

Exercise walk-through

Inference and Experiments ■ 3.7

eXercise

You must be able to

- explain that **random assignment** 随机分配 allows a **cause-and-effect** conclusion
- explain that **random selection** 随机选取 allows **generalization** to a population
- describe when a difference is **statistically significant** 统计显著

Method — Two kinds of randomness

- **Random assignment** of units to treatments lets you conclude **cause and effect**.
- **Random selection** of units from a population lets you **generalize** the results to that population.

Method — Statistical significance

A difference between groups is **statistically significant** when it is **too large to be explained by chance alone**.

Practice 2.1 ■ 1 mark

State what random assignment allows you to conclude.

Solution 2.1

Method: Two kinds of randomness

Worked steps

a cause-and-effect relationship **B1**.

Practice 2.2 ■ 1 mark

State what random selection allows.

Solution 2.2

Method: Two kinds of randomness

Worked steps

generalizing the results to the population **B1**.

Practice 2.3 ■ 1 mark

Define a statistically significant difference.

Solution 2.3

Method: Statistical significance

Worked steps

a difference too large to be explained by chance alone **B1**.

Exam-style 3.1 ■ 1 mark

Random assignment to treatments allows a conclusion about

- A** generalization
- B** cause and effect
- C** the population size
- D** bias

Solution 3.1

Method: Two kinds of randomness

A generalization

B cause and effect



C the population size

D bias

Worked steps

B.

Exam-style 3.2 ■ 1 mark

A result is statistically significant if it is

- A** small
- B** unlikely to be due to chance alone
- C** biased
- D** perfectly random

Solution 3.2

Method: Statistical significance

- A small
- B unlikely to be due to chance alone
- C biased
- D perfectly random



Worked steps

B.

Exam-style 3.3 ■ 1 mark

An experiment randomly assigns treatments and finds a large difference between the groups.

- (a) State what random assignment allows.
- (b) State what random selection of units would allow.
- (c) State what “statistically significant” means.

Solution 3.3

Method: Statistical significance

Worked steps

(a) a cause-and-effect conclusion **B1**. (b) generalizing to the population **B1**. (c) the difference is unlikely to be due to chance alone **B1**.