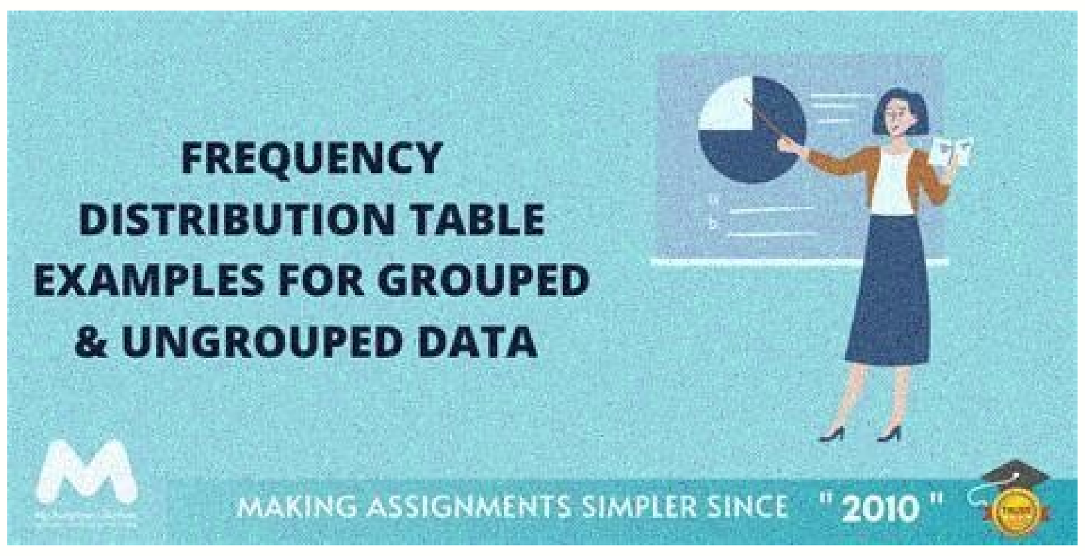
Grouped and ungrouped data standard deviation. Grouped and ungrouped data in statistics pdf notes. Grouped and ungrouped data ppt. Grouped and ungrouped data questions. Grouped and ungrouped data differences. Grouped and ungrouped data similarities.



Grouped and ungrouped data similarities. Grouped and ungrouped data in statistics examples. Grouped and ungrouped data meaning. Difference between grouped and ungrouped data. Grouped and ungrouped data mean median mode. Grouped and ungrouped data worksheet. Standard deviation formula for grouped and ungrouped data. Grouped and ungrouped data example. Grouped and ungrouped data in statistics pdf. Grouped and ungrouped data formula.

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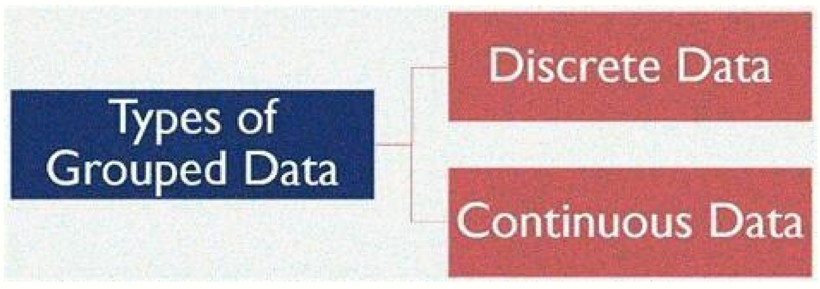

