

Cumulative Frequency

Please write clearly in block capitals

Forename:

Surname:

Materials

For this paper you must have:

- mathematical instruments



You must **not** use a calculator.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

- In all calculations, show clearly how you work out your answer.

- 1** Pete measured how late his school bus was over the course of 6 months. (Level 6)
The results are summarised in the table below.

- 1(a)** Use the information to complete the table below.

[2 marks]

Delay (mins)	Frequency	Cumulative Frequency
$0 < t \leq 2$	6	
$2 < t \leq 4$	13	
$4 < t \leq 6$	34	
$6 < t \leq 8$	19	
$8 < t \leq 10$	13	
$10 < t \leq 12$	5	

- 1(b)** Pete wants to plot the information shown in the table to make a cumulative frequency diagram.

Starting with the smallest x value, give the first two coordinates Pete will plot.

[2 marks]

Answer _____ and _____

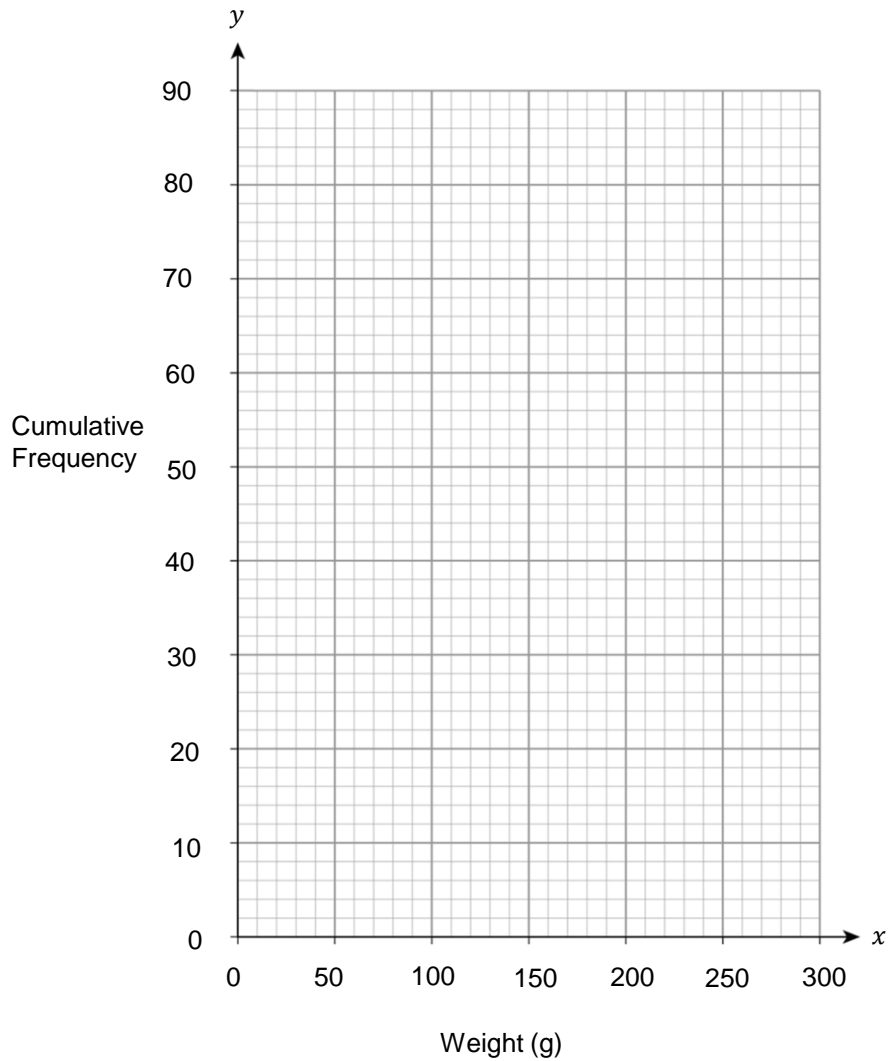
Turn over for next question

- 2 Oliver picks 90 apples from the apple trees in his garden and weighs them individually. (Level 6)
The weights have been summarised in the cumulative frequency table below.

Weight (g)	Cumulative Frequency
$0 < g \leq 50$	5
$0 < g \leq 100$	16
$0 < g \leq 150$	43
$0 < g \leq 200$	67
$0 < g \leq 250$	80
$0 < g \leq 300$	90

Use this information to plot a cumulative frequency diagram on the axes below.

