



QUESTION WORKBOOK

The normal distribution

Statistics · Year 12–13

6 questions · 21 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

- A1** Describe 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. [3]

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

SECTION B · Standard

- B1** Masses are modelled by $X \sim N(60, 10^2)$ grams. Find $P(65 < X < 75)$ to 3 significant figures. [3]

- 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 . [3]

SECTION C · Stretch

C1 $X \sim N(\mu, \sigma^2)$, with $P(X < 20) = 0.10$ and $P(X > 35) = 0.05$. Find μ and σ . [6]