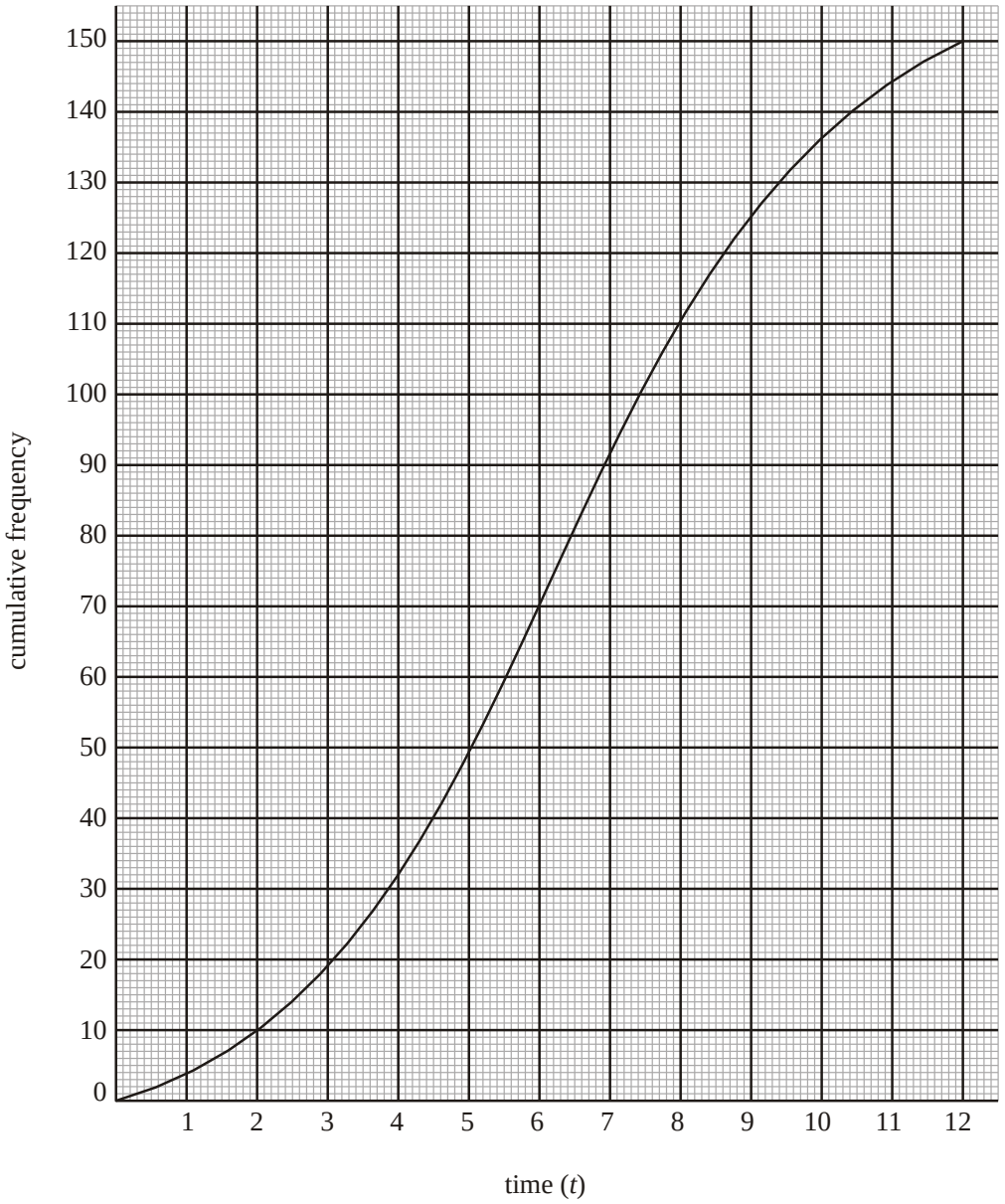
1. The following is the cumulative frequency curve for the time, t minutes, spent by 150 people in a store on a particular day.



(a) (i) How many people spent less than 5 minutes in the store?

(ii) Find the number of people who spent between 5 and 7 minutes in the store.

(iii) Find the median time spent in the store.

(6)

(b) Given that 40% of the people spent longer than k minutes, find the value of k.

