

Exercise walk-through

Justifying a Claim About a Population Mean Based on a Confidence Interval ■ 7.3

eXercise

You must be able to

- use a confidence interval to judge whether a claimed mean is **plausible**
- recognise a value inside the interval as plausible and one outside as not supported

Method — Judging a claim about μ

The confidence interval gives the plausible values of the population mean:

- a claimed value **inside** the interval is **plausible**;
- a claimed value **outside** the interval is **not supported** by the data.

Method — Example

A 95% interval of (48, 52) contains 50, so “ $\mu = 50$ ” is plausible; it does not contain 55, so “ $\mu = 55$ ” is not supported.

Practice 2.1 ■ 1 mark

State how to judge a claim about μ using a confidence interval.

Solution 2.1

Method: Judging a claim about μ

Worked steps

a value inside the interval is plausible; a value outside is not supported **B1**.

Practice 2.2 ■ 1 mark

A 95% CI for μ is (48, 52). State whether the claim " $\mu = 50$ " is plausible.

Solution 2.2

Method: Judging a claim about μ

Worked steps

yes, plausible (50 is inside) **B1**.

Practice 2.3 ■ 1 mark

State what a claimed μ outside the interval implies.

Solution 2.3

Method: Judging a claim about μ

Worked steps

the data do not support that claim **B1**.

Exam-style 3.1 ■ 1 mark

A claimed mean that lies inside the confidence interval is

- A** rejected
- B** plausible
- C** impossible
- D** certainly correct

Solution 3.1

Method: Judging a claim about μ

- A rejected
- B plausible** 
- C impossible
- D certainly correct

Worked steps

B.

Exam-style 3.2 ■ 1 mark

A 95% CI for μ is (60, 70). The claim " $\mu = 55$ " is

- A** plausible
- B** not supported
- C** certainly true
- D** unknown

Solution 3.2

A plausible

B not supported 

C certainly true

D unknown

Worked steps

B.

Exam-style 3.3 ■ 1 mark

A 95% CI for the mean is (10.2, 11.8).

- (a) State whether " $\mu = 11$ " is plausible.
- (b) State whether " $\mu = 12$ " is plausible.
- (c) State the confidence level.

Solution 3.3

Method: Judging a claim about μ

Worked steps

(a) yes **B1**. (b) no **B1**. (c) 95% **B1**.