



ANSWER BOOK

Representing and interpreting data

Statistics · Year 12–13

7 questions · 20 marks

NAVY EDITION

SECTION A · Warm-up

- A1** Density = frequency/width = $30/5 = 6$. In a histogram the area carries the frequency, so the height must be frequency per unit of width.
- A2** Frequency = density $\times$ width = $1.5 \times 20 = 30$. A low, wide bar can hold as much frequency as a tall, narrow one: the area is the whole story, the height only half of it. [3]

SECTION B · Standard

- B1** The first bar's density is $40/20 = 2$, so the second bar's density is $2 \times 1.6 = 3.2$, and its frequency is $3.2 \times 5 = 16$. Heights compare densities, never frequencies: the second bar is taller yet holds under half the frequency, because it is only a quarter as wide. [4]
- B2** IQR = 16, so the fences sit at $20 - 24 = -4$ and $36 + 24 = 60$. The value 62 lies beyond the upper fence: outlier. The value 58 does not: large, but within bounds. The rule draws the line so that the same decision is made every time.
- B3** Positive skew: the lower half of the middle 50% is squashed and the upper half stretched, so values above the median straggle further than values below it. Most of the data sit low with a long tail of high values, incomes being the classic shape. [3]

SECTION C · Stretch

- C1** Route B is typically two minutes quicker, but far less predictable: its middle half spans 18 minutes against A's 6. A commuter who must arrive on time would sensibly prefer A's consistency over B's slightly better average. Both sentences need the context and the units; bare numbers earn little. [18]
- C2** Frequency is spread along each class's width, so a wide class dilutes its frequency into a lower bar. Height alone confuses concentration with quantity; area = density $\times$ width restores the actual count. [2]