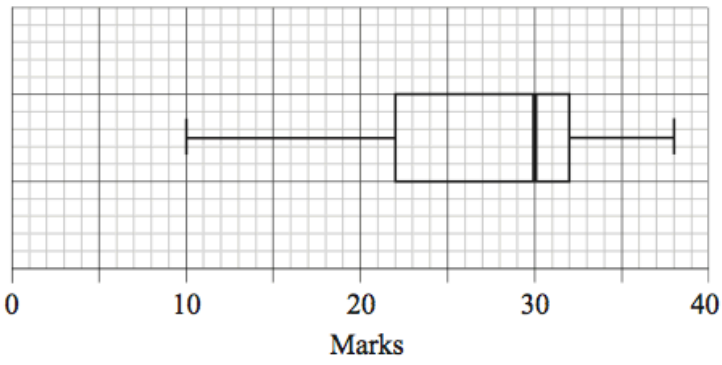
Descriptive stats 2 C/Freq and Box plots

1) 56 students were given a test out of 40 marks. The teacher used the following box and whisker plot to represent the marks of the students.



(a) Write down

(i) the median mark;

(ii) the 75th percentile mark;

(iii) the range of marks. *[4 marks]*

(b) Estimate the number of students who achieved a mark greater than 32. *[2 marks]*

2) The cumulative frequency table below shows the ages of 200 students at a college.

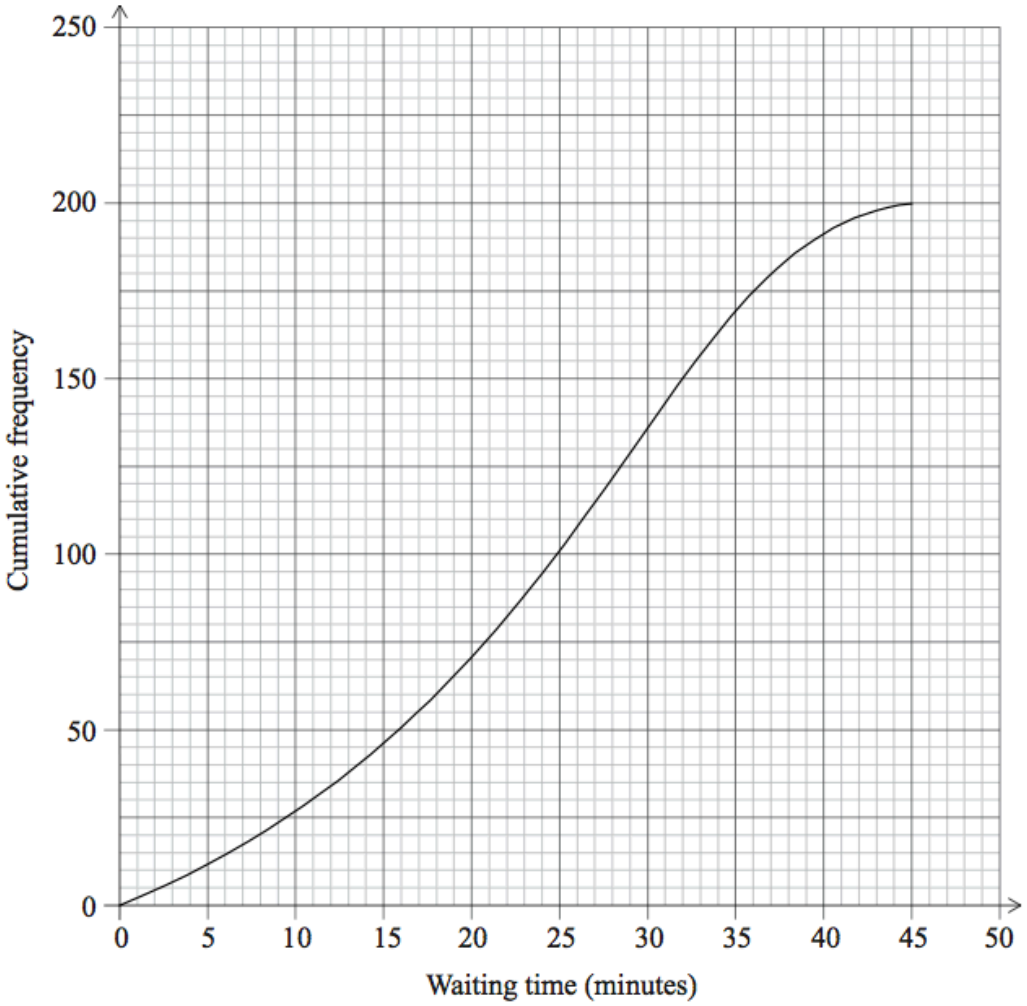
Age	Number of Students	Cumulative Frequency
17	3	3
18	72	75
19	62	137
20	31	m
21	12	180
22	9	189
23-25	5	194
> 25	6	n