[3 marks]



Turn over for next question

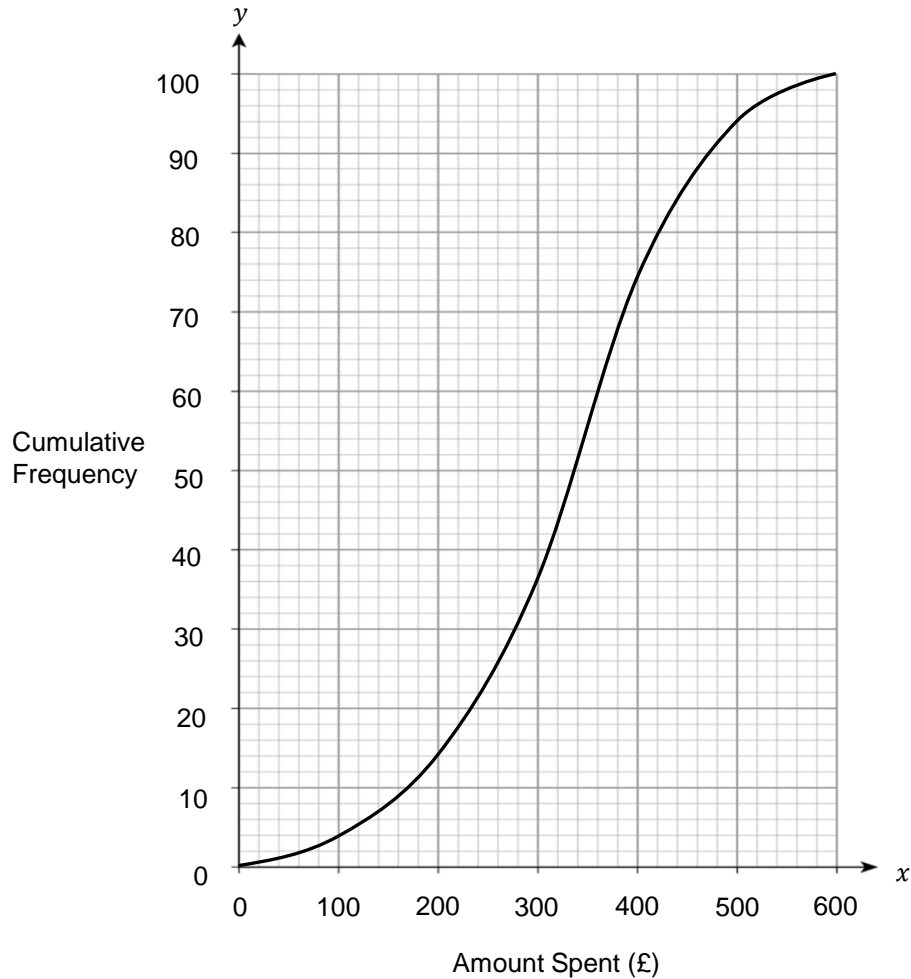
Turn over ►

3

Connor does a survey on how much money 100 people spend over the Christmas period.

(Level 6)

The results have been plotted on a cumulative frequency diagram below.



3(a)

Use the cumulative frequency diagram to find the median amount spent.

[1 mark]

Answer _____

3(b)

Use the cumulative frequency diagram above to find the lower quartile.

[1 mark]

Answer _____

Question continues on next page

3(c) Use the cumulative frequency diagram to find the upper quartile.

[1 mark]

Answer _____

3(d) Use the cumulative frequency diagram to find the inter-quartile range.

[1 mark]

Answer _____

3(e) Use the cumulative frequency diagram to estimate the number of people who spent over £500 during the Christmas period.

