NCEA Level 3 · AS 91584: Evaluating Statistical Reports

Name: _____ Date: _____

Reports turn a sample into a claim about a population. This sheet practises the 1/√n rules of thumb, then asks you to judge how far a claim can be trusted. All contexts are invented. Write every interval in full and interpret it in context.

Revision summary

- One proportion: margin of error ≈ 1/√n.
- Difference within one group or poll: margin of error ≈ 2 × 1/√n.
- Difference between two independent groups: margin of error ≈ 1.5 × the average of the two margins.
- The rules suit random samples with proportions from about 30% to 70%.
- A margin of error covers sampling variation only. It does not cover bias, non-response or question wording.
- Compare groups with one interval for the difference, not by checking whether two intervals overlap.
- An interval all above or all below zero supports a claim of a difference. Zero inside it means no claim either way.
- Interpret first: name the population, the variable and the parameter. Make any claim separately.
- A claim about cause needs a randomised experiment.

Key skills

1. A random poll surveys 1600 voters. Find the margin of error.

2. A random poll of 400 people finds 46% support a policy. Form the interval.

3. A cycling club emails its members to ask whether the town wants a new cycleway. Name the main problem with this sample.

4. Name two things a margin of error does not cover.

Achieved

5. A random sample of 900 residents finds 54% support a new library. Form the interval.

6. Interpret the interval from question 5.

7. In the same poll, 54% prefer site A and 38% prefer site B. Find an interval for the difference.

8. A headline says, "Coffee drinkers live longer", based on a survey of adults' habits. Why can it not show that coffee causes longer life?

Merit

9. Town A: n = 625, 52% support a plan. Town B: n = 400, 44% support it. Find an interval for the difference and make a claim.

10. A student says the Town A and Town B intervals overlap, so the towns cannot differ. Explain the error.

11. In a study, 200 students are randomly allocated to use a revision app or to revise as usual. Why does random allocation matter, and why is the second group needed?

Excellence

12. A random sample of 1000 finds 4% of people own an electric bike. Can the $1/\sqrt{n}$ rule be used? Explain.

13. A website poll gets 10 000 votes, with 62% in favour, and reports a margin of error of 1%. Critique this.

14. A random poll of 2500 finds Party A on 48% and Party B on 44%. The report says Party A leads. Evaluate the claim.