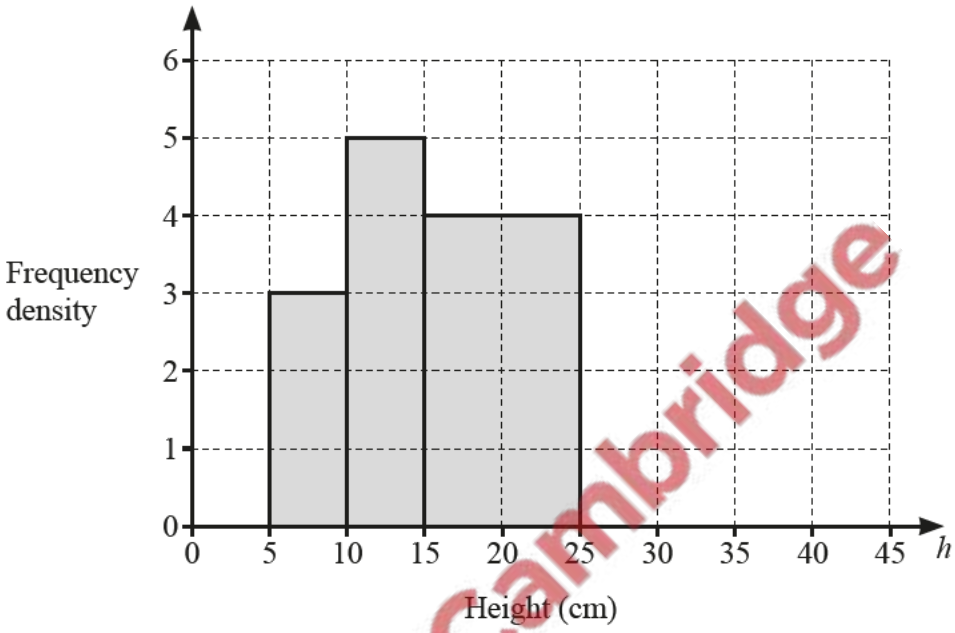
Statistical diagrams – 2020 O Level Math D

1. Nov/2020/Paper_12/No.16

The heights of a sample of plants were measured.
The results are shown in the table and in the histogram.

Height (h cm)	$5 < h \leqslant 10$	$10 < h \leqslant 15$	$15 < h \leqslant 25$	$25 < h \leqslant 40$
Frequency	15	25	p	30



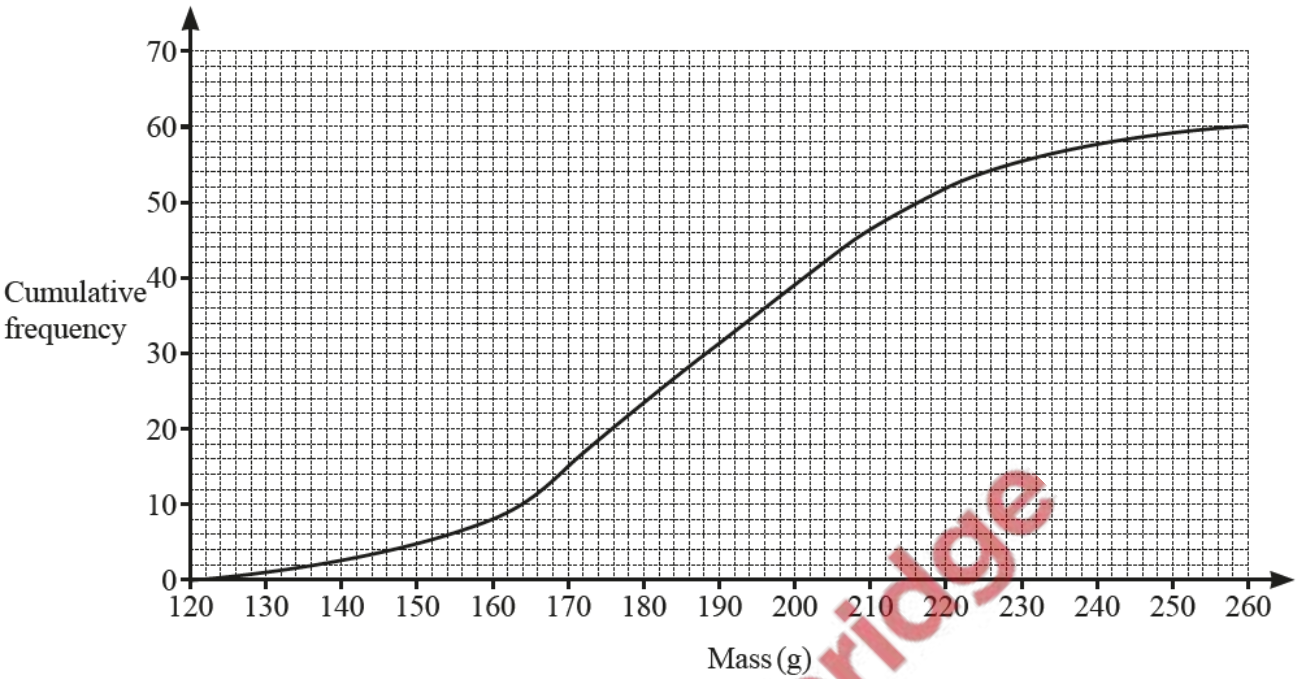
(a) Use the histogram to find the value of p.