(a) What are the values of m and n?

(b) How many students are younger than 20?

(c) Find the value in years of the lower quartile.

3) The cumulative frequency graph shows the amount of time in minutes, 200 students spend waiting for their train on a particular morning.

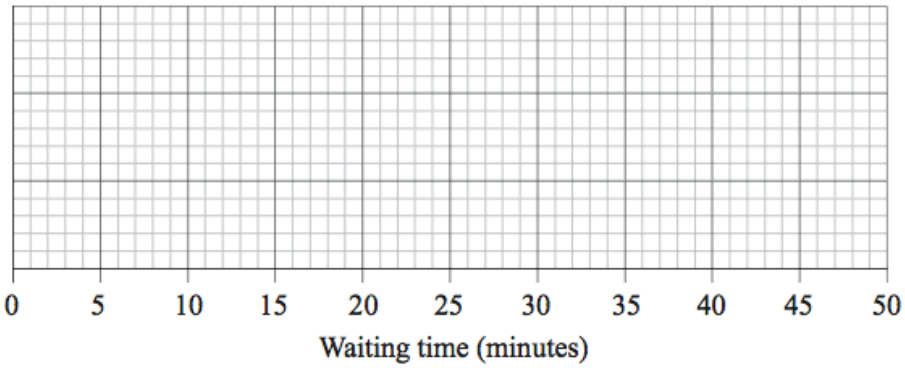


(a) Write down the median waiting time. *[1 mark]*

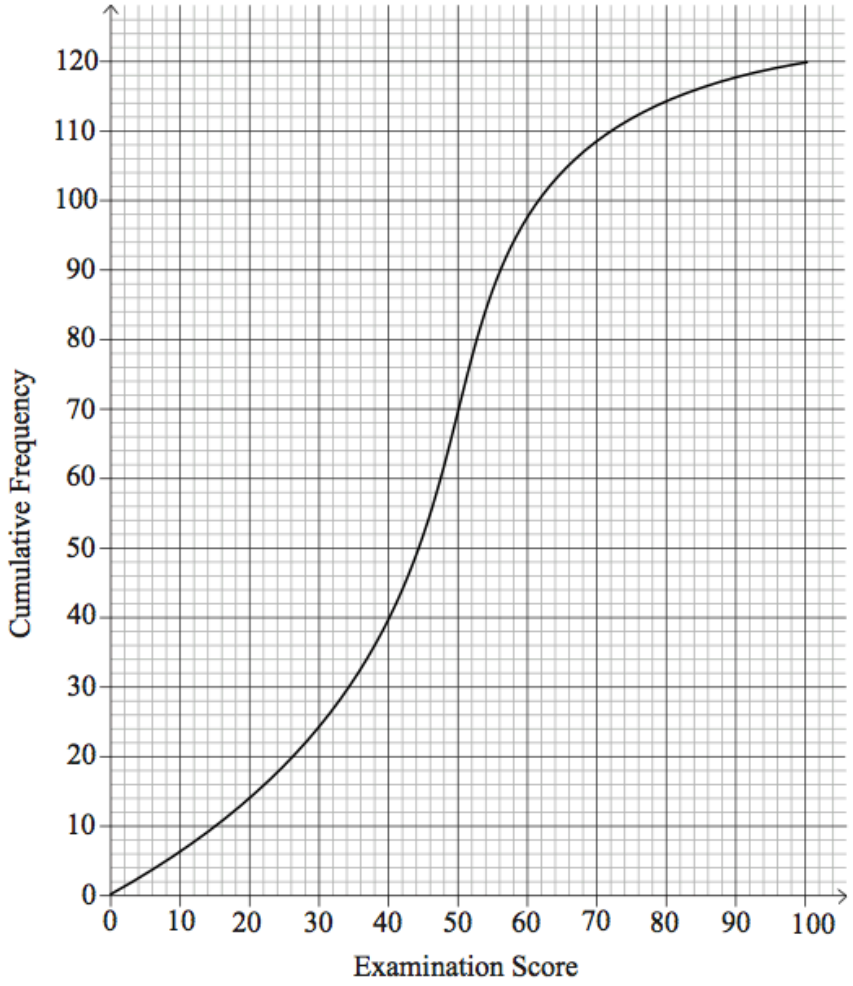
(b) Find the interquartile range for the waiting time. *[2 marks]*

