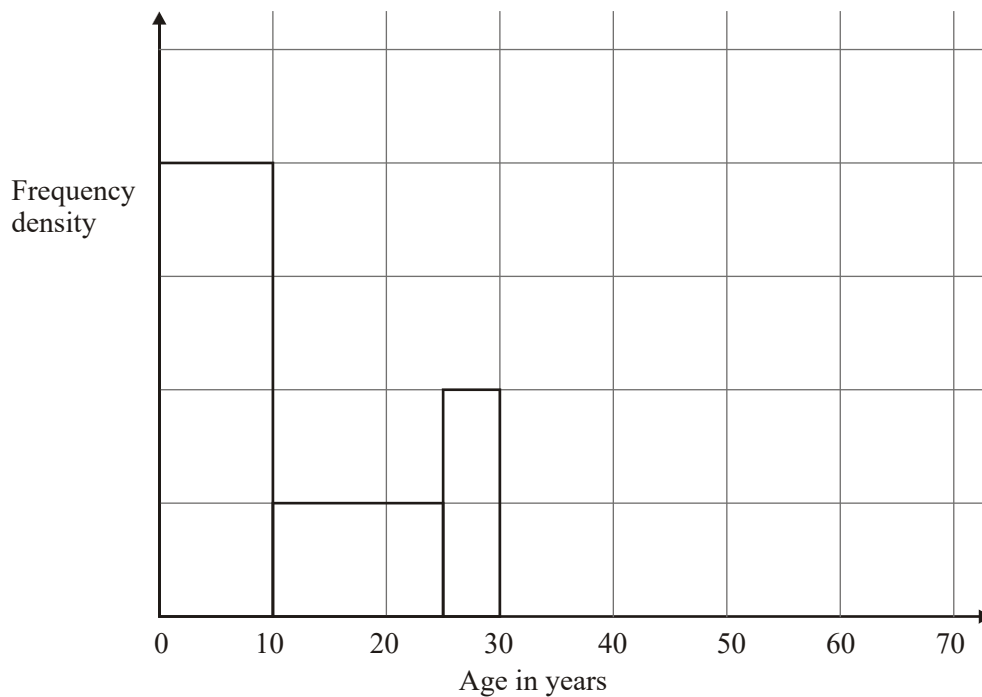1. The incomplete table and histogram give some information about the ages of the people who live in a village.

(a) Use the information in the histogram to complete the frequency table below.

| Age (x) in years	Frequency
$0 < x \leq 10$	160
$10 < x \leq 25$	
$25 < x \leq 30$	
$30 < x \leq 40$	100
$40 < x \leq 70$	120

(2)

(b) Complete the histogram.

(2)
(Total 4 marks)

2. One Monday, Victoria measured the time, in seconds, that individual birds spent on her bird table.

    She used this information to complete the frequency table.
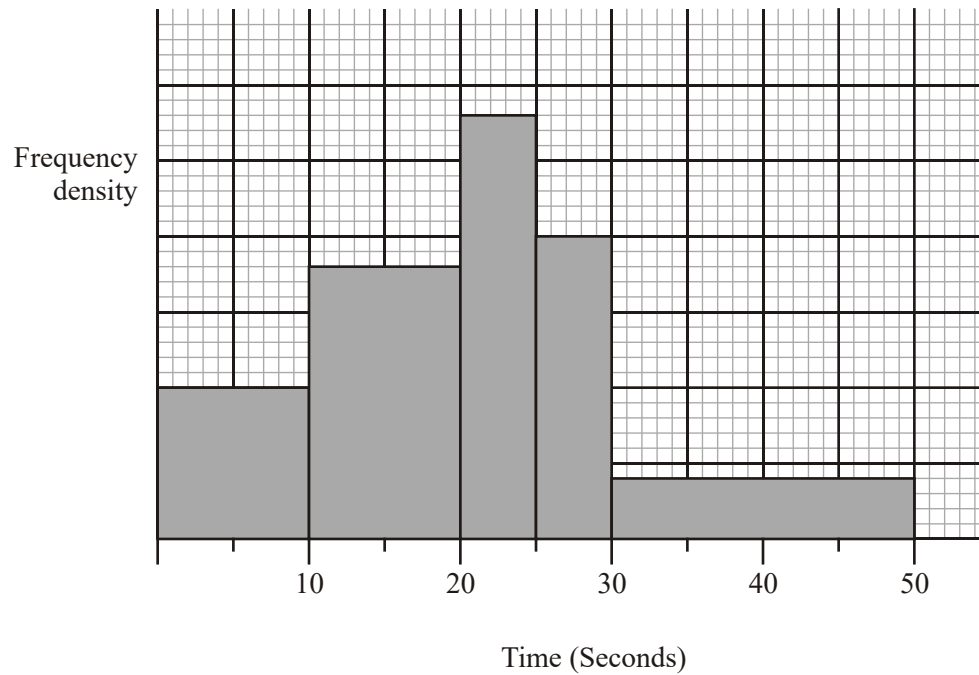
Time (t seconds)	Frequency
$0 < t \leq 10$	8
$10 < t \leq 20$	16
$20 < t \leq 25$	15
$25 < t \leq 30$	12
$30 < t \leq 50$	6

(a) Use the table to complete the histogram.
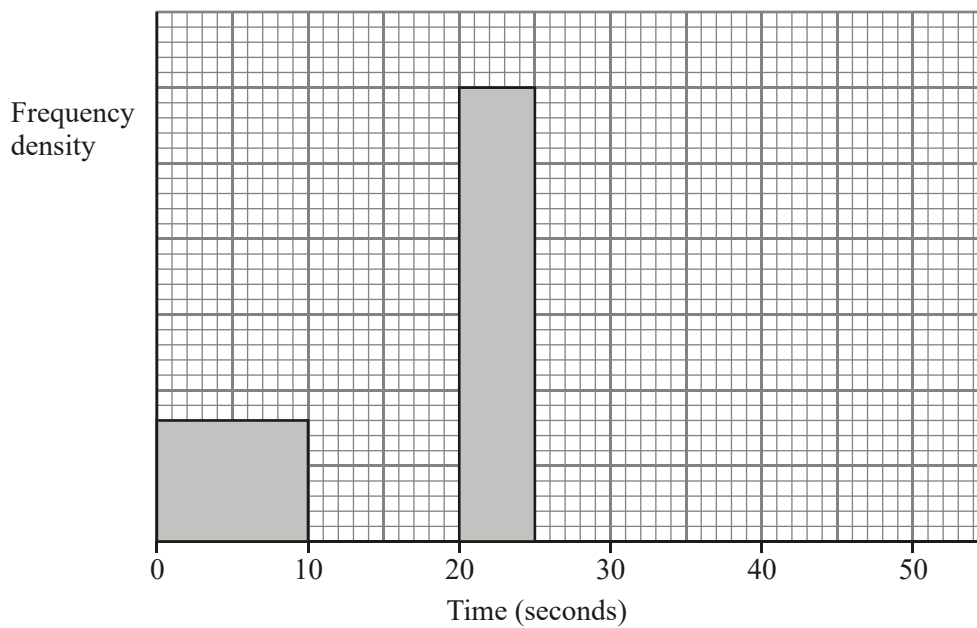
(3)

On Tuesday she conducted a similar survey and drew the following histogram from her results.

