

C9.1 Classifying statistical data

Name: _____ Class: _____ Date: _____

Total: 20 marks**KEY WORDS** two-way table 双向表 • data 数据 • statistical 统计 • frequency 频数

Objective

Use classifying statistical data to solve Core IGCSE Mathematics problems.

You must be able to:

- Classify categorical, discrete and continuous data
- Organise counts in frequency and two-way tables
- Check totals and explain why a classification fits a variable

1 Key knowledge and worked examples

■ Key knowledge: Classifying statistical data

Classify numerical data as discrete (counted values) or continuous (measured values). Categories such as colours are not numerical. A tally records one mark per observation, grouped in fives; frequency is the total tally count. A two-way table classifies each observation in two ways. Row totals, column totals and the grand total must agree.

■ Worked example: Classifying statistical data

0 pets: 3	1 pet: 3	2 pets: 2
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For pet counts 0, 1, 2, 1, 0, 1, 2, 0, frequencies are 0 pets: 3, 1 pet: 3, 2 pets: 2. Check $N = 3 + 3 + 2 = 8$.

- A two-way survey has junior bus 6, junior walk 4, senior bus 3, senior walk 7.
- Row totals are 10 and 10; column totals bus 9 and walk 11; grand total 20.
- Pet count is discrete; travel time is continuous; travel method is categorical.

■ Method check

Classify the quantity measured, not the way it is written. A continuous time remains continuous even if readings are rounded to whole minutes.

2 Practice

2.1 Classify number of siblings and a measured height as discrete or continuous. [2]

2.2 Create a frequency table for 1, 2, 1, 3, 2, 1, 2, 2. [2]

2.3 A tally row has two complete groups of five and three extra strokes. Find the frequency. [2]

2.4 A two-way table has row totals 18 and 22. One column total is 17. Find the other column total. [2]

3 Exam-style questions

3.1 Apply the classifying statistical data methods below. Show working and include units where appropriate.

(a) In a survey, 9 boys and 7 girls cycle; 6 boys and 8 girls walk. Make a two-way table with row and column totals. [2]

(b) Find the number of students surveyed. [2]

(c) Three more girls who walk join the survey. Give the new girls total and new walking total. [2]

3.2 A survey records bus or walk to school. Year 7 has 12 bus and 8 walk; Year 8 has 9 bus and 11 walk.

(a) Make a two-way table including row totals, column totals and the grand total. [3]

(b) Classify travel method, number of siblings and journey time to the nearest minute. Explain the classification of the time variable. [3]

Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

2.1

- Siblings are counted: **discrete**. Height is measured: **continuous**.

2.2

- Count occurrences: **1: 3; 2: 4; 3: 1**. Total is 8.

2.3

- $f = 2(5) + 3 = \mathbf{13}$.

2.4

- $N = 18 + 22 = 40$; other column $f = 40 - 17 = \mathbf{23}$.

3.1

(a)

- **Boys: cycle 9, walk 6, total 15; girls: cycle 7, walk 8, total 15; column totals 16, 14, 30.**

(b)

- $N = 9 + 7 + 6 + 8 = \mathbf{30}$.

(c)

- Girls total $G = 15 + 3 = \mathbf{18}$; walk total $W = 14 + 3 = \mathbf{17}$.

3.2

(a)

- Year totals are **20 and 20**.
- Bus and walk totals are **21 and 19**.
- Complete the labelled table with grand total **40**.

(b)

- Travel method is **categorical**.
- Sibling count is **discrete**.
- Journey time is **continuous**, because intermediate times are possible despite rounding the displayed reading.