



ChapterNotes

chaptersnotes.in · free NEET & JEE prep

CHAPTER NOTES

Statistics Class 9 Notes | CBSE Maths

- ✓ Chapter-wise notes & important questions
- ✓ Free gamified practice app — streaks
- ✓ Free mock & prediction papers with answers

Source: <https://chaptersnotes.in/cbse/class-9-maths>



Ira

Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Explain Statistics simply

What can the board exam ask?

Most important formulas

Quiz me on this chapter

Ask Ira anything...



Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

Statistics Class 9 Notes | CBSE Maths

Statistics is a chapter of CBSE Class 9 Maths (2026-27 syllabus). It teaches you how to answer a question with data: pose a statistical investigative question, collect and organise the data, show it in a suitable graph, and then summarise it with a mean, median or mode so that you can make a decision. The chapter adds two tools that are new for many students, the weighted average and the stacked bar graph, including the 100% stacked bar graph.

These notes cover statistical questions and variability, primary and secondary data, frequency tables and the range, bar graphs, stacked and 100% stacked bar graphs, the mean, median and mode of raw data and of a frequency table, the weighted average and the combined mean, and how to choose the right average for a real decision. In the CBSE Class IX course structure for 2026-27, Unit VI, Statistics and Probability, carries 10 marks in the annual theory paper, shared between this chapter and Introduction to Probability. The same averages and data-reading skills return in Class 10.

Quick Answer - Statistics in 30 Seconds

A **statistical investigative question** explores raw data in a **frequency table** and measures. In a **stacked bar graph** the whole bar is the total reading minus its bottom reading. In a 100% stacked bar graph, the segments show shares, so group sizes are relative. The **mean** is the middle of ordered data, **mode** = most frequent value, and the **median** when there are extreme values.



Ira

Your teacher for Statistics



Hi, I am [Ira](#). I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

All Key Formulas at a Glance

Idea	Rule or Formula	Remember
Range	Range = Highest value – Lowest value	Measures spread
Mean of raw data	Mean = $(x_1 + x_2 + \dots + x_n) / n$	Sum = Mean $\times$ n
Mean of a frequency table	Mean = $\Sigma fx / \Sigma f$	Σf is the total number of observations
Median, n odd	Value of the $((n + 1)/2)$ th observation	Arrange the data in order first
Median, n even	Mean of the $(n/2)$ th and $(n/2 + 1)$ th observations	Average the two middle
Mode	Observation with highest frequency	
Weighted average	$(w_1x_1 + w_2x_2 + \dots + w_nx_n) / (w_1 + w_2 + \dots + w_n)$	
Combined mean of two groups	$(n_1m_1 + n_2m_2) / (n_1 + n_2)$	
Stacked bar segment	Segment value / Bottom reading	
Percentage share	Share = $(\text{Part} / \text{Total}) \times 100$	
Count from a share	Count = $(\text{Percentage} / 100) \times \text{Group total}$	



Ira

Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

Key Concepts

1. Statistical Investigative Questions and Collecting Data

Statistics begins with a question. A **statistical investigative question** is a question whose answer comes from data that **vary**. "How many hours do Class 9 students of our school sleep on a school night?" is statistical, because different students give different answers. "What time does our school start?" has one fixed answer, so it is not statistical. The spread of different answers is called **variability**, and it is the reason we need statistics at all.

A quick test: if you must ask many people or take many measurements, and you expect the answers to differ, the question is statistical. "How tall is Riya?" is not statistical. "How tall are the girls of Class 9?" is.

Every statistical investigation follows the same cycle:

1. **Pose** a clear question and decide the group to ask your school.
2. **Collect** the data by a survey, an experiment, or observation.
3. **Organise** the data in a table.
4. **Visualise** the data with a suitable graph.
5. **Interpret** the result and use it to answer the question.

Primary and secondary data. Data that you collect yourself are **primary data**, for example a survey of your class. Data that someone else has already collected them, like census figures, are **secondary data**.

Collecting fairly. The data should represent the whole group. Priya wants to know how Class 9 students travel to school. If she asks only her friends, they may all live in the same area. If she asks only the boys, almost all of them will say "bus". Both plans are unfair. She should plan to ask from every section of Class 9.

2. Organising Data: Frequency Tables

Data written down in the order they were collected is called a **raw data**. A **frequency table** organises them: each different value is listed once, and the number of times it occurs is written next to it.



Ira

Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

we write how many times it occurs. That count is its **frequency**. Tally marks help while counting: four strokes with a fifth stroke across them stand for 5.

