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JC MATHEMATICS (H2) STUDY TIPS

**THREE CRITICAL STEPS IN
MASTERING HYPOTHESIS
TESTING WHEN THE
CONCLUSION IS KNOWN**

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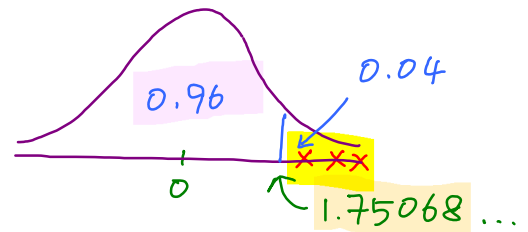
JC_H2Maths_038



Reject H_0 when $\frac{\bar{x} - 94.3}{8.2/\sqrt{40}} > 1.75068 \dots$

$$\bar{x} - 94.3 > 2.26982 \dots$$

$$\bar{x} > 96.56982 \dots$$



$$\Rightarrow \left\{ \bar{x}: \bar{x} \in \mathbb{R}^+, \bar{x} \geq 96.6 \right\} \quad (3sf)$$

↑
Round up

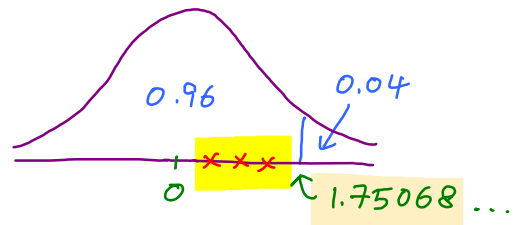
(iii) Given: $\bar{x} = 95.8$ and H_0 is not rejected when

$$\frac{95.8 - 94.3}{8.2/\sqrt{n}} < 1.75068 \dots$$

$$\sqrt{n} < \left(\frac{8.2}{1.5} \right) (1.75068 \dots)$$

$$\sqrt{n} < 9.57041 \dots$$

$$n < 91.59288 \dots$$



Round down
↓

$$\therefore \left\{ n: n \in \mathbb{Z}^+, n \leq 91 \right\}$$



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Explanation

When tackling hypothesis testing questions where the final conclusion is already provided, you can systematically find the unknown value by following three essential steps.

First, set up the standardized test statistic by using the given sample data and the null hypothesis parameters.

Second, determine the exact critical value from the given significance level or confidence level to map out the boundaries of the rejection region on the distribution curve.

Finally, formulate a logical inequality that directly connects your test statistic to the critical value based on the final conclusion.

For example, if the null hypothesis is not rejected, you place the test statistic outside the rejection region, allowing you to systematically solve the expression to isolate the unknown variable.

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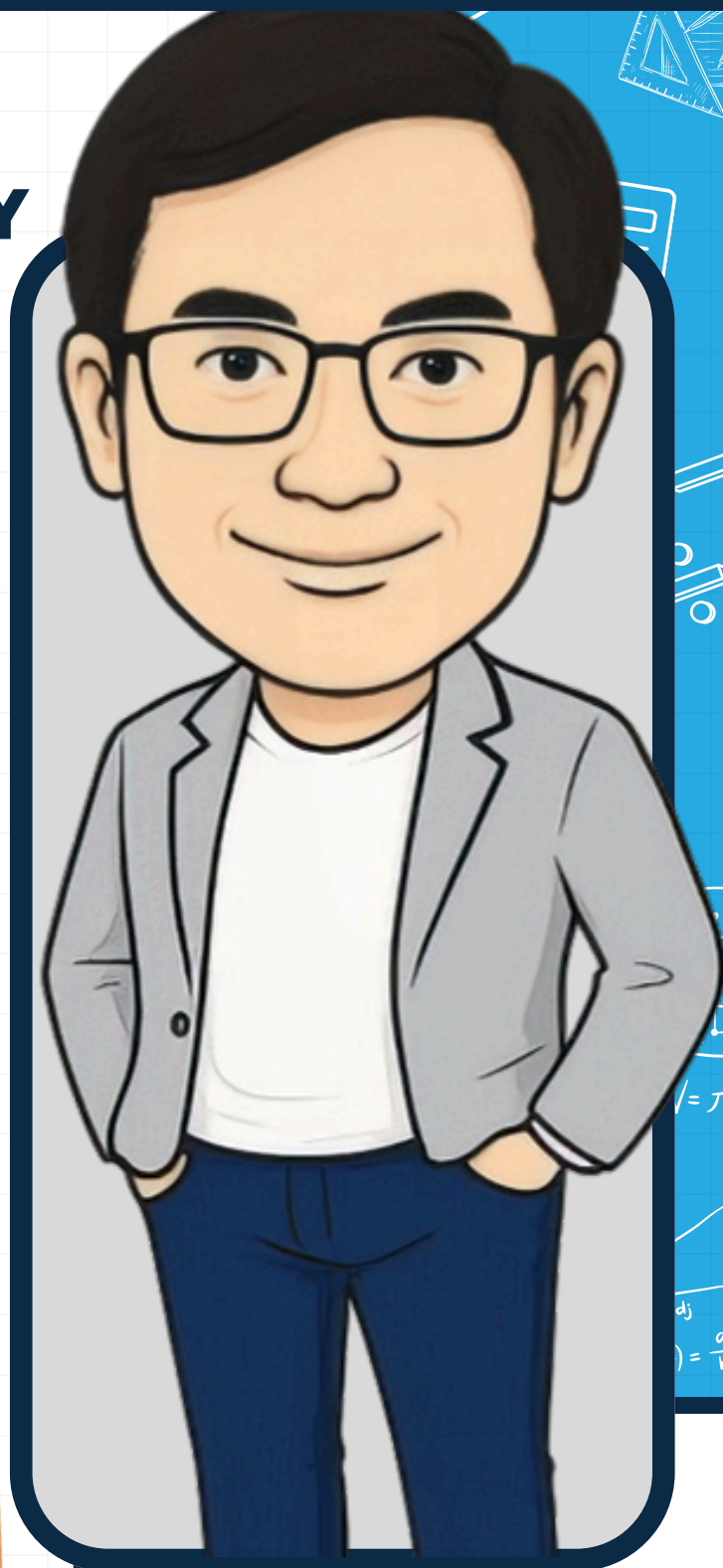
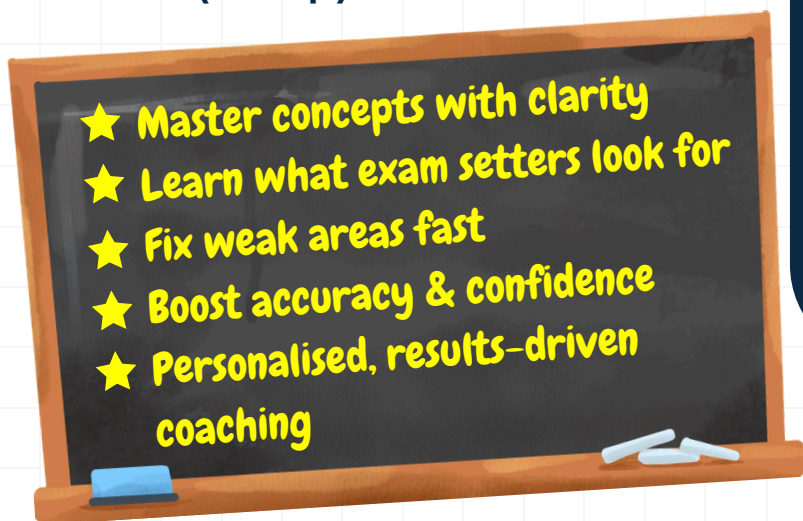
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