



QUESTION WORKBOOK

The continuous uniform distribution

Further Statistics 2 · Year FM

6 questions · 20 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

- A1** Write down the density and the cumulative distribution function of the continuous uniform distribution on the interval a to b . [2]

- A2** X follows $U(5, 17)$. Find the mean, the variance and the standard deviation. [3]

SECTION B · Standard

- B1** For the same X , find $P(X \leq 8)$, $P(9 \leq X \leq 15)$ and $P(X > 14 \text{ given } X > 11)$. [4]

- B2** Readings are rounded to the nearest 10 units. State the distribution of the rounding error, find its standard deviation, and find the probability that it exceeds 4 units in size. [4]

- B3** Buses leave every 15 minutes and a passenger arrives at a random time. Find the expected wait and the probability of waiting more than 10 minutes. [3]

SECTION C · Stretch

- C1** For X following $U(a, b)$, derive the cumulative distribution function and the mean by integration. [4]