Illustration. Marks (out of 10) of 20 students: 6, 8, 5, 9, 7, 6, 8, 10, 4, 6, 7, 8, 6, 9, 5, 7, 6, 8, 7, 3.

Marks (x)	3	4	5	6	7	8	9	10	Total
Frequency (f)	1	1	2	5	4	4	2	1	20

Every observation is counted exactly once, so **the frequencies always add up to the total number of observations**. This gives a check on your counting, and it lets you find a missing frequency. If shoe sizes 5, 6, 7 and 8 of 40 students have frequencies 6, 14, x and 8, then $6 + 14 + x + 8 = 40$, so $x = 12$.

Range. The range is the simplest measure of how spread out the data are:

Range = Highest value – Lowest value

For the marks above, range = $10 - 3 = 7$. A large range means they are spread out. The range can make it large.

3. Graphical Representation: Choice

A graph lets the reader see a pattern at a glance.



Ira
Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed
AI generated, can make mistakes. Cross-check with NCERT.

Graph	What it shows well	Example
Bar graph	Comparing counts of separate categories	Number of students choosing each sport
Double bar graph	Comparing two groups category by category	Boys and girls choosing each sport
Stacked bar graph	Each group's total and how it is split into parts	Students of each section, split by mode of travel
100% stacked bar graph	Shares (percentages) of parts, for groups of different sizes	Percentage of each school's students who cycle
Line graph	How one quantity changes over time	Daily temperature over a week

Reading any bar graph. Read the title, the bar. Bars must have equal width and equal height. Check whether the scale starts at 0. If the scale looks twice as tall as a bar of 45 even though the cut scale can mislead, so always compare

4. Stacked Bar Graphs

In a **stacked bar graph** each bar stands for a total which is cut into **segments**, one for each sub-category. The order in which shade stands for which sub-category is the same in every bar.

- The **height of the whole bar** is the **total**
- Each **segment** is the part contributed by a sub-category
- Only the bottom segment starts at 0. Even if the top segment starts at 45, so **segment value = top reading – bottom reading**

Illustration. A stacked bar graph shows how the scale readings of the segments are given



Ira

Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

Section	Walk segment	Bus segment	Cycle segment
9A	0 to 14	14 to 30	30 to 38
9B	0 to 10	10 to 32	32 to 42
9C	0 to 18	18 to 28	28 to 40

For 9B: Walk = 10 – 0 = 10, Bus = 32 – 10 = 22, Cycle = 42 – 32 = 10, and the total is the top of the bar, 42. Check: 10 + 22 + 10 = 42.

Comparing bars. Totals are compared by bar heights. Bottom segments share the baseline, so they can be compared by eye. Upper segments start at different heights, so work out each value before comparing. In the graph above, the Cycle segment of 9B sits highest on the page, yet 9C has more cyclists (12 against 10).

Finding a missing part. If you know the base Tuesday bar reaches 95 cups, with tea 45

5. 100% Stacked Bar Graphs

Suppose School P has 250 students and S bar is more than twice as tall, and P’s segr bar is drawn to the **same height, 100%**, an group. This is a **100% stacked bar graph**.

Percentage share = (Part / Group total) ×

Building a bar. Section 9C has 40 student 100 = 45%, Bus = 10/40 × 100 = 25%, Cyc On the graph the Walk segment runs from 70% to 100%.

Going back to counts. A count can be fou

Count = (Percentage / 100) × Group total



Ira

Your teacher for Statistics



Hi, I am [Ira](#). I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

School (students)	Walk	Bus	Cycle
P (250)	40% = 100	36% = 90	24% = 60
Q (600)	25% = 150	55% = 330	20% = 120

The key limitation. P has the larger *share* of cyclists (24% against 20%), but Q has more *cyclists* (120 against 60). A 100% stacked bar graph hides group sizes, so it answers “what fraction?” and cannot answer “how many?” unless the totals are supplied. Always multiply a percentage by that group’s own total.

Which stacked graph to use. Use an ordinary stacked bar graph when both the totals and their make-up matter. Use a 100% stacked bar graph when you want to compare the make-up of groups of different sizes.

6. Mean, Median and Mode

A **measure of central tendency** is a single three common ones.

Mean. The mean (arithmetic mean, average) were shared equally.

Mean = Sum of all observations / Number

Turned around, **Sum = Mean × Number of** corrected-mean problems. If a value was

Median. Arrange the data in ascending (or

- If the number of observations n is **odd**, observations, it is the 13th.
- If n is **even**, the median is the mean of the 15, 20 ($n = 6$), the median is $(11 + 12)/2$

Mode. The mode is the observation that occurs most often. A data set can have two modes (bimodal), or the only one of the three that works for categorical data.



