

Exercise walk-through

E9.1

Classifying statistical data

IGCSE Mathematics

You must be able to

- classify a variable as qualitative, discrete quantitative or continuous quantitative
- explain why continuous data is grouped using inequalities with no gaps or overlaps
- distinguish a population from a sample

1

The method

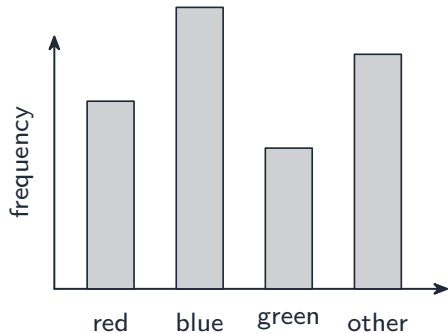
Method — Can you count it, measure it, or only name it?

- **Qualitative** data is a name or a category: eye colour, favourite sport, country.
- **Quantitative** data is a number, and splits in two: **discrete** is counted and lands on separate values (number of cars, shoe size), while **continuous** is measured and can take any value in a range (height, time, mass).
- **Grouping continuous data:** classes are written $0 < m \leq 10$, $10 < m \leq 20$ so there is **no gap and no overlap**. Writing 0–10, 11–20 would leave 10.4 with nowhere to go.
- **Population** is everyone or everything being studied; a **sample** is the smaller part actually measured.

Answer shapes (marked by **method marks** — M1 for a correct method, A1 for the correct answer): these are B marks for precise words. “Continuous quantitative” earns more than “numbers”.

Method — Can you count it, measure it, or only name it?

Answer shapes (marked by method marks — M1 for a correct method, A1 for the correct answer): these are B...



A bar chart of categories

Method — Can you count it, measure it, or only name it?

Answer shapes (marked by method marks — M1 for a correct method, A1 for the correct answer): these are B...



A pictogram using a key

2

Practice

Practice 2.1 ■ 1 mark

State whether shoe size is discrete or continuous.

Solution 2.1

Method: Can you count it, measure it, or only name it? — p.4

Worked steps

- shoe sizes come in separate steps and are counted, not measured

discrete

B1

Practice 2.2 ■ 1 mark

State whether the height of a plant is discrete or continuous.

Solution 2.2

Method: Can you count it, measure it, or only name it? — p.4

Worked steps

- height can take any value within a range

continuous

B1

Practice 2.3 ■ 1 mark

State whether eye colour is qualitative or quantitative.

Solution 2.3

Method: Can you count it, measure it, or only name it? — p.4

Worked steps

- it is a category, not a number

qualitative

B1

3

Exam-style

Exam-style 3.1 ■ 3 marks

Classify each of the following as qualitative, discrete quantitative or continuous quantitative.

Exam-style 3.1 (a) ■ 1 mark

The number of cars in a car park.

Exam-style 3.1 (b) ■ 1 mark

The time taken to run 100 m.

Exam-style 3.1 (c) ■ 1 mark

A student's favourite sport.

Solution 3.1

Method: Can you count it, measure it, or only name it? — p.4

Worked steps

- (a) discrete quantitative **B1**
- (b) continuous quantitative **B1**
- (c) qualitative **B1**

Exam-style 3.2 ■ 3 marks

A set of masses m grams is grouped as $0 < m \leq 10$, $10 < m \leq 20$, and so on.

Exam-style 3.2 (a) ■ 2 marks

Explain why the classes are written with inequalities rather than as 0–10, 11–20.

Solution 3.2 (a)

Method: Can you count it, measure it, or only name it? — p.4

Worked steps

- mass is continuous, so a value such as 10.4 g is possible **B1**
- 0–10 and 11–20 would leave a gap between them with nowhere for such a value to go; the inequalities leave no gap and no overlap **B1**

Exam-style 3.2 (b) ■ 1 mark

State which class a mass of exactly 10 g belongs to.

Solution 3.2 (b)

Worked steps

- the first class ends with ≤ 10 , so it includes exactly 10

$$0 < m \leq 10$$

B1

Exam-style 3.3 ■ 2 marks

Explain the difference between a population and a sample.

Solution 3.3

Method: Can you count it, measure it, or only name it? — p.4

Worked steps

- a population is EVERY member of the group being studied **B1**
- a sample is the smaller part of it that is actually measured, chosen to represent the whole **B1**