



QUESTION WORKBOOK

Correlation and regression

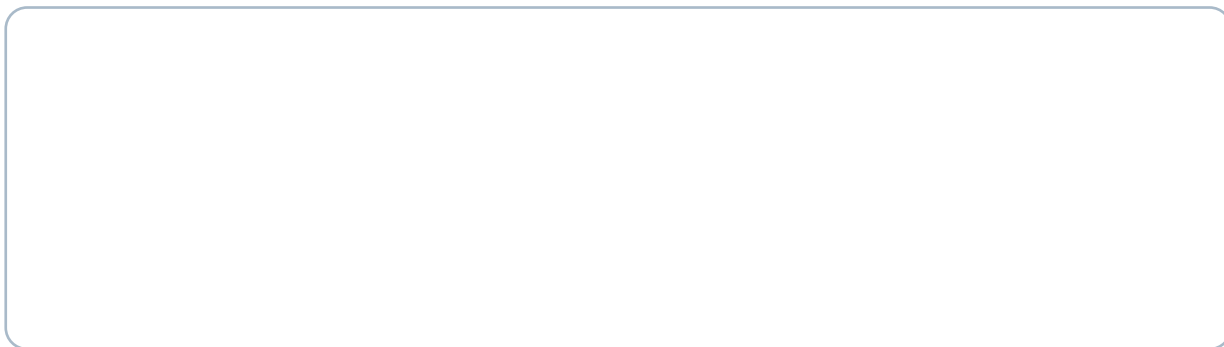
Statistics · Year 12–13

7 questions · 19 marks

PRINT EDITION

SECTION A · Warm-up

- A1** A scatter diagram gives a product moment correlation coefficient of $r = -0.9$. Describe the correlation, and sketch the diagram. [2]



- A2** A regression line for exam mark y against revision hours x is $y = 3.5 + 0.6x$. Interpret the numbers 3.5 and 0.6 in context. [2]

SECTION B · Standard

- B1** A regression line for exam mark y against revision hours x is $y = 3.5 + 0.6x$. Predict the mark of a student who revised for 10 hours, given that the data covered 2 to 15 hours. [2]

- B2** A teacher uses the line $y = 3.5 + 0.6x$, fitted to revision hours from 2 to 15, to predict the mark after 40 hours of revision. Comment on the prediction. [3]

- B3** Ice cream sales and drowning incidents are strongly positively correlated across the months of a year. Explain what this does and does not show. [3]

- B4** A coefficient of $r = 0.05$ is reported for a large scatter of points. State what this value says. [2]

SECTION C · Stretch

- c1** The number of bacteria v in a culture after t hours is modelled by $v = ab^t$, where a and b are constants. The regression line of $\log_{10}v$ on t is $\log_{10}v = 0.8 + 0.12t$. Find the values of a and b , and estimate v when $t = 5$. [5]