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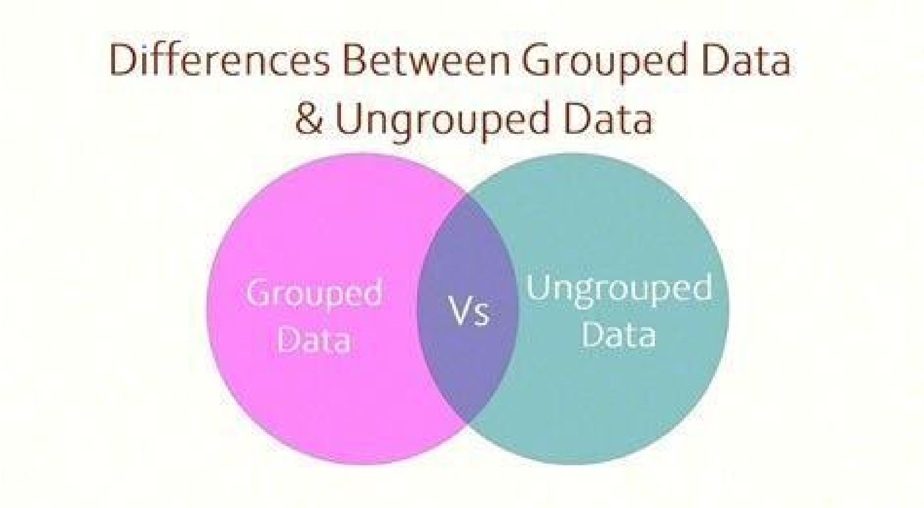
Grouping data plays a vital role when dealing with large datasets. This information can be visually represented using pictographs or bar graphs. Data grouping involves arranging individual observations into groups, making it easier to summarize and analyze the data. To analyze large datasets, we can use tally marks as an approach. For instance, consider the exam scores of 50 students from class VII, with a maximum score of 50. The dataset includes various marks, such as 23, 8, 13, and so on. Creating a frequency distribution table for each observation would result in a massive table. To simplify this process, we can group observations into categories like 0-10, 10-20, etc. This helps us identify significant patterns and trends in the data. Notably, many students scored between 20-40 marks, while 8 students scored higher than 40 marks, indicating that they achieved more than 80% in the exam. The grouped frequency distribution table displays class intervals (or classes) like 0-10, 10-20, and so on. However, to avoid inconsistencies, we adopt a rule where an observation belongs to the higher class interval. For example, consider the class interval 10-20, with 10 as the lower limit and 20 as the upper limit. The difference between these limits is known as the class height or class size. To determine the class size, follow these steps: Step 1 - Identify the highest and lowest data values. Step 2 - Find the difference between these values. Step 3 - Assume the number of class intervals (usually 5-20). Step 4 - Divide the difference by the number of classes. Step 5 - Take the nearest whole number greater than the decimal result as the class size. Histograms can be used to visually represent frequency distributions, making it easier to identify patterns and trends in the data. Consider presenting grouped data using histograms. On the horizontal axis, use class intervals, and on the vertical axis, show frequencies. Each bar's height represents the frequency of its corresponding class interval. Since there are no gaps between classes, bars touch one another. Grouped data is categorized information presented as class intervals (e.g., 0-20, 20-40). In contrast, ungrouped data consists of individual values or numbers (e.g., 15, 63, 34). Suppose we have a dataset ranging from 0 to 50 with values like 2, 17, 0, 1, 8, and so on. We can group this data into classes such as 0-10, 10-20, ...,40-50. This is an example of grouped data. Grouping data has several advantages: It helps focus on essential subgroups while ignoring trivial ones, increasing the efficiency and accuracy of required estimates. Tally marks are a useful technique for grouping data without confusion. To do this, divide the difference between the highest and lowest data values by the desired number of classes to find the class interval size (rounding to the nearest whole number if necessary). For ideal grouped data, it's recommended to have at least 5 and no more than 20 class intervals. However, fewer than 5 class intervals can also be suitable in certain situations. Data can take various forms. One way to distinguish between data is by categorizing it into grouped or ungrouped data. When raw data hasn't been categorized and no summarization has occurred, it's considered ungrouped data, also known as raw data. Conversely, when raw data is categorized into different classes, it becomes grouped data. For instance: Height of students: (171, 161, 155, 155, 183, 191, 185, 170, 172, 177, 183, 190, 139, 149, 150, 150, 152, 158, 159, 174, 178, 179, 190, 170, 143, 165, 167, 187, 169, 182, 163, 149, 174, 174, 177, 181, 170, 182, 170, 145, 143) This is ungrouped data. The following table shows the grouped data: Before exploring more about grouped and ungrouped data, it's essential to understand what we mean by "Central Tendencies." Central tendency refers to the central location in a probability distribution. There are various measures for central tendencies like mean, mode, median, interquartile range, percentiles, geometric mean, harmonic mean, and so on. The most common measures of central tendencies used are discussed below. Understanding the measures of central tendencies of ungrouped data. (i) MODE: The most frequently occurring item/value in a dataset is the mode. #### Measures of Central Tendency: **(i)** **Mode**: When two values occur with equal frequency, it's called bimodal. Multimodal refers to datasets with more than two modes. For example, {7, 11, 14, 25, 15, 15, 15, 19, 29, 81} has a mode of 15. **(ii)** **Median**: The median is the middle value in an ordered dataset. If the number of values is odd, the median is the middle value; if it's even, it's the average of the two middle values. For example, {3, 4, 5, 7, 8, 9, 11, 14, 15, 16, 16, 17, 19, 20, 22} has a median of 17. Advantages: The median is not influenced by extreme values and remains immune to outliers. However, it only makes sense when the data is at least ordinal. **(iii)** **Mean** (Arithmetic Average): This is calculated by summing all values and dividing by the number of values. For example, {3, 4, 5, 7, 8, 9, 11, 14, 15, 16, 16, 17, 19, 20, 22} has a mean of approximately 13.27.