Time (Seconds)
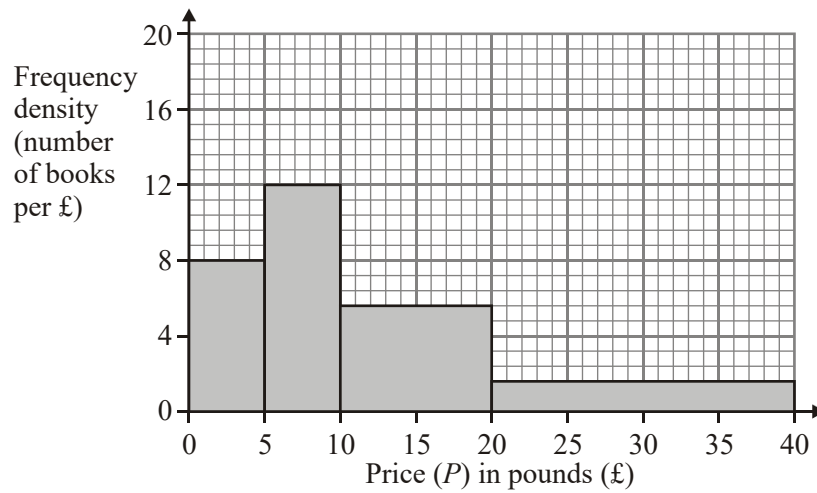
(b)   Use the histogram for Tuesday to complete the table.

Time (*t* seconds)	Frequency
$0 < t \le 10$	10
$10 < t \le 20$	
$20 < t \le 25$	
$25 < t \le 30$	
$30 < t \le 50$	

(2)
(Total 5 marks)

3. This histogram gives information about the books sold in a bookshop one Saturday.

(a) Use the histogram to complete the table.

Price (P) in pounds (£)	Frequency
$0 < P \leq 5$	
$5 < P \leq 10$	
$10 < P \leq 20$	
$20 < P \leq 40$	

(2)

The frequency table below gives information about the books sold in a second bookshop on the same Saturday.

Price (P) in pounds (£)	Frequency
$0 < P \leq 5$	80
$5 < P \leq 10$	20
$10 < P \leq 20$	24
$20 < P \leq 40$	96

(b)   On the grid below, draw a histogram to represent the information about the books sold in the second bookshop.

Price (P) in pounds (£)
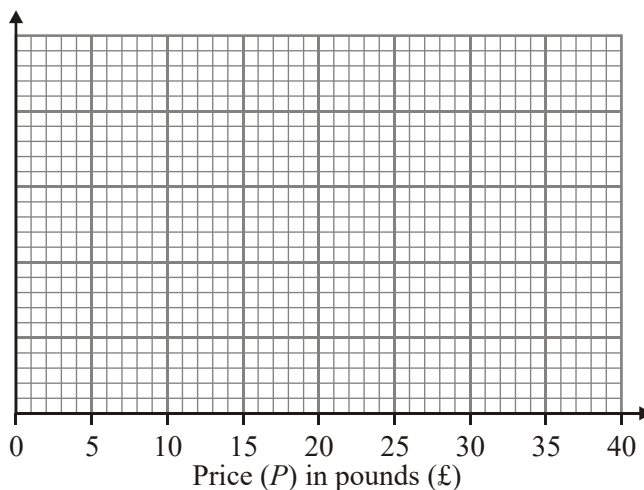
(3)
(Total 5 marks)

4.   The table and histogram show information about the length of time it took 165 adults to connect to the internet.

Time (t seconds)	Frequency
$0 < t \leq 10$	20
$10 < t \leq 15$	
$15 < t \leq 17.5$	30
$17.5 < t \leq 20$	40
$20 < t \leq 25$	
$25 < t \leq 40$	

None of the adults took more than 40 seconds to connect to the internet.

(a)   Use the table to complete the histogram.

(2)

(b)   Use the histogram to complete the table.

(2)

2003

Time (seconds)

2004
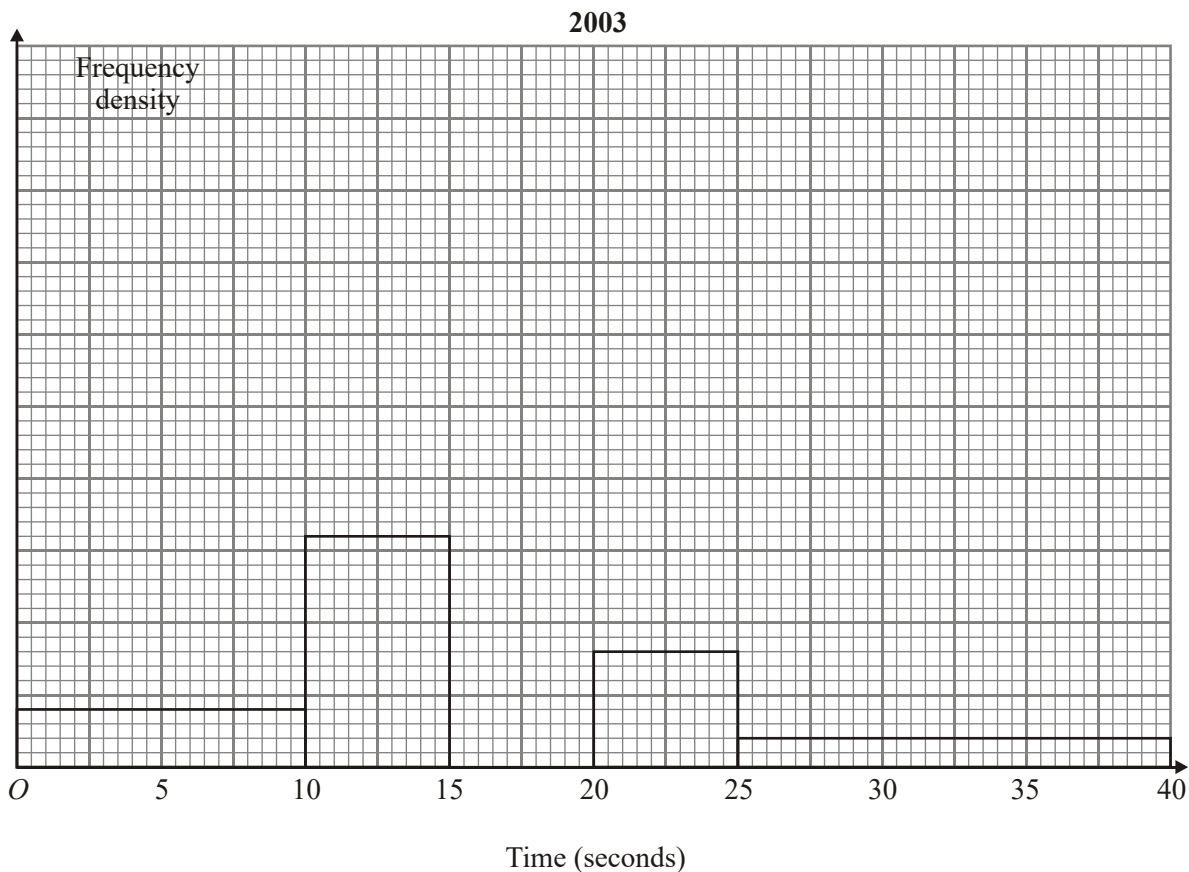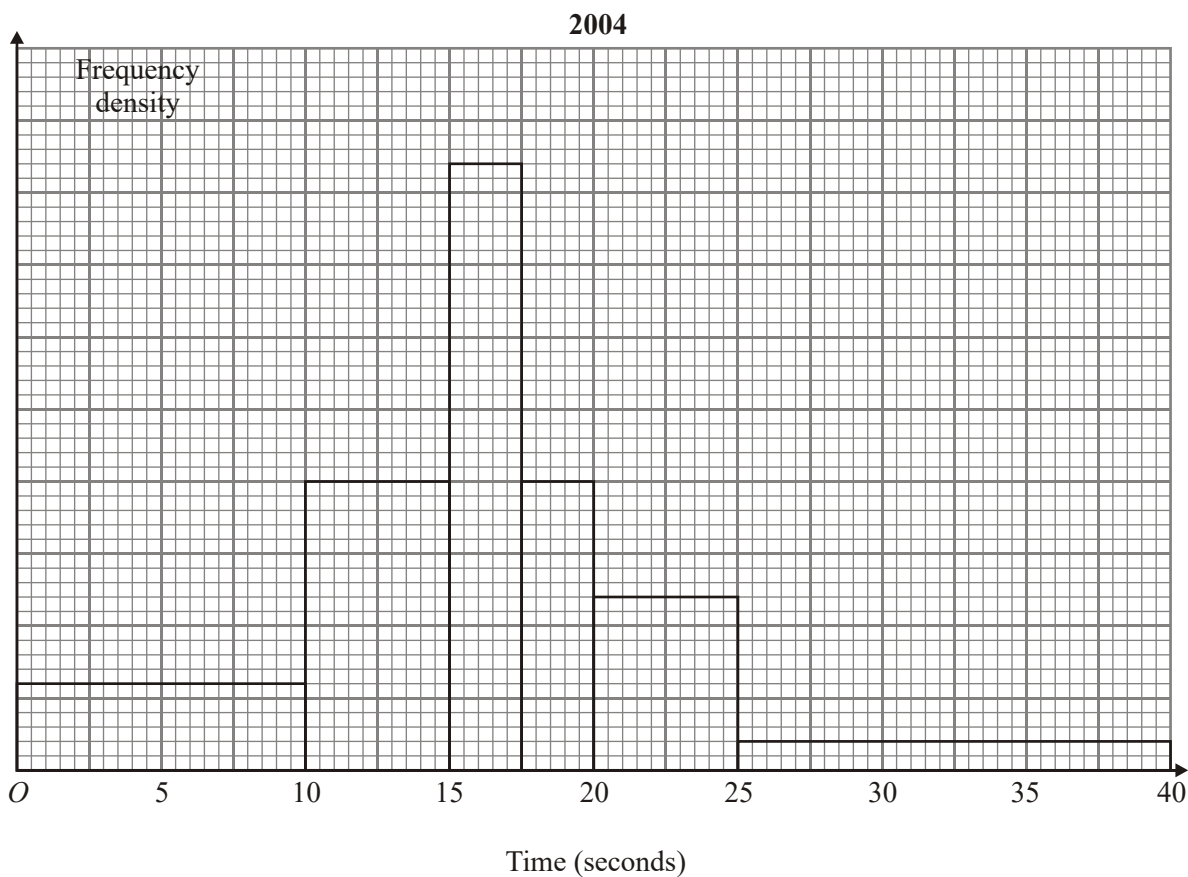
The histogram shows information about the time it took some children to connect to the internet.
None of the children took more than 40 seconds to connect to the internet.

