

Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- running total
- **5, 13, 23, 30**

2.2

- at $\frac{80}{2} = \mathbf{40}$

2.3

- at $\frac{80}{4} = \mathbf{20}$

3.1

(a)

- at $\frac{3}{4} \times 200 = \mathbf{150}$

(b)

- $\text{IQR} = 63 - 42 = \mathbf{21}$

3.2

- total frequency = **60**
- median is read at $\frac{60}{2} = \mathbf{30}$

3.3

(a)

- cumulative frequencies **6, 24, 54, 74, 80**
- points plotted at the **upper** class boundaries 10, 20, 30, 40, 50
- a smooth increasing curve through them

(b)

- median at the 40th value, about **27** minutes
- LQ at the 20th, about 18 min; UQ at the 60th, about 32 min
- $\text{IQR} \approx 32 - 18 = \mathbf{14}$ minutes

(c)

- reading up from 35 gives a cumulative frequency of about 64
- about $80 - 64 = \mathbf{16}$ students took longer

(d)

- the original data were **grouped**, so individual times are no longer known
- the curve assumes values are spread evenly within each class — every reading is an **estimate**