



QUESTION WORKBOOK

Conditional probability

Statistics · Year 12–13

6 questions · 20 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

- A1** $P(A \cap B) = 0.18$ and $P(B) = 0.6$. Find $P(A|B)$, and state what $P(A)$ would have to equal for A and B to be independent. [2]

SECTION B · Standard

- B1** A bag holds 4 red and 3 blue counters. Two are drawn without replacement. Find the probability that the second counter is blue, and the probability that both are red. [4]

- B2** For the same bag, find the probability that the first counter was red, given that the second is blue. [4]

- B3** Of 100 gym members, 60 are adults and 40 are juniors. 45 adults and 10 juniors attend classes. Find $P(\text{attends} \mid \text{adult})$ and $P(\text{adult} \mid \text{attends})$. [4]

SECTION C · Stretch

- C1** Express independence as a statement about conditional probability, and explain why the statement captures the idea. [3]

- C2** A test for a rare condition is 99% accurate, and a patient reasons that a positive result means a 99% chance of having the condition. Using the ideas of this lesson, explain the error. [3]