



ACHIEVE ACADEMY

GCSE Maths — Higher Tier

Cumulative Frequency & Box Plots · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Cumulative Frequency & Box Plots

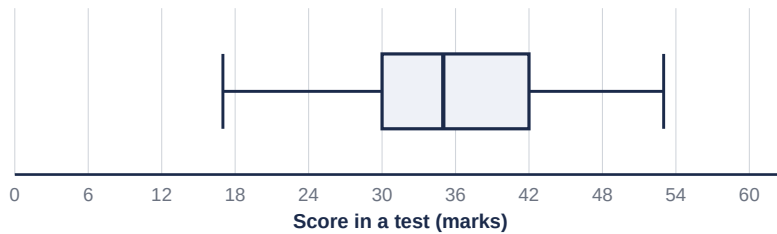
Total marks available: 81

Cumulative Frequency & Box Plots

Q1

[2 marks]

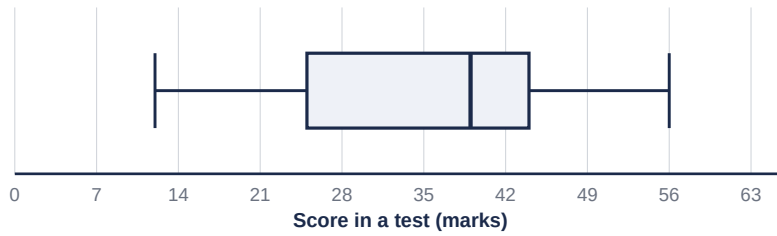
The box plot shows score in a test (marks) for a sample of students. (a) Find the range. (b) Find the interquartile range (IQR).



Q2

[2 marks]

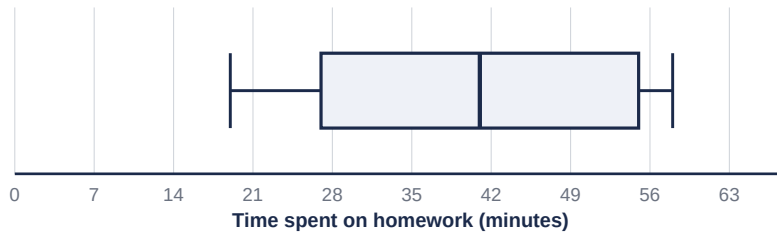
The box plot shows score in a test (marks) for a sample of students. (a) Find the range. (b) Find the interquartile range (IQR).



Q3

[1 mark]

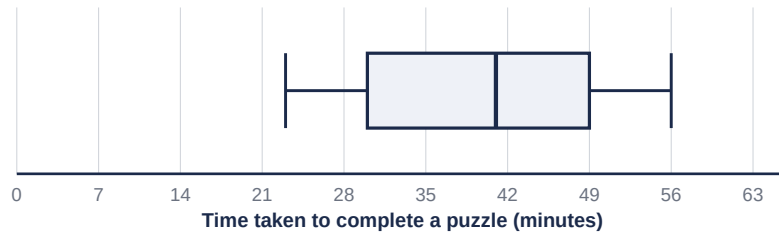
The box plot shows time spent on homework (minutes) for a sample of students. Write down the upper quartile.



Q4

[2 marks]

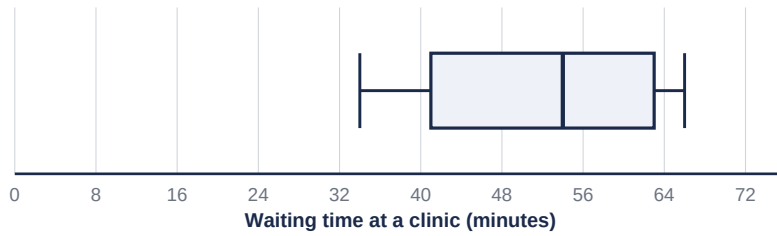
The box plot shows time taken to complete a puzzle (minutes) for a sample of pupils. (a) Find the range. (b) Find the interquartile range (IQR).



