RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.6:** RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.6 focus on cumulative frequency distribution and how to draw cumulative frequency curves, called ogives.

They help students learn how to plot and understand ogives step by step. By practicing these exercises, students can get better at analyzing and visualizing data, which is important for their math exams. These solutions are a great resource for understanding cumulative frequency and its uses in statistics.

## **RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.6 Overview**

These solutions for RS Aggarwal Class 10 Maths Chapter 9 Exercise 9.6 were created by subject experts of Physics Wallah. This exercise teaches about cumulative frequency distribution and how to draw cumulative frequency curves, called ogives. The solutions explain each step clearly and simply, helping students learn how to plot and understand ogives.

By practicing these exercises, students can improve their skills in analyzing and visualizing data, which is important for their exams. These expert-prepared solutions are a great resource for understanding cumulative frequency and its uses in statistics.

## **RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.6 PDF**

The PDF link for RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.6 is available below.

By using this PDF, students can easily understand how to plot and interpret cumulative frequency curves. This resource is very useful for improving data analysis and visualization skills, helping students prepare effectively for their exams.

[RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.6 PDF](#)

## **RS Aggarwal Solutions for Class 10 Maths Chapter 9 Mean Median Mode Of Grouped Data Cumulative Frequency Graph And Ogive Exercise 9.6**

Here we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.6 for the ease of students so that they can prepare better for their exams.

**Q. Which of the following is not a measure of central tendency?**

- (a) Mean
- (b) Mode
- (c) Median
- (d) Range

**Solution: C**

Mean and mode does not require construction of cumulative frequency, but median necessarily requires construction of cumulative frequency, unless it is raw data (in which median is the  $(n/2)$ th value, when there are  $n$  number of observations; and the average of  $(n/2)$ th and  $(n/2 + 1)$ th values, when there are  $n$  observations).

**Q. Which of the following cannot be determined graphically?**

- (a) Mean
- (b) Mode
- (c) Median
- (d) None of these

**Solution: C**

Given: mean = 27 and median = 33

We have to find the value of mode.

Empirical relationship is given by,

$$\text{Mode} = 3(\text{Median}) - 2(\text{Mean})$$

$$\Rightarrow \text{Mode} = 3(33) - 2(27)$$

$$\Rightarrow \text{Mode} = 99 - 54 = 45$$

**Q. Which of the following measures of central tendency is influenced by extreme values?**

- (a) Mean
- (b) Mode
- (c) Median
- (d) None of these

**Solution: B**

**Solution: B**

We need to find – (1) Median class

(2) Modal class

First we'll find (1) Median class.

To find median class,

Assume  $\Sigma f_i = N =$  Sum of frequencies,

$f_i =$  frequency of class intervals

and  $C_r$  = cumulative frequency

Lets form a table.

CLASS INTERVAL	FREQUENCY( $f_i$ )	$C_r$
0 - 5	10	10
5 - 10	15	$10 + 15 = 25$
10 - 15	12	$25 + 12 = 37$
15 - 20	20	$37 + 20 = 57$
20 - 25	9	$57 + 9 = 66$
TOTAL	66	

So,  $N = 66$

$\Rightarrow N/2 = 66/2 = 33$

The cumulative frequency just greater than ( $N/2 =$ ) 33 is 37, so the corresponding median class is 10 - 15.

$\therefore$  median class is 10 - 15.

To find (2) Modal class,

Here, the maximum class frequency is 20.

The class corresponding to this frequency is the modal class.  $\Rightarrow$

modal class = 15 - 20

Lower limit of median = 10 and lower limit of mode = 15

Sum =  $10 + 15 = 25$

### Question

Calculate the median from the following data:

Height (in cm)	135 - 140	140 - 145	145 - 150	150 - 155	155 - 160	160 - 165	165 - 170
No. of boys	6	10	18	22	20	15	6

**Solution:**

We prepare the cumulative frequency table, as shown:

<b>Class</b>	<b>Frequency(f)</b>	<b>Cumulative frequency</b>
135-140	6	6
140-145	10	16
145-150	18	34
150-155	22	56
155-160	20	76
160-165	15	91
165-170	6	97
170-175	3	100

$$N = \sum f = 100$$

$$N = 100$$

$$\Rightarrow N/2 = 50$$

The cumulative frequency greater than 50 is 56 and the corresponding class is 150-155.