110 children took up to 12.5 seconds to connect to the internet.

(c)   work out an estimate for the number of children who took 21 seconds or more to connect to the internet.

....

(3)
(Total 7 marks)

5. The table gives information about the heights, in centimetres, of some 15 year old students.

Height (h cm)	$145 < h \leq 155$	$155 < h \leq 175$	$175 < h \leq 190$
Frequency	10	80	24

Use the table to draw a histogram.

Height (h cm)
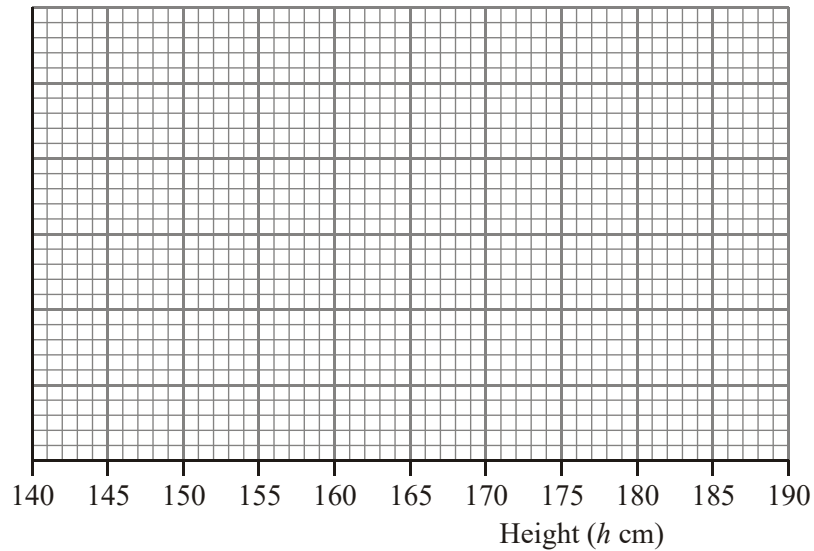
(Total 3 marks)

6.   A teacher asked some year 10 students how long they spent doing homework each night.
The histogram was drawn from this information.
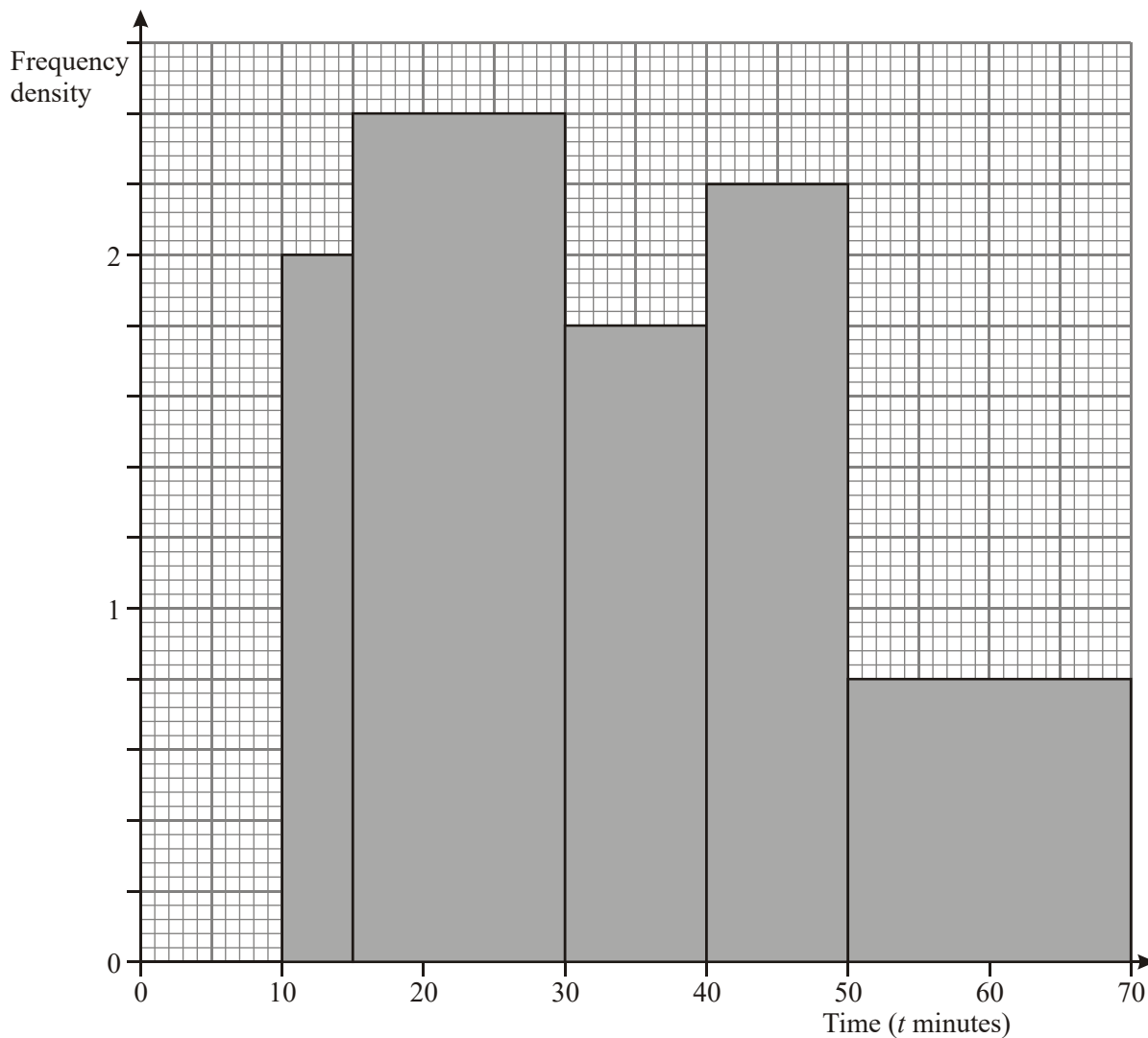
Use the histogram to complete the table.

