

GRADE 9 | 2024

Data Handling, Statistics and Probability

Mathematics

CAPS ALIGNED

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1. Collecting and Displaying Data

- Discrete data: can only take specific values (number of students)
- Continuous data: can take any value in a range (height, mass, temperature)

Statistical Graphs

- Histogram: for continuous grouped data (no gaps between bars)
- Bar graph: for discrete or categorical data (gaps between bars)
- Pie chart: shows parts of a whole as percentages
- Line graph: shows change over time
- Scatter plot: shows relationship between two variables

2. Measures of Central Tendency and Spread

FORMULA: Mean = sum of values / number of values

Median = middle value (sorted data)

Mode = most frequent value

Range = max - min

Interquartile range (IQR) = Q3 - Q1

Quartiles

The lower quartile (Q1) is the median of the lower half. The upper quartile (Q3) is the median of the upper half.

3. Five-Number Summary and Box-and-Whisker Plot

FORMULA: Five-number summary: Min, Q1, Median, Q3, Max

A box-and-whisker plot displays these 5 values visually.

EXAMPLE: Box plot

Data: 2, 5, 7, 9, 12, 14, 16, 18, 20

Min=2, Q1=7, Median=12, Q3=18, Max=20

IQR = 18 - 7 = 11

4. Probability

FORMULA: $P(A) = n(A) / n(S)$ [$n(A)$ = favourable outcomes, $n(S)$ = total outcomes]

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

$P(A \text{ and } B) = P(A) \times P(B)$ for independent events

KEY POINT: Mutually exclusive events: $P(A \text{ and } B) = 0$. Complementary: $P(\text{not } A) = 1 - P(A)$.