

1.3 Representing a Categorical Variable with Tables

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

KEY WORDS relative frequency 相对频率 • two-way table 双向表 • proportion 比例
• frequency table 频数表 • relative frequencies 相对频数

Objective

Build the skills to answer exam questions on **representing a categorical variable with tables**.

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

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ **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:

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

■ **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.

2 Practice

2.1 State what a frequency table shows. [1]

2.2 In a class of 25, 10 prefer tea. Find the relative frequency (proportion) who prefer tea. [2]

2.3 State what a two-way table displays. [1]

3 Exam-style questions

3.1 A relative frequency is a [1]

- **A** count
- **B** proportion or percentage
- **C** total
- **D** graph

3.2 A two-way table displays [1]

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

3.3 In a survey of 40 people, 12 answered "yes".

(a) Find the relative frequency of "yes". [2]

(b) State what a two-way table would add to this summary. [1]

Solutions

2.1 the count of individuals in each category.

2.2 $\frac{10}{25} = 0.40$ (40%).

2.3 two categorical variables together.

3.1 B.

3.2 B.

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