Time (t minutes)	Frequency
$10 \leq t < 15$	10
$15 \leq t < 30$	
$30 \leq t < 40$	
$40 \leq t < 50$	
$50 \leq t < 70$	

(Total 2 marks)

7.   Some students at Highfliers School took a mathematics examination.
       The unfinished table and histogram show some information about their marks.

Mark ($x\%$)	Frequency
$0 < x \leq 40$	10
$40 < x \leq 60$	40
$60 < x \leq 75$	45
$75 < x \leq 85$	60
$85 < x \leq 95$	
$95 < x \leq 100$	25
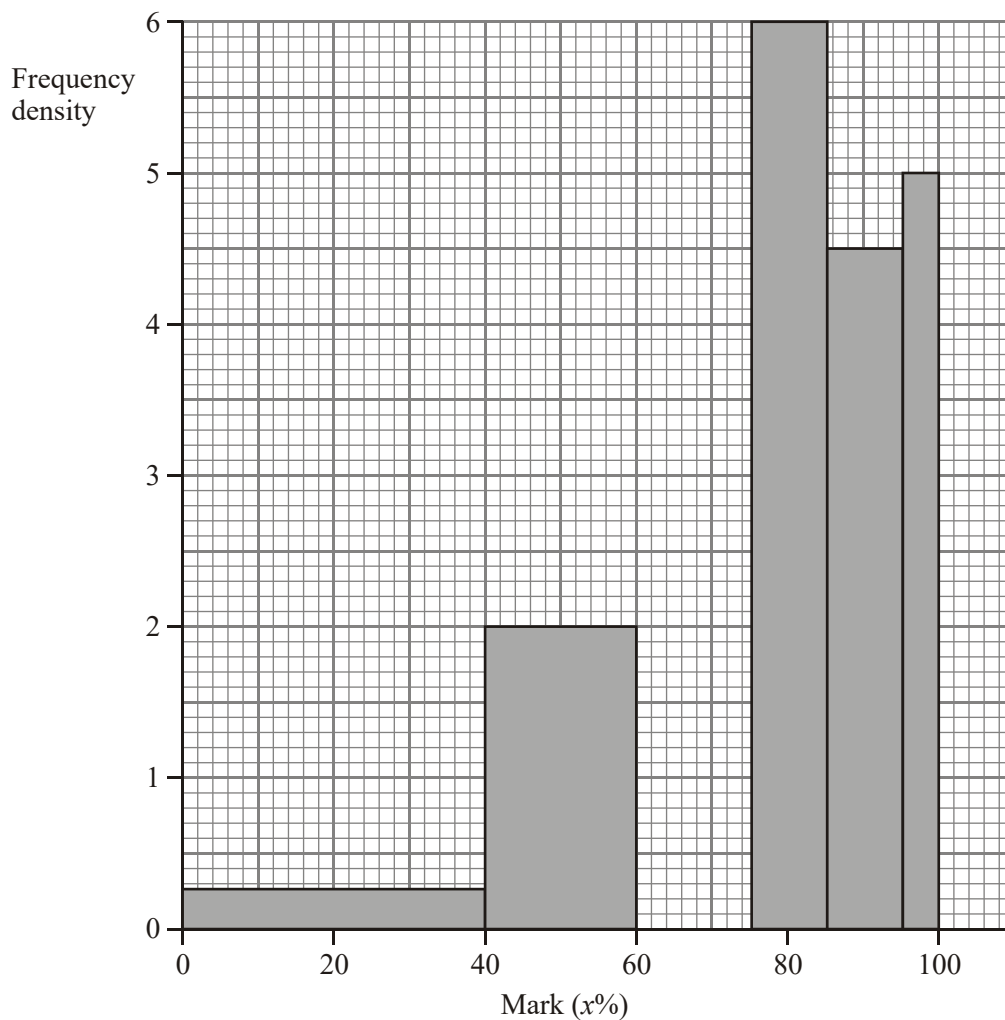
(a)   Use the information in the table to complete the histogram.

(1)

(b)   Use the information in the histogram to complete the table.

(1)
(Total 2 marks)

8.
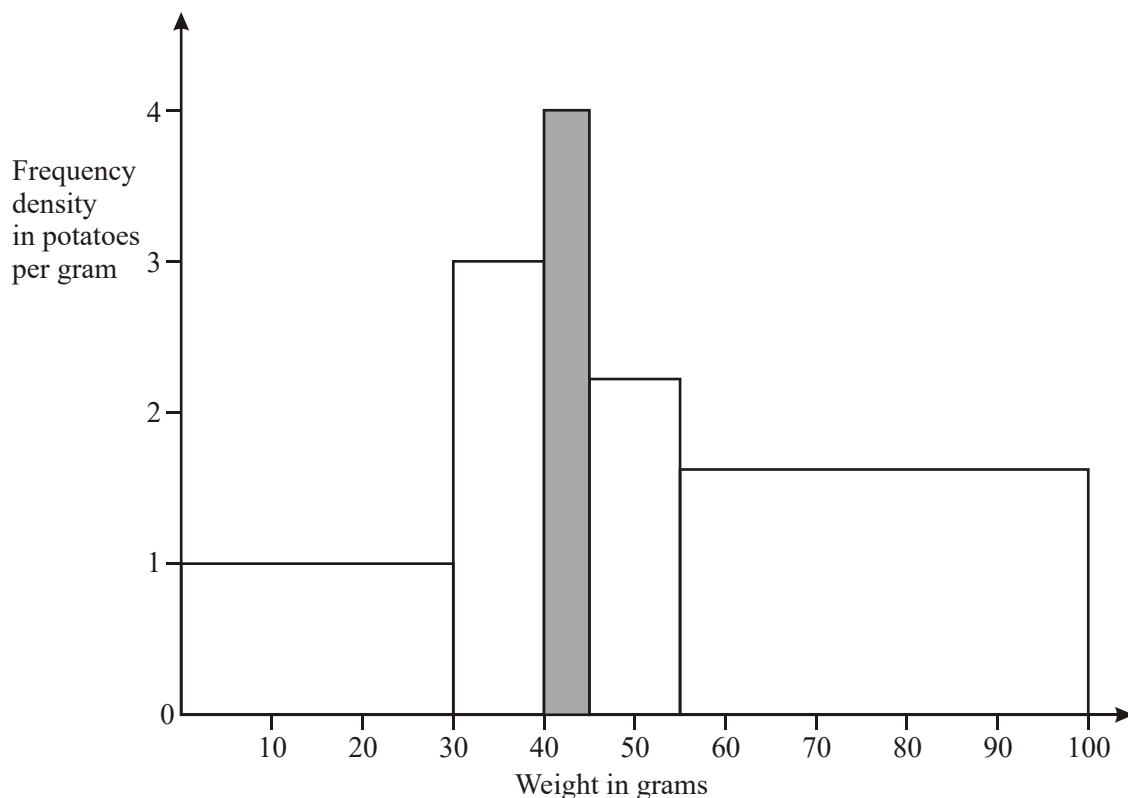
The histogram gives information about the weights of some potatoes.
The shaded bar represents 20 potatoes.

