

6.1.4 Grouped Summaries

Name: _____ Class: _____ Date: _____

KEY WORDS modal class

<!-- Session 2 native-skill companion -->

Objective

Practise grouped summaries within the labelled native lessons. Public original tasks; locally authored answer guidance.

1 Key knowledge and worked examples

■ Frequency summaries and grouped estimates · Foundation

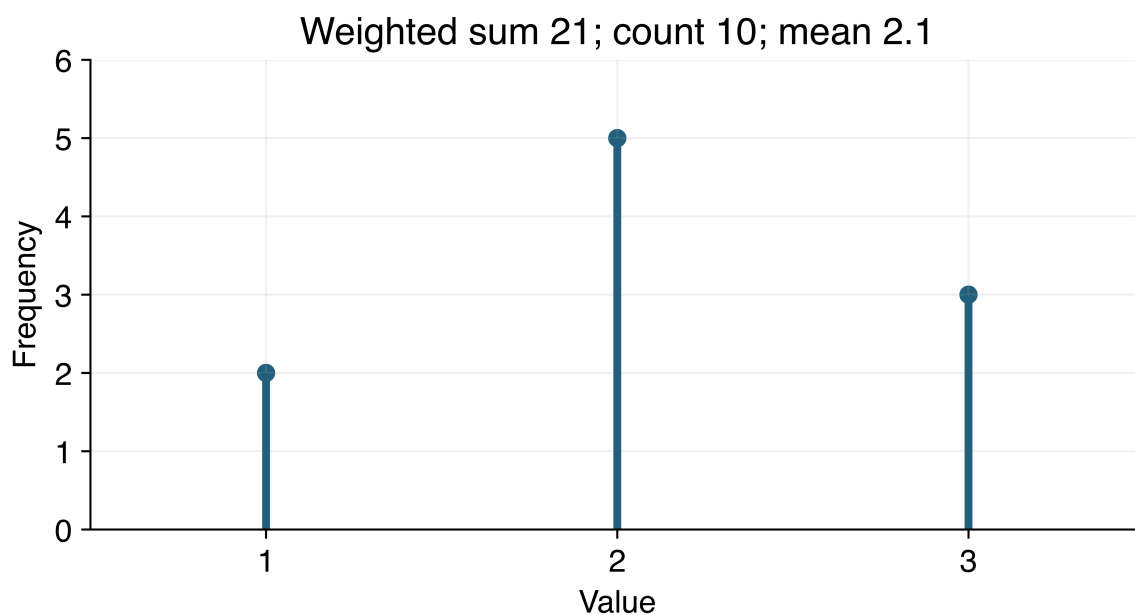
For exact value frequencies, mean is $\text{sum}(\text{value} \times \text{frequency}) / \text{total frequency}$. Locate the median using cumulative counts. For interval data, use class midpoints to estimate a mean; the exact values are unknown. The modal class has greatest frequency, which need not be the tallest unequal-width histogram bar. Compare a suitable average and spread, in context, and state the limitations of grouping or outliers.

$$\bar{x} \approx \frac{\sum fm}{\sum f}$$

Values 1,2,3 with frequencies 2,5,3 give total 10 and weighted sum $2+10+9=21$, so mean is 2.1. The fifth and sixth observations are both 2, giving median 2 and mode 2. For continuous classes $0 \leq x < 10, 10 \leq x < 20, 20 \leq x < 30$ with frequencies 2,5,3, midpoints 5,15,25 give estimated sum $10+75+75=160$ and estimated mean 16. The modal class is $10 \leq x < 20$. The range of individual observations cannot be recovered exactly from these intervals. For values 2,4,4,6,24, mean is 8 and median 4; the unusually large value raises the mean. Comparing two groups should describe both a typical value and variation, rather than selecting whichever summary favours a claim.

The grouped mean is an estimate because all members are represented by a midpoint. A median is not found by averaging the class labels. Outliers can alter the mean/range substantially.

AQA S4/S5 Foundation includes appropriate mean/median/mode/modal class and range, with grouped data and outlier awareness. Higher quartiles/box plots are taught separately.



Original native-lesson illustration; labels belong to its worked example.

2 Practice

2.1 (Foundation) Find mean of values 1,2,3 with frequencies 2,5,3.

2.2 (Foundation) Find midpoint-estimated mean for classes 0–10,10–20,20–30 with frequencies 2,5,3.

2.3 (Foundation) Find median of 2,4,4,6,24.

3 Exam-style questions

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: A grouped midpoint mean is always the exact mean of the original measurements.