[1 mark]

Answer _____



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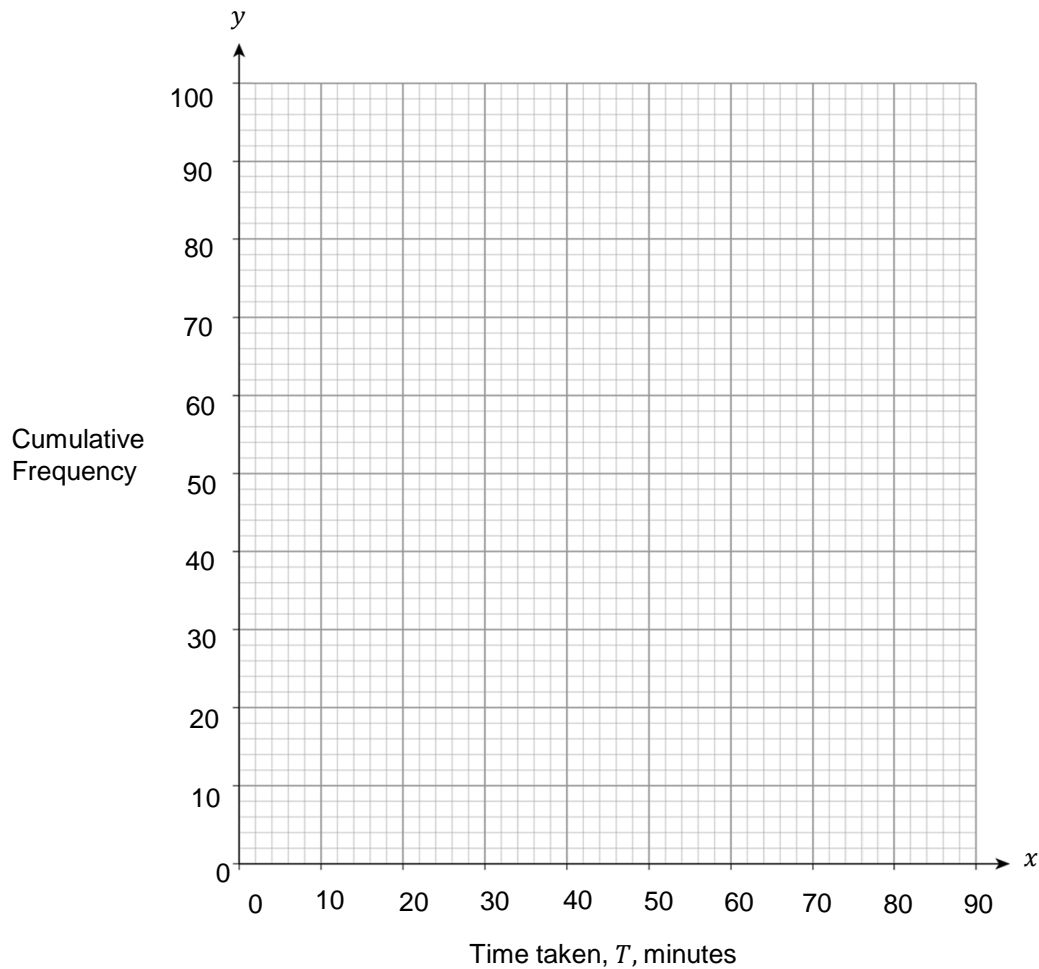
- 4 Debbie collects data on the time it takes people in her year group to complete a cross-country race. (Level 6)

The completion times have been summarised in the grouped frequency table below.

Time taken (mins)	Frequency	
$0 < t \leq 20$	2	
$20 < t \leq 30$	12	
$30 < t \leq 40$	23	
$40 < t \leq 50$	30	
$50 < t \leq 60$	14	
$60 < t \leq 70$	5	
$70 < t \leq 90$	4	

- 4(a) Use the information in the table to plot a cumulative frequency diagram on the axes below.

[3 marks]



Turn over ►

4(b) Using your cumulative frequency diagram, calculate the Inter-quartile range

[2 marks]

Answer _____

4(c) Using your cumulative frequency diagram, calculate an estimate for the number of people who completed the race in under 45 minutes.

[2 marks]