Thus the median class is 150-155.

Therefore,  $l = 150$ ,  $h = 5$ ,  $f = 22$ ,  
c.f. of preceding class = 34 and  $N/2=50$

Median,  
 $M = l + \left( \frac{N/2 - cf}{f} \right) \times h$

$$\text{Median} = 150 + \left( \frac{50 - 34}{22} \right) \times 5$$

$$\text{Median} = 150 + 3.64$$

$$\text{Median} = 153.64$$

Hence, median is 153.64.

**Question:**

**The median of the following data is 16. Find the missing frequencies a and b if the total of frequencies is 70.**

Class	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	12	a	12	15	b	6	6	4

**Solution**

We prepare the cumulative frequency table, as shown:

Class	Frequency $f_i$	Cumulative frequency
0-5	12	12
5-10	a	12+a
10-15	12	24+a
15-20	15	39+a
20-25	b	39+a+b
25-30	6	45+a+b
30-35	6	51+a+b
35-40	4	55+a+b
Total	$N = \sum f_i = 70$	

Let a,b be the missing frequencies of class intervals 5-10 and 20-25 respectively. Then,

$$55 + a + b = 70$$

$$\Rightarrow a+b=15 \dots\dots(i)$$

Median is 16, which lies in 15-20. So the median class is 15-20 .

Therefore, l = 15, h= 5, N= 70, f = 15, and cf = 24+a

Now,

Median,

$$M=l+((N/2-cf)/f)\times h$$

$$16=15+(70/2-(24+a)/15)\times 5$$

$$\Rightarrow 16=15+(35-24-a)/3$$

$$\Rightarrow 16-15=(11-a)/3$$

$$\Rightarrow 1\times 3=11-a$$

$$\Rightarrow a=11-3$$

$$\Rightarrow a=8$$

Therefore,

$$b=15-a \text{ ( From (i) )}$$

$$\Rightarrow b=15-8$$

$$\Rightarrow b=7$$

Hence, a= 8 and b = 7 .

**Q.** The distributions X and Y with total number of observations 36 and 64, and mean 4 and 3 respectively are combined.What is the mean of the resulting distribution X+Y?

**Solution:**

Number of observations in X=36 and Mean=4

Number of observations in Y=64 and Mean=3

Therefore Mean of the distribution X+Y=(36×4+64×3)/(36+64)

$$=(144+192)/100$$

$$=336/100=3.36$$

**Q.** The following table gives, the literacy rate (in percentage) in 40 cities. Find the mean literacy rate, choosing a suitable method.

Literacy rate(%)	45 – 55	55 – 65	65 – 75	75 – 85	85 – 95
Number of cities	4	11	12	9	4

**Solution:**

Using Direct method, the given data is shown as follows:

Literacy rate (%)	Number of cities (fi)	Class mark (xi)	(fixi)
45 - 55	4	50	200
55 - 65	11	60	660
65 - 75	12	70	840
75 - 85	9	80	720
85 - 95	4	90	360
Total	$\sum fi=40$		$\sum (fi \times xi)=2780$

The mean of given data is given by

$$\bar{x} = \frac{\sum (fi \times xi)}{\sum fi}$$

$$= 2780/40$$

$$= 69.5$$

Thus, the mean literacy rate is 69.5%.

**Q.** Find the mean of the following frequency distribution using step-deviation method.

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

Let us choose  $a = 25$ ,  $h = 10$ ,

then  $di = xi - 25$

and

$$u_i = (x_i - 25)/10$$

Using Step-deviation method, the given data is shown as follows:

Class	Frequency (f <sub>i</sub> )	Class mark (x <sub>i</sub> )	d <sub>i</sub> = x <sub>i</sub> - 25	u <sub>i</sub> = (x <sub>i</sub> - 25)/10	f <sub>i</sub> u <sub>i</sub>
0 - 10	7	5	-20	-2	-14
10 - 20	10	15	-10	-1	-10
20 - 30	15	25	0	0	0
30 - 40	8	35	10	1	8
40 - 50	10	45	20	2	20
Total	$\sum f_i = 50$				$\sum (f_i \times u_i) = 4$