Q5

[1 mark]

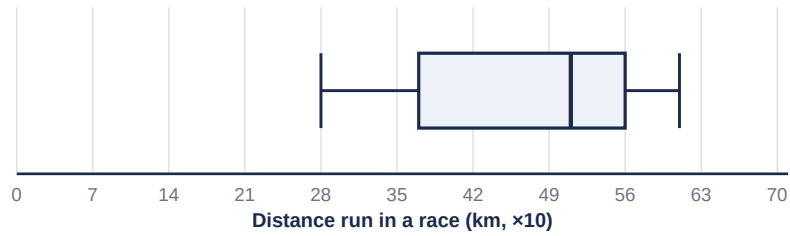
The box plot shows waiting time at a clinic (minutes) for a sample of patients. Write down the upper quartile.



Q6

[1 mark]

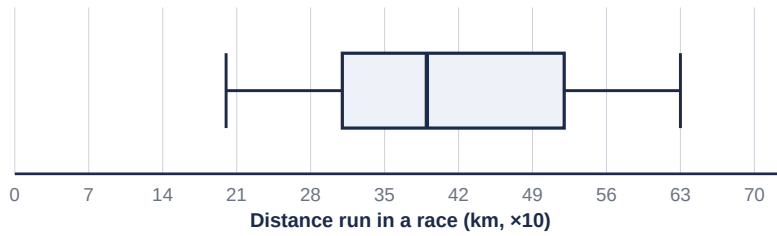
The box plot shows distance run in a race (km, $\times 10$) for a sample of runners. Write down the minimum.



Q7

[2 marks]

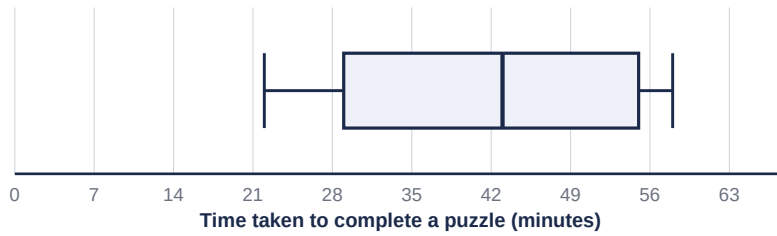
The box plot shows distance run in a race (km, $\times 10$) for a sample of runners. (a) Find the range. (b) Find the interquartile range (IQR).



Q8

[2 marks]

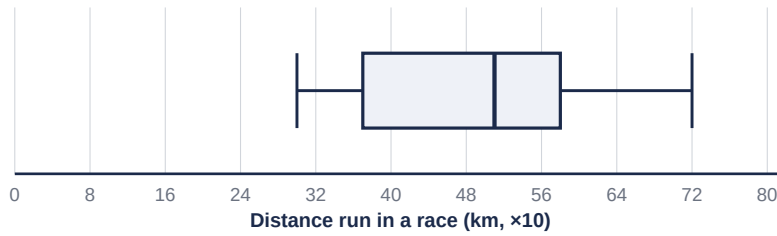
The box plot shows time taken to complete a puzzle (minutes) for a sample of pupils. (a) Find the range. (b) Find the interquartile range (IQR).



Q9

[1 mark]

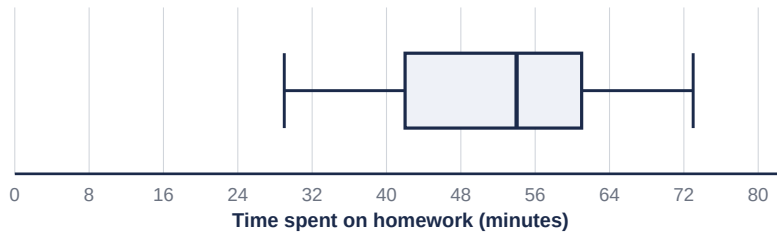
The box plot shows distance run in a race (km, $\times 10$) for a sample of runners. Write down the maximum.



Q10

[1 mark]

The box plot shows time spent on homework (minutes) for a sample of students. Write down the minimum.



Q11

[2 marks]