The minimum waiting time is zero and the maximum waiting time is 45 minutes.

(c) Draw a box and whisker plot on the grid below to represent this information. *[3 marks]*



4) 120 Mathematics students in a school sat an examination. Their scores (given as a percentage) were summarized on a cumulative frequency diagram. This diagram is given below.



(a) Complete the grouped frequency table for the students. *[3 marks]*

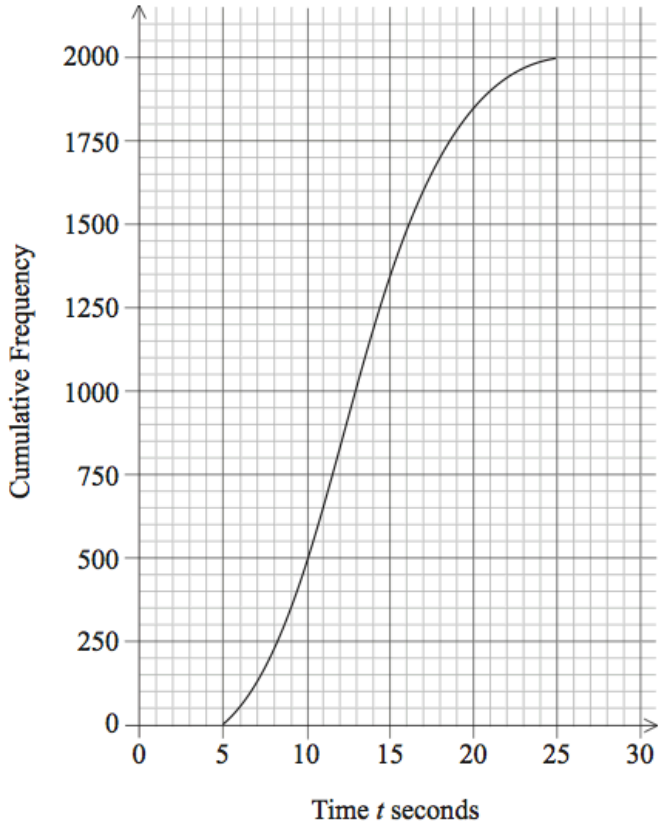
Examination Score x (%)	$0 \le x \le 20$	$20 < x \le 40$	$40 < x \le 60$	$60 < x \le 80$	$80 < x \le 100$
Frequency	14	26			

(b) Write down the mid-interval value of the $40 < x \le 60$ interval. *[1 mark]*

(c) Calculate an estimate of the mean examination score of the students. *[2 marks]*

5)

The diagram shows the cumulative frequency graph for the time t taken to perform a certain task by 2000 men.



(a) Use the diagram to estimate

(i) the median time;

(ii) the upper quartile and the lower quartile;

(iii) the interquartile range. *[4 marks]*

6)

A survey was conducted of the number of bedrooms in 208 randomly chosen houses. The results are shown in the following table.