The mean of given data is given by

$$\bar{x} = a + (\sum f_i u_i / \sum f_i) \times h$$

$$= 25 + 4/50 \times 10$$

$$= 25 + 4/5$$

$$= (125 + 4)/5$$

$$= 129/5$$

$$= 25.8$$

Thus, the mean is 25.8

**Q.** Find the mean of the following data, using step-deviation method:

Class	5 - 15	15 - 25	25 - 35	35 - 45	45 - 55	55 - 65	65 - 75
Frequency	6	10	16	15	24	8	7

**Solution:**

Let us choose

$$a = 40, h = 10,$$

$$\text{then } d_i = x_i - 40 \text{ and } u_i = (x_i - 40)/10$$

Using Step-deviation method, the given data is shown as follows:

Class	Frequency (fi)	Class mark (xi)	di= xi- 40	ui = xi-40/10	fiui
5 - 15	6	10	-30	-3	-18
15 - 25	10	20	-20	-2	-20
25 - 35	16	30	-10	-1	-16
35 - 45	15	40	0	0	0
45 - 55	24	50	10	1	24
55 - 65	8	60	20	2	16
65 - 75	7	70	30	3	21
Total	$\sum fi=86$				$\sum(fi \times ui)=7$

The mean of given data is given by

$$\bar{x} = a + (\sum fiui / \sum fi) \times h$$

$$= 40 + (7/86) \times 10$$

$$= 40 + 70/86$$

$$= 40 + 0.81$$

$$= 40.81$$

Thus, the mean is 40.81.

**Q.** Find the mean of the following data, using step-deviation method:

Class	5 - 15	15 - 25	25 - 35	35 - 45	45 - 55	55 - 65	65 - 75
Frequency	6	10	16	15	24	8	7

**Solution:**

Let us choose

a = 40, h = 10,

then di = xi - 40 and ui = (xi-40)/10

Using Step-deviation method, the given data is shown as follows:

Class	Frequency (fi)	Class mark (xi)	di= xi- 40	ui = xi-40/10	fiui
5 - 15	6	10	-30	-3	-18
15 - 25	10	20	-20	-2	-20
25 - 35	16	30	-10	-1	-16
35 - 45	15	40	0	0	0
45 - 55	24	50	10	1	24
55 - 65	8	60	20	2	16
65 - 75	7	70	30	3	21
Total	$\sum fi=86$				$\sum(fi \times ui)=7$

The mean of given data is given by

$$\bar{x} = a + \left( \frac{\sum fiui}{\sum fi} \right) \times h$$

$$= 40 + \left( \frac{7}{86} \right) \times 10$$

$$= 40 + 70/86$$

$$= 40 + 0.81$$

$$= 40.81$$

Thus, the mean is 40.81.

**Q.** The weights of tea in 70 packets are shown in the following table:

Weights (in grams)	200 - 01	201 - 202	202 - 203	203 - 204	204 - 205	205 - 206
Number of packets	13	27	18	10	1	1

Find the mean weight of packets using step-deviation method.

**Solution:**

Let us choose  $A=201.5, h=1$ , then  $di=xi-201.5$  and  $ui=(xi-A)/h=xi-201.5$

Using the Step-deviation method, the given data is shown as follows:

Weight(in grams)Number of packets(fi)Class  
 mark(xi)di=A-xi=201.5-xiui=(xi-201.5)1fiui200-20113200.51113201-20227201.5000202-2031  
 8202.5-1-1-18203-20410203.5-2-2-10204-2051204.5-3-3-3205-2061205.5-4-4-4TotalΣf  
 i=70Σfiui=-22

$$N = \sum f_i = 70$$

$$h = 1, A = 201.5$$

$$\text{Mean} = A + \frac{\sum f_i u_i}{N} \times h$$

$$= 201.5 + \frac{-22}{70} \times 1 = 201.5 - 0.31 = 201.19$$

**Q.** In the following data the median of the runs scored by 60 top batsmen of the world in one-day international cricket matches is 5000. Find the missing frequencies x and y.