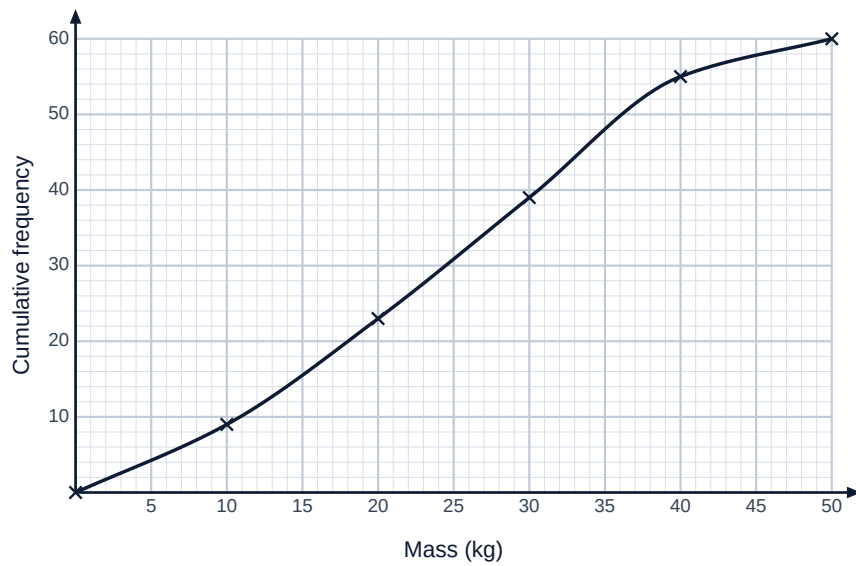
The table shows information about the times some students spent on homework. Complete the cumulative frequency column.

Time (t minutes)	Frequency	Cumulative frequency
$10 < t \leq 20$	7	
$20 < t \leq 30$	9	
$30 < t \leq 40$	22	
$40 < t \leq 50$	13	
$50 < t \leq 60$	6	
$60 < t \leq 70$	2	

Q12

[2 marks]

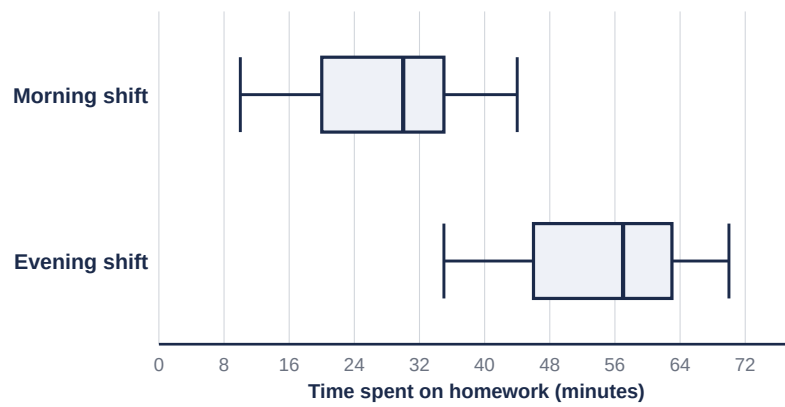
The cumulative frequency graph shows information about the masses of some parcels. Use the graph to estimate how many of the parcels had a mass of less than 25 kg.



Q13

[2 marks]

The box plots show time spent on homework (minutes) for Morning shift and Evening shift. Compare the medians of the two groups.



Q14

[2 marks]

The table shows information about the times some students spent on homework. Complete the cumulative frequency column.

Time (t minutes)	Frequency	Cumulative frequency
$0 < t \leq 10$	9	
$10 < t \leq 20$	9	
$20 < t \leq 30$	14	
$30 < t \leq 40$	12	
$40 < t \leq 50$	5	
$50 < t \leq 60$	2	

Q15

[2 marks]

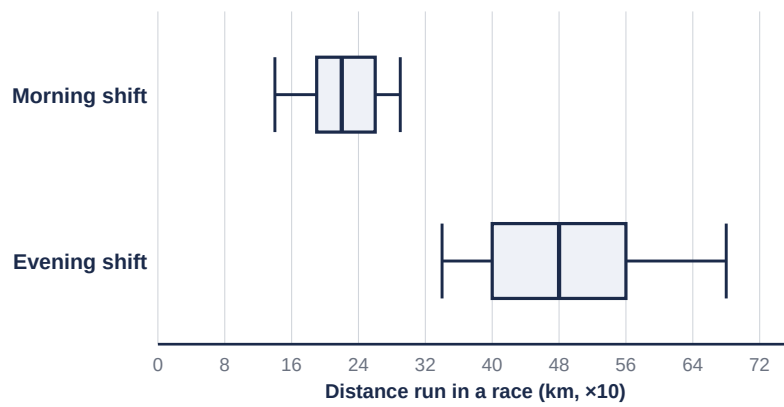
The table shows information about the heights of some plants. Complete the cumulative frequency column.

