

SAMPLE PAPER 4: PAPER 2

QUESTION 8 (35 MARKS)

Question 8 (a)

$$n = 250: \text{Margin of error} = \pm \frac{1}{\sqrt{n}} = \pm \frac{1}{\sqrt{250}} = \pm 0.063 = \pm 6.3\%$$

Question 8 (b)

$$n = 500: \text{Margin of error} = \pm \frac{1}{\sqrt{n}} = \pm \frac{1}{\sqrt{500}} = \pm 0.045 = \pm 4.5\%$$

As can be seen from the calculation, doubling the sample size to 500 does not cause the margin of error to be halved.

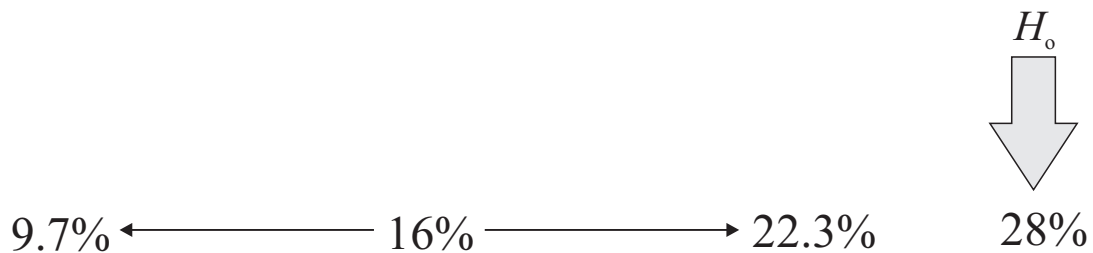
Question 8 (c)

Claim (H_0): 28% of second level students in Ireland are 180 cm or taller.

$$\text{Proportion of those in the sample who are 178 cm or taller} = \frac{40}{250} = 0.16 = 16\%$$

Test (using the sample proportion): 9.7% \leftarrow 16% \rightarrow 22.3%

Since 28% is outside this interval, reject the null hypothesis where the teacher claims that 28% of second level students in Ireland are 180 cm or taller.



Question 8 (d)

The population is the entire group under investigation.

The sample is a group chosen to test the claim.

Population: All second level students in Ireland.

Sample: 250 students from our school.