Runs scored	2500-3500	3500-4500	4500-5500	5500-6500	6500-7500	7500-8500
	0	0	0	0	0	0
Number of batsman	5	x	y	12	6	2

**Solution:**

We prepare the cumulative frequency table, as shown:

Runs scored	No. of batsmen	Cumulative frequency
2500-3500	5	5
3500-4500	x	5+x
4500-5500	y	5+x+y
5500-6500	12	17+x+y
6500-7500	6	23+x+y
7500-8500	2	25+x+y
Total	N = Σf <sub>i</sub> = 60	

Let x, y be the missing frequencies of class intervals 3500-4500 and 4500-5500 respectively.

Then,

$$25 + x + y = 60$$

$$\Rightarrow x+y=35 \text{ -----(i)}$$

Median is 5000, which lies in 4500-5500.

So the median class is 4500-5500.

Therefore,  $l = 4500$ ,  $h = 1000$ ,  $N = 60$ ,  $f = y$ , and  $cf = 5+x$

Now,

$$\text{Median, } M = l + \left( \frac{N/2 - cf}{f} \right) \times h$$

$$\Rightarrow 5000 - 4500 = \left( \frac{30 - 5 - x}{y} \right) \times 1000$$

$$\Rightarrow 500 = \left( \frac{25 - x}{y} \right) \times 1000$$

$$\Rightarrow y = 50 - 2x$$

$$\Rightarrow 35 - x = 50 - 2x \text{ ( From (i) )}$$

$$\Rightarrow 2x - x = 50 - 35$$

$$\Rightarrow x = 15$$

Therefore,  $y = 35 - x$

$$\Rightarrow y = 35 - 15$$

$$\Rightarrow y = 20$$

Hence,  $x = 15$  and  $y = 20$ .

**Q.** Find the median from the following data:

Marks	No. of students
Below 10	12
Below 20	32
Below 30	57
Below 40	80
Below 50	92
Below 60	116
Below 70	164
Below 80	200

**Solution:**

The given series is of inclusive form. Converting it into exclusive form and preparing the cumulative frequency table, we get

Marks	Frequency $f_i$	C.F
0-10	12	12
10-20	20	32
20-30	25	57
30-40	23	80
40-50	12	92
50-60	24	116
60-70	24	116
70-80	36	200

$N = \sum f_i = 200$

$$N = 200$$

$$\Rightarrow N/2 = 100$$

Now,

The cumulative frequency just greater than 100 is 116 and corresponding class is 50-60.

Thus, the median class is 50-60

$$l = 50, h = 10, f = 24, c = \text{C.F. preceding median class} = 92 \text{ and } N/2 = 100$$

$$\text{Median} = l + \left[ \frac{h \times (N/2 - c)}{f} \right] = 50 + \left[ \frac{10 \times (100 - 92)}{24} \right]$$

$$= 50 + \left[ \frac{10 \times 8}{24} \right] = 50 + \left[ \frac{10 \times 84}{24} \right] = 50 + 3.33 = 53.33$$

Hence, Median = 53.33

**Q.** If the median of the following frequency distribution is 32.5, find the values of  $f_1$  and  $f_2$

Class interval	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	Total
Frequency	$f_1$	5	9	12	$f_2$	3	2	40

**Solution:**

We prepare the cumulative frequency table, as shown below:

Class	Frequency	Cumulative frequency
0-10	$f_1$	$f_1$
10-20	5	$f_1+5$
20-30	9	$f_1+14$
30-40	12	$f_1+26$
40-50	$f_2$	$f_1+f_2+26$
50-60	3	$f_1+f_2+29$
60-70	2	$f_1+f_2+31$
	$N=\Sigma f=40$	

Now,  $f_1+f_2+31 = 40$

$\Rightarrow f_1+f_2=9$

$\Rightarrow f_2=9-f_1$ .....(i)

The median is 32.5 which lies in 30 – 40.