(a)   Work out how many of the potatoes weigh 30 grams or less.

....

(1)

(b)   Work out how many of the potatoes weigh more than 45 grams.

....

(2)
(Total 3 marks)

9. A teacher asked some students how much time they spent using a mobile phone one week.
The histogram was drawn from this information.
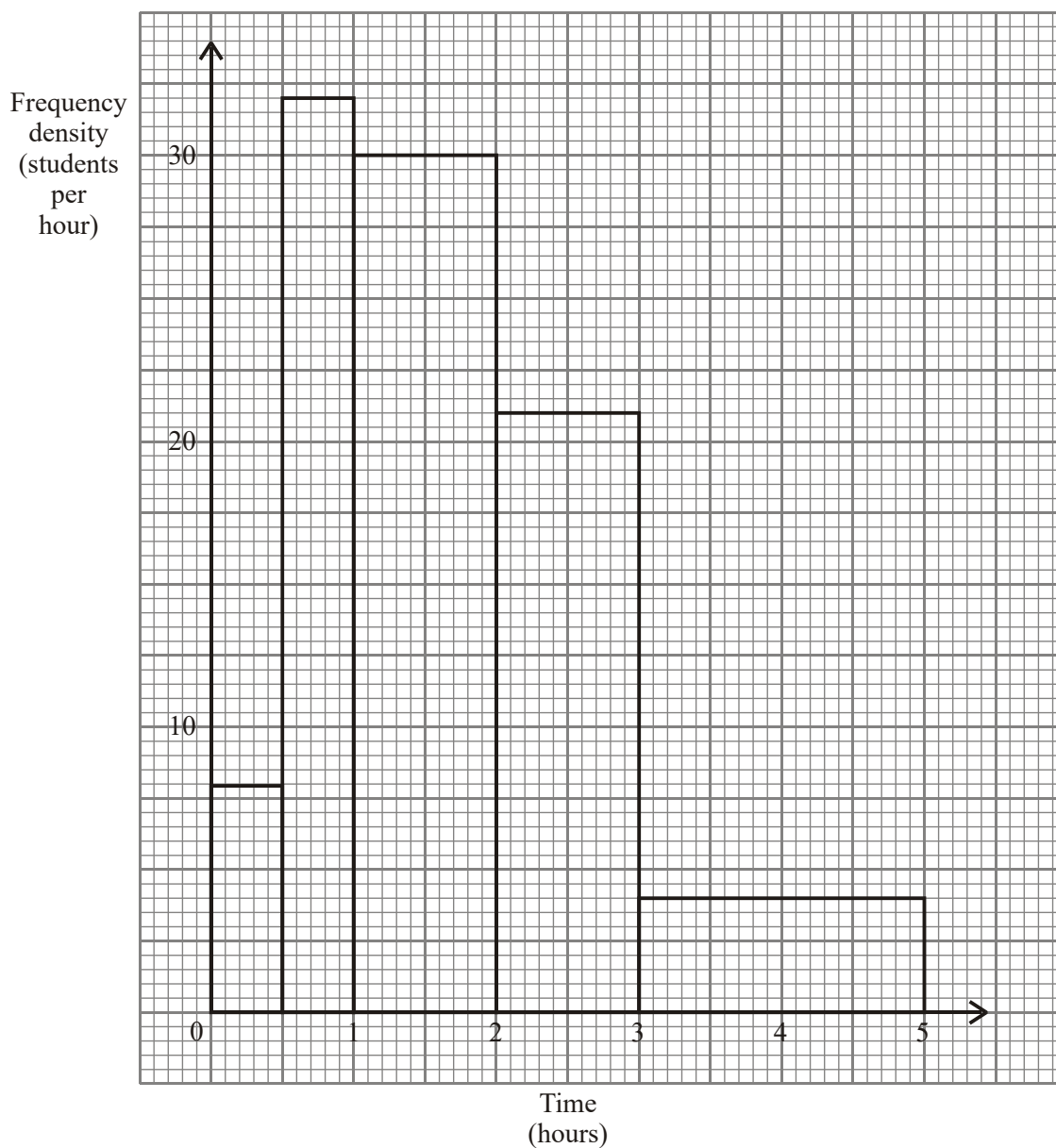
Time
(hours)

Use the histogram to complete the table.

Time (t) hours	Frequency
$0 \leq t < \frac{1}{2}$	
$\frac{1}{2} \leq t < 1$	
$1 \leq t < 2$	30
$2 \leq t < 3$	
$3 \leq t < 5$	

(Total 2 marks)

10.   Kath recorded the times, in minutes, taken by 170 students to travel to school.
          The table gives information about her results.

Time (*t* minutes)	Frequency
$0 \le t < 20$	70
$20 \le t < 35$	45
$35 \le t < 45$	44
$45 \le t < 50$	11

