

6 Confidence intervals – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English

Write it 3 times (English)

confidence interval

Recall

You use a sample to estimate something about a population:

- A poll estimates the fraction of people who support an idea.
- But the estimate is not exact – how sure can we be?

This sheet introduces confidence intervals. Each idea has a worked example.

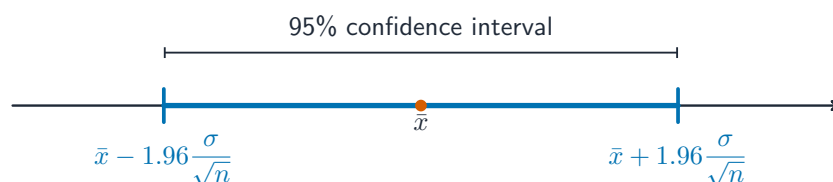
New ideas

■ 1 A range, not a single number

Because a sample estimate varies, we give a **range** likely to contain the true value, not just one number.

■ 2 The confidence interval

A **confidence interval** is an estimate plus-or-minus a margin of error: “the true value is probably in this range”.



Worked example. A poll finds 60% support with a margin of error of $\pm 3\%$, giving a confidence interval of 57% to 63%.

■ 3 Confidence level

A 95% **confidence level** means the method captures the true value 95% of the time it is used – we are 95% confident the range is right.

■ 4 Wider or narrower

A larger sample gives a **smaller** margin of error (a narrower, more precise interval); a higher confidence level gives a **wider** one.

Watch out: the confidence interval estimates the **population** value, not a single person. And "95% confident" refers to the method's long-run success rate, not a probability about this one interval.

Practice

Try these in order. The methods are all above.

2.1 State why we give a range instead of a single estimate. [2]

2.2 A poll finds 45% with a margin of error of $\pm 4\%$. State the confidence interval. [2]

2.3 A poll finds 70% with a margin of error of $\pm 2\%$. State the confidence interval. [2]

2.4 State what a larger sample does to the margin of error. [1]

2.5 State what a "95% confidence level" means. [2]
