



QUESTION WORKBOOK

The normal distribution

Statistics · Year 12–13

6 questions · 20 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

- A1** Sketch the shape of a normal distribution in words: state its symmetry, and roughly what proportion of values fall within one and within two standard deviations of the mean. [2]

- A2** $X \sim N(60, 5^2)$. Find $P(X \leq 70)$ to 3 significant figures. [3]

SECTION B · Standard

- B1** Masses are modelled by $X \sim N(60, 10^2)$ grams. Find the probability that a mass exceeds 75 g, to 3 significant figures. [4]

B2 $X \sim N(40, \sigma^2)$ and $P(X > 46) = 0.05$. Find σ to 3 significant figures. [4]

B3 $X \sim N(\mu, 4^2)$ and $P(X < 50) = 0.975$. Use $z = 1.96$ to find μ . [4]

SECTION C · Stretch

C1 Two exam papers have marks distributed $N(60, 10^2)$ and $N(60, 5^2)$. A student scores 75 on the first and 69 on the second. Which performance is stronger, and why? [3]