Ira

Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

Mean of a frequency table. When value x occurs f times, it contributes $f \times x$ to the sum. So

Mean = $\Sigma fx / \Sigma f$

where Σ (sigma) means "sum of" and Σf is the total number of observations. For the 20 students' marks in Concept 2: $\Sigma fx = 3 + 4 + 10 + 30 + 28 + 32 + 18 + 10 = 135$, so mean = $135/20 = 6.75$. The median is the mean of the 10th and 11th values. Counting frequencies from the lowest mark (1, 2, 4, 9, 13, ...), the 10th to 13th values are all 7, so median = 7. The mode is 6 (frequency 5). One data set, three different centres: 6.75, 7 and 6.

7. Weighted Average and Combined Mean

The simple mean treats every value as equally important. Often they are not. If you mix 3 glasses of juice costing ₹40 each with 2 glasses costing ₹50 each, the average price per glass is not ₹45. You have more of the cheaper juice, so the total cost is $3 \times 40 + 2 \times 50 = ₹220$ for 5 glasses, which is ₹44 per glass. The number

Weighted average = $(w_1x_1 + w_2x_2 + \dots + w_nx_n) / (w_1 + w_2 + \dots + w_n)$

When every weight is 1, this becomes the simple average, with the frequencies as weights.

Setting	
Final score from several exams	Marks in exams
Grade point average	Grade point average per subject
Price of a mixture	Price per unit of variety
Combined mean of groups	Mean of groups

Percentage weights. Tests 20%, half-yearly 30%, final 50%.
weighted score = $0.2 \times 80 + 0.3 \times 70 + 0.5 \times 60 = 67$



Ira
Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

final score is lower because the lowest score carries half the weight. When the weights are percentages that add to 100%, dividing by the sum of the weights (1) changes nothing.

Combined mean. For groups of sizes n_1 and n_2 with means m_1 and m_2 :

Combined mean = $(n_1m_1 + n_2m_2) / (n_1 + n_2)$

Section A (30 students, mean 60) and Section B (20 students, mean 70) have combined mean $(1800 + 1400)/50 = 64$, closer to 60 because Section A is larger.

A built-in check. A weighted average always lies between the smallest and the largest value, and it is pulled towards the value with the larger weight. An answer outside that range means an arithmetic slip.

8. Choosing the Right Average for Decisions

Each measure has a job, and the chapter e

Measure	Strength
Mean	Uses every observation
Median	Unaffected by extreme values
Mode	Shows the most popular value; works for categories

The outlier effect. Data: 10, 12, 12, 15, 16 g
60: the sum becomes 109 and the mean ju
outlier is a value far away from the rest.

A mean that no one has. A shoe shop lear
wears size 6.4. The shop needs the mode,



Ira
Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed
AI generated, can make mistakes. Cross-check with NCERT.

Looking beyond the centre. Two batters each average 50 runs over five innings. Batter A scored 50, 48, 52, 49, 51 (range 4). Batter B scored 0, 5, 120, 10, 115 (range 120, median 10). The means are equal, but A is far more **consistent**. For a decision, compare the spread (range) as well as the centre.



Ira

Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

Formula and Theorem Sheet

Result	Formula or rule	When to use
Range	Highest value – Lowest value	Spread or consistency of data
Sum of frequencies	Σf = total number of observations	Checking a table; finding a missing frequency
Mean of raw data	$(x_1 + x_2 + \dots + x_n) / n$	Values listed one by one
Sum from mean	Sum = Mean $\times$ n	Missing, removed, added or corrected values
Mean of a frequency table	$\Sigma fx / \Sigma f$	Values with frequencies
Median (n odd)	$((n + 1)/2)$ th observation	
Median (n even)	Mean of the $(n/2)$ th and $(n/2 + 1)$ th observations	
Mode	Value with the highest frequency	
Weighted average	$\Sigma wx / \Sigma w$	
Combined mean	$(n_1m_1 + n_2m_2) / (n_1 + n_2)$	
Stacked bar segment	Top reading – Bottom reading	
Percentage share	$(\text{Part} / \text{Group total}) \times 100$	
Count from share	$(\text{Percentage} / 100) \times \text{Group total}$	



