



QUESTION WORKBOOK

Correlation coefficients: product moment and Spearman

Further Statistics 2 · Year FM

6 questions · 22 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

A1 State what the product moment correlation coefficient measures and the range of values it can take. [2]

A2 A data set gives $S_{xx} = 40$, $S_{xy} = 58$ and $S_{yy} = 86$. Find r and interpret it. [3]

SECTION B · Standard

B1 Each x value is coded as $u = (x - 20)/5$ and each y as $v = (y - 100)/10$. Explain the effect on r , and on the gradient of the regression line of y on x . [4]

- B2** Two coaches rank seven players. Coach A gives 1 to 7 in order; coach B gives 1, 3, 2, 5, 4, 7, 6. Calculate Spearman's rank correlation coefficient. [4]

- B3** Six items are ranked, and two of them tie for third place. Explain how the ranks are assigned, and calculate r_s if the resulting $\sum d^2$ is 8. [3]

SECTION C · Stretch

- C1** A colony is counted at six equally spaced times. The counts, in order, are 2, 3, 5, 9, 17 and 33, at times 1, 2, 3, 4, 5 and 6. Calculate the product moment correlation coefficient and Spearman's rank correlation coefficient, and explain why they differ so much. [6]