

3.3 Random Sampling and Data Collection

Name: _____ Class: _____ Date: _____

Total: 9 marks

Objective

Build the skills to answer exam questions on **random sampling and data collection**.

You must be able to:

- explain why **random sampling** 随机抽样 helps produce a representative sample
- describe a **simple random sample (SRS)** 简单随机抽样
- distinguish **stratified** 分层, **cluster** 整群, and **systematic** 系统 random sampling

1 Worked examples

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

■ Why random?

Random sampling gives every individual a known chance of selection, which produces a **representative** sample and reduces bias.

■ Sampling methods

- **Simple random sample (SRS)** —every possible sample of the chosen size is equally likely.
- **Stratified** —split into groups (strata), then randomly sample **within each**.
- **Cluster** —randomly select whole **groups** and use everyone in them.
- **Systematic** —pick every k -th individual from a list.

2 Practice

2.1 State why random sampling helps. [1]

2.2 Describe a simple random sample. [1]

2.3 Name two other types of random sampling. [2]

3 Exam-style questions

3.1 Random sampling helps produce a _____ sample. [1]

- **A** biased
- **B** representative
- **C** small
- **D** voluntary

3.2 Splitting a population into groups and randomly sampling within each is _____ sampling. [1]

- **A** cluster
- **B** stratified
- **C** systematic
- **D** voluntary

3.3 A school selects every 10th student on an alphabetical list.

(a) Name this sampling method. [1]

(b) State one benefit of random sampling. [1]

(c) Name a method that samples whole groups. [1]

4 Go further

- work through the **3.3 Random Sampling and Data Collection** lesson on the **Learn** page;
- read the **Collecting Data** section of the AP Statistics handout on the **Know** page.

Solutions

2.1 it gives a representative sample and reduces bias.

2.2 a sample in which every possible group of that size is equally likely to be chosen.

2.3 any two of: stratified, cluster, systematic.

3.1 B.

3.2 B.

3.3 (a) systematic sampling. (b) it reduces bias / gives a representative sample. (c) cluster sampling.