Ira

Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

Important Definitions

- **Statistics:** the study of collecting, organising, representing and interpreting data to answer questions and make decisions.
- **Data:** facts or figures, numbers or categories, collected for a purpose.
- **Statistical investigative question:** a question that is answered using data and whose answers are expected to vary.
- **Variability:** the fact that observations of the same quantity differ from one another.
- **Primary data:** data collected first-hand by the investigator for the purpose in hand.
- **Secondary data:** data taken from a source where they were already collected by someone else.
- **Raw data:** data in the form in which they were collected, before any organising.
- **Frequency:** the number of times a value or category occurs in the data.
- **Frequency table:** a table listing each value and its frequency.
- **Range:** the difference between the highest and lowest values.
- **Stacked bar graph:** a bar graph in which each bar is divided into segments representing different categories, so the bar shows a group total.
- **100% stacked bar graph:** a stacked bar graph where each segment shows the percentage share of the total.
- **Mean:** the sum of all observations divided by the number of observations.
- **Median:** the middle value of the data when arranged in order.
- **Mode:** the observation that occurs most frequently.
- **Weighted average:** the sum of each value multiplied by its weight, divided by the sum of the weights.
- **Outlier:** an observation that lies far away from the rest of the data.



Ira

Your teacher for Statistics



Hi, I am [Ira](#). I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Solved Examples

Example 1: Frequency table, range

The number of books read in a month by 10 students is given below. Make a frequency table and find the range.

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

Solution:

Books (x)	0	1	2	3	4	5	Total
Frequency (f)	1	2	4	6	2	1	16

Check: $1 + 2 + 4 + 6 + 2 + 1 = 16$. Range = $5 - 0 = 5$. The highest frequency is 6, for 3 books, so the mode = **3 books**.

Example 2: Mean, median and mode of raw data

The daily rainfall (in mm) in a town over a week was 8, 12, 15, 10, 20, 7, 12. Find the mean, median and mode.

Solution: Sum = $8 + 12 + 15 + 10 + 20 + 7 + 12 = 84$. Mean = $84/7 = 12$ mm.

Ordered: 7, 8, 10, 12, 12, 15, 20. n = 7 is odd.

12 occurs twice and every other value once.

Example 3: Median of an even number of observations

The heights (in cm) of 8 students are 142, 145, 148, 141, 138, 146, 149, 147. Find the median height.

Solution: Ordered: 138, 141, 142, 145, 146, 147, 148, 149. Median = average of the 4th and 5th values.

Median = $(145 + 148)/2 = 293/2 = 146.5$ cm.

Example 4: Finding a missing observation

The mean of six numbers is 15. Five of the numbers are 10, 12, 14, 16, 18. Find the sixth number.

Solution: Sum of six numbers = $6 \times 15 = 90$. Sum of five numbers = $10 + 12 + 14 + 16 + 18 = 70$. Sixth number = $90 - 70 = 20$.

Example 5: Correcting a wrong mean

The mean of 25 observations was found to be 16. It was later discovered that one observation had been wrongly copied as 84. Find the correct mean.



Ira
Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Solution: Wrong sum = $25 \times 36 = 900$. Correct sum = $900 - 84 + 48 = 864$. Correct mean = $864/25 = \mathbf{34.56}$.

The wrong value was larger than the correct one, so the correct mean must be smaller than 36. It is.

Example 6: Mean, median and mode from a frequency table

A survey of 30 families recorded the number of children in each family.

Children (x)	0	1	2	3	4
Families (f)	3	8	12	5	2

Find the mean, median and mode.

Solution: $\Sigma f = 3 + 8 + 12 + 5 + 2 = 30$. $\Sigma fx = 0 + 8 + 24 + 15 + 8 = 55$.
children.

$n = 30$ is even, so the median is the mean of the 15th and 16th frequencies.
frequency: 3 (up to 0), 11 (up to 1), 23 (up to 2), 28 (up to 3), 30 (up to 4).
15th and 16th are both 2. Median = **2**.

The highest frequency is 12, for 2 children. Mode = **2**.

Example 7: Weighted final score

A school gives weights of 20% to unit test, 30% to class test and 50% to final exam. Anjali scores 85, 72 and 64 (out of 100) in these tests respectively. Find her weighted final score and compare it with the simple mean.

Solution: Final score = $0.2 \times 85 + 0.3 \times 72 + 0.5 \times 64 = 17 + 21.6 + 32 = 70.6$.

Simple mean = $(85 + 72 + 64)/3 = 221/3 \approx 73.67$.
exam, her lowest score, carries the largest weight.

Example 8: Price of a mixture

A shopkeeper mixes 5 kg of rice costing ₹40/kg with 3 kg of rice costing ₹30/kg. Find the cost per kg of the mixture.