Use the information in the table to draw a histogram.
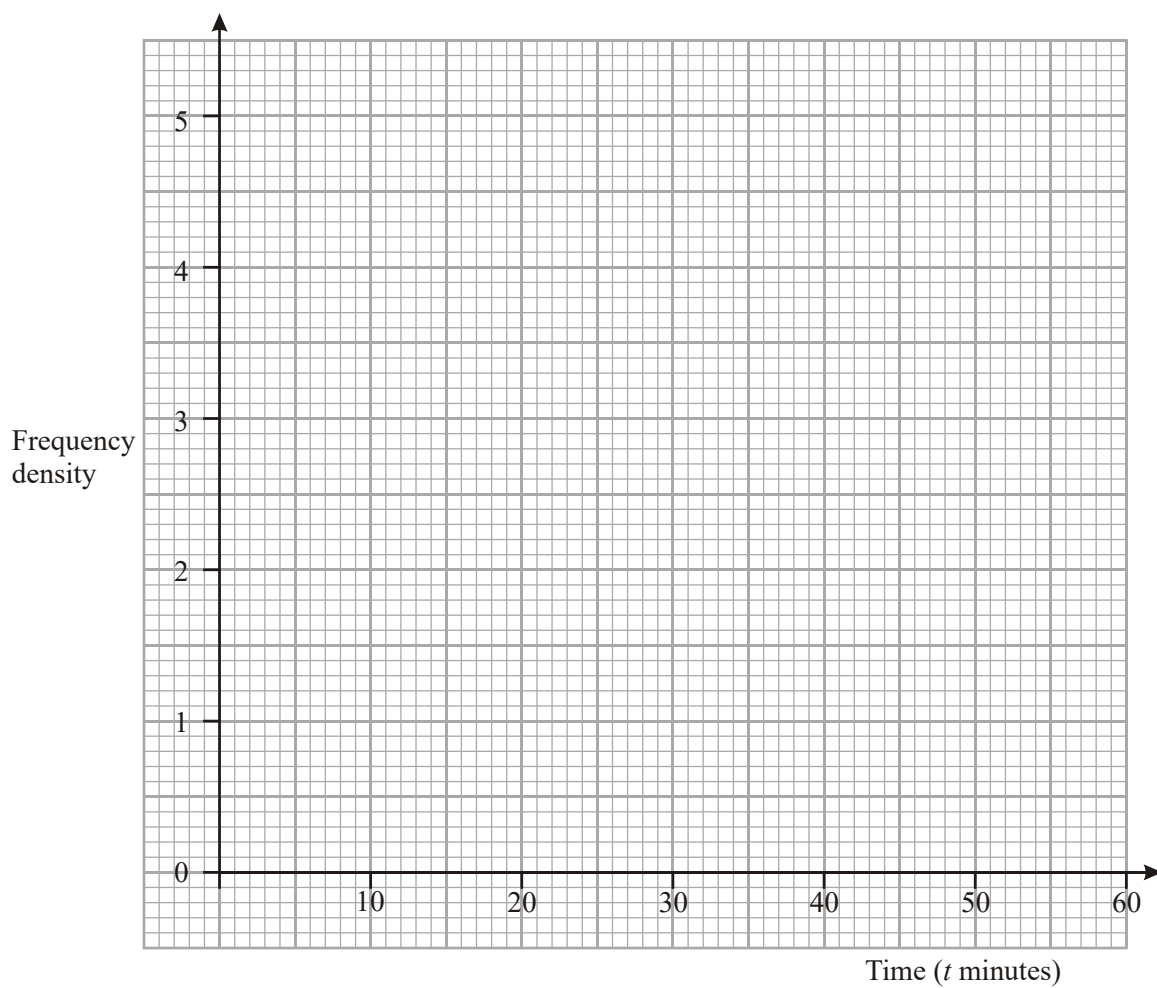
(Total 3 marks)

11.   The histogram gives information about the weights, in kilograms, of some boxes.
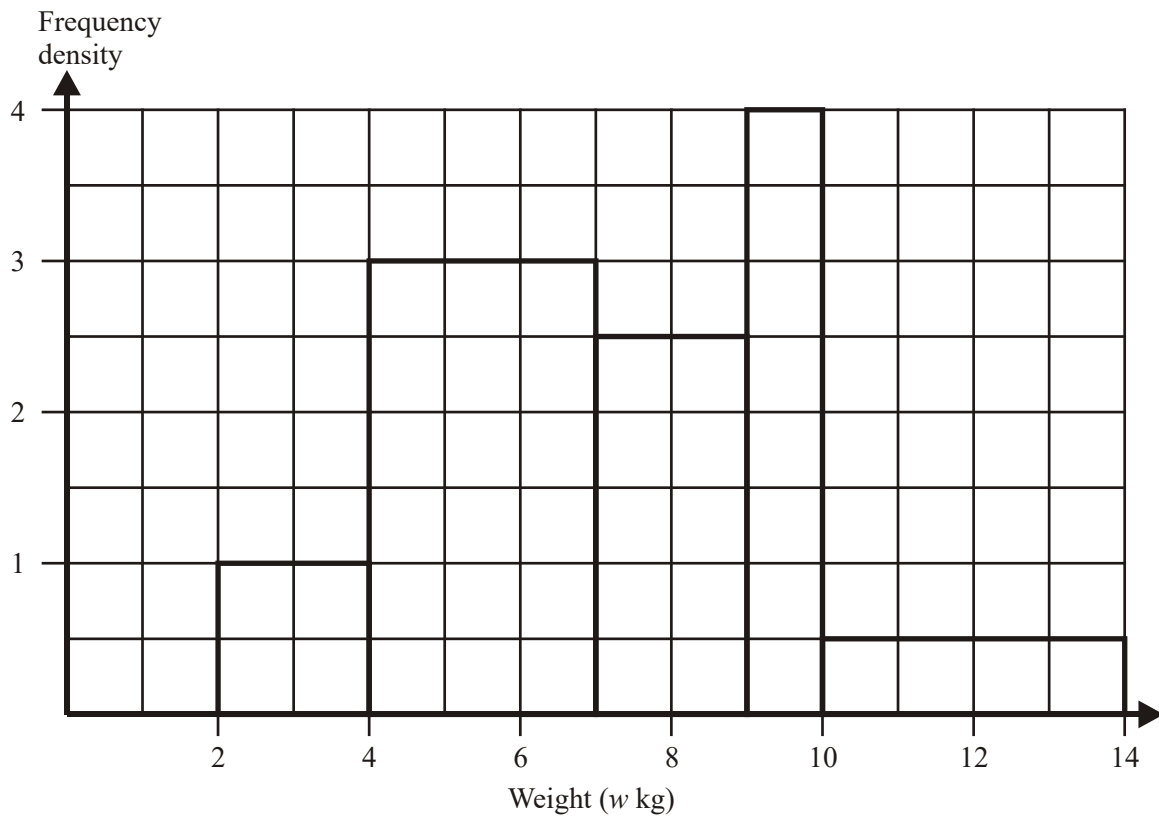
Use the histogram to complete the table.

Weight (w kg)	Frequency
$2 \leq w < 4$	20
$4 \leq w < 7$	
$7 \leq w < 9$	
$9 \leq w < 10$	
$10 \leq w < 14$	

(Total 2 marks)

12. The table gives information about the number of hours worked by some factory workers.

Number of hours (n) worked	Frequency
$0 < n \le 5$	15
$5 < n \le 15$	42
$15 < n \le 35$	40
$35 < n \le 50$	6

Use the table to draw a histogram.

Number of hours (n) worked
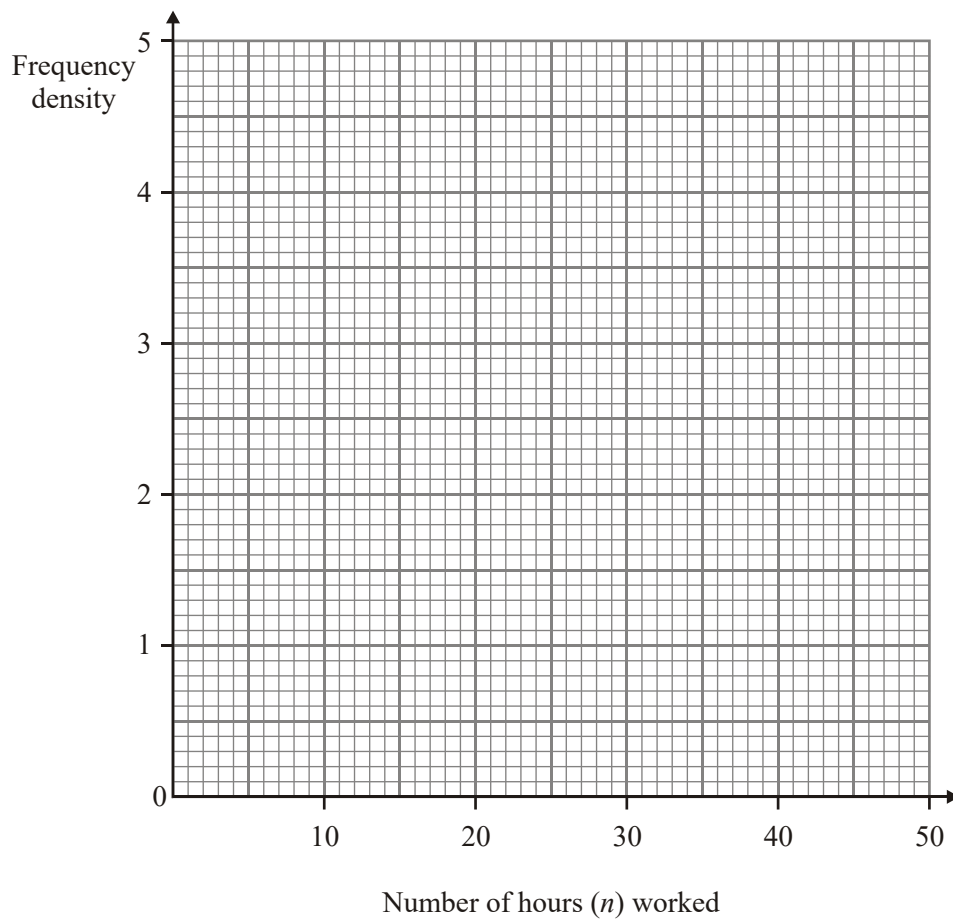
(Total 3 marks)

