

Frequency Tables

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Find the mean from: 2 people scored 5, 3 scored 7, 5 scored 9.

Step 1 · Multiply each value by its frequency

$$(2 \times 5) + (3 \times 7) + (5 \times 9) = 10 + 21 + 45 = 76$$

Step 2 · Find the total frequency

$$2 + 3 + 5 = 10$$

Step 3 · Divide to find the mean

$$76 \div 10 = 7.6$$

Answer: Mean = 7.6

Check: This is a weighted average — values with higher frequency pull the mean toward them ✓

2. Now try one with the steps

Find the median from: score 1 (f = 3), score 2 (f = 5), score 3 (f = 6), score 4 (f = 1).

Step 1 · Total frequency

Step 2 · Position of the median

Step 3 · Count through: scores of 1 are values 1–3, scores of 2 are values 4–8

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. A frequency table shows 5 people scored 3, 8 scored 4, and 2 scored 5. Find the total number of people. [1]

2. Using the same data (5 scored 3, 8 scored 4, 2 scored 5), find the mode. [2]

3. A grouped frequency table has class '10–19' with frequency 6. Find the midpoint of this class. [2]

4. Using the table: 3 people scored 1, 5 scored 2, 4 scored 3, 2 scored 4. Find the total of all scores (Σfx). [3]

5. Find the estimated mean from a grouped frequency table: class 0–9 (freq 3, midpoint 4.5), class 10–19 (freq 5, midpoint 14.5). [3]

6. Explain why the mean calculated from grouped data is called an 'estimate' rather than an exact value. [3]

7. Goals scored in a team's matches: 0 goals (frequency 4), 1 goal (7), 2 goals (5), 3 goals (3), 4 goals (1). How many matches were played? [1]

8. For the same goals table, what is the modal number of goals? [1]

9. For the same goals table, what is the range of goals scored? [1]

10. For the same goals table, how many goals were scored altogether? [2]

11. For the same goals table, find the mean number of goals per match. [2]

12. For the same goals table, find the median number of goals. [2]

13. Heights of 20 pupils: $140 \leq h < 150$ (frequency 6), $150 \leq h < 160$ (10), $160 \leq h < 170$ (4). What is the modal class? [1]

14. For the same heights table, estimate the mean height in cm. [3]

15. For the same heights table, which class contains the median? [2]

16. Scores 1, 2, 3 and 4 have frequencies 2, 6, x and 4. The mean score is 2.6. Find x. [3]

4. Before you hand it in

Finding the mean by simply averaging the VALUES (ignoring frequency): $(5+7+9) \div 3$

You must use $\Sigma fx \div \Sigma f$ — multiply each value by HOW MANY times it occurs (frequency), sum these products, then divide by the total count. Ignoring frequency gives a wrong, unweighted average.

Using the class boundaries (e.g. 10 and 19) instead of the midpoint when estimating the mean from grouped data

For grouped data, always use the midpoint of each class: $(\text{lower bound} + \text{upper bound}) \div 2$, best single representative value for that whole class.

Dividing Σfx by the number of rows in the table

Divide by the total frequency Σf . A table with 4 rows might hold 20 or 200 values — the frequencies tell you how many.