Ira
Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

Solution: Total cost = $5 \times 48 + 3 \times 56 = 240 + 168 = ₹408$. Total quantity = $5 + 3 = 8$ kg. Cost per kg = $408/8 = ₹51$.

Check: 51 lies between 48 and 56 and is closer to 48, which has the larger weight.

Example 9: Combined mean of two sections

Section A has 35 students with mean marks 62. Section B has 25 students with mean marks 74. Find the mean marks of all 60 students.

Solution: Total marks of A = $35 \times 62 = 2170$. Total marks of B = $25 \times 74 = 1850$. Combined mean = $(2170 + 1850)/60 = 4020/60 = 67$.

The simple mean of 62 and 74 is 68; the correct answer is lower because the section with the lower mean is larger.

Example 10: Finding an unknown

Section A has 30 students with mean 50. Section B has 20 students with mean 60. The combined mean is 54. How many students are in Section B?

Solution: Let Section B have n students. Total marks of A = $30 \times 50 = 1500$. Total marks of B = $60n$. Combined mean = 54. So,

$1500 + 60n = 54(30 + n) = 1620 + 54n$, so

Check: $(1500 + 1200)/50 = 2700/50 = 54$.

Example 11: Reading a stacked bar graph

Use the stacked bar graph of Concept 4 (Concept 4: Reading a stacked bar graph). (i) How many students in each section who travel by bus? (ii) How many students in each section who travel by cycle? (iii) How many students in all three sections who travel by bus?

Solution: (i)



Ira
Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground. Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

Section	Walk	Bus	Cycle	Total
9A	14	$30 - 14 = 16$	$38 - 30 = 8$	38
9B	10	$32 - 10 = 22$	$42 - 32 = 10$	42
9C	18	$28 - 18 = 10$	$40 - 28 = 12$	40

(ii) **9B**, with 22 bus riders. (iii) $8 + 10 + 12 = \mathbf{30}$ **students** cycle.

Example 12: A 100% stacked bar graph and the share trap

A 100% stacked bar graph shows that in School P (250 students) 24% cycle, and in School Q (600 students) 20% cycle. Riya says, “More students cycle in School P.” Is she right?

Solution: Cyclists in P = $(24/100) \times 250 = 60$. Cyclists in Q = $(20/100) \times 600 = 120$.

Riya is **wrong**. P has the larger share of cyclists. A 100% stacked bar graph compares shares; counts are not shown.

Example 13: Choosing the right average

The times (in minutes) that 15 students take to run a mile are 10, 11, 12, 12, 13, 14, 15, 15, 15, 15, 16, 16, 17, 18, 55. Find the mean, median and mode.

Solution: Sum = 258, so mean = $258/15 = 17.2$.

Ordered: 10, 11, 12, 12, 13, 14, 15, 15, 15, 15, 16, 16, 17, 18, 55. The value 15 occurs four times, so the mode is **15 min**.

The value 55 is an outlier. It pulls the mean up to 17.2 minutes. The **median, 15 minutes**, is not affected. The median would be $203/14 = 14.5$, while the median



Ira
Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed
AI generated, can make mistakes. Cross-check with NCERT.

Competency-Based Questions (with answers)

1. Case-based: The school canteen

A canteen records sales of three items on three days in a stacked bar graph. Monday: Samosa 0 to 40, Sandwich 40 to 65, Fruit cup 65 to 80. Tuesday: Samosa 0 to 35, Sandwich 35 to 70, Fruit cup 70 to 90. Wednesday: Samosa 0 to 50, Sandwich 50 to 70, Fruit cup 70 to 95.

- (a) How many sandwiches were sold on Tuesday? $70 - 35 = 35$.
- (b) On which day were the most fruit cups sold? Monday $80 - 65 = 15$, Tuesday $90 - 70 = 20$, Wednesday $95 - 70 = 25$. Wednesday.
- (c) Find the mean number of items sold per day, and the item the canteen should prepare most. Totals are 80, 90 and 95, so mean = $265/3 \approx 88.3$ items per day. Over three days: samosa $40 + 35 + 50 = 125$, sandwich $25 + 35 + 20 = 80$, fruit cup $15 + 20 + 25 = 60$. Samosa is the modal item, so the canteen should prepare

2. Case-based: Screen time in two schools

A 100% stacked bar graph shows daily screen time in two schools. School X: less than 1 hour 30%, 1 to 3 hours 50%, more than 3 hours 20%. School Y: less than 1 hour 45%, 1 to 3 hours 35%, more than 3 hours 20%.