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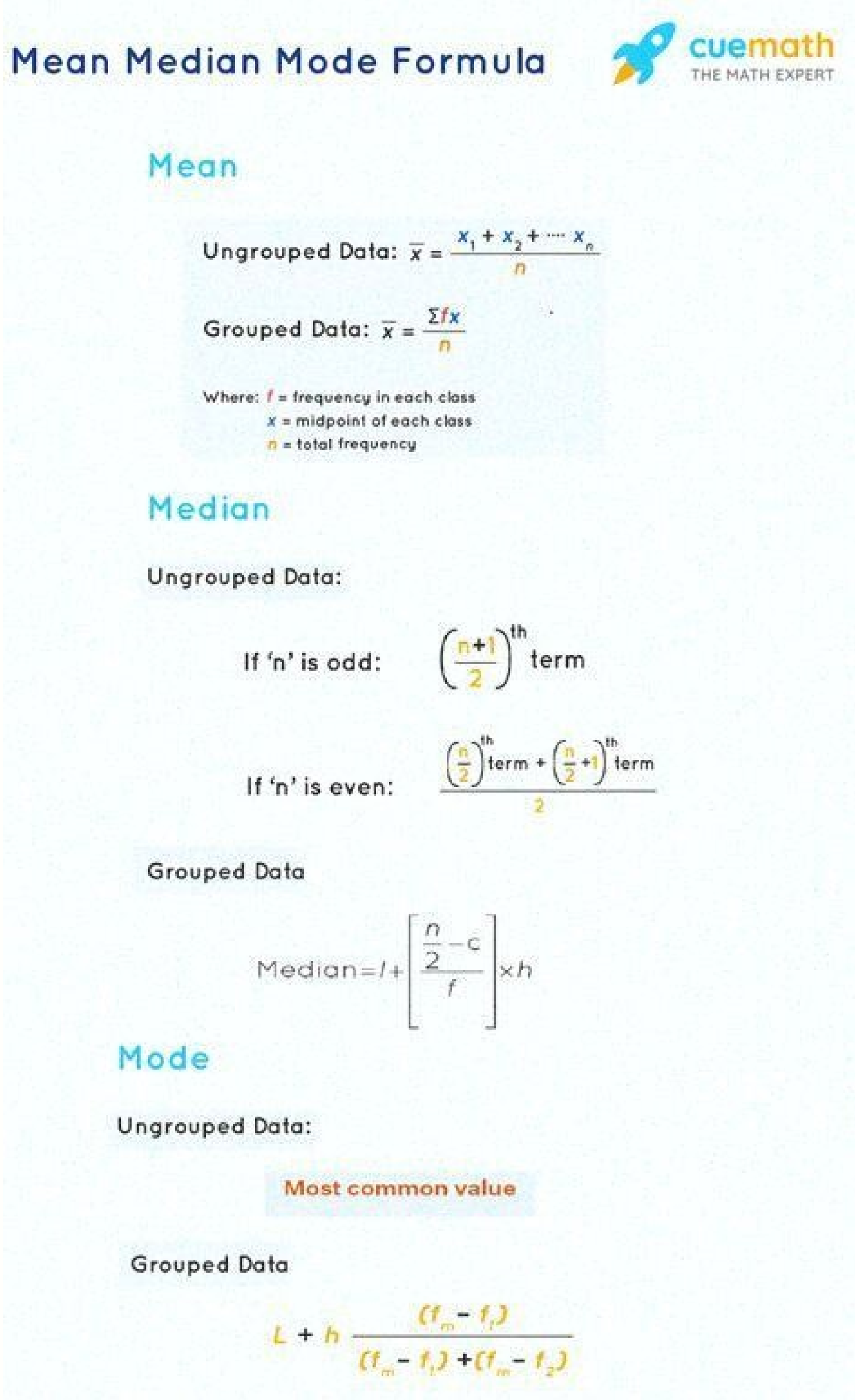