13. The histogram and table show information about the number of emails received by each of the students in a school.
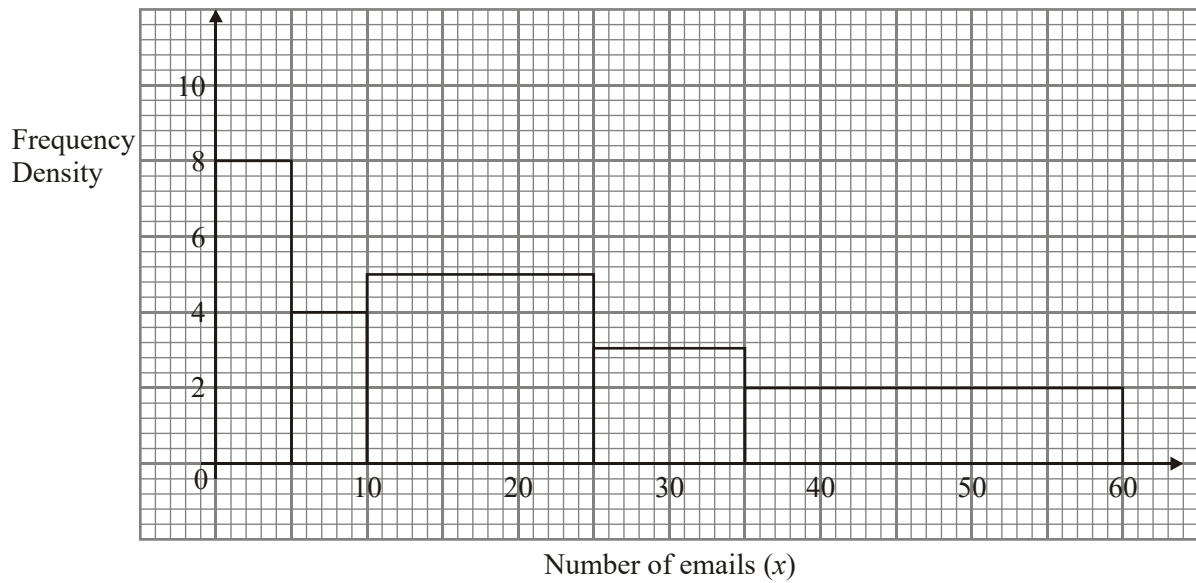
Number of emails (*x*)

Number of emails (*x*)	Frequency
$0 < x \le 5$	
$5 < x \le 10$	20
$10 < x \le 25$	
$25 < x \le 35$	
$35 < x \le 60$	

Use the information in the histogram to complete the table.

(Total 2 marks)

14.　The table and histogram show information about the length of time it took 165 adults to connect to the internet.

Time (t seconds)	Frequency
$0 < t \leq 10$	20
$10 < t \leq 15$	
$15 < t \leq 17.5$	30
$17.5 < t \leq 20$	40
$20 < t \leq 25$	
$25 < z \leq 40$	

None of the adults took more than 40 seconds to connect to the internet.

(a)　Use the table to complete the histogram.

(2)

(b)　Use the histogram to complete the table.

Time (seconds)
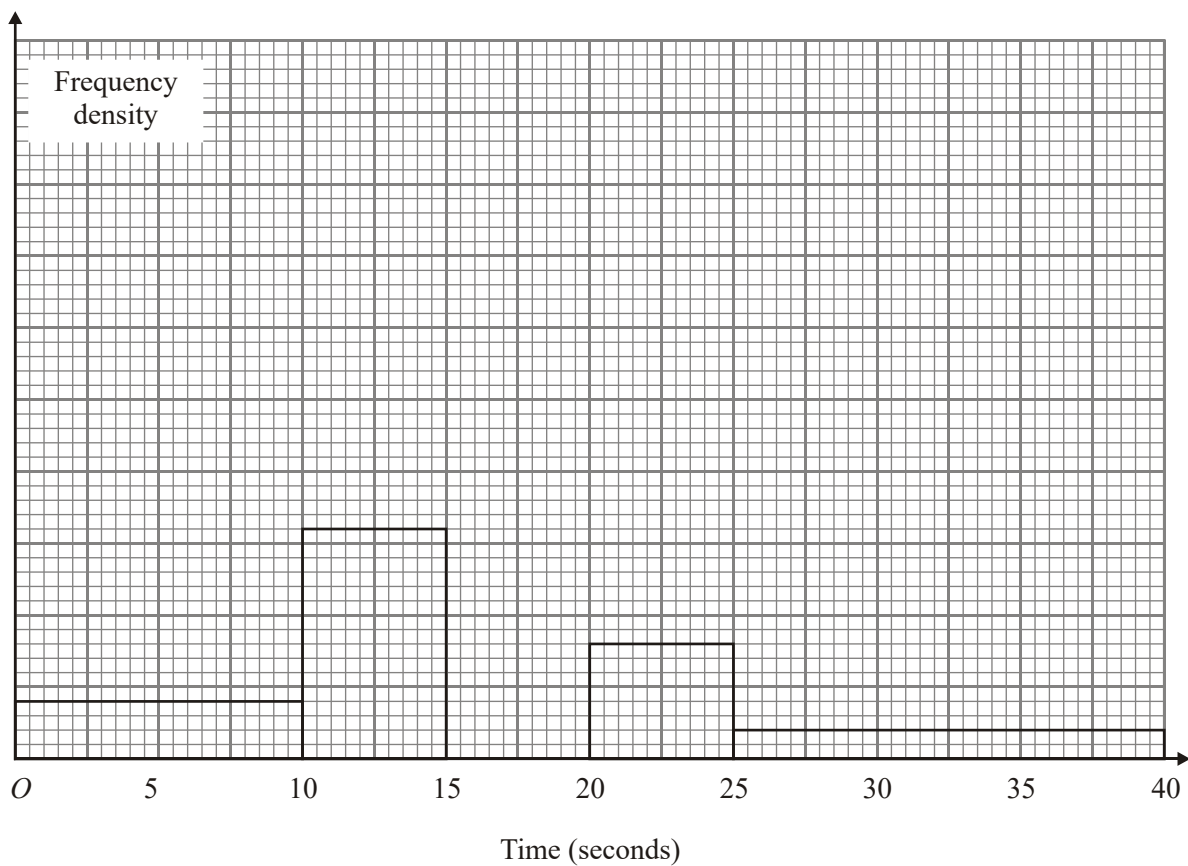
                                                                                    (2)
                                                                        (Total 4 marks)

