

# 5.1 Introducing Statistics: Why Is My Sample Not Like Yours?

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_ Total: 9 marks

KEY WORDS statistic 统计量 • parameter 参数 • sampling variability 抽样变异性

## Objective

Build the skills to answer exam questions on **why samples differ**.

You must be able to:

- describe **sampling variability** 抽样变异性
- distinguish a **statistic** 统计量 (describes a sample) from a **parameter** 参数 (describes a population)
- explain why different samples give different statistics

## 1 Worked examples

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

■ **Sampling variability**

Different random samples from the same population give **different** values of a statistic — this is **sampling variability**.

■ **Statistic vs parameter**

- A **statistic** (like  $\bar{x}$  or  $\hat{p}$ ) is computed from a **sample** and varies.
- A **parameter** (like  $\mu$  or  $p$ ) is a fixed number describing the whole **population**.

## 2 Practice

2.1 Define sampling variability. [1]

2.2 State the difference between a statistic and a parameter. [2]

2.3 State why two random samples give different means. [1]

## 3 Exam-style questions

3.1 A number describing a sample is a [1]

- |   |   |
|---|---|
| A | B |
| C | D |
- A parameter  
B statistic  
C population  
D census

3.2 A number describing a population is a [1]

- |   |   |
|---|---|
| A | B |
| C | D |
- A statistic  
B parameter  
C sample  
D residual

3.3 Two students each survey 50 people and get different sample proportions.

(a) Name the reason for the difference. [1]

(b) Name the value computed from each sample. [1]

(c) Name the fixed population value. [1]