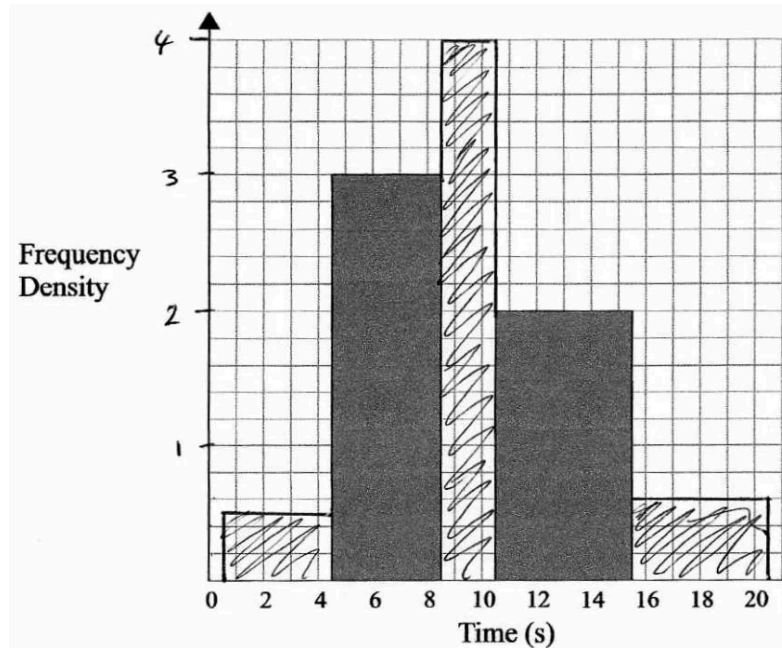


1

- (a) • The frequency for the 11–15 class is 10. (B1)
- (b) • Use frequency density = $\frac{\text{frequency}}{\text{class width}}$ to obtain densities 0.5, 4, and 0.6 for the missing classes. (M1)
- Draw the missing bars over the class boundaries 0.5–4.5, 8.5–10.5, and 15.5–20.5 with heights 0.5, 4, and 0.6 respectively. (A1)

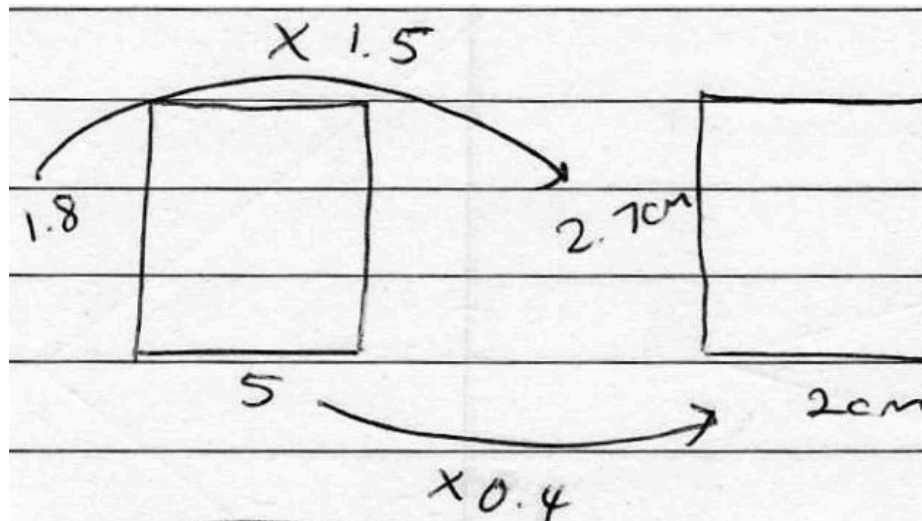


- (c) • Estimate the number completing the puzzle in under 10 seconds as $2 + 12 + \frac{3}{4}(8) = 20$. (M1)
- Probability = $\frac{20}{35} = \frac{4}{7}$. (A1)

(Total for question 1 is 5 marks)

2

- For the 9–13 class, use class width 5 and frequency density $\frac{9}{5} = 1.8$, giving scale factors $\times 0.4$ for width and $\times 1.5$ for height. (M1)

