What is the process for finding the mode of grouped data and can you provide examples?

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The process for finding the mode of grouped data involves identifying the most frequently occurring value or class within a set of data that has been organized into groups. This can be done by creating a frequency table that shows the number of times each value or class appears in the data set. The mode is then determined by selecting the value or class with the highest frequency. For example, if a data set is grouped into age ranges (0-10, 11-20, 21-30, etc.) and the 21-30 age range appears the most frequently, then the mode of the data is 21-30.

Find the Mode of Grouped Data (With Examples)

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:

Mode of Grouped Data = L + W

where:

L: Lower limit of modal classW: Width of modal classFm: Frequency of modal classF1: Frequency of class immediately before modal classF2: 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: 71W: Width of modal class: 9Fm: Frequency of modal class: 15F1: Frequency of class immediately before modal class: 8F2: Frequency of class immediately after modal class: 8

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

Mode = L + WMode = 71 + 9Mode = 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: 11W: Width of modal class: 9Fm: Frequency of modal class: 25F1: Frequency of class immediately before modal class: 8F2: Frequency of class immediately after modal class: 14

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

Mode = L + WMode = 11 + 9Mode = 16.46

We estimate that the modal points scored is 16.46.

Additional Resources

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