- (a) Which school has the larger share of students using screens for less than 1 hour? School Y, 45% against 30%.
- (b) How many students in each school use screens for more than 3 hours? School X: 20% of 300 = 60. School Y: 20% of 500 = 100.
- (c) A student looks only at the graph and claims that School X has more students using screens for less than 1 hour. Comment. The graph also shows the total number of students in each school. Using the totals: X has 30% of 300 = 90 and Y has 45% of 500 = 225. So the claim is wrong.

3. Case-based: The report card

A school's final score gives 20% weight to the annual exam. Kabir has scored 70 in the annual exam. He wants a final score of at least 65.



Ira
Your teacher for Statistics



Hi, I am [Ira](#). I teach this syllabus all day, so [Statistics](#) is very much my home ground. Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

(a) Write the final score in terms of his annual mark a. $0.2 \times 70 + 0.3 \times 60 + 0.5a = 14 + 18 + 0.5a = 32 + 0.5a$.

(b) Find the least annual mark he needs. $32 + 0.5a \geq 65$ gives $0.5a \geq 33$, so $a \geq 66$.

(c) If the three exams had equal weight, what annual mark would give 65? $(70 + 60 + a)/3 = 65$ gives $130 + a = 195$, so $a = 65$. With the weights he needs one mark more. His weaker score, 60, carries 30% weight against 20% for the 70, so his two earlier scores have a weighted average of $32/0.5 = 64$, which is below 65, and the annual exam must make up the gap.

4. Source-based: Picking a batter

A selector compares two batters over five matches. Batter A: 50, 48, 52, 49, 51. Batter B: 0, 5, 120, 10, 115.

(a) Find the mean score of each. A: $250/5 = 50$. B: $250/5 = 50$.

(b) Find the median and range of each. A is ordered 48, 49, 50, 51, 52, median 50, range 4. B is ordered 0, 5, 10, 115, 120, median 10, range 120.

(c) Whom should the selector pick for a series? Both have a mean of 50, but A's range is 4 and B's is 120, so A is more consistent. In most matches B scored little.

5. Assertion-Reason

Assertion (A): For the data 3, 5, 7, 9, 100, the mean is 24.8. **Reason (R):** The median depends on the number of observations. An extreme value larger or smaller does not affect the median.

(a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, but R is not the correct explanation of A. (c) A is true and R is false. (d) A is false and R is true.

Answer: (a). Mean = $124/5 = 24.8$, larger than the median 7. The mean is pulled towards the outlier 100. The median resists the outlier 100 for exactly the reason given in R).

6. Assertion-Reason

Assertion (A): The weighted average of 60, 70, and 80 with weights 0.2, 0.3, and 0.5 respectively is 68. **Reason (R):** A weighted average is pulled towards the larger values.



Ira

Your teacher for Statistics



Hi, I am [Ira](#). I teach this syllabus all day, so [Statistics](#) is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

(a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, but R is not the correct explanation of A. (c) A is true, but R is false. (d) A is false, but R is true.

Answer: (d). Weighted average = $(3 \times 60 + 1 \times 80)/4 = 260/4 = 65$. The value 70 is the simple mean. R is true: 65 lies closer to 60, the value with the larger weight.

7. Assertion-Reason

Assertion (A): The mode is the suitable average for finding the favourite sport of a class.

Reason (R): The mean of a data set need not be one of its observations.

(a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, but R is not the correct explanation of A. (c) A is true, but R is false. (d) A is false, but R is true.

Answer: (b). Sports are categories, so a mean or median cannot be found and the most frequent choice (the mode) is the answer. R is true (the mean of 1, 2, 4 is $7/3$), but it is a different fact and does not explain A.

8. Investigation design: Asking the

Three students plan a class project. Aman asks, "How much pocket money do you get?" Neha asks, "How much pocket money do I get?" Rishi asks, "How much pocket money do I get?" (a) Suggest a fair way to collect data. (b) Suggest a fair way to collect data.

Answer: (a) Neha's. Its answers vary from student to student. (b) Neha should survey a few students chosen at random from each class in Class 9. A survey of only her friends would not be fair.

9. Decision-making: The shoe shop

A shop sold these sizes of school shoes in a month. Size 6: 12 pairs, size 7: 12 pairs, size 8: 5 pairs. The owner should choose, and which measure of central tendency should she use?

Answer: Size 6, the mode, because it sold the most shoes. $(75 + 132 + 84 + 40)/60 = 355/60 \approx 5.92$, so size 6 is the most popular. In such "popular" decisions, the mode is the right measure.