Height (h cm)	Frequency	Cumulative frequency
$20 < h \leq 30$	4	
$30 < h \leq 40$	16	
$40 < h \leq 50$	14	
$50 < h \leq 60$	15	
$60 < h \leq 70$	7	
$70 < h \leq 80$	2	

Q16

[2 marks]

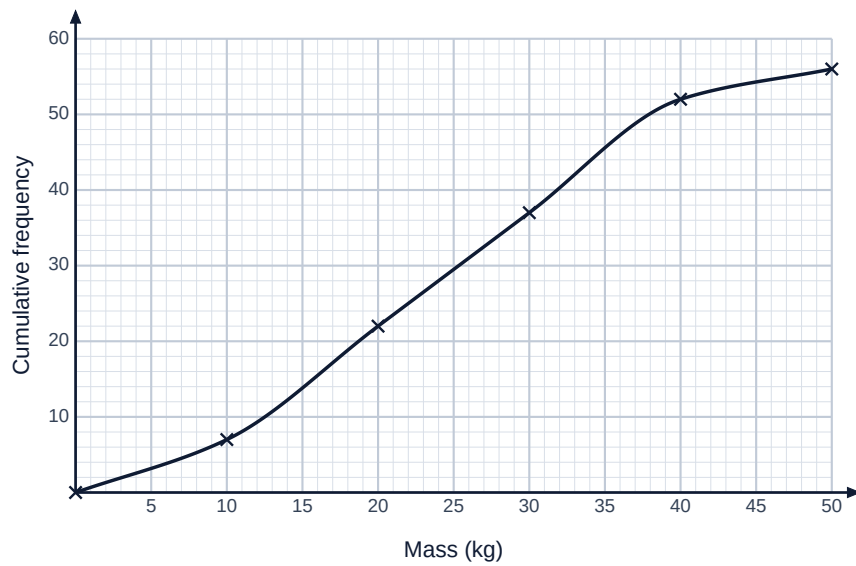
The box plots show distance run in a race (km, $\times 10$) for Morning shift and Evening shift. Compare the medians of the two groups.



Q17

[2 marks]

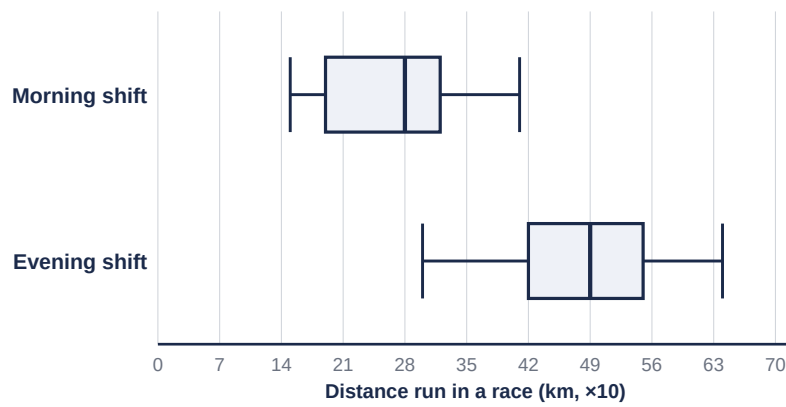
The cumulative frequency graph shows information about the masses of some parcels. Use the graph to estimate how many of the parcels had a mass of more than 15 kg.



Q18

[2 marks]

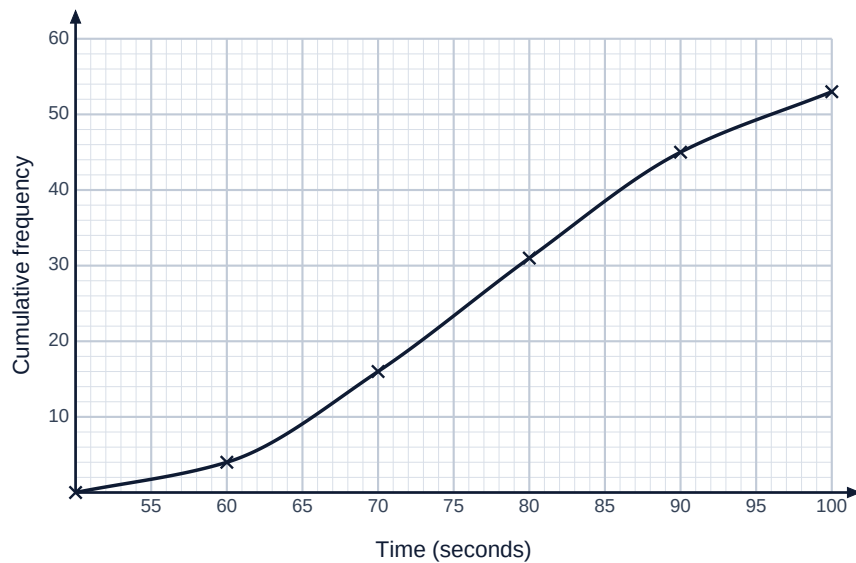
The box plots show distance run in a race (km, $\times 10$) for Morning shift and Evening shift. Compare the medians of the two groups.



