**AS 2.9 Inference Checklist**

**Problem/Question**Formed a Comparative Research Question  
- Variables defined with units  
- Population defined (and any assumptions)  
- Groups are defined.  
- Parameter is defined (eg. median)  
- An indication of what you think the result will be, eg 'taller, greater, less, larger'  
A prediction is made: ‘I think that...’  
Reason why making your prediction: Why ‘I think that...’

**Plan**Use excel to do a simple random sample and make a new spreadsheet with the sample (saved)  
Use iNZight to analyse and display and put on informal confidence interval bars (save the display image)

**Data**  
Did you have to ‘clean’ the data’ (discuss)  
Comment on the sampling method,   
Comment on the **effect** of sample size. (eg. How sample size could affect results, what happens if sample is too small, why you had to limit how big your sample was…)

**Analysis**  
Discussion of sample statistics comparing two samples.  
Discussion of each boxplot/dotplot ‘outliers & extreme values’  
Discussion of boxplots ‘shift & overlap & middle 50%’  
Discussion of each boxplot/dotplot ‘distribution, groups, cluster, gaps, symmetry, skew’ and possible causes  
Discussion of what each informal confidence interval means (in context & referring back to the population and how sure you are)  
Discussion of informal confidence interval overlap / or not (in context & referring back to the population and how sure you are)

In discussing the sample distributions, the discussion must be about the distributions of the **variables**, for example the heights of NZ year 12 boys and NZ year girls.

The **discussion needs be in context at all levels**. The context includes the variable, for example height, numerical values and associated units and the population groups.

Discussion of the difference in the medians with contextual links back to the population and an indication of uncertainty, 'I can be reasonably sure that...'

Be sure to be clear **when you are discussing the sample and when you are discussing the population** estimate.

**Conclusion**  
Answer your research question by referring to your graphs, analysis and informal confidence interval.   
Discuss errors, bias, omissions, improvements, further research...

You **must make an inference**, which will be a conclusion about the population medians based on their samples taken from the population.

Your conclusion will answer the posed investigative question and will involve making a call about the population medians.

The informal confidence intervals will be used to make an inference about the population medians.

Discuss sampling variability, including the variability of the population estimates.  
An **understanding relating to sampling variability and variability of estimates must be evident**. Another sample will give different medians and informal confidence intervals.