Ira

Your teacher for Statistics



Hi, I am [Ira](#). I teach this syllabus all day, so [Statistics](#) is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

Important Questions for Exams

1-Mark Questions

1. **Define the range of a data set.** The difference between the highest and the lowest observation.
2. **Find the mode of 2, 4, 4, 5, 6, 6, 6, 7.** 6, since it occurs three times.
3. **Find the mean of the first five natural numbers.** $(1 + 2 + 3 + 4 + 5)/5 = 15/5 = 3$.
4. **Is "What is the height of our school flagpole?" a statistical investigative question?** No. It has one fixed answer, so there is no variability in the data.
5. **In a 100% stacked bar, two segments are 35% and 40%. What is the third segment?** $100 - 35 - 40 = 25\%$.

2-Mark Questions

1. **Find the median of 23, 19, 31, 27, 15, 22, 25, 20, 18, 24.** $(22 + 23)/2 = 22.5$.
2. **The mean of 5 observations is 24. If the sum of the first four observations is 110, find the fifth observation.** $\text{Sum} = 5 \times 24 = 120$. New sum = $120 - 110 = 10$.
3. **If the mean of $x, x + 2, x + 4, x + 6$ and $x + 8$ is 11, find the value of x .** $4x + 20 = 11 \times 5$, giving $x = 7$.
4. **Distinguish between primary and secondary data.** Primary data are collected first-hand by the investigator. Secondary data are taken from an existing source like a newspaper.

3-Mark Questions

1. **Find the mean, median and mode of the following data: 12, 15, 18, 20, 22, 25, 28, 30, 32, 35, 38, 40.** $\Sigma f = 30$; $\Sigma fx = 40 + 120 + 270 + 600 + 900 + 1100 + 1200 + 1200 + 1200 + 1400 + 1600 + 1600$ totals 4, 10, 19, so the 15th and 16th values are 30 and 32. $\text{Mean} = 30/3 = 10$, $\text{Median} = 30$, $\text{Mode} = 30$.
2. **In the table $x = 2, 4, 6, 8, 10$ with frequencies $p, 2p, 3p, 4p, 5p$ respectively, find the value of p if the mean is 6.** $\Sigma fx = 6 + 8 + 18 + 8 + 10p = 40 + 10p$. $(40 + 10p)/20 = 6$, $40 + 10p = 120$, $10p = 80$, $p = 8$.



Ira

Your teacher for Statistics



Hi, I am [Ira](#). I teach this syllabus all day, so [Statistics](#) is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

3. A student takes three subjects with credits 4, 3 and 1 and grade points 9, 8 and 5. Find the weighted grade point average and explain why it differs from the simple mean. Weighted average = $(4 \times 9 + 3 \times 8 + 1 \times 5)/(4 + 3 + 1) = (36 + 24 + 5)/8 = 65/8 = 8.125$. The simple mean $22/3 \approx 7.33$ gives the 1-credit subject, where the grade point is lowest, the same importance as the 4-credit subject.
4. A stacked bar for a family's monthly spending has Books from 0 to 150, Snacks from 150 to 230 and Travel from 230 to 400 (in rupees). Find each amount, the total, and the percentage spent on travel. Books ₹150, Snacks ₹80, Travel ₹170, total ₹400. Travel share = $170/400 \times 100 = 42.5\%$.

5-Mark Questions

1. The times (in minutes) that 15 students take to reach school are 12, 15, 10, 18, 15, 20, 14, 15, 11, 16, 13, 15, 17, 12, 55. (i) Find the range. (ii) Find the mean, median and mode. (iii) Which measure best represents a typical student, and why? (i) Range = $55 - 10 = 45$. (ii) Mean = $258/15 = 17.2$; median = 8th ordered value = 15; mode = 15. (iii) The median. The value 55 is an outlier that pulls the mean above the time of most students and stays at 15.
2. Section A has 30 students with mean marks 60. (i) Find the combined mean marks of Section A and Section B as 27. Find the correct mean of Section A. (ii) Correct sum of A = $1500 - 27 \times 30 = 1500 - 810 = 690$. Correct combined mean = $(690 + 1200)/50 = 22.8$. (iii) The combined mean is closer to Section A's mean because Section A has more students. (iv) The combined mean is closer to Section A's mean because Section A has more students.