Q19

[2 marks]

The cumulative frequency graph shows information about the times some runners took to run 400 metres. Use the graph to estimate how many of the runners took more than 85 seconds.



Q20

[2 marks]

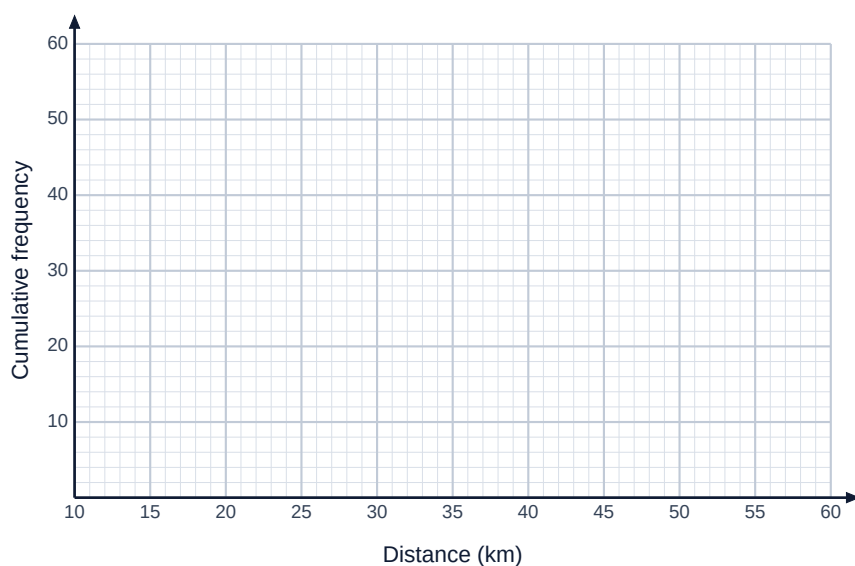
The table shows information about the distances some people travel to work. Complete the cumulative frequency column.

Distance (d km)	Frequency	Cumulative frequency
$20 < d \leq 30$	9	
$30 < d \leq 40$	14	
$40 < d \leq 50$	21	
$50 < d \leq 60$	15	
$60 < d \leq 70$	4	
$70 < d \leq 80$	4	

The table shows information about the distances some people travel to work.

- (a) Complete the cumulative frequency column.
- (b) Draw a cumulative frequency graph on the grid.
- (c) Use your graph to estimate the median.

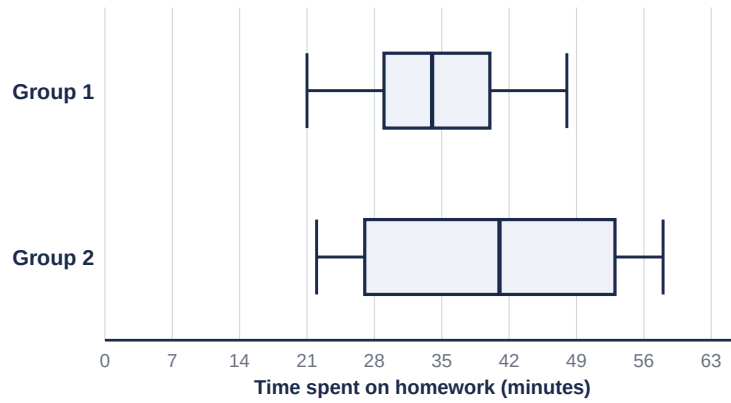
Distance (d km)	Frequency	Cumulative frequency
$10 < d \leq 20$	9	
$20 < d \leq 30$	13	
$30 < d \leq 40$	15	
$40 < d \leq 50$	10	
$50 < d \leq 60$	9	



Q22

[4 marks]

