

Exercise walk-through

Justifying a Claim Based on a Confidence Interval for a Population Proportion ■

6.3

eXercise

You must be able to

- use a confidence interval to judge whether a claimed value is **plausible**
- recognise that a value **inside** the interval is plausible and one **outside** is not supported
- state the meaning of the confidence level

Method — Using a confidence interval to judge a claim

A confidence interval gives the plausible values of p :

- if a claimed value is **inside** the interval, the claim is **plausible**;
- if it is **outside**, the data do **not support** that claim.

Method — Example

A 95% interval of (0.52, 0.58) does **not** contain 0.5, so “ $p = 0.5$ ” is not supported, but “a majority ($p > 0.5$)” is plausible.

Practice 2.1 ■ 1 mark

State how a confidence interval can be used to judge a claim.

Solution 2.1

Method: Using a confidence interval to judge a claim

Worked steps

a value inside the interval is plausible; a value outside is not supported by the data

B1.

Practice 2.2 ■ 1 mark

A 95% CI for p is $(0.45, 0.55)$. State whether the claim " $p = 0.5$ " is plausible.

Solution 2.2

Method: Using a confidence interval to judge a claim

Worked steps

yes, plausible (0.5 is inside the interval) **B1**.

Practice 2.3 ■ 1 mark

State what it means if a claimed value lies outside the interval.

Solution 2.3

Method: Using a confidence interval to judge a claim

Worked steps

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

Exam-style 3.1 ■ 1 mark

A claimed value that lies inside a confidence interval is

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

Solution 3.1

Method: Using a confidence interval to judge a claim

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

Worked steps

B.

Exam-style 3.2 ■ 1 mark

A 95% CI for p is $(0.60, 0.70)$. A claim that $p = 0.50$ is

- A** plausible
- B** not supported (it is outside the interval)
- C** certainly true
- D** unknown

Solution 3.2

- A** plausible
- B** not supported (it is outside the interval) 
- C** certainly true
- D** unknown

Worked steps

B.

Exam-style 3.3 ■ 1 mark

A 95% CI for the proportion supporting a policy is (0.52, 0.58).

- (a) State whether “a majority ($p > 0.5$) support it” is plausible.
- (b) State whether $p = 0.5$ is inside the interval.
- (c) State the confidence level.

Solution 3.3

Method: Using a confidence interval to judge a claim

Worked steps

(a) yes (the whole interval is above 0.5) **B1**. (b) no **B1**. (c) 95% **B1**.