

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

Name: _____ Class: _____ Date: _____

Total: 8 marks

Objective

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

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

1 Worked examples

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

■ 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.

■ 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.

2 Practice

2.1 State how to judge a claim about μ using a confidence interval. [1]

2.2 A 95% CI for μ is (48, 52). State whether the claim " $\mu = 50$ " is plausible. [1]

2.3 State what a claimed μ outside the interval implies. [1]

3 Exam-style questions

3.1 A claimed mean that lies inside the confidence interval is [1]

- **A** rejected
 - **B** plausible
 - **C** impossible
 - **D** certainly correct
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3.2 A 95% CI for μ is $(60, 70)$. The claim " $\mu = 55$ " is [1]

- **A** plausible
 - **B** not supported
 - **C** certainly true
 - **D** unknown
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3.3 A 95% CI for the mean is $(10.2, 11.8)$.

(a) State whether " $\mu = 11$ " is plausible. [1]

(b) State whether " $\mu = 12$ " is plausible. [1]

(c) State the confidence level. [1]

4 Go further

- work through the **7.3 Justifying a Claim About a Population Mean** lesson on the **Learn** page;
- read the **Inference for Quantitative Data: Means** section of the AP Statistics handout on the **Know** page.

Solutions

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

2.2 yes, plausible (50 is inside).

2.3 the data do not support that claim.

3.1 B.

3.2 B.

3.3 (a) yes. (b) no. (c) 95%.