$p =$ ..... [1]

(b) Complete the histogram. [1]

2. Nov/2020/Paper_21/No.2

(a) The cumulative frequency diagram shows the masses, in grams, of 60 potatoes of variety A.



(i) Use the diagram to estimate

(a) the median,

..... g [1]

(b) the interquartile range.

..... g [2]

(ii) Potatoes with a mass greater than 220 g are sold as baking potatoes.

Find the percentage of the potatoes that are sold as baking potatoes.

..... % [3]

(iii) The masses of 60 potatoes of variety B are also measured.
For variety B, the median is 175 g and the interquartile range is 30 g.

Kali wants to buy potatoes that are more consistent in mass.

Should she choose variety A or variety B?
Explain how you decide.

Variety ..... because ..... [1]

(b) The table shows the masses, m grams, of 120 potatoes of variety C.

Mass (m g)	$80 \leqslant m < 100$	$100 \leqslant m < 120$	$120 \leqslant m < 130$	$130 \leqslant m < 140$	$140 \leqslant m < 200$
Frequency	10	15	42	36	17

Calculate an estimate of the mean mass.

..... g [3]

(c) A bag of potatoes has a mass of 2.5 kg, correct to the nearest 100 g.
Bags of potatoes are packed into a box.
The mass of the box is 600 g, correct to the nearest 10 g.

Calculate the upper bound of the total mass, in kilograms, of a box containing 10 of these bags of potatoes.

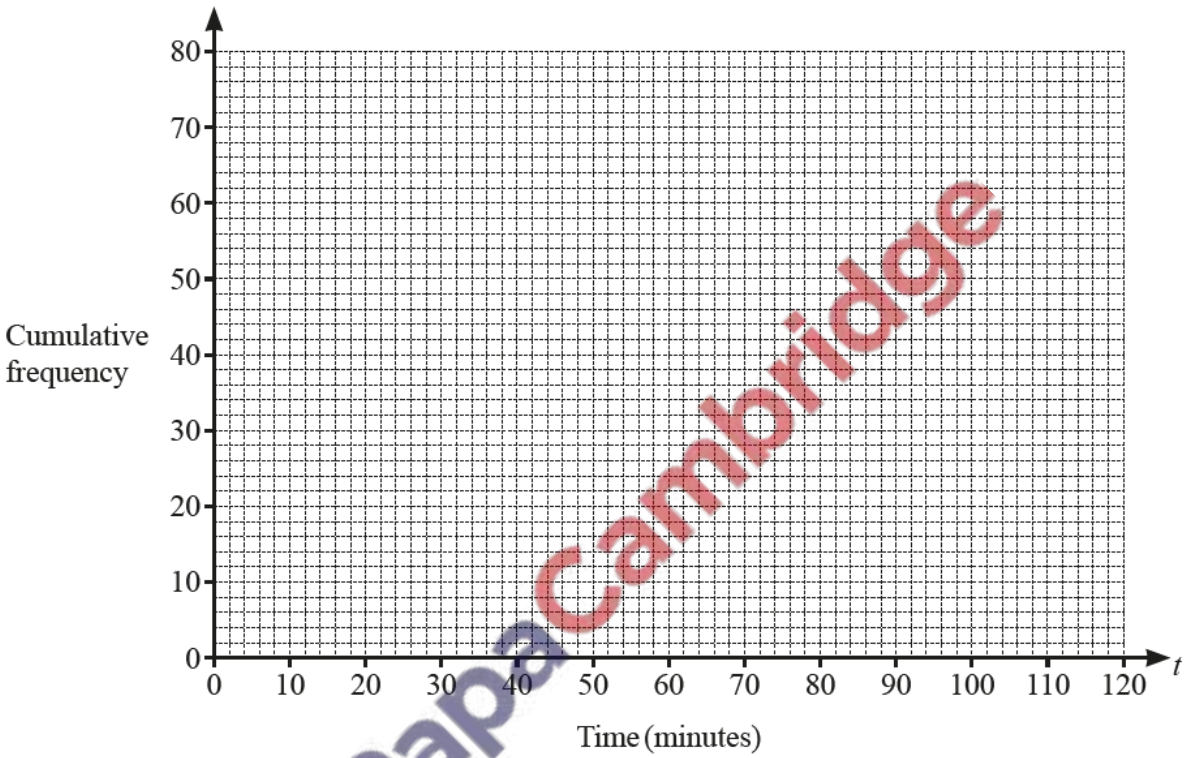
..... kg [3]

3. Nov/2020/Paper_22/No.2

(a) A group of 80 students each completed a task.
The table shows the time, t minutes, each student took to complete the task.

Time (t minutes)	$20 < t \leqslant 40$	$40 < t \leqslant 60$	$60 < t \leqslant 80$	$80 < t \leqslant 100$	$100 < t \leqslant 120$
Frequency	10	20	34	12	4

(i) On the grid, draw a cumulative frequency diagram to represent this information.



[3]

(ii) Use your diagram to estimate

(a) the median,

..... minutes [1]

(b) the interquartile range.

..... minutes [2]

(b) A group of 160 adults each completed the same task.
The table shows the number of errors made by each of these adults.

Number of errors	0	1	2	3	4	5
Frequency	24	30	50	32	16	8

(i) Calculate the mean.

..... [2]

(ii) One of the adults is selected at random.

Find the probability that this adult made more than 3 errors.

..... [1]

(iii) Two of the adults are selected at random.

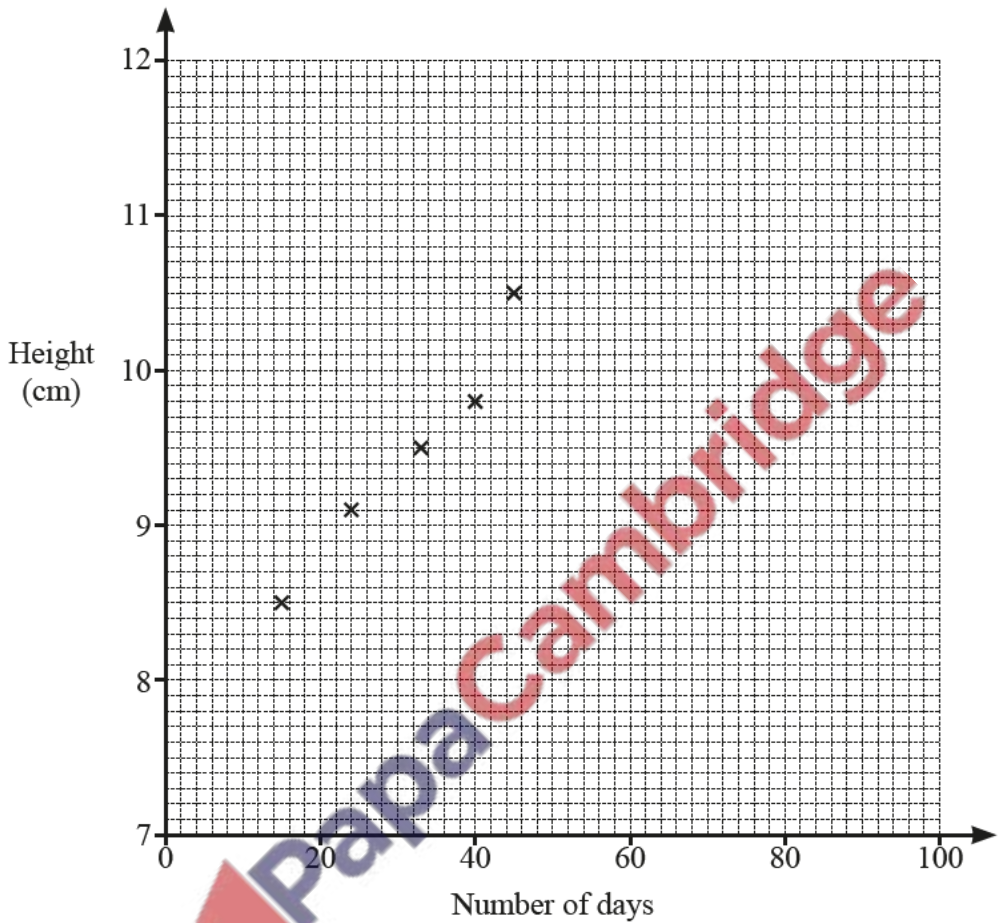
Find the probability that they each made exactly one error.

..... [2]

4. June/2020/Paper_11/No.10

The table below shows the height of a plant, in centimetres, and the number of days after planting.

Number of days	15	24	33	40	45	51	62	68	73	80
Height (cm)	8.5	9.1	9.5	9.8	10.5	10.8	11.3	11.4	11.8	11.8



(a) On the grid, complete the scatter diagram.
The first five points have been plotted for you. [2]

(b) What type of correlation is shown on the scatter diagram?

..... [1]

(c) Draw a line of best fit. [1]

(d) Can the scatter diagram be used to predict the height of this plant 100 days after planting?
Give a reason for your answer.

.....

..... [1]

5. June/2020/Paper_12/No.6

The pie chart shows information about the number of goals scored by each player in a football club.

(a) Write down the modal class.

..... [1]

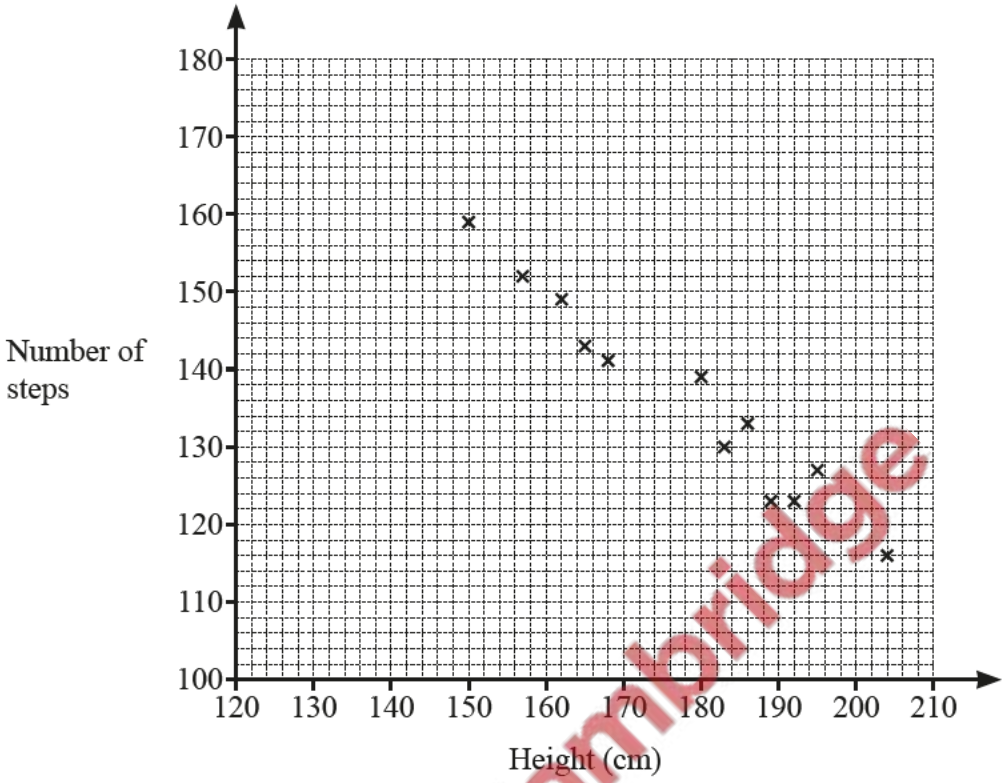
(b) 8 of the players each scored 11 to 15 goals.

Work out the total number of players in the club.

..... [2]

6. June/2020/Paper_12/No.8

The number of steps taken by 12 people to walk 100 m was recorded.
The scatter diagram shows the heights of these people and the number of steps they took.



(a) What type of correlation is shown in the scatter diagram?

..... [1]

(b) Draw a line of best fit. [1]

(c) The height of another person is 175 cm.

Use your line of best fit to estimate the number of steps they would take to walk 100 m.

..... [1]

7. June/2020/Paper_21/No.1

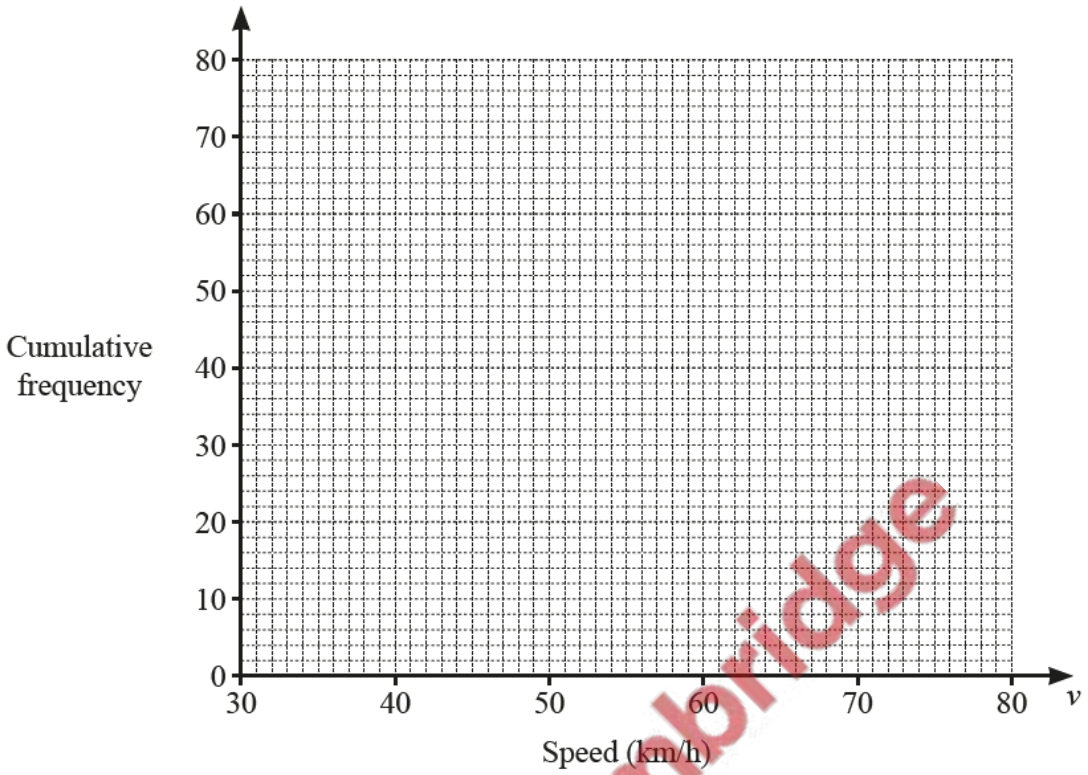
The speeds, v km/h, of 80 vehicles travelling along a road were recorded.
The results are shown in the table.

Speed (v km/h)	Frequency
$30 < v \leqslant 40$	10
$40 < v \leqslant 50$	18
$50 < v \leqslant 60$	27
$60 < v \leqslant 70$	19
$70 < v \leqslant 80$	6

(a) Calculate an estimate of the mean speed of the vehicles.

..... km/h [3]

(b) Draw the cumulative frequency diagram.



[3]

(c) Use your cumulative frequency diagram to find an estimate for

(i) the median,

..... km/h [1]

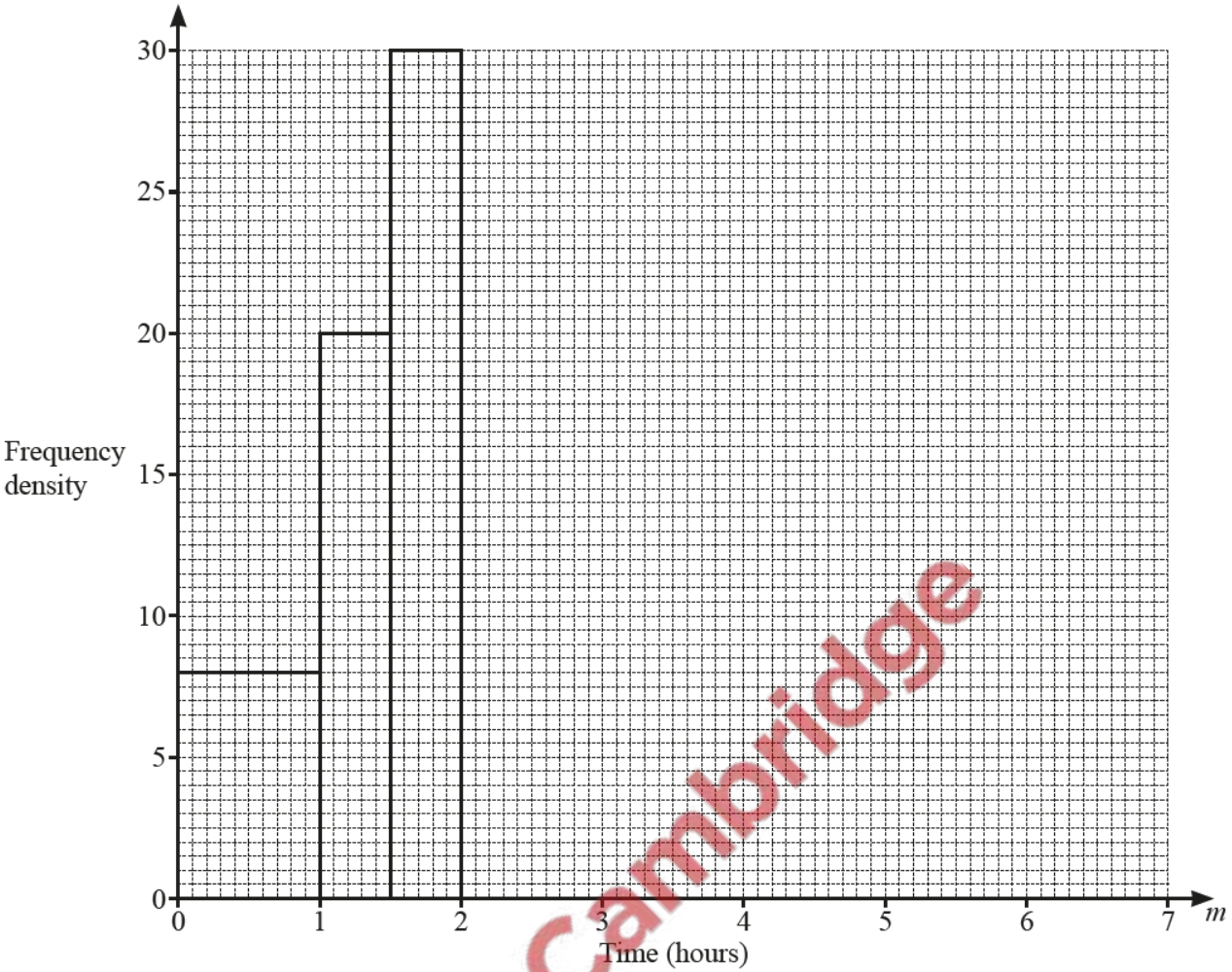
(ii) the interquartile range.

..... km/h [2]

8. June/2020/Paper_22/No.4

(a) The table summarises the time, m hours, that each student in a year group spent listening to music in one day.
Some of the results are shown on the histogram.

