

Exercise walk-through

Random Sampling and Data Collection ■ 3.3

eXercise

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

Method — Why random?

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

Method — 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.

Practice 2.1 ■ 1 mark

State why random sampling helps.

Solution 2.1

Worked steps

it gives a representative sample and reduces bias **B1**.

Practice 2.2 ■ 1 mark

Describe a simple random sample.

Solution 2.2

Method: Sampling methods

Worked steps

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

B1.

Practice 2.3 ■ 2 marks

Name two other types of random sampling.

Solution 2.3

Worked steps

any two of: stratified, cluster, systematic **B1** **B1**.

Exam-style 3.1 ■ 1 mark

Random sampling helps produce a _____ sample.

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

Solution 3.1

A biased

B representative 

C small

D voluntary

Worked steps

B.

Exam-style 3.2 ■ 1 mark

Splitting a population into groups and randomly sampling within each is _____ sampling.

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

Solution 3.2

Method: Sampling methods

A cluster

B stratified



C systematic

D voluntary

Worked steps

B.

Exam-style 3.3 ■ 1 mark

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

- (a) Name this sampling method.
- (b) State one benefit of random sampling.
- (c) Name a method that samples whole groups.

Solution 3.3

Method: Sampling methods

Worked steps

(a) systematic sampling **B1**. (b) it reduces bias / gives a representative sample **B1**. (c) cluster sampling **B1**.