

Grade 8 Math Formulas

Data Handling Formulas

Based on Maharashtra Board Syllabus (NEP 2025-26)

Note:

This document contains key concepts and formulas related to Data Handling for Grade 8.

Understanding Data

- Data: A collection of facts or information.
- Raw Data: Data collected in its original form.
- Frequency: The number of times a particular observation occurs in a data set.
- Frequency Distribution Table: A table that shows the frequency of each observation or class interval.
- Class Interval: A range of values within which data is grouped (e.g., 0-10, 10-20).
- Upper Class Limit: The highest value in a class interval.
- Lower Class Limit: The lowest value in a class interval.
- Class Mark (Midpoint): $(\text{Upper Class Limit} + \text{Lower Class Limit}) / 2$
- Range of Data: Highest value - Lowest value.

Measures of Central Tendency (Ungrouped Data)

These are values that represent the center or typical value of a data set.

- **Mean (Average):**

Mean = Sum of all observations / Total number of observations

Example: Mean of 2, 4, 6 is $(2 + 4 + 6) / 3 = 12 / 3 = 4$.

- **Median:**

The middle value of a data set when arranged in ascending or descending order.

- If the number of observations (n) is odd, the Median is the $((n + 1) / 2)$ th observation.
- If the number of observations (n) is even, the Median is the average of the $(n / 2)$ th and $((n / 2) + 1)$ th observations.

Example (odd n): Median of 3, 5, 8, 10, 12 (sorted) is the 3rd term, which is 8.

Example (even n): Median of 10, 15, 20, 25 (sorted) is the average of the 2nd and 3rd terms: $(15 + 20) / 2 = 17.5$.

- **Mode:**

The observation that occurs most frequently in the data set.

A data set can have one mode (unimodal), more than one mode (multimodal), or no mode.

Example: Mode of 5, 7, 7, 8, 9 is 7.

Example: Mode of 10, 12, 12, 15, 15 is 12 and 15.

Graphical Representation of Data (Concepts)

- **Bar Graph:** Uses bars of uniform width with heights proportional to the frequencies. Used for comparing discrete data.
- **Histogram:** A type of bar graph where the bars are adjacent to each other. Used for continuous data grouped into class intervals. The area of each bar is proportional to the frequency of the class interval.
- **Pie Chart (Circle Graph):** Represents data as sectors of a circle. The size of each sector is proportional to the fraction of the whole that it represents.

Angle of Sector = (Frequency of the component / Total frequency) multiplied by 360 degrees.

End of Formulas - Data Handling Formulas

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