Ira

Your teacher for Statistics



Hi, I am Ira. I teach this syllabus all day, so Statistics is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Common Mistakes and Explanations

- Finding the median of unordered data.** Always sort the data first. Show that line in your answer.
- Taking one middle value when n is even.** The median is the average of the two middle values.
- Using the position as the median.** (n + 1)/2 observation is the median, the number of observations is not.
- Calling the largest value the mode.** The mode is the value that appears most frequently. In a table, look for the largest frequency, then write its corresponding value.

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

5. **Dividing by the old count.** After removing or adding an observation, divide the new sum by the new number of observations.
6. **Changing the mean directly for a misread value.** Correct the sum (subtract the wrong value, add the right one), then divide.
7. **Dividing Σfx by the number of rows.** In a frequency table, divide by Σf , the total number of observations, never by how many different x-values there are.
8. **Taking the simple mean of weighted values.** Group means, mixture prices and exam scores with weights all need $\Sigma wx / \Sigma w$. Check that the answer lies between the smallest and largest value.
9. **Reading the top of a stacked segment as its value.** Only the bottom segment starts at 0. Subtract the bottom reading from the top reading.
10. **Treating a larger share as a larger number.** In a 100% stacked bar graph, convert shares to counts with each group's own total before saying "more".
11. **Judging with the mean alone.** When the question asks about consistency or reliability, compare ranges too. When there is an outlier, compare means too.



Ira

Your teacher for Statistics



Hi, I am [Ira](#). I teach this syllabus all day, so [Statistics](#) is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Quick Revision Points

- A statistical investigative question expects a numerical answer
- Investigation cycle: pose, collect, organise, analyse, conclude, communicate
- Primary data are collected first-hand; secondary data are collected from others
- Collect from all parts of the group to avoid bias
- Frequencies in a table add up to the total number of observations
- Range = highest – lowest; it measures spread
- Bar graphs compare categories; line graphs compare values over time
- Check the scale: a vertical axis that does not start at 0 is misleading
- Stacked bar: whole bar = group total; segments = parts
- Compare upper segments only after calculating the whole
- 100% stacked bar: every bar is 100%; segments show shares
- Share = $\text{part} / \text{total} \times 100$; count = percentage of total
- A 100% stacked bar graph hides group differences

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

- Mean = sum/n ; $\text{sum} = \text{mean} \times n$.
- Median: order first; n odd, $((n + 1)/2)$ th value; n even, mean of the $(n/2)$ th and $(n/2 + 1)$ th values.
- Mode = most frequent value; a set may have more than one mode or none.
- Mean of a frequency table = $\Sigma fx / \Sigma f$.
- Weighted average = $\Sigma wx / \Sigma w$; it lies between the smallest and largest values.
- Combined mean = $(n_1m_1 + n_2m_2) / (n_1 + n_2)$.
- Outliers pull the mean; the median resists them.
- Use the mode for the most popular choice and for categorical data.
- Equal means can hide very different spreads; compare ranges for consistency.

Weightage and Exam Pattern

Class 9 has no board exam. This chapter is in the yearly exam and the annual exam. In the CBSE 27, **Unit VI, Statistics and Probability**, can get 10 marks are shared between this chapter and the annual exam. The unit is allocated 10 marks. The year are internal assessment: pen-paper (5) and lab practical (5).



Ira

Your teacher for Statistics



Hi, I am [Ira](#). I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Unit

I. Number System

II. Algebra

III. Coordinate Geometry

IV. Geometry

V. Mensuration

VI. Statistics and Probability

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

The course structure lists the competencies this chapter builds: collecting, organising, visualising and interpreting data to answer a statistical investigative question; computing and applying a weighted average in different settings; reading and interpreting stacked and 100% stacked bar graphs; and interpreting mean, median and mode for decision-making. Expect questions in all of these forms: direct calculations of mean, median and mode, weighted average problems set in real contexts, graph-reading items described in a case, and short justifications of which average to use. The question paper design also gives weight to applying and analysing, so a one-line reason after each calculation is good practice. The same averages and graph-reading skills are used again in Class 10.



Ira

Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.

cn

Got this PDF from a friend?

Everything here is free at **chaptersnotes.in** — 134 chapters of notes, a gamified practice app, and full NEET mock & prediction papers.



Scan for the full chapter page with practice questions

Join our Telegram · daily NEET PYQ with solution + every new PDF drop · t.me/chaptersnotes_in



Ira

Your teacher for Statistics



Hi, I am **Ira**. I teach this syllabus all day, so **Statistics** is very much my home ground.

Ask me anything from this chapter. A concept, a numerical, or that one doubt you did not want to raise in class. Pick one to start:

Free questions, no login needed

AI generated, can make mistakes. Cross-check with NCERT.