

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

Name: _____ Class: _____ Date: _____ Total: 8 marks

KEY WORDS confidence interval 置信区间 • confidence level 置信水平

Objective

Build the skills to answer exam questions on **justifying a claim from a confidence interval for a proportion**.

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

1 Worked examples

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

■ 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.

■ 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.

2 Practice

2.1 State how a confidence interval can be used to judge a claim. [1]

2.2 A 95% CI for p is (0.45, 0.55). State whether the claim " $p = 0.5$ " is plausible. [1]

2.3 State what it means if a claimed value lies outside the interval. [1]

3 Exam-style questions

3.1 A claimed value that lies inside a confidence interval is [1]

- A

B

C

D

A rejected

B plausible

C impossible

D certainly correct

3.2 A 95% CI for p is (0.60, 0.70). A claim that $p = 0.50$ is [1]

- A

B

C

D

A plausible

B not supported (it is outside the interval)

C certainly true

D unknown

3.3 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. [1]

(b) State whether $p = 0.5$ is inside the interval. [1]

(c) State the confidence level. [1]