

How to Easily Calculate the Mode of Grouped Data

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November 30, 2025

RECOMMENDED CITATION

stats writer (2025). *How to Easily Calculate the Mode of Grouped Data*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=102374>

To find the mode of grouped data, you must first arrange the data into classes or groups, then find the class with the highest frequency or count. The mode is the value that lies at the midpoint of that class. If there are two classes with the same highest frequency, then the data has two modes.

Often we may want to calculate the mode of data that is grouped in some way.

Recall that the represents the value that occurs most frequently.

For example, suppose we have the following grouped data:

Range	Frequency
1-10	2
11-20	7
21-30	10
31-40	3
41-50	1

While it's not possible to calculate the exact mode since we don't know the , it is possible to estimate the mode using the following formula:

$$\text{Mode of Grouped Data} = L + W$$

where:

L: Lower limit of modal class

W: Width of modal class

Fm: Frequency of modal class

F1: Frequency of class immediately before modal class

F2: Frequency of class immediately after modal class

Note: The **modal class** is simply the class with the highest frequency. In the example above, the modal class would be 21-30 since it has the highest frequency.

The following examples show how to calculate the mode of grouped data in different scenarios.

Example 1: Calculate the Mode of Grouped Data

Suppose we have the following frequency distribution that shows the exam scored receive by 40 students in a certain class:

Exam Score	Frequency
51-60	4
61-70	8
71-80	15
81-90	8
91-100	5

In this example, the **modal class** is 71-80.

Knowing this, we can calculate the following values:

L: Lower limit of modal class: **71**

W: Width of modal class: **9**

F_m: Frequency of modal class: **15**

F₁: Frequency of class immediately before modal class: **8**

F₂: Frequency of class immediately after modal class: **8**

We can plug these values into the formula to calculate the mode of the distribution:

$$\text{Mode} = L + W$$

$$\text{Mode} = 71 + 9$$

$$\text{Mode} = \mathbf{75.5}$$

We estimate that the modal exam score is **75.5**.

Example 2: Calculate the Mode of Grouped Data

Suppose we have the following frequency distribution that shows the number of points scored per game by 60 basketball players:

Points Scored	Frequency
1-10	8
11-20	25
21-30	14
31-40	9
41-50	4

In this example, the **modal class** is 11-20.

Knowing this, we can calculate the following values:

L: Lower limit of modal class: **11**

W: Width of modal class: **9**

F_m: Frequency of modal class: **25**

F₁: Frequency of class immediately before modal class: **8**

F₂: Frequency of class immediately after modal class: **14**

We can plug these values into the formula to calculate the mode of the distribution:

$$\text{Mode} = L + W$$

$$\text{Mode} = 11 + 9$$

$$\text{Mode} = \mathbf{16.46}$$

We estimate that the modal points scored is **16.46**.

The following tutorials explain how to perform other common operations with grouped data: