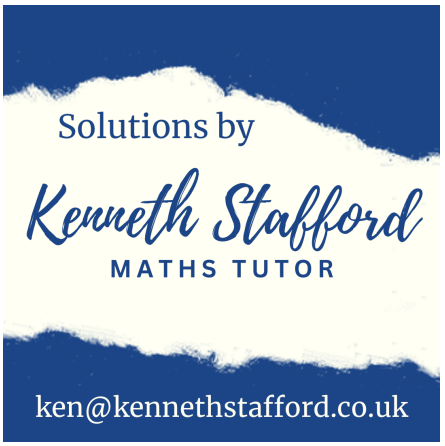
Name: SOLUTIONS

GCSE (1 - 9)

Cumulative Frequency





These questions are compiled from *released* Pearson Edexcel GCSE maths exam papers
They contain exam questions from up until the ***November 2021*** exam series
More recent exam papers do exist but are withheld for mock exams
As new exam papers are released these worksheets will gradually be updated
The ***most current*** version of these worksheets will always be available at: kennethstafford.co.uk
These worksheets were made using examq.co.uk

Question	Where the question appeared
1	Edexcel, GCSE, Autumn 2021, Paper 1H, Q12
2	Edexcel, GCSE, Autumn 2021, Paper 2H, Q8
3	Edexcel, GCSE, Autumn 2020, Paper 1H, Q12
4	Edexcel, GCSE, Autumn 2019, Paper 1H, Q10
5	Edexcel, GCSE, Summer 2019, Paper 2H, Q11
6	Edexcel, GCSE, Autumn 2018, Paper 1H, Q9
7	Edexcel, GCSE, Autumn 2017, Paper 3H, Q11
8	Edexcel, GCSE, Summer 2017, Paper 2H, Q8

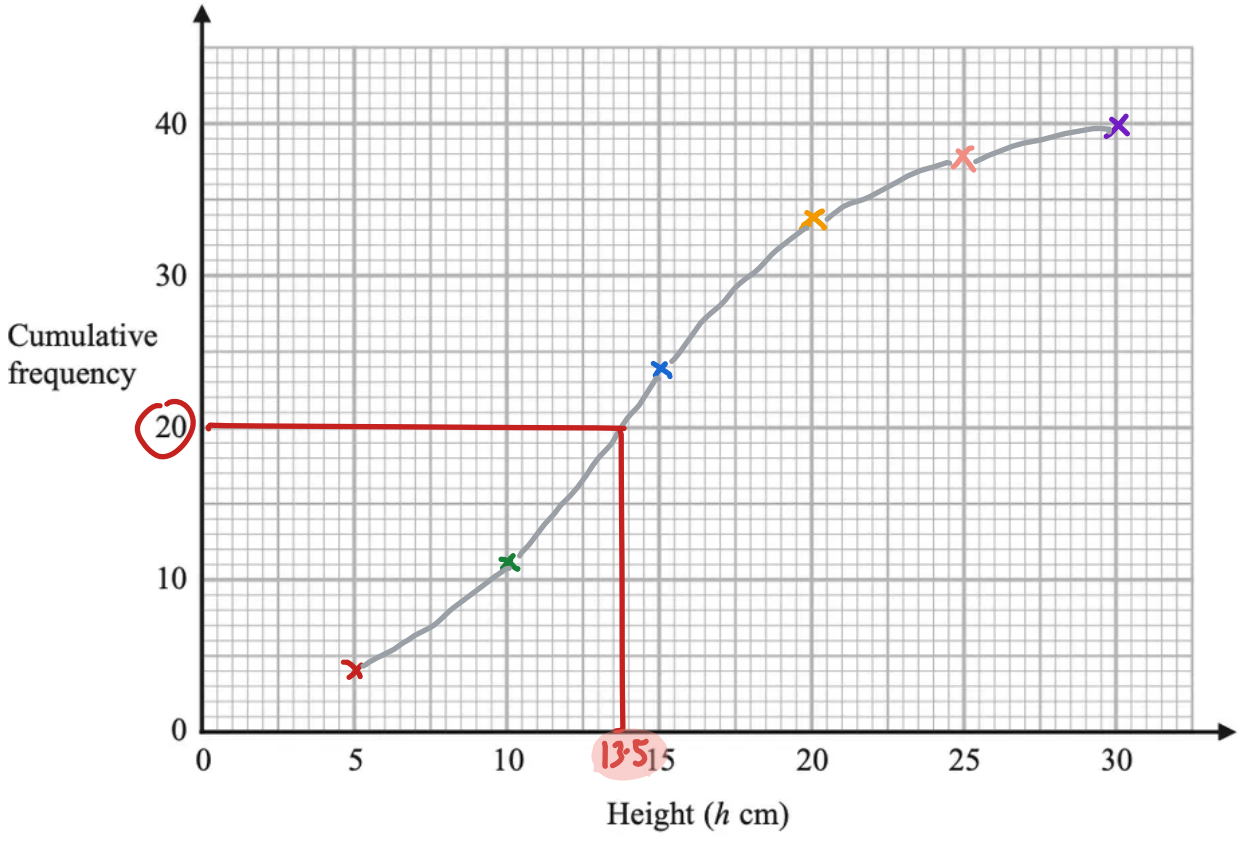
1

The cumulative frequency table gives information about the heights, in cm, of 40 plants.

Height (h cm)	Cumulative Frequency
$0 < h \leqslant 5$	4
$0 < h \leqslant 10$	11
$0 < h \leqslant 15$	24
$0 < h \leqslant 20$	34
$0 < h \leqslant 25$	38
$0 < h \leqslant 30$	40

(5, 4)
(10, 11)
(15, 24)
(20, 34)
(25, 38)
(30, 40)

(a) On the grid, draw a cumulative frequency graph for this information.



(2)

(b) Use the graph to find an estimate for the median height of the plants.

13·5 cm

(1)

(Total for Question 12 is 3 marks)

[Edexcel, GCSE, Autumn 2021, Paper 1H, Q12]

2

The grouped frequency table gives information about the time, in minutes, taken by 50 people to solve a puzzle.

Time (t minutes)	Frequency
$0 < t \leqslant 10$	5
$10 < t \leqslant 20$	8
$20 < t \leqslant 30$	12
$30 < t \leqslant 40$	15
$40 < t \leqslant 50$	7
$50 < t \leqslant 60$	3

Brian was asked to draw a cumulative frequency table for this information.

This is the table that Brian drew.

Time (t minutes)	Cumulative frequency
$0 < t \leqslant 10$	5
$10 < t \leqslant 20$	13
$20 < t \leqslant 30$	25
$30 < t \leqslant 40$	40
$40 < t \leqslant 50$	47
$50 < t \leqslant 60$	50

Write down **one** thing that is wrong with this cumulative frequency table.

The groups should all start with zero.
e.g.
0 < t < 20
0 < t < 30
0 < t < 40

(Total for Question 8 is 1 mark)

[Edexcel, GCSE, Autumn 2021, Paper 2H, Q8]

3

The table gives information about the weekly wages of 80 people.

Wage (£w)	Frequency
$200 < w \leqslant 250$	5
$250 < w \leqslant 300$	10
$300 < w \leqslant 350$	20
$350 < w \leqslant 400$	20
$400 < w \leqslant 450$	15
$450 < w \leqslant 500$	10

(a) Complete the cumulative frequency table.

Wage (£w)	Cumulative frequency
$200 < w \leqslant 250$	5
$200 < w \leqslant 300$	15
$200 < w \leqslant 350$	35
$200 < w \leqslant 400$	55
$200 < w \leqslant 450$	70
$200 < w \leqslant 500$	80

(1)

(b) On the grid opposite, draw a cumulative frequency graph for your completed table.

(2)

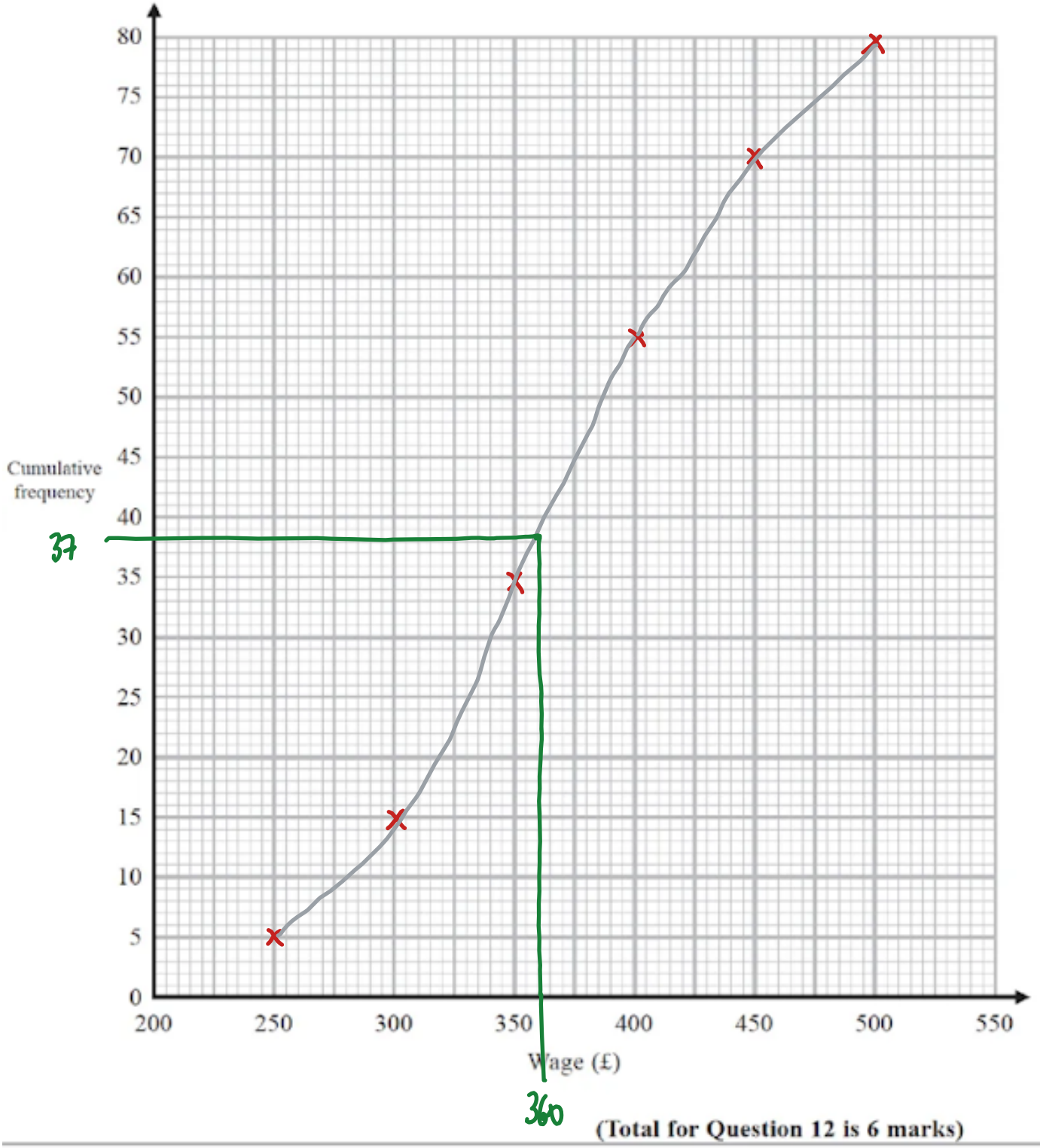
Juan says

"60% of this group of people have a weekly wage of £360 or less."

(c) Is Juan correct?
You must show how you get your answer.

$\frac{37}{80} = 46.25\%$

No. $46.25\% < 60\%$



(Total for Question 12 is 6 marks)

[Edexcel, GCSE, Autumn 2020, Paper 1H, Q12]

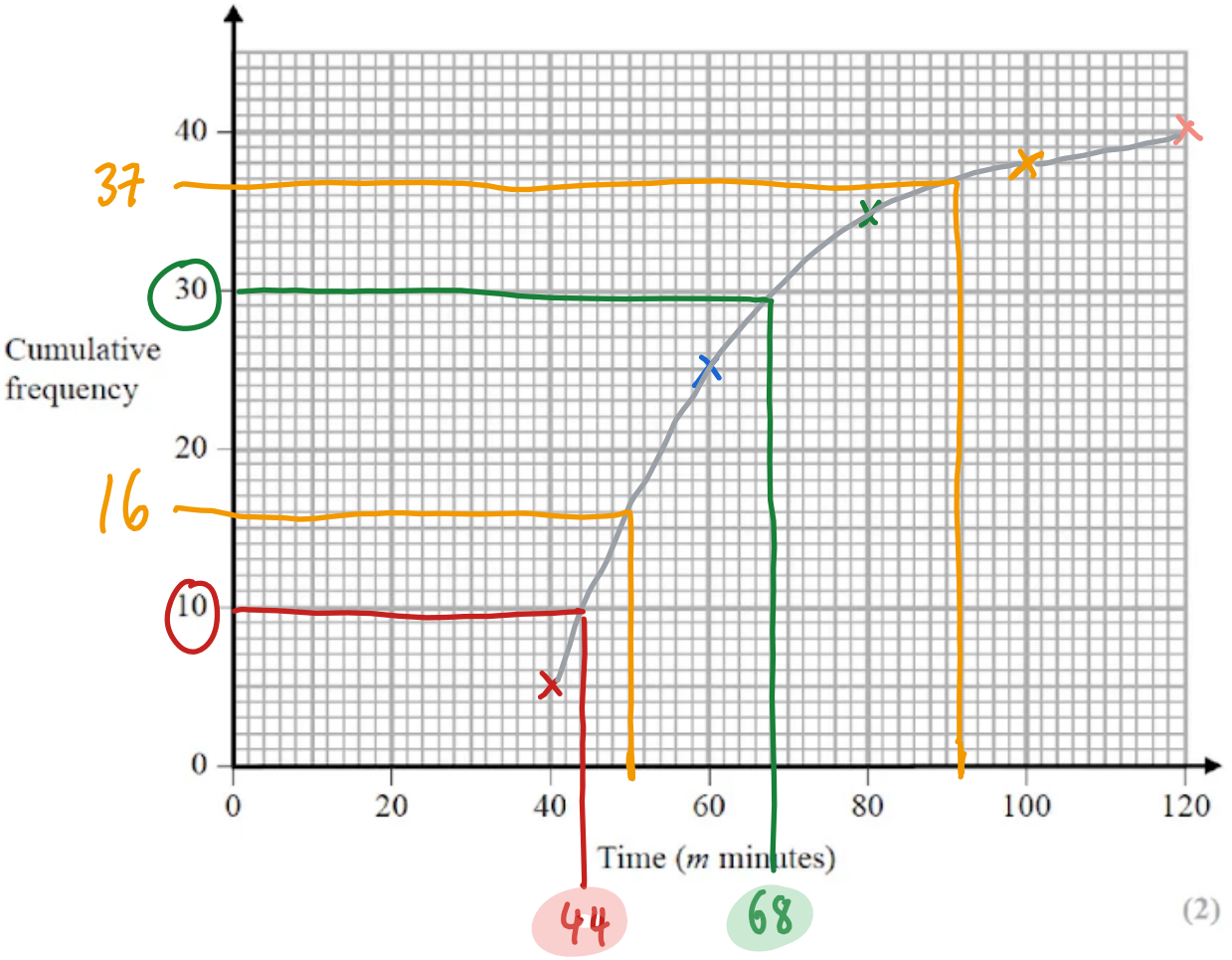
4

The cumulative frequency table shows information about the times, in minutes, taken by 40 people to complete a puzzle.

Time (m minutes)	Cumulative frequency
$20 < m \leqslant 40$	5
$20 < m \leqslant 60$	25
$20 < m \leqslant 80$	35
$20 < m \leqslant 100$	38
$20 < m \leqslant 120$	40

(40, 5)
(60, 25)
(80, 35)
(100, 38)
(120, 40)

(a) On the grid below, draw a cumulative frequency graph for this information.



(2)

(b) Use your graph to find an estimate for the interquartile range.

$68 - 44 = 24$

..... minutes

(2)

One of the 40 people is chosen at random.

(c) Use your graph to find an estimate for the probability that this person took between 50 minutes and 90 minutes to complete the puzzle.

$37 - 16 = 21$

$\frac{21}{40}$

(2)

(Total for Question 10 is 6 marks)

[Edexcel, GCSE, Autumn 2019, Paper 1H, Q10]

5

The grouped frequency table gives information about the times, in minutes, that 80 office workers take to get to work.

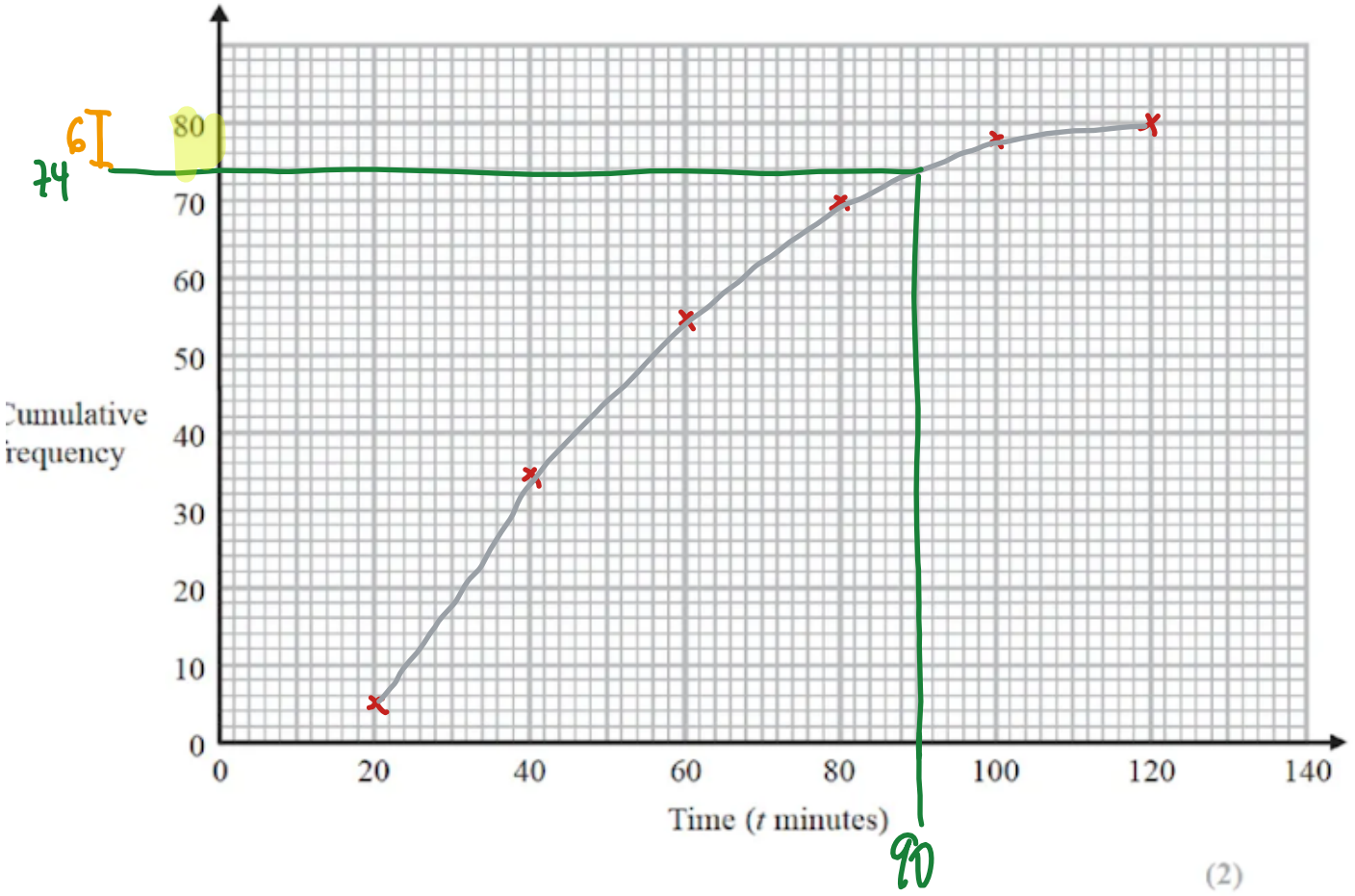
Time (t minutes)	Frequency
$0 < t \leqslant 20$	5
$20 < t \leqslant 40$	30
$40 < t \leqslant 60$	20
$60 < t \leqslant 80$	15
$80 < t \leqslant 100$	8
$100 < t \leqslant 120$	2

(a) Complete the cumulative frequency table.

Time (t minutes)	Cumulative frequency
$0 < t \leqslant 20$	5
$0 < t \leqslant 40$	35
$0 < t \leqslant 60$	55
$0 < t \leqslant 80$	70
$0 < t \leqslant 100$	78
$0 < t \leqslant 120$	80

(1)

(b) On the grid, draw the cumulative frequency graph for this information.



(2)

(c) Use your graph to find an estimate for the percentage of these office workers who take more than 90 minutes to get to work.

$\frac{6}{80} = 7.5\%$

7.5 %

(3)

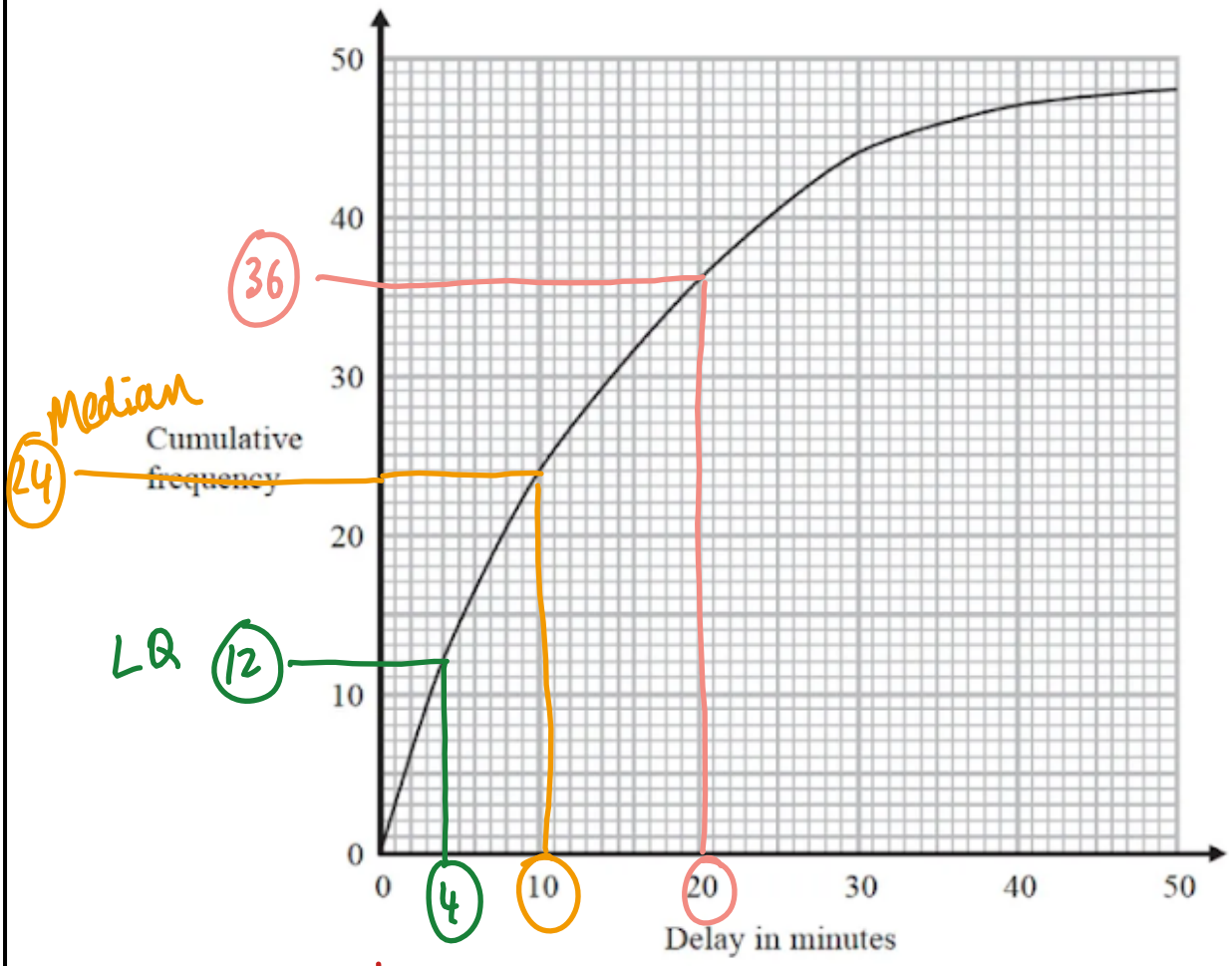
(Total for Question 11 is 6 marks)

[Edexcel, GCSE, Summer 2019, Paper 2H, Q11]

6

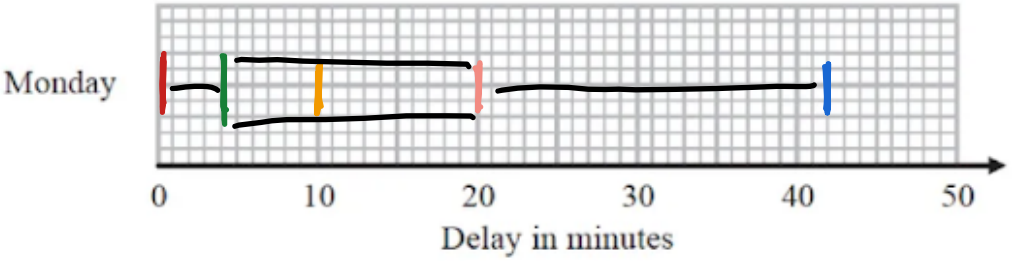
The times that 48 trains left a station on Monday were recorded.

The cumulative frequency graph gives information about the numbers of minutes the trains were delayed, correct to the nearest minute.



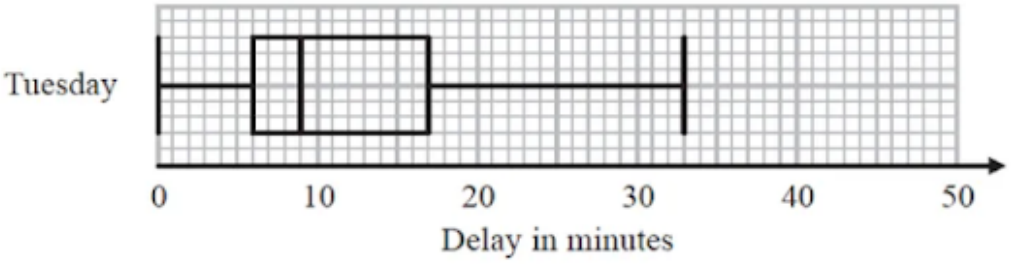
The shortest delay was 0 minutes.
The longest delay was 42 minutes.

(a) On the grid below, draw a box plot for the information about the delays on Monday.



(3)

48 trains left the station on Tuesday.
The box plot below gives information about the delays on Tuesday.



(b) Compare the distribution of the delays on Monday with the distribution of the delays on Tuesday.

The median delay on Monday was 10 minutes, on Tuesday it was lower - 9 minutes.

The range of delays on Monday was 42 minutes which was higher than on Tuesday when the range was 33 minutes.

The interquartile range was 16 minutes on Monday which was higher than the interquartile range on Tuesday (11 minutes)

(2)

Mary says,

"The longest delay on Tuesday was 33 minutes.
This means that there must be some delays of between 25 minutes and 30 minutes."

(c) Is Mary right?
You must give a reason for your answer.

'No' with statement explaining that there might not be any delays between 25 minutes and 30 minutes as in the upper 25% (12 trains) the delays may all be between 17 and 25 or 30 and 33

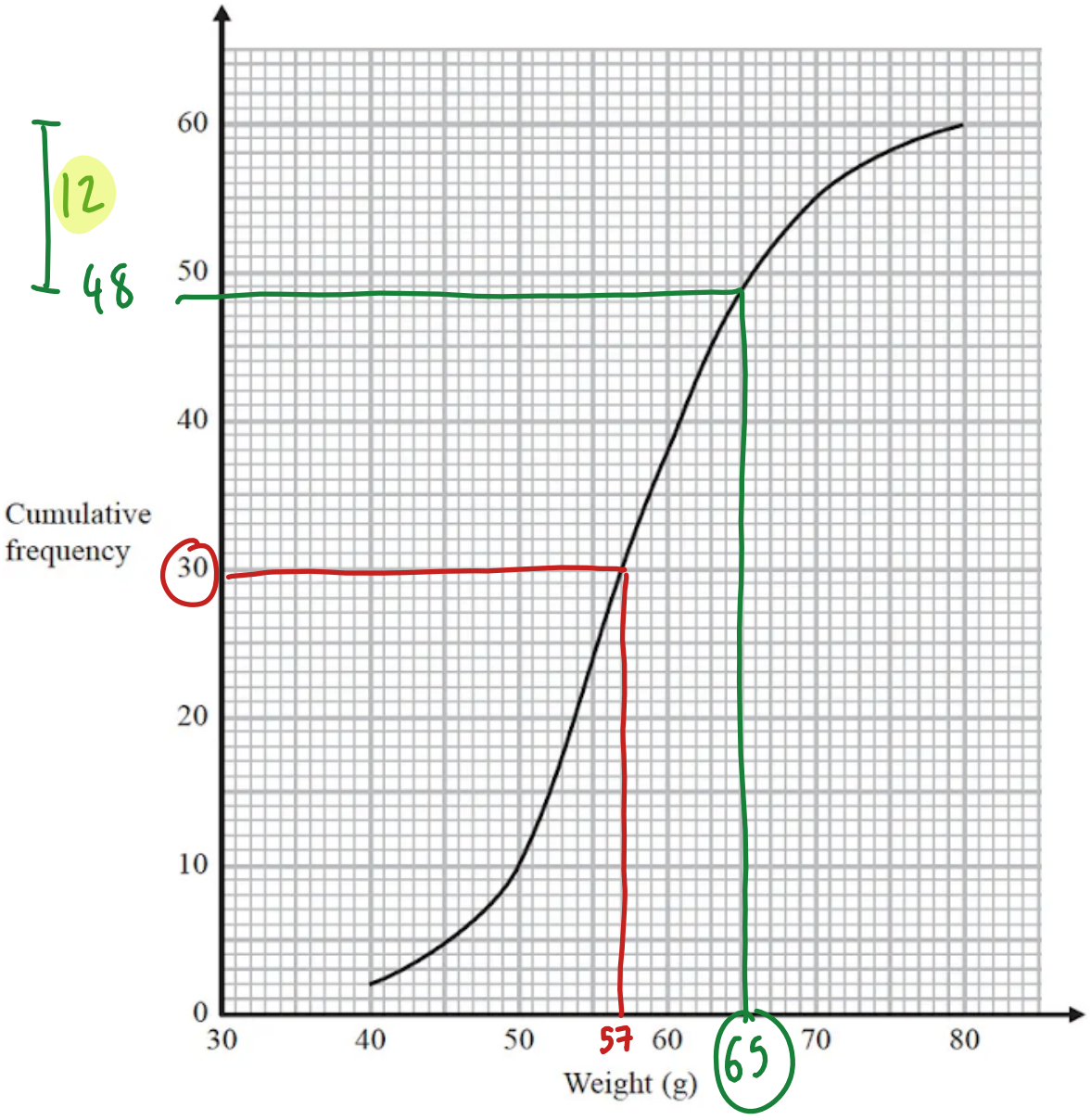
(1)

(Total for Question 9 is 6 marks)

[Edexcel, GCSE, Autumn 2018, Paper 1H, Q9]

7

The cumulative frequency graph shows information about the weights of 60 potatoes.



(a) Use the graph to find an estimate for the median weight.

57 g

(1)

Jamil says,

"80 − 40 = 40 so the range of the weights is 40 g."

(b) Is Jamil correct?
You must give a reason for your answer.

Jamil might not be correct and reason, eg the maximum weight could be less than 80 or the minimum weight could be less than 40

(1)

(c) Show that less than 25% of the potatoes have a weight greater than 65 g.

$\frac{12}{60} = 20\%$

$20\% < 25\%$

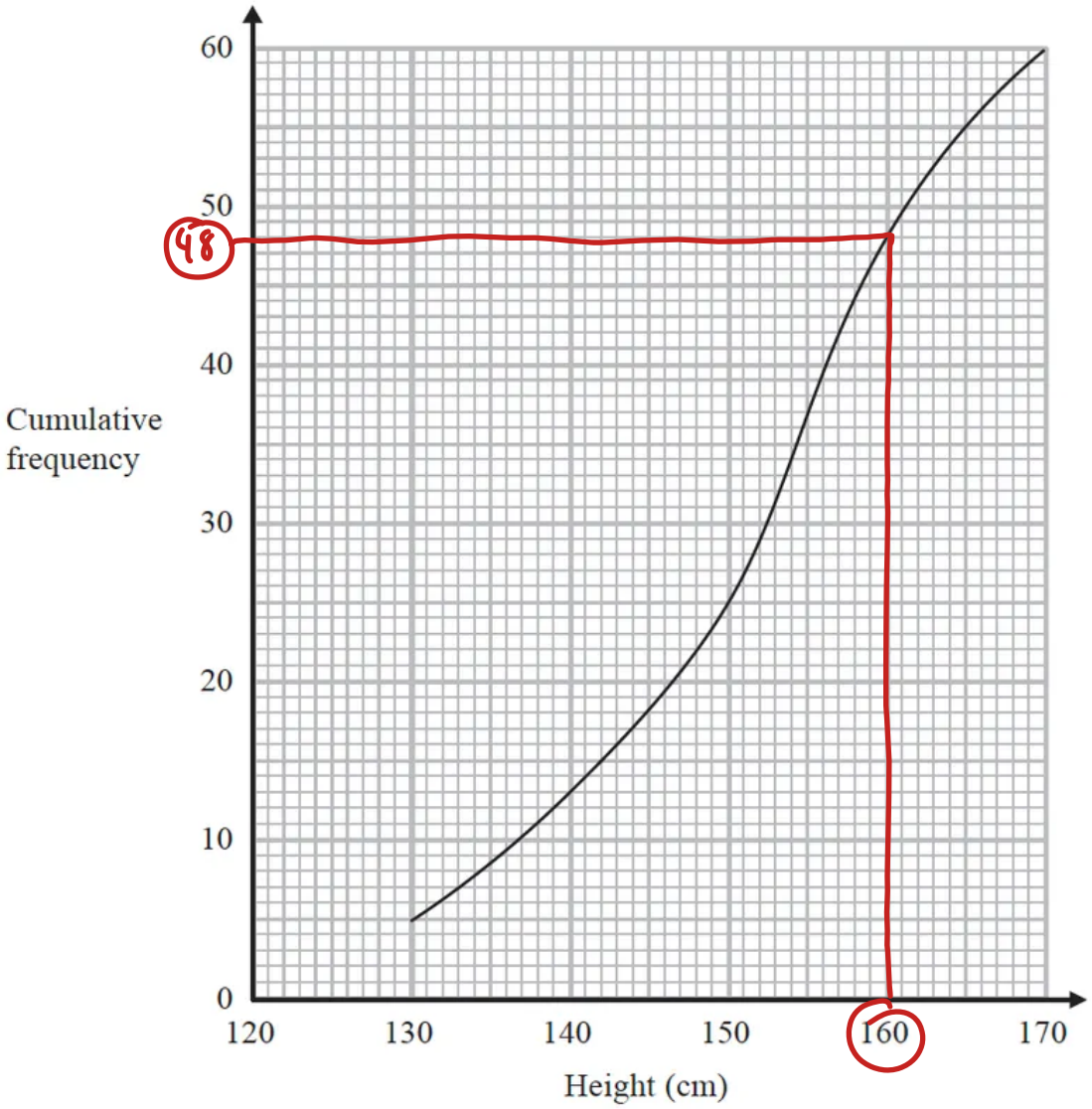
(2)

(Total for Question 11 is 4 marks)

[Edexcel, GCSE, Autumn 2017, Paper 3H, Q11]

8

The cumulative frequency graph shows some information about the heights, in cm, of 60 students.



Work out an estimate for the number of these students with a height greater than 160 cm.

60 - 48 = 12

(Total for Question 8 is 2 marks)

[Edexcel, GCSE, SUmmer 2017, Paper 2H, Q8]