



State your null and alternative hypotheses.

Write down whether this is a one-tailed test or a two-tailed test.

Perform a t -test at the 5% significance level.

Write down the conclusion to the test.

Chapter summary



- The product moment correlation coefficient of the ranks of a set of data is called Spearman's rank correlation coefficient. The IB notation is r_s .
- A value of 1 means the set of data is strictly increasing and a value of -1 means it is strictly decreasing. A value of 0 means the data shows no monotonic behaviour.
- The advantages of Spearman's over the PMCC are:
 - It can be used on data that is not linear.
 - It can be used on data that has been ranked even if the original data is unknown or cannot be quantified.
 - It is not greatly affected by outliers.
- A χ^2 test for independence can be performed to find out whether two data sets are independent of each other or not. It can be performed at various significance levels. In the examination it will only be tested at the 1%, 5% or 10% significance level.
- The number of degrees of freedom is $\nu = (\text{rows} - 1)(\text{columns} - 1)$.
- Expected values must be greater than 5. If there are expected values less than 5 then you will need to combine rows or columns.
- The formula for the χ^2 test is $\chi^2 = \sum \frac{(f_o - f_e)^2}{f_e}$ where f_o are the observed values and f_e are the expected values.
- If the p -value is greater than the significance level (0.01, 0.05 or 0.10) then you accept the null hypothesis; if it is less than the significance level then you do not accept the null hypothesis.
- If the χ^2 test statistic is less than the critical value then you accept the null hypothesis; if it is greater than the critical value then you do not accept the null hypothesis.
- In a χ^2 goodness of fit test, $\nu = (n - 1)$.
- The t -test is used for two data sets that are measuring the same thing, and only applies to normally distributed data.

Developing inquiry skills

Thinking about the opening problem:

- Discuss how what you have learned in this chapter has helped you to answer the questions.
- Discuss how you decided whether the data was biased or not.
- Write down which statistical tests you were able to use from this chapter.
- State what claims you can make about the trees.
- Discuss what information you managed to find.



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