(3)

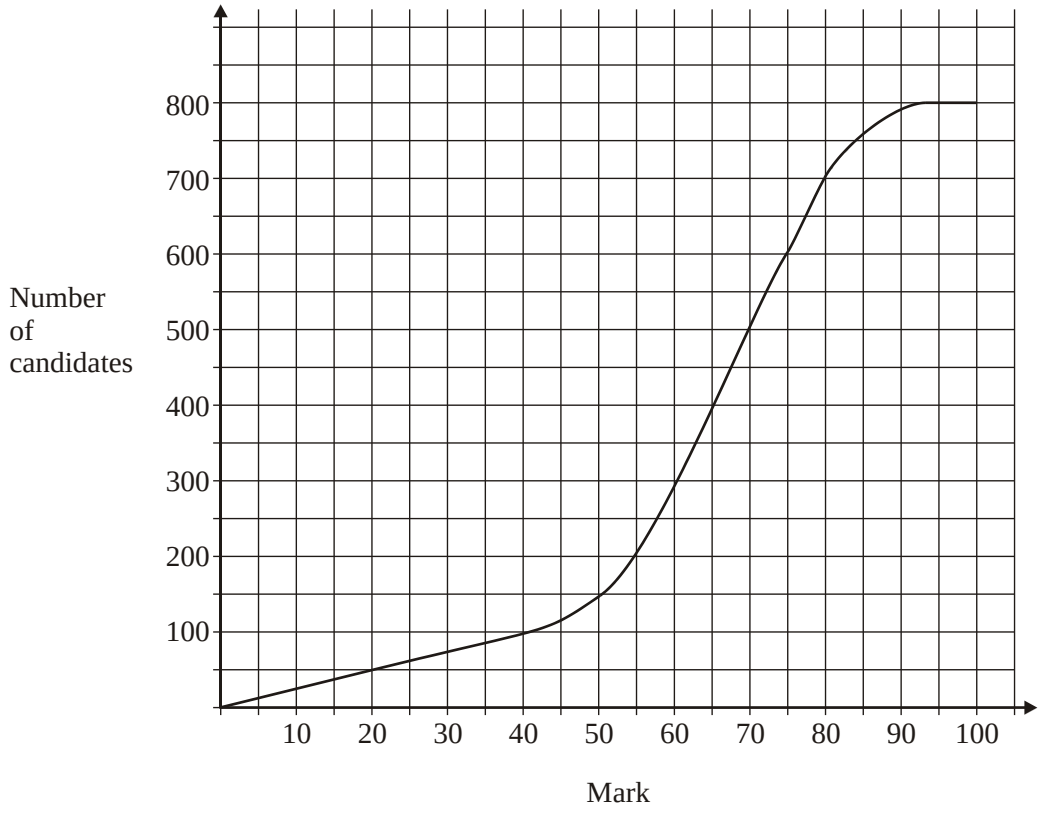
(c) (i) **On your answer sheet**, copy and complete the following frequency table.

t (minutes)	$0 \le t < 2$	$2 \le t < 4$	$4 \le t < 6$	$6 \le t < 8$	$8 \le t < 10$	$10 \le t < 12$
Frequency	10	23				15

(ii) Hence, calculate an estimate for the mean time spent in the store.

(5)
(Total 14 marks)

2. A test marked out of 100 is written by 800 students. The cumulative frequency graph for the marks is given below.



(a) Write down the number of students who scored 40 marks or less on the test.

(b) The middle 50% of test results lie between marks a and b, where $a < b$. Find a and b.

(Total 6 marks)

3. The table below shows the marks gained in a test by a group of students.

Mark	1	2	3	4	5
Number of students	5	10	p	6	2

The median is 3 and the mode is 2. Find the **two** possible values of p.

(Total 6 marks)

4. From January to September, the mean number of car accidents per month was 630. From October to December, the mean was 810 accidents per month.

What was the mean number of car accidents per month for the whole year?

(Total 6 marks)

5. Three positive integers a, b, and c, where $a < b < c$, are such that their median is 11, their mean is 9 and their range is 10. Find the value of a.

(Total 6 marks)

6. The mean of the population $x_1, x_2, \ldots\ldots, x_{25}$ is m. Given that $\sum_{i=1}^{25} x_i = 300$ and

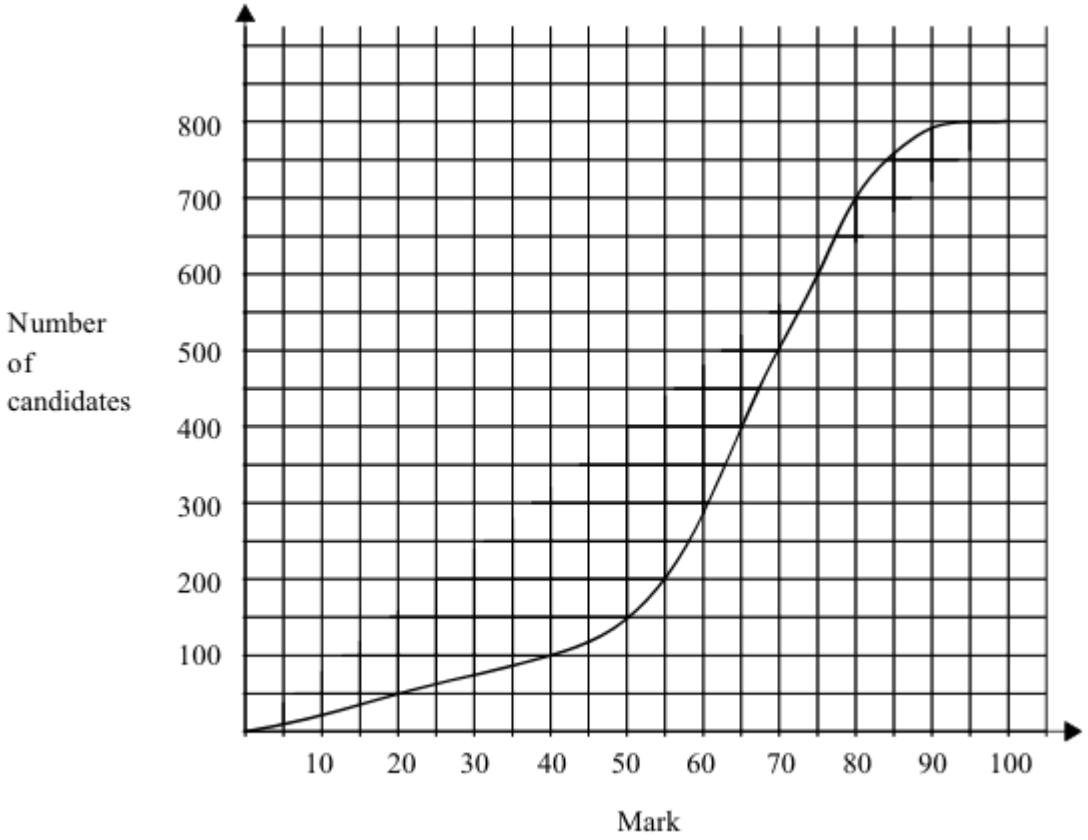
$\sum_{i=1}^{25} (x_i - m)^2 = 625$, find

(a) the value of m;

(b) the standard deviation of the population.

(Total 4 marks)

7. A test marked out of 100 is written by 800 students. The cumulative frequency graph for the marks is given below.



(a) Write down the number of students who scored 40 marks or less on the test.

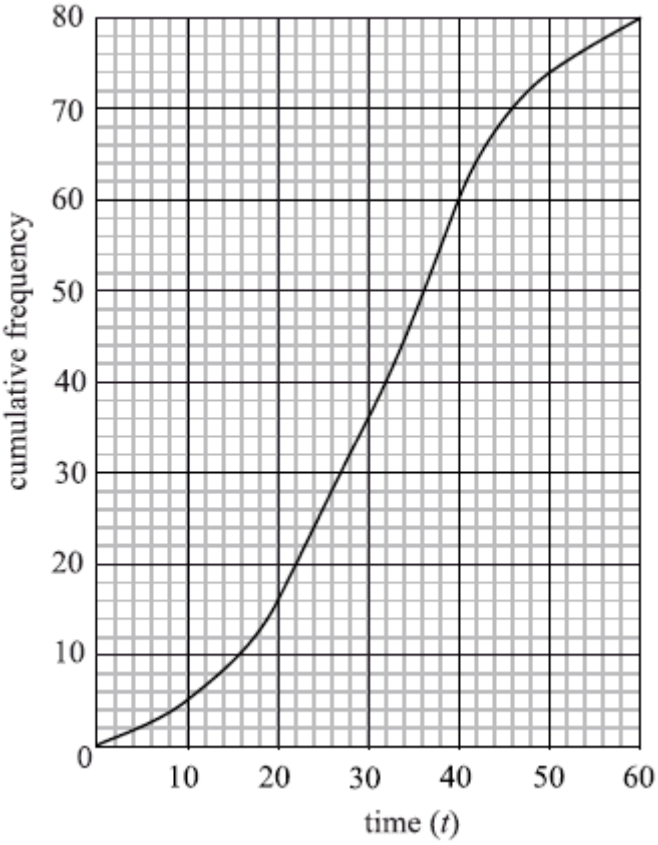
(2)

(b) The middle 50 % of test results lie between marks a and b, where $a < b$.
Find a and b.

(4)

(Total 6 marks)

8. The following is a cumulative frequency diagram for the time t, in minutes, taken by 80 students to complete a task.



(a) Write down the median.

(1)

(b) Find the interquartile range.

(3)

(c) Complete the frequency table below.

Time (minutes)	**Number of students**
$0 \leq t < 10$	5
$10 \leq t < 20$	
$20 \leq t < 30$	20
$30 \leq t < 40$	24
$40 \leq t < 50$	
$50 \leq t < 60$	6

(2)
(Total 6 marks)

9. At a conference of 100 mathematicians there are 72 men and 28 women. The men have a mean height of 1.79 m and the women have a mean height of 1.62 m. Find the mean height of the 100 mathematicians.

(Total 4 marks)

10. There are 50 boxes in a factory. Their weights, w kg, are divided into 5 classes, as shown in the following table.

Class	Weight (kg)	Number of boxes
A	$9.5 \leq w < 18.5$	7
B	$18.5 \leq w < 27.5$	12
C	$27.5 \leq w < 36.5$	13
D	$36.5 \leq w < 45.5$	10
E	$45.5 \leq w < 54.5$	8

(a) Show that the estimated mean weight of the boxes is 32 kg.

(3)

(b) There are x boxes in the factory marked "Fragile". They are all in class E. The estimated mean weight of all the other boxes in the factory is 30 kg. Calculate the value of x.

(4)

(c) An additional y boxes, all with a weight in class D, are delivered to the factory. The total estimated mean weight of **all** of the boxes in the factory is less than 33 kg. Find the largest possible value of y.

(5)

(Total 12 marks)

11. The population below is listed in ascending order.

5, 6, 7, 7, 9, 9, r, 10, s, 13, 13, t

The median of the population is 9.5. The upper quartile Q_3 is 13.

(a) Write down the value of

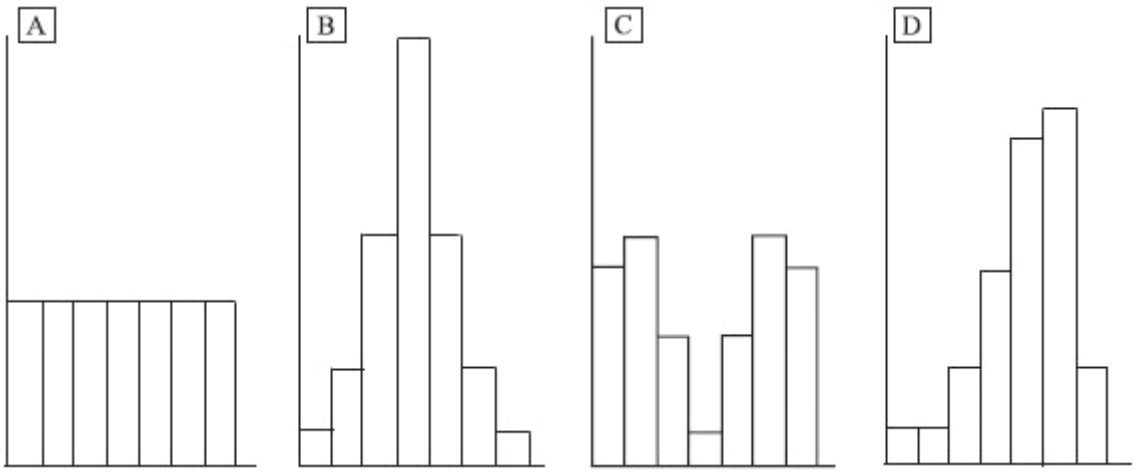
(i) r;

(ii) s.

(b) The mean of the population is 10. Find the value of t.

(Total 6 marks)

12. The four populations A, B, C and D are the same size and have the same range.
Frequency histograms for the four populations are given below.



(a) Each of the three box and whisker plots below corresponds to one of the four populations. Write the letter of the correct population under each plot.

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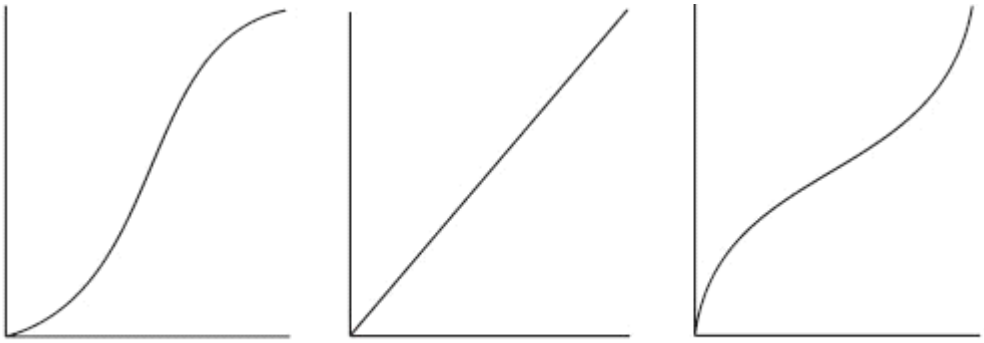
(b) Each of the three cumulative frequency diagrams below corresponds to one of the four populations. Write the letter of the correct population under each diagram.



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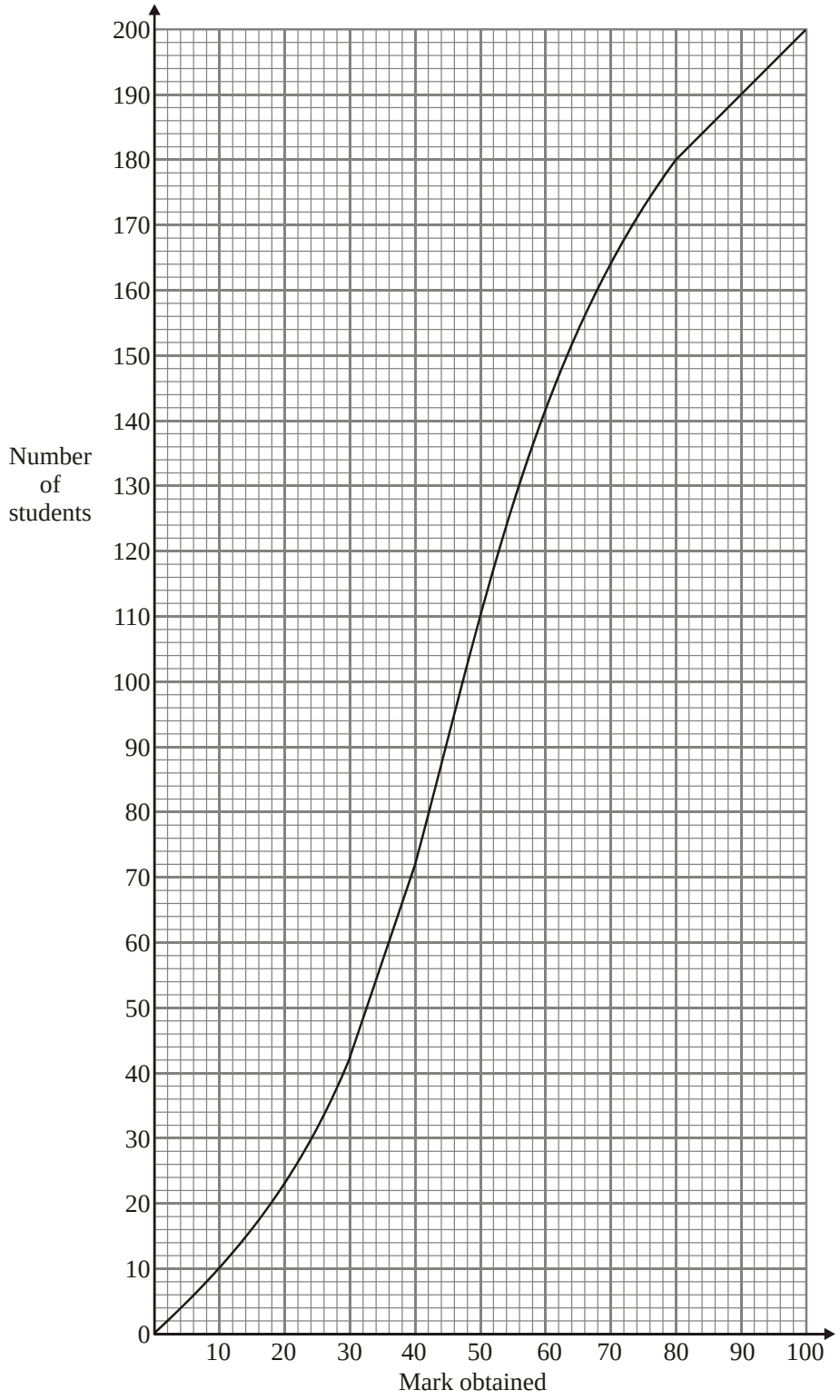
(Total 6 marks)

13. The cumulative frequency curve below shows the marks obtained in an examination by a group of 200 students.



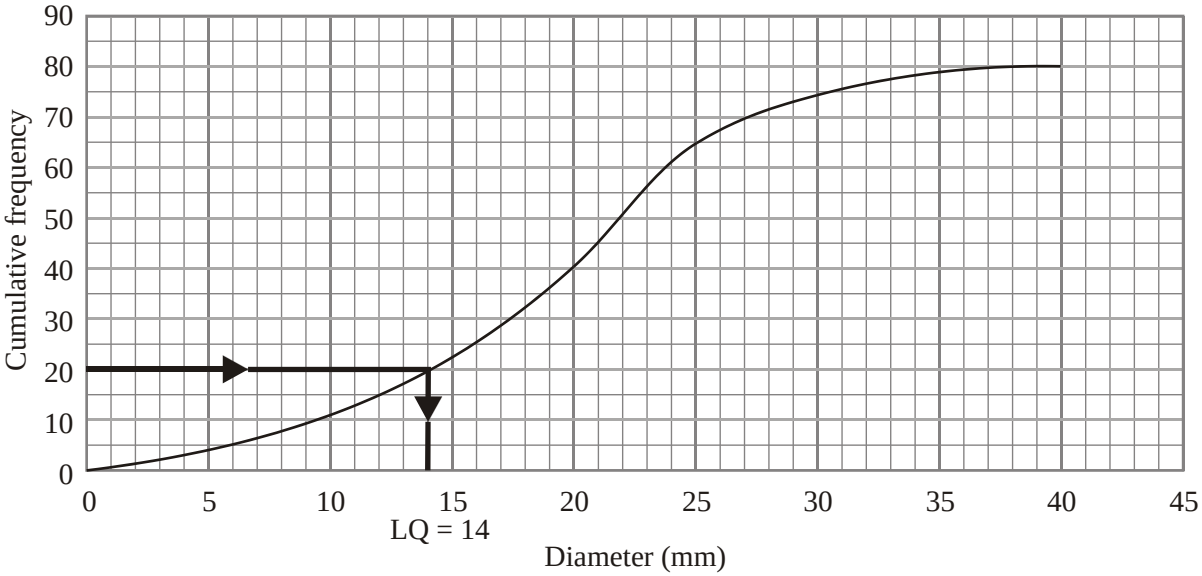
(a) Use the cumulative frequency curve to complete the frequency table below.

Mark (x)	$0 \le x < 20$	$20 \le x < 40$	$40 \le x < 60$	$60 \le x < 80$	$80 \le x < 100$
Number of students	22				20

(b) Forty percent of the students fail. Find the pass mark.

(Total 6 marks)

14. A student measured the diameters of 80 snail shells. His results are shown in the following cumulative frequency graph. The lower quartile (LQ) is 14 mm and is marked clearly on the graph.



(a) On the graph, mark clearly in the same way and write down the value of

(i) the median;

(ii) the upper quartile.

(b) Write down the interquartile range.

(Total 6 marks)