What is the process for finding the range of grouped data and what are some examples?

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The process for finding the range of grouped data involves first organizing the data into groups or categories. Then, the highest value in each group is identified and recorded. Next, the lowest value in each group is also identified and recorded. Finally, the difference between the highest and lowest values is calculated to determine the range. For example, if the data is grouped into age categories of 0-10, 11-20, 21-30, the range would be calculated by subtracting the lowest age (0) from the highest age (30) to get a range of 30. This process can be applied to any type of grouped data, such as income ranges, test scores, or population demographics.

Find the Range of Grouped Data (With Examples)

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

Recall that the range represents the difference between the largest and smallest value in a dataset.

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 range since

we don't know the , it is possible to estimate the range using one of the following formulas:

Formula 1: Use Upper and Lower Limits

Range of Grouped Data = Umax - Lmin

where:

U: Upper limit of maximum intervalL: Lower limit of minimum interval

Formula 2: Use Midpoints

Range of Grouped Data = Midpointmax - Midpointmin

where:

Midpointmax: Midpoint of maximum intervalMidpointmin: Midpoint of minimum interval

The following examples show how to use each formula in practice.

Example 1: Calculate the Range 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

Formula 1: Use Upper and Lower Limits

Range of Grouped Data = Umax - LminRange of Grouped Data = 100 - 51Range of Grouped Data = 49

Using this formula, we estimate that the range is 49.

Formula 2: Use Midpoints

Range of Grouped Data = Midpointmax - MidpointminRange of Grouped Data = (100+91)/2 - (60+51)/2Range of Grouped Data = 95.5 - 55.5Range of Grouped Data = 40

Using this formula, we estimate that the range is 40.

Example 2: Calculate the Range 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

Here is how to calculate the range of this grouped data using each formula:

Formula 1: Use Upper and Lower Limits

Range of Grouped Data = Umax - LminRange of Grouped Data = 50 - 1Range of Grouped Data = 49

Using this formula, we estimate that the range is 49.

Formula 2: Use Midpoints

Range of Grouped Data = Midpointmax -

MidpointminRange of Grouped Data = (50+41)/2 - (1+10)/2Range of Grouped Data = 45.5 - 5.5Range of Grouped Data = 40

Using this formula, we estimate that the range is 40.

Additional Resources

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

How to Find the Variance of Grouped Data