

2.2 Representing Two Categorical Variables

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

KEY WORDS joint 联合 • conditional 条件 • marginal 边缘 • two-way table 双向表

Objective

Build the skills to answer exam questions on **representing two categorical variables**.

You must be able to:

- organise two categorical variables in a **two-way table** 双向表
- calculate **joint** 联合, **marginal** 边缘, and **conditional** 条件 relative frequencies
- display the relationship with a **segmented** or **side-by-side bar chart**

1 Worked examples

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

■ **Three kinds of relative frequency**

From a two-way table with grand total N :

- **Joint** — one cell $\div N$.
- **Marginal** — a row or column total $\div N$.
- **Conditional** — a cell $\div$ its **row (or column)** total.

■ **Displaying it**

A **segmented (stacked)** or **side-by-side** bar chart shows how the categories of one variable break down by the other.

2 Practice

2.1 Define a joint relative frequency. [1]

2.2 Define a marginal relative frequency. [1]

2.3 In a survey of 50 people, 20 are "young and answered yes". Find the joint relative frequency. [2]

3 Exam-style questions

3.1 A conditional relative frequency is a proportion within [1]

- | | |
|---|---|
| A | B |
| C | D |
- A** the whole table
 - B** one row or one column
 - C** a single cell only
 - D** no group

3.2 A row or column total divided by the grand total is a _____ relative frequency.[1]

- | | |
|---|---|
| A | B |
| C | D |
- A** joint
 - B** marginal
 - C** conditional
 - D** none of these

3.3 Of 80 students, 24 are "sporty and pass".

(a) Find the joint relative frequency of "sporty and pass". [2]

(b) Name a chart that displays two categorical variables. [1]