Number of bedrooms	1	2	3	4	5	6
Number of houses	41	60	52	32	15	8

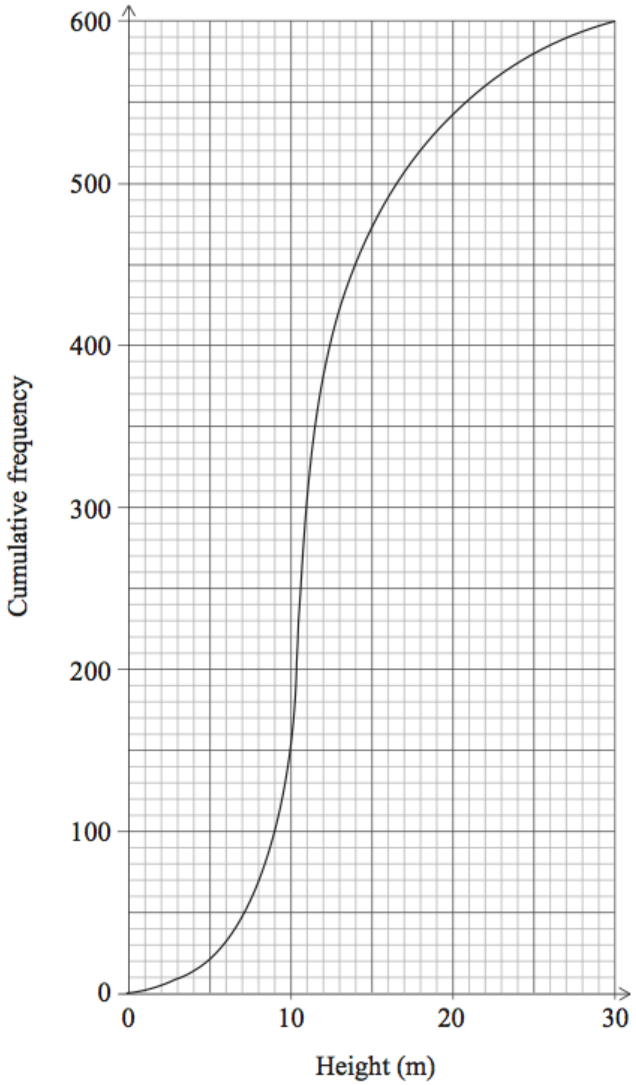
(a) State whether the data is discrete or continuous. *[1 mark]*

(b) Write down the mean number of bedrooms per house. *[2 marks]*

(c) Write down the standard deviation of the number of bedrooms per house. *[1 mark]*

(d) Find how many houses have a number of bedrooms greater than one standard deviation above the mean. *[2 marks]*

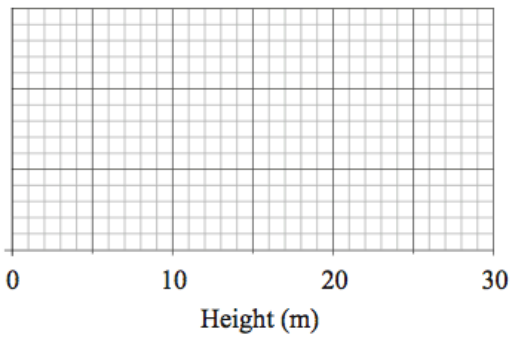
7) The diagram below shows the cumulative frequency distribution of the heights in metres of 600 trees in a wood.



