



QUESTION WORKBOOK

Testing a correlation coefficient

Further Statistics 2 · Year FM

7 questions · 29 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

- A1** Write down the hypotheses for a one-tailed test of positive product moment correlation, and say why r must not appear in them. [3]

- A2** A sample of 12 pairs gives $r = 0.62$. The 5% one-tailed critical value is 0.4973. Carry out the test. [3]

SECTION B · Standard

- B1** A sample of 8 pairs gives $r = 0.65$. Test at the 5% level whether there is any correlation, given that the critical value for 2.5% in one tail with $n = 8$ is 0.7067. [4]

- B2** Ten judges' rankings give $r_s = 0.62$. The 5% one-tailed Spearman critical value for $n = 10$ is 0.5636. Test for positive agreement and state the advantage of this test over the product moment one. [4]

- B3** State the condition the product moment test requires of the data, and what should be said about it in an answer. [3]

- B4** A coefficient of $r = 0.35$ is obtained. The 5% one-tailed critical values are 0.5494 for $n = 10$ and 0.3061 for $n = 30$. Explain what this shows about interpreting a coefficient on its own. [4]

SECTION C · Stretch

- C1** Two judges rank eight cakes. The first judge's ranks are 1 to 8 in order, and the second judge ranks the same cakes 3, 1, 2, 5, 4, 7, 6, 8. Calculate Spearman's rank correlation coefficient and test at the 5% level whether the judges agree. The 5% one-tailed critical value for $n = 8$ is 0.6429. [8]