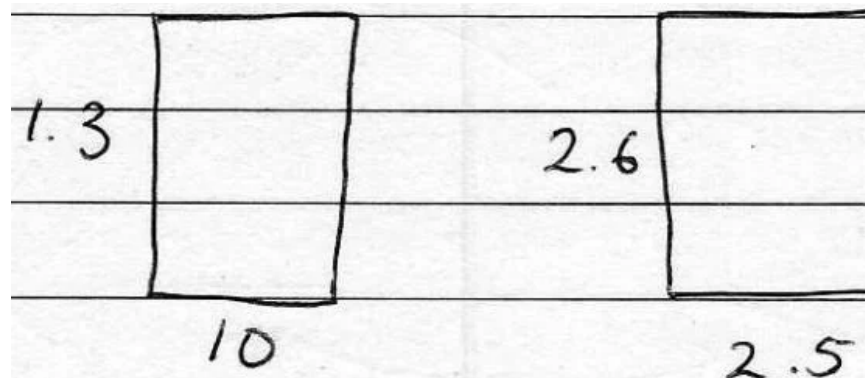


- The 14–20 class has width 7, so its bar width is $7 \times 0.4 = 2.8$ cm. (A1)
- Its frequency density is $\frac{14}{7} = 2$, so its bar height is $2 \times 1.5 = 3$ cm. (A1)

(Total for question 2 is 3 marks)

3

- (a)
- For the 10–19 class, use class width 10 and frequency density $\frac{13}{10} = 1.3$, giving scale factors $\times 0.25$ for width and $\times 2$ for height. (M1)



- The 20–24 class has width 5, so its bar width is $5 \times 0.25 = 1.25$ cm. (A1)
- Its frequency density is $\frac{7}{5} = 1.4$, so its bar height is $1.4 \times 2 = 2.8$ cm. (A1)

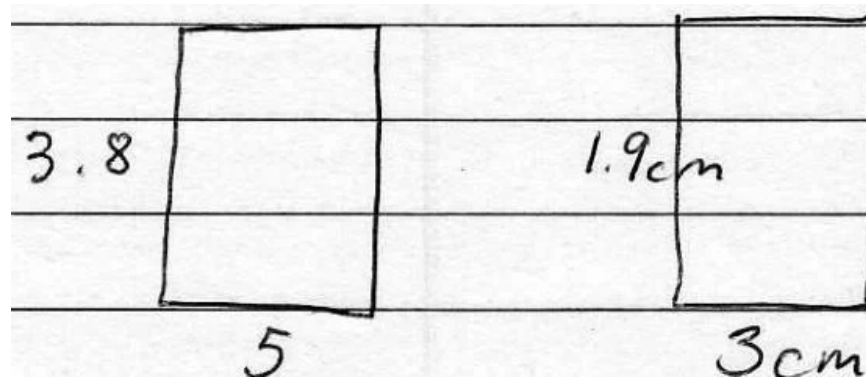
- (b)
- Use the scale factors $\times 0.25$ for width and $\times 2$ for height. (M1)
 - The 25–28 class has width 4, so its bar width is $4 \times 0.25 = 1$ cm. (A1)
 - Its frequency density is $\frac{15}{4} = 3.75$, so its bar height is $3.75 \times 2 = 7.5$ cm. (A1)

(Total for question 3 is 6 marks)

4

(a)

- For the 10–14 class, use class width 5 and frequency density $\frac{19}{5} = 3.8$, giving scale factors $\times 0.6$ for width and $\times 0.5$ for height. (M1)



- The 15–18 class has width 4, so its bar width is $4 \times 0.6 = 2.4$ cm. (A1)
 - Its frequency density is $\frac{41}{4} = 10.25$, so its bar height is $10.25 \times 0.5 = 5.125$ cm. (A1)
- (b)
- Use the scale factors $\times 0.6$ for width and $\times 0.5$ for height. (M1)
 - The 19–20 class has width 2, so its bar width is $2 \times 0.6 = 1.2$ cm. (A1)
 - Its frequency density is $\frac{26}{2} = 13$, so its bar height is $13 \times 0.5 = 6.5$ cm. (A1)

(Total for question 4 is 6 marks)