Answer _____



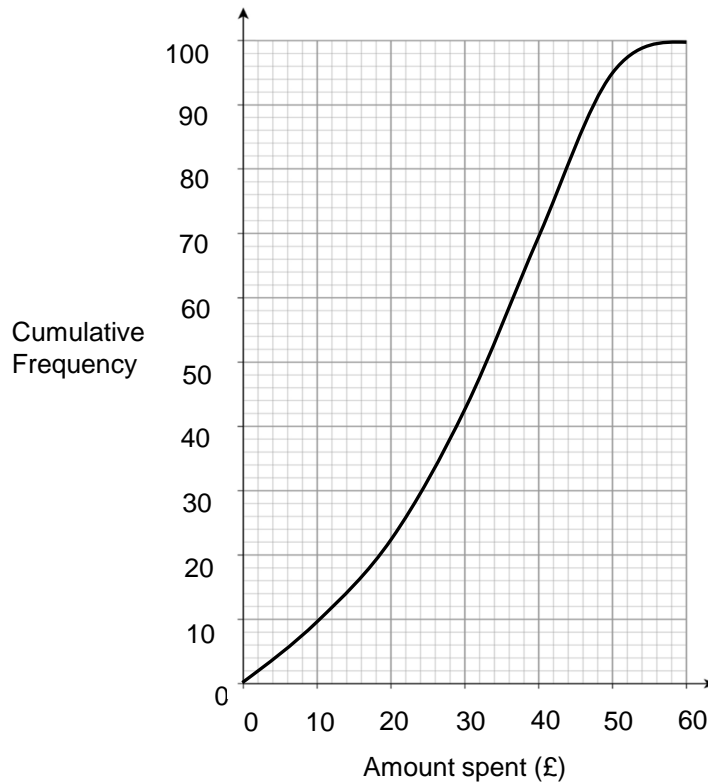
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- 5** Eve collects information on the household spending per day for 100 families. (Level 6)
The information has been summarised in the cumulative frequency diagram below.



- 5(a)** How many families spend greater than £25, but lower than £45, per day?

[2 marks]

Answer _____

- 5(b)** Her friend Frances collected her own data.
The median for her data is £27 and the inter-quartile range is £30.
Compare Eve and Frances' spending data.

[2 marks]

Answer _____

6

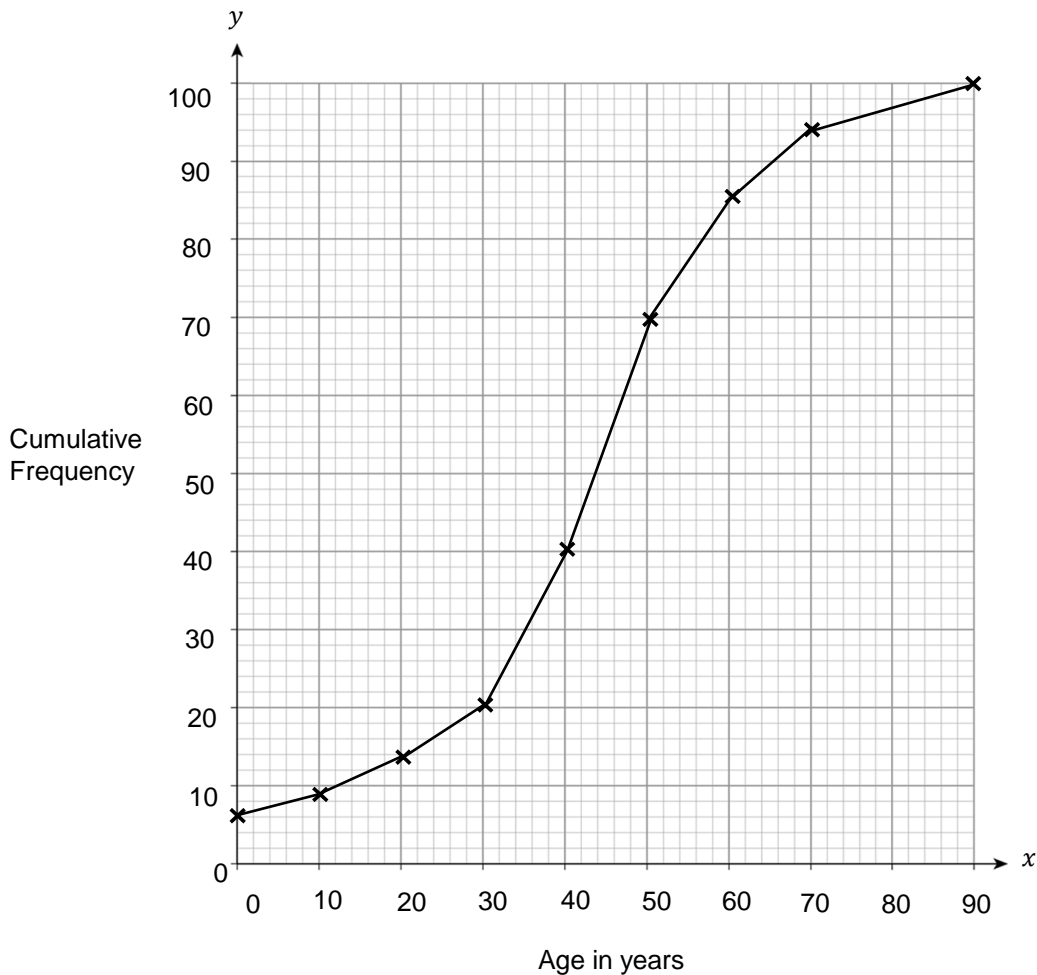
Graham collects data on the ages of people in his village.