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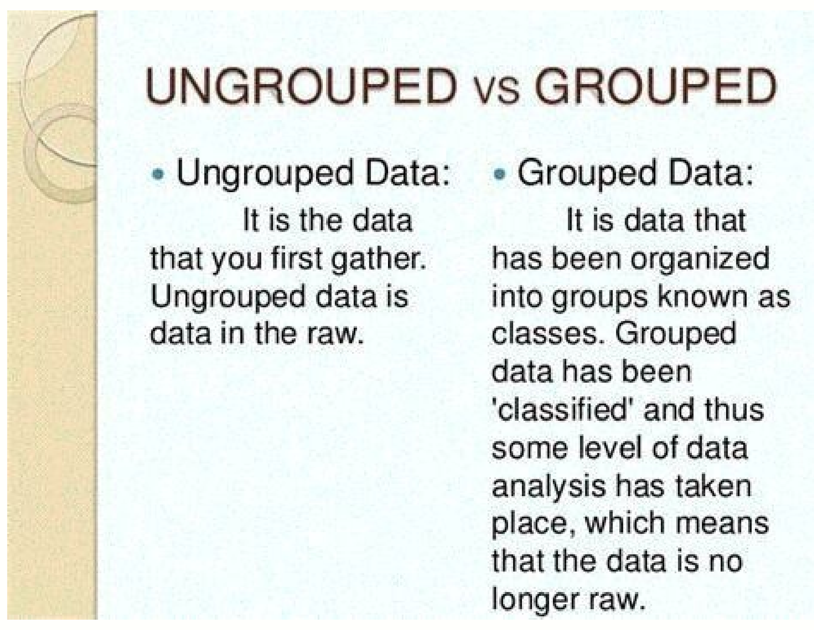

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For example, {3, 4, 5, 7, 8, 9, 11, 14, 15, 16, 16, 17, 19, 20, 22} has a mean of approximately 13.27. **(iv)** **Percentile**: This divides a dataset into 100 equal parts. The nth percentile is the value below which there are n values and above which there are (100-n) values. Steps to calculate percentiles: Arrange data in order; find the ith percentile location; determine the location by either (a) or (b); if i is a whole number, the percentile is at the average of the i and i+1 positions; if i is not a whole number, the percentile is at the i+1 position. **(v)** **Quartile**: This divides data into four equal parts: First Quartile = 25th percentile; Second Quartile (Median); Third Quartile = 75th percentile; Fourth Quartile = 100th percentile. The second quartile is equal to the median.

Measures of Variability: **(i)** **Range**: The difference between the largest and smallest values in a dataset. **(ii)** **Interquartile Range** (IQR): The difference between the first and third quartiles, which is useful for middle values rather than extreme ends. **(iii)** **Mean Absolute Deviation**: The average of absolute deviations around the mean of the dataset. **(iv)** **Variance**: The square of deviations about the arithmetic mean.

Note that the final result is expressed in terms of the squared unit. (v) STANDARD DEVIATION: * It's the square root of variance, calculated as 6.086 in our example. * Standard deviations are used for computing confidence intervals and hypothesis testing. * The standard deviation has the same unit as the raw data.

(vi) COEFFICIENT OF VARIATION: * It's the ratio of standard deviation to mean, resulting in a coefficient of 64.7 in our example. * Calculating measures of central tendencies for grouped data: Mean: ∑fx/ n = 6.93 Median: i + (N/2 - CW)/MED = 7.105 Mode: The mode is the frequency of the modal class, with a maximum frequency of 19 for intervals 7-9, indicating a mode of 8. Abbreviations: f: frequency N: total frequency CW: class width i: initial point (N/2) gives the location of the median value (30 in our example). MED: the frequency of the class where the median exists (19 in our example). That's all for this blog. Coming up: Statistics 101: Hypothesis Testing and p-value - What's the fuss about that! Previous Blog: Statistics 101: Basics Visualization - It's good to be 'seen'!