Time (m hours)	Frequency
$0 < m \leqslant 1$	8
$1 < m \leqslant 1\frac{1}{2}$	10
$1\frac{1}{2} < m \leqslant 2$	p
$2 < m \leqslant 2\frac{1}{2}$	14
$2\frac{1}{2} < m \leqslant 3\frac{1}{2}$	23
$3\frac{1}{2} < m \leqslant 5$	18
$5 < m \leqslant 7$	12



(i) Use the histogram to find the value of p.

$p =$ ..... [1]

(ii) Complete the histogram. [3]

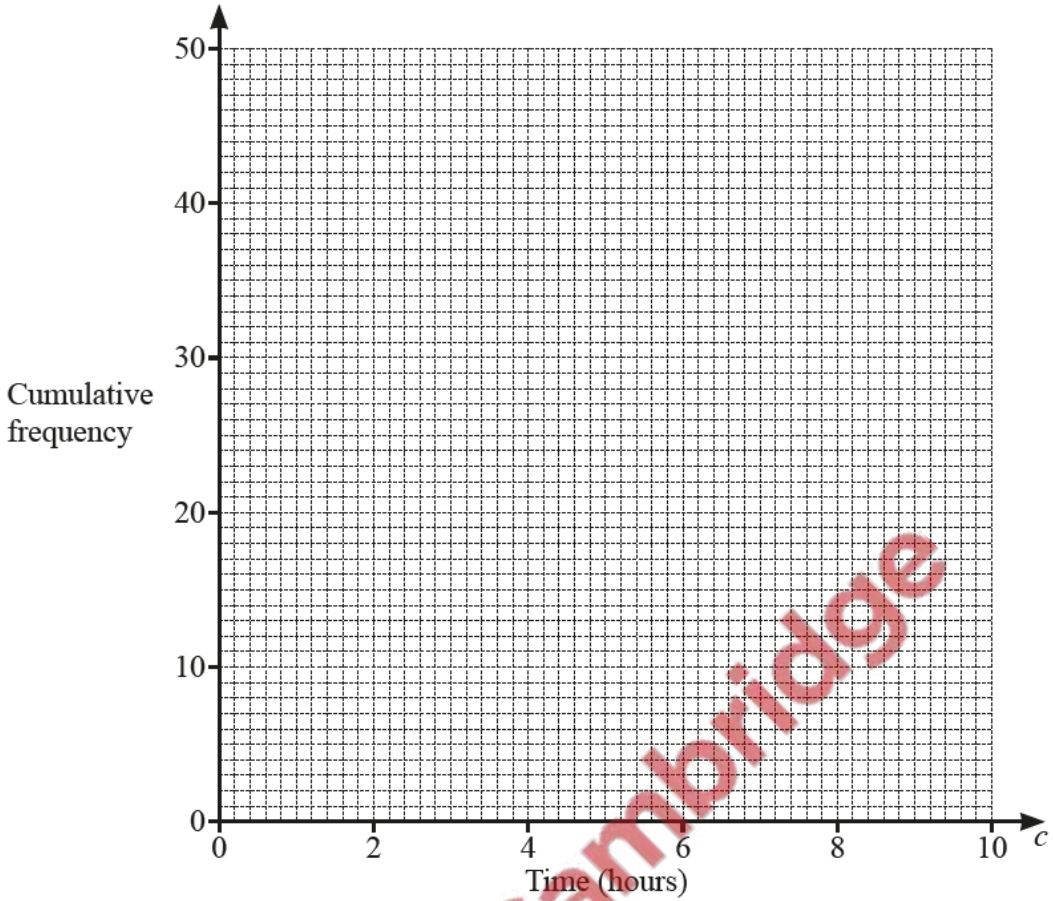
(b) This table summarises the time, c hours, that each student in a group of 50 students spent cooking in one week.

Time (c hours)	Frequency
$0 < c \leqslant 2$	8
$2 < c \leqslant 4$	16
$4 < c \leqslant 6$	15
$6 < c \leqslant 8$	7
$8 < c \leqslant 10$	4

(i) Calculate an estimate of the mean time spent cooking.

..... hours [3]

(ii) Draw the cumulative frequency diagram.



[3]

(iii) Use the cumulative frequency diagram to find an estimate for the median.

..... hours [1]