(a) Write down the median height of the trees. *[1 mark]*

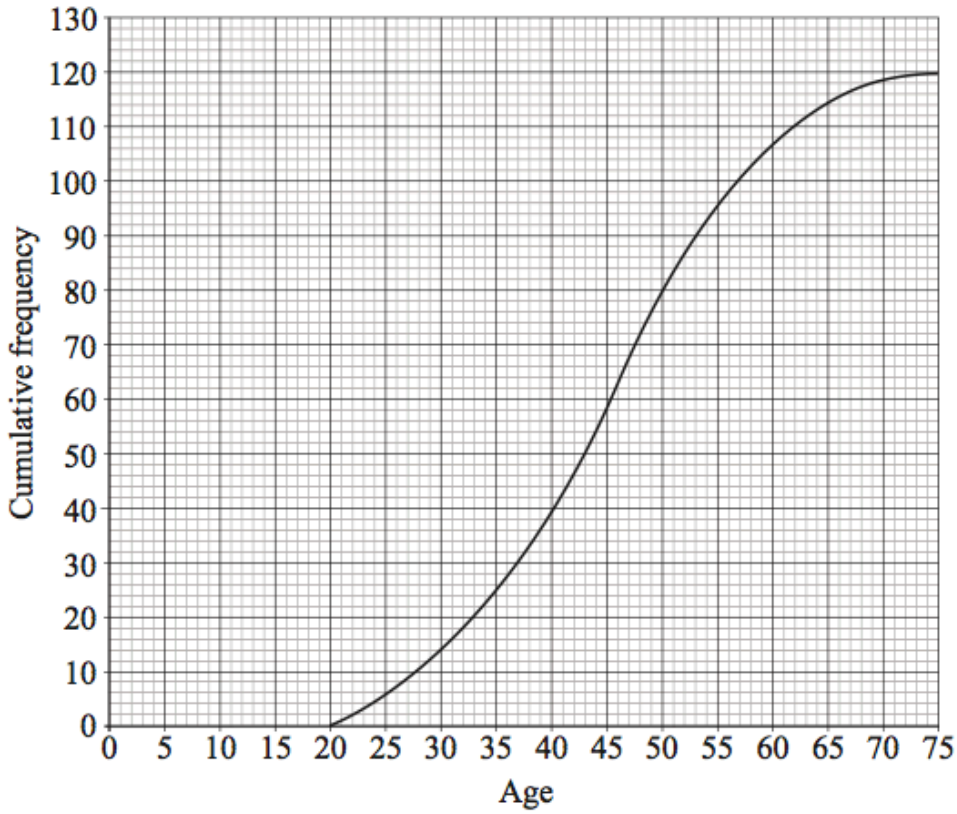
(b) Calculate the interquartile range of the heights of the trees. *[2 marks]*

(c) Given that the smallest tree in the wood is 3 m high and the tallest tree is 28 m high, draw the box and whisker plot on the grid below that shows the distribution of trees in the wood. *[3 marks]*



8)

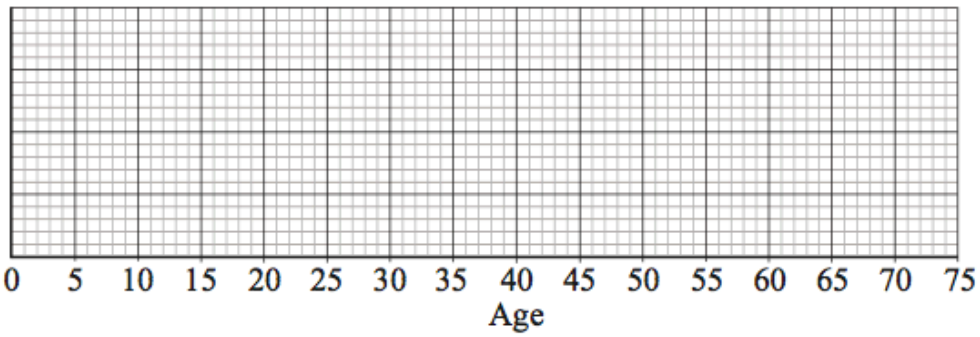
There are 120 teachers in a school. Their ages are represented by the cumulative frequency graph below.



(a) Write down the median age. *[1 mark]*

(b) Find the interquartile range for the ages. *[2 marks]*

(c) Given that the youngest teacher is 21 years old and the oldest is 72 years old, represent the information on a box and whisker plot using the scale below. *[3 marks]*



9)

The local council has been monitoring the number of cars parked near a supermarket on an hourly basis. The results are displayed below.

Parked Cars/Hour	Frequency	Cumulative Frequency
0 – 19	3	3
20 – 39	15	18
40 – 59	25	w
60 – 79	35	78
80 – 99	17	95

(a) Write down the value of w.

(b) Draw and label the **Cumulative Frequency** graph for this data.

(c) Determine the median number of cars per hour parked near the supermarket.