AP STATISTICS • EXERCISE SHEET

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

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

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 μ 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]

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3 Exam-style questions

3.1 A number describing a sample is a [1]

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

3.2 A number describing a population is a [1]

- **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]

4 Go further

- work through the **5.1 Why Is My Sample Not Like Yours?** lesson on the **Learn** page;
- read the **Sampling Distributions** section of the AP Statistics handout on the **Know** page.

Solutions

2.1 the natural variation in a statistic from one random sample to another.

2.2 a statistic describes a sample and varies; a parameter describes the population and is fixed.

2.3 each sample contains different individuals (sampling variability).

3.1 B.

3.2 B.

3.3 (a) sampling variability. (b) a statistic. (c) a parameter.