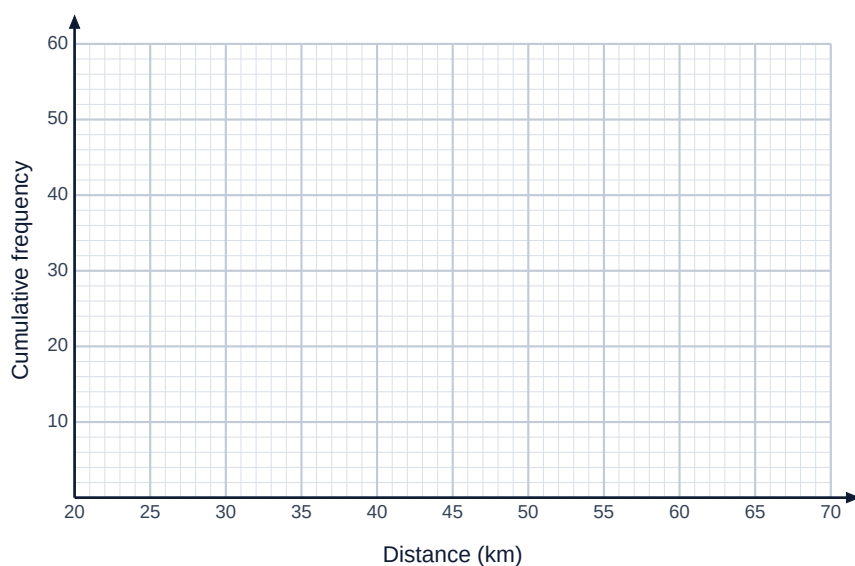
The box plots show time spent on homework (minutes) for Group 1 and Group 2. Compare the two distributions, referring to the median and the interquartile range.



The table shows information about the distances some people travel to work.

- (a) Complete the cumulative frequency column.
(b) Draw a cumulative frequency graph on the grid.
(c) Use your graph to estimate the median.

Distance (d km)	Frequency	Cumulative frequency
$20 < d \leq 30$	7	
$30 < d \leq 40$	9	
$40 < d \leq 50$	19	
$50 < d \leq 60$	9	
$60 < d \leq 70$	8	

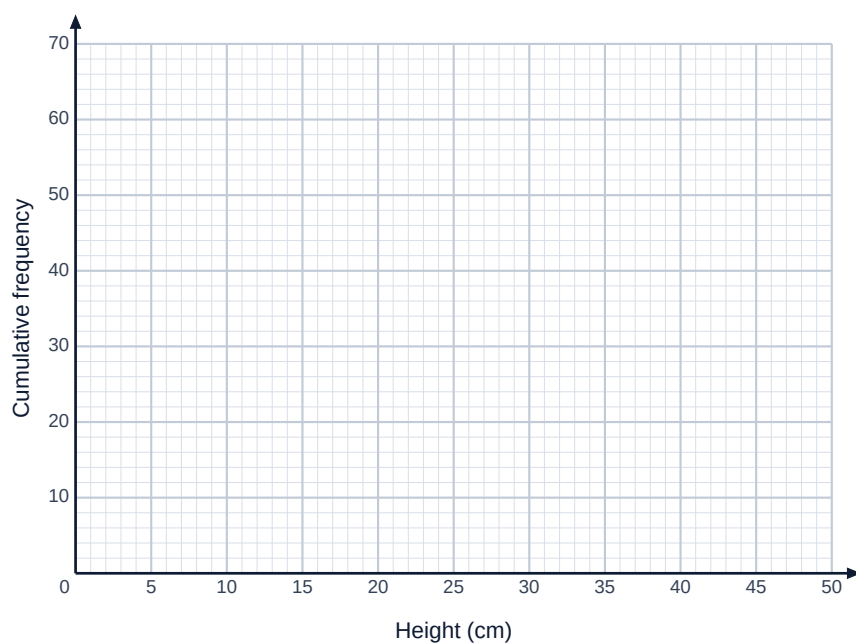


A large dashed rectangular box for drawing the cumulative frequency graph.

The table shows information about the heights of some plants.

