

Statistics

CBSE Class 9 Maths · Knowledge organiser

KEY DEFINITIONS

Frequency

How many times a value or class appears in the data.

Class interval

A group of values in grouped data, such as 10–20.

Bar graph

Bars of equal width whose heights show the frequencies of separate categories.

KEY FORMULAS

Mean; weighted mean $\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$; $\bar{x}_w = \frac{\sum w_i x_i}{\sum w_i}$

Combined mean of two groups $\frac{n_1 \bar{x}_1 + n_2 \bar{x}_2}{n_1 + n_2}$

Mixture concentration $\frac{q_1 c_1 + q_2 c_2}{q_1 + q_2}$

Average speed = total distance ÷ total time; 100% stacked bars compare proportions, not totals

Median: middle value in order (n even: mean of the two middle values); mode: most frequent value

YOU SHOULD BE ABLE TO...

- Find a mean and a weighted mean, combine two group averages and read a stacked bar chart.
- Solve mixture and purity questions, correct a mean and use frequency tables.
- Answer multi-part problems on class averages, grading schemes and blends.
- Find the ratio in which to mix, a missing weight or value, and explain misleading averages.

WORKED EXAMPLE

A report gives weight 40% to coursework and 60% to the exam. Find the result for coursework 85 and exam 70.

$$0.4 \times 85 + 0.6 \times 70 = 34 + 42 = 76.$$

COMMON MISTAKES

- ✗ Averaging two group means without weighting by the group sizes.
- ✗ Average speed as the mean of the two speeds when the times differ.
- ✗ Dividing a weighted total by the number of values instead of the sum of the weights.
- ✗ Comparing totals from a 100% stacked chart: it shows only proportions.