01.   (a)   60
              40   2
                          B1 cao
                          B1 cao

        (b)   correct bars   2
                          B1 for 30 < x ≤ 40 with an area of 2½ squares
                          B1 for 40 < x ≤ 70 with an area of 3 squares
                          SC: $\frac{0}{4}$ *give M1 if clearly using area or frequency density*

                                                                                        [4]

02.   (a)   Frequency densities of 8 ÷ 10 = 0.8
              16 ÷ 10 = 1.6, 15 ÷ 5 = 3, 12 ÷ 5 = 2.4
              6 ÷ 20 = 0.3   3
                          B1+ B1 + B1 for each correct column shown on histogram
                          If B0, then M1 for clear attempt to use frequency density or
                          area

        (b)   18, 14, 10, 8   2

              1.8 × 10 = 18, 2.8 × 5 = 14, 2 × 5 = 10, 0.4 × 20 = 8

              B2 all correct
              B1 2 or 3 correct
              5
              □ 5 =
              $\frac{25}{80}$ = 2.5 birds

                                                                                        [5]

03. (a) 40, 60, 56, 32   2
B2 for all frequencies correct
(B1 for any 1 frequency correct)

(b)   3
B1 for Frequency density label or appropriate units

B2 for 4 correct histogram bars $\pm \dfrac{1}{2}\, sq$

(B1 for 2 bars correct)

[5]

04. (a) Heights 24, 32   2
B1 cao for bar from 15 – 17.5, height 24 × 2mm squares
B1 cao for bar from 17.5 – 20, height 32 × 2mm square

(b) Freqs 40, 20, 15   2
B2 cao for all 3 correct
(B1 for any 1 or 2 correct)

(c) Area up to 12.5 = 220x
Area above 21 = 156x

Frequency $=\dfrac{156x}{220x}\times110$

78   3
*M1 for attempt to find area up to 12.5 **and** area above 21 consistently*

M1 for $\dfrac{156}{220}\times110$ *or* $\dfrac{6.24}{8.8}\times110$ *or* $156\times\dfrac{110}{220}$ *oe*
A1 78 cao
SC: If no marks earned B1 for 2mm^2 = 1 person oe

[7]

05. Correct histogram   3

Heights in proportion 5 : 20 : 8
B3 for fully correct histogram with axes scaled
***OR** labelled*
(B2: fully correct but one error)
(B1: fully correct but two errors)

[3]

06.   (10), 36, 18, 22, 16   2

          B2 for all 4 answers correct
          (B1 for any 2 correct answers)

                                                                            [2]

07.   (a)   bar to 3   1

          Bar 6cm high … (to 3) in correct place
                B1 cao

     (b)   45   1

                B1 cao

                                                                           [2]

08.   (a)   30   1

          30×1
                B1 cao

     (b)   94   2

          $10 \times 2.2 + 45 \times 1.6 = 22 + 72$
                M1 for 10×2.2 or 45×1.6
                A1 cao

                                                                           [3]

09.   4, 16, 21, 8   2

          B2 for 4 correct
          (B1 for 2 or 3 correct)

                                                                         [2]

10.   Column heights of:
     3.5 3 4.4 2.2
     Histogram   3

          M1 for use of frequency density
          A1 correct width of 3 or 4 bars
          A1 fully correct histogram

                                                                          [3]

11.   (20), 90, 50, 40, 20   2
                    B2 for all 4 correct
                    (B1 for 2 or 3 correct)

                    <u>*Alternative Scheme*</u>
                    B2 for 9, 5, 4, 2
                    (B1 for 2 or 3 of 9, 5, 4, 2)

                                                                                                          [2]

12.   Bars of heights
          3, 4.2, 2, 0.4   3
                    B3 for all 4 bars fully correct ± ½ square
                    (B2 for 3 bars fully correct)
                    (B1 for 2 bars fully correct)
                    SC: If no marks scored then B1 for use of frequency density: at
                    least one correct result must be seen

                                                                                                          [3]

13.   **40**, 20, **75**, **30**, 50   2
                    B2 for all values correct
                    (B1 for 2 or 3 correct values)

                                                                                                          [2]

14.   (a)   Heights 24, 32   2
                    B1 cao for bar from 15 – 17.5, height 24 × 2 mm squares
                    B1 cao for bar from 17.5 – 20, height 32 × 2 mm square

          (b)   Freqs 40, 20, 15   2
                    B2 cao for all 3 correct
                    (B1 for any 1 or 2 correct)

                                                                                                          [4]

01.   Many candidates gained full marks for this question. All but the very weakest generally drew
          the first bar correctly. The common wrong values in the table were 40 and 80.

02.   The improvement in the success with which candidates answer questions such as this has been
          maintained. Many candidates had a clear idea of the concept of frequency density and were able
          to relate the diagram to the table in both parts.

03. The performance in this very straightforward histogram question was very disappointing. Only 25% of candidates could correctly calculate the area of the bars and so the frequencies in part (a) and in part (b) only 20% of candidates gained all the marks. Frequently the vertical axis was left with no label even though an example was given in part (a).

04. Candidates were much more successful at completing the table in part (b) than they were at completing the histogram in part (a).
Common errors in part (a) were to have the bars the wrong way round, or just to have a single bar across the width.
About half the candidates were able to get full marks in part (b). Some common errors in the table were 40, 20, 30 or 80, 40, 10 or 32, 16, 12.
Only the best candidates were able to do part (c). The majority did not attempt to compare the two areas, typically working only with area up to 12.5. Some candidates were able to gain credit for identifying One person = One 2 mm square

05. It was clear that this topic had not been covered by some centres. Of those candidates who understood how to draw a histogram, a number clearly struggled to evaluate 24 ÷ 15 without a calculator. The majority of candidates used the frequencies given for the heights of their bars.

06. This was mostly answered well. Candidates who had a clear understanding of histograms generally gave the four correct answers. Most weaker candidates just wrote down the heights of the bars.

07. This question was answered correctly by about 75% of the candidates.

08. A significant number of candidates just looked at the height of the bars and gave these as incorrect answers. The majority of candidates were able to appreciate the fact that the given diagram was a histogram.

09. Just under 50% of candidates were unable to gain any marks on this question. The most common error was to read the heights of the bars from the y axis and not to take the area of the histogram into account. Of those candidates who understood the concept of frequency density the majority scored full marks; just over a third of all candidates.

10. Many correct histograms were seen. Candidates should, however, be advised to show their division and write down the proposed heights of their bars before drawing the histogram. Some evidence of poor arithmetic was seen. The most common error was to give 11 ÷5 as 2.1 rather than 2.2. A small minority of candidates drew the final bar with a width of 15 rather than 5 and so failed to gain full credit.

11. This question was well answered with approximately 70% of candidates scoring full marks. Once again, there was evidence of poor arithmetic with 30×3 being evaluated as 60 being the most common error.

12. A fully correct histogram was drawn by approximately 30% of candidates. The most common error was to evaluate the height of the final bar incorrectly. Many candidates were unable to deal with the division of 6 ÷15. This calculation was generally done correctly by those candidates who wrote it down as a fraction. Many candidates calculated 15 ÷ 6 and obtained the commonly seen incorrect height of 2.5

13. Approximately 70% of candidates were able to give all the correct frequencies. The most common error was for candidates to read off the y axis as they would for a bar chart.

14. Approximately 35% of candidates were able to complete the histogram correctly while just over 50% of candidates were able to complete the table correctly.