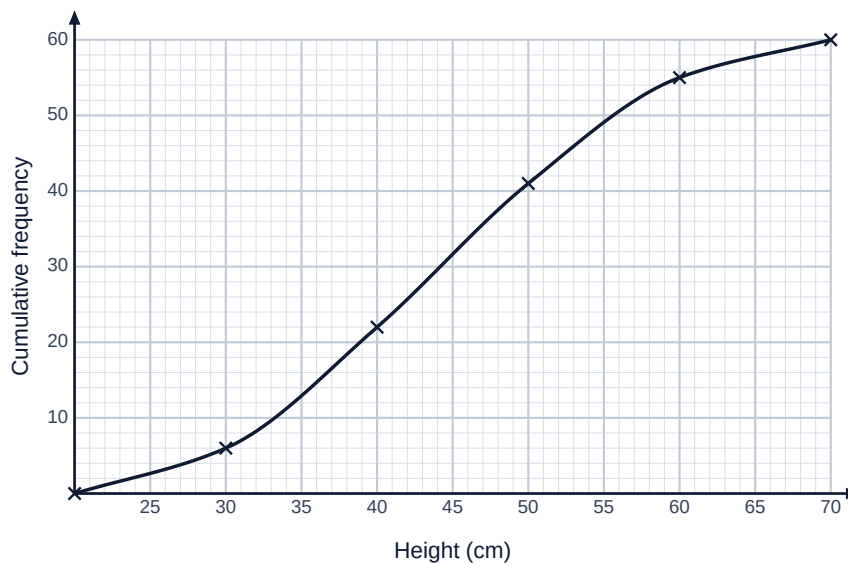
- (a) Complete the cumulative frequency column.
- (b) Draw a cumulative frequency graph on the grid.
- (c) Use your graph to estimate the median.

Height (h cm)	Frequency	Cumulative frequency
$0 < h \leq 10$	6	
$10 < h \leq 20$	15	
$20 < h \leq 30$	22	
$30 < h \leq 40$	12	
$40 < h \leq 50$	7	



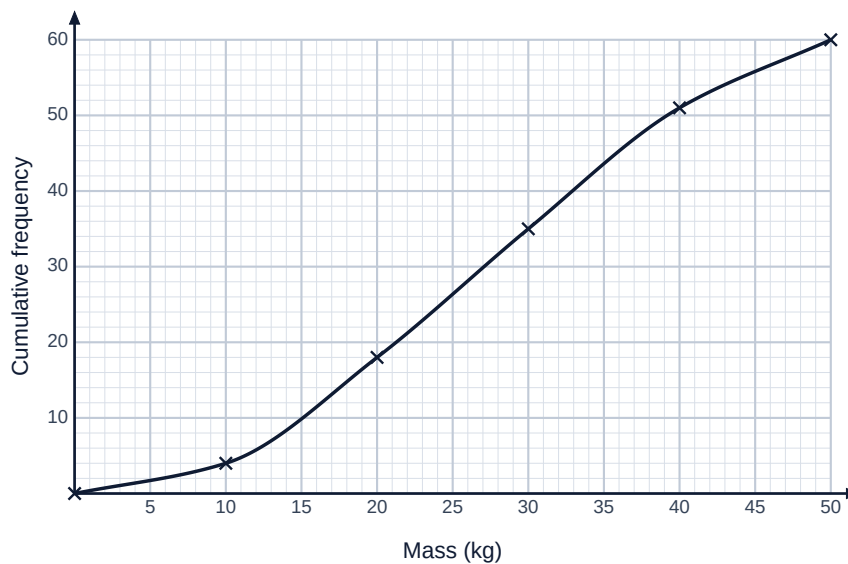
The cumulative frequency graph shows information about the heights of some plants.

- (a) Use the graph to estimate the median.
(b) Use the graph to estimate the interquartile range.



The cumulative frequency graph shows information about the masses of some parcels.

- (a) Use the graph to estimate the median.
(b) Use the graph to estimate the interquartile range.