Hence, median class = 30 – 40

Therefore,  $l = 30, N/2=20, f = 12$ , and  $cf = 14+f_1$

Now,

Median=32.5

Also,

Median

$(M)=l+(N/2-cf/f)\times h$

$$32.5 = 30 + (20 - (14 + f_1)/12) \times 10$$

$$\Rightarrow 32.5 = 30 + 6 - f_1/12 \times 10$$

$$\Rightarrow 2.5 = 6 - f_1/12 \times 10$$

$$\Rightarrow 60 - 10f_1 = 30$$

$$\Rightarrow 10f_1 = 30$$

$$\Rightarrow f_1 = 3$$

From eq. (i), we have

$$f_2 = 9 - 3 \Rightarrow f_2 = 6$$

### Q. Assertion-and-Reason Type

Each question consists of two statements, namely, Assertion (A) and Reason (R). For selecting the correct answer, use the following code:

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A).

(c) Assertion (A) is true and Reason (R) is false.

(d) Assertion (A) is false and Reason (R) is true.

Assertion (A) Reason (R) Consider the following frequency distribution:  
The value of the variable which occurs most often is the mode.  
Class interval 3-6 6-9 9-12 12-15 15-18 18-21  
Frequency 25 21 23 10 12  
The mode of the above data is 12.4.

### Solution:

The correct answer is:

(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A).

Clearly, Reason (R) is true.

But we got the value of mode thus:

The maximum frequency is 23 and the modal class is 12-15.

Using,  $\text{Mode} = l + \frac{(f_1 - f_0)(f_1 - f_2)}{(f_1 - f_0) + (f_1 - f_2)} \times h$

where

$l$  = lower limit of the modal class,

$h$  = size of the class interval (assuming all class sizes to be equal),

$f_1$  = frequency of the modal class,

$f_0$  = frequency of the class preceding the modal class,

$f_2$  = frequency of the class succeeding the modal class.

$$\text{Mode} = 12 + \frac{(23 - 21)(23 - 10)}{(23 - 21) + (23 - 10)} \times 3$$

$$\Rightarrow \text{Mode} = 12 + \frac{(2)(15)}{(2) + (15)} \times 3$$

$$\Rightarrow \text{Mode} = 12 + 0.4$$

$$\Rightarrow \text{Mode} = 12.4$$

$\therefore$  Assertion (A) and Reason (R) are true.

However, Reason (R) isn't the correct explanation of Assertion (A).

**Q.** The mean of 2, 7, 6 and  $x$  is 15 and the mean of 18, 1, 6,  $x$  and  $y$  is 10. What is the value of  $y$ ?

(a) 5 (b) 10 (c) 20 (d) 30

**Solution:**

In ( 1 ) case:- The average of 2, 7, 6 and  $x$  is 15

$$\Rightarrow \frac{2+7+6+x}{4} = 15$$

$$\Rightarrow 15+x=60$$

$$\Rightarrow 15+x=60$$

$$\Rightarrow x=60-15$$

$$\Rightarrow x=45 \text{-----( 1 )}$$

In ( 2 ) case:- the average of 18, 1, 6,  $x$  and  $y$  is 10

$$\Rightarrow 18+1+6+x+y=10$$

$$\Rightarrow 25+x+y=10$$

$$\Rightarrow 25+5+y=10 \text{ -----from( 1 )}$$

$$\Rightarrow 30+y=10$$

$$\Rightarrow 30+y=50$$

$$\Rightarrow y=50-30$$

$$\Rightarrow y=20$$

## Benefits of RS Aggarwal Solutions for Class 10 Maths Chapter 9 Exercise 9.6

- **Improved Data Analysis Skills:** By practicing these solutions, students can enhance their ability to analyze and visualize data using cumulative frequency curves.
- **Exam Preparation:** These solutions are excellent for exam preparation provide comprehensive practice that helps reinforce understanding and boosts confidence.
- **Conceptual Clarity:** Students develop a deeper understanding of cumulative frequency and its applications, which are important for mastering statistics.
- **Expert Guidance:** The solutions are prepared by subject experts from Physics Wallah, ensuring accuracy and reliable guidance for students.
- **Accessible Resource:** The PDF format makes it easy for students to access and use the solutions anytime, providing a convenient study aid.