

Exercise walk-through

Representing a Categorical Variable with Tables ■ 1.3

eXercise

You must be able to

- summarise a categorical variable with a **frequency table** 频数表
- calculate **relative frequencies** 相对频数 (proportions or percentages)
- build a **two-way table** 双向表 for two categorical variables

Method — Frequency and relative frequency

A **frequency table** lists the count in each category. A **relative frequency** is that count as a proportion of the total:

$$\text{relative frequency} = \frac{\text{count in category}}{\text{total}}.$$

Method — Two-way tables

A **two-way (contingency) table** shows **two** categorical variables together — one across the rows, one across the columns — so you can study their relationship.

Practice 2.1 ■ 1 mark

State what a frequency table shows.

Solution 2.1

Worked steps

the count of individuals in each category **B1**.

Practice 2.2 ■ 2 marks

In a class of 25, 10 prefer tea. Find the relative frequency (proportion) who prefer tea.

Solution 2.2

Method: Frequency and relative frequency

Worked steps

$$\frac{10}{25} = 0.40 \text{ (40\%)} \quad \text{M1} \quad \text{A1}.$$

Practice 2.3 ■ 1 mark

State what a two-way table displays.

Solution 2.3

Worked steps

two categorical variables together **B1**.

Exam-style 3.1 ■ 1 mark

A relative frequency is a

A count

B proportion or percentage

C total

D graph

Solution 3.1

Method: Frequency and relative frequency

A count

B proportion or percentage



C total

D graph

Worked steps

B.

Exam-style 3.2 ■ 1 mark

A two-way table displays

- A** one categorical variable
- B** two categorical variables together
- C** a histogram
- D** a mean

Solution 3.2

- A one categorical variable
- B two categorical variables together** 
- C a histogram
- D a mean

Worked steps

B.

Exam-style 3.3 ■ 2 marks

In a survey of 40 people, 12 answered “yes”.

- (a) Find the relative frequency of “yes”.
- (b) State what a two-way table would add to this summary.

Solution 3.3

Method: Frequency and relative frequency

Worked steps

(a) $\frac{12}{40} = 0.30$ (30%) **M1** **A1**. (b) a second categorical variable, to show the relationship between the two **B1**.