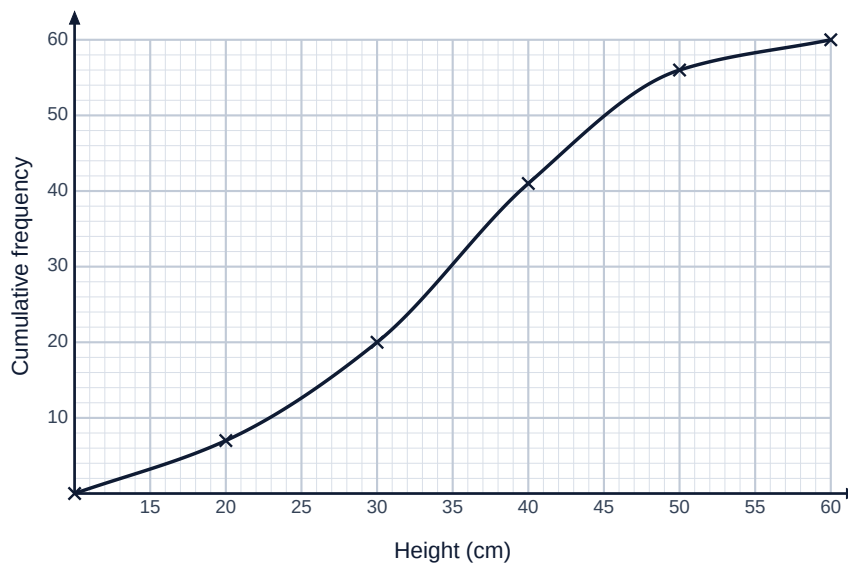
A large dashed rectangular box for working space.

Q27

[4 marks]

The cumulative frequency graph shows information about the heights of some plants.

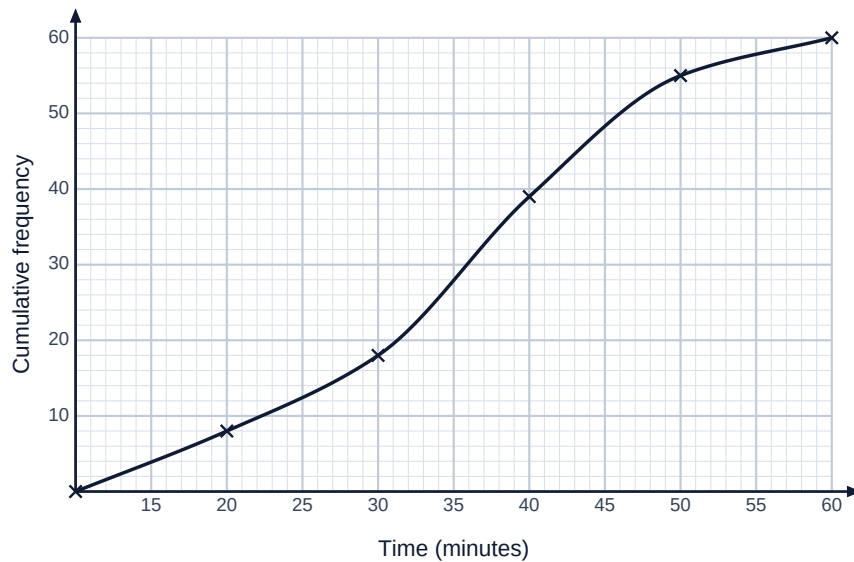
- (a) Use the graph to estimate the median.
(b) Use the graph to estimate the interquartile range.



Area for working or answer.

The cumulative frequency graph shows information about the times some students spent on homework.

- (a) Use the graph to estimate the median.
(b) Use the graph to estimate the interquartile range.

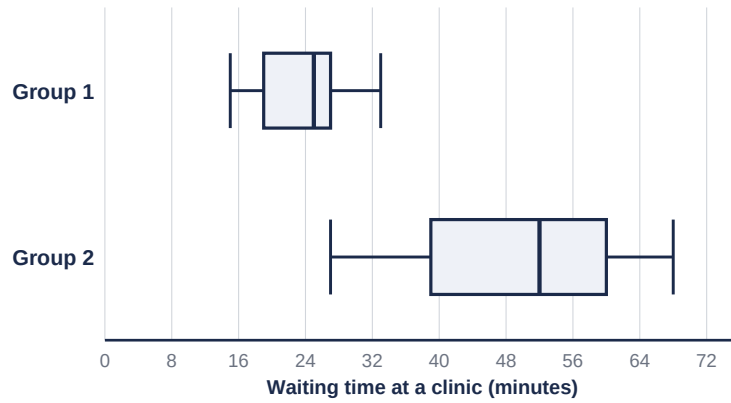


A large dashed rectangular box for working space.

Q29

[4 marks]

The box plots show waiting time at a clinic (minutes) for Group 1 and Group 2. Compare the two distributions, referring to the median and the interquartile range.



Q30

[4 marks]

The box plots show waiting time at a clinic (minutes) for Team X and Team Y. Compare the two distributions, referring to the median and the interquartile range.