(Level 6)

He has summarised the information in a frequency table below.

He then plots his information on a cumulative frequency diagram as shown.

Age (years)	Frequency	Cumulative Frequency
$0 < a \leq 10$	2	2
$10 < a \leq 20$	4	6
$20 < a \leq 30$	8	14
$30 < a \leq 40$	18	32
$40 < a \leq 60$	48	80
$60 < a \leq 70$	8	88
$70 < a \leq 90$	12	100



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6(a)

State three mistakes Graham has made when plotting his cumulative frequency diagram.

[3 marks]

1. _____

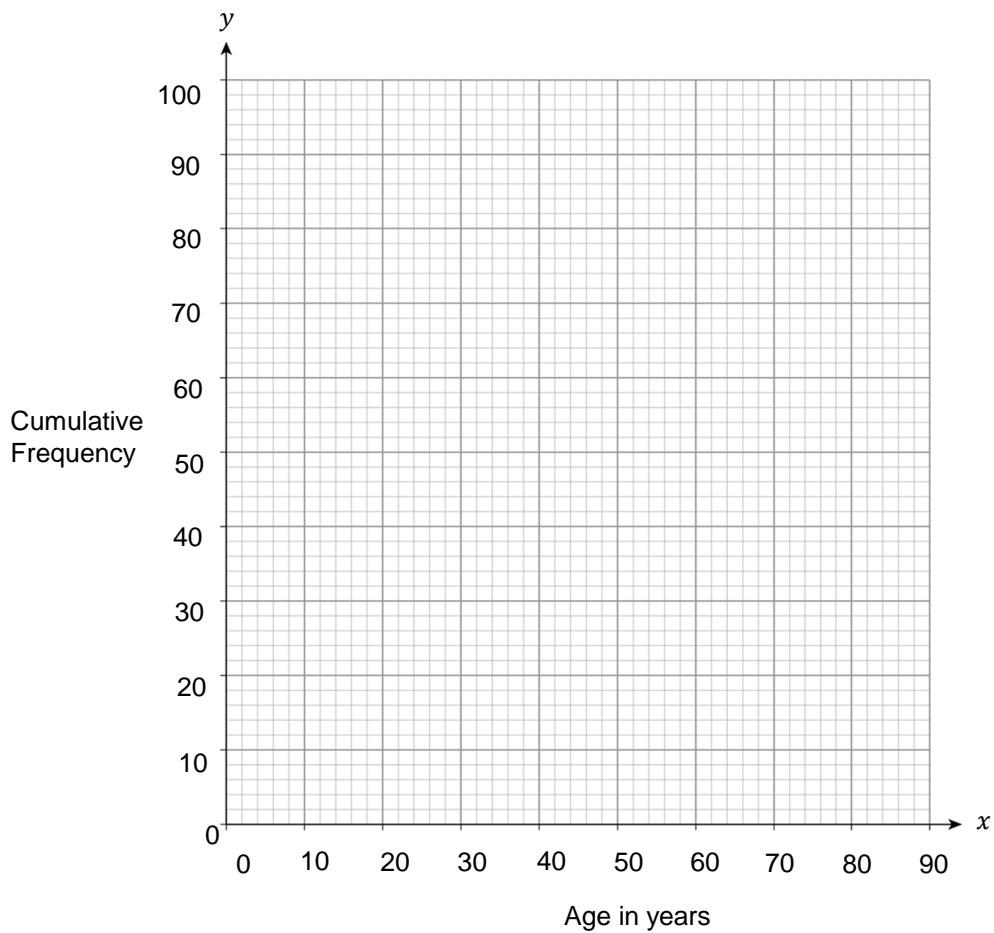
2. _____

3. _____

6(b)

Use the axes below to plot a corrected version of Graham's cumulative frequency diagram

[2 marks]



End of questions

END