

Section 1: Using the Normal distribution

Crucial points

1. Make sure you know the distribution of the sample means

Given a population with a mean of μ and a standard deviation of σ , the distribution

of sample means has a mean of μ and a standard deviation of $\frac{\sigma}{\sqrt{n}}$, where *n* is the

sample size.

2. Remember what assumptions you are making

You need to assume that the underlying distribution has a Normal distribution. Given a population *X* with a mean of μ and a standard deviation of σ , so that

$$X \sim N(\mu, \sigma^2)$$
, the distribution of sample means is $\overline{X} \sim N\left(\mu, \frac{\sigma^2}{n}\right)$

3. Write down clear probability statements You are more likely to receive method marks if your statements are easy to read.

4. Make sure you write down hypotheses correctly

Make sure you know whether you are using a one-tail test or a two-tail test. Always write down your hypotheses using symbols in terms of μ , and remember to state that μ is the true population mean (there is often a mark awarded specifically for this).

5. Be sure to interpret the result of the test correctly

Make sure you know whether you are looking at the left-hand tail or the righthand tail, so that you can draw the correct conclusion. A sketch diagram is helpful.

6. Remember to state the result of the test in words

It is not enough to state "accept H_0 " or "reject H_0 " (although you must do this!) – you must also give the result in plain English, using words such as "the evidence suggests…" or "there is not sufficient evidence to suggest that…" – never "This proves that…"!

