2.17 Cumulative Frequency: 10-minute Pack

EDEXCEL 1ST0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The table shows the length of time, in seconds, that people spent at a ticket machine. There are 60 people altogether. The cumulative frequency graph is drawn by plotting the upper class boundary against the cumulative frequency and joining the points with straight lines.

Class (seconds)	Frequency
$0 < x \leq 10$	6
$10 < x \leq 20$	20
$20 < x \leq 30$	16
$30 < x \leq 40$	10
$40 < x \leq 50$	8

(a) Work out the cumulative frequency for each class.

(b) The median is the value at position n/2, where n is the total frequency. Write down this position in the cumulative frequency list, and the class that contains the median.

(Total for Question 1 is 4 marks)

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2 The table shows the heights, in centimetres, of young trees. There are 68 trees altogether. The cumulative frequency graph is drawn by plotting the upper class boundary against the cumulative frequency and joining the points with straight lines.

Class (cm)	Frequency
$10 < x \leq 30$	20
$30 < x \leq 50$	8
$50 < x \leq 70$	8
$70 < x \leq 90$	12
$90 < x \leq 110$	20

(a) Work out the cumulative frequency for each class.

(b) Use linear interpolation between the plotted points to estimate the median. Give your answer to 1 decimal place.

(c) Estimate how many values are less than 80.

(Total for Question 2 is 7 marks)

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Mark scheme · 2.17 Cumulative Frequency: 10-minute Pack

Question 1

running totals of the frequencies	**M1**
6, 26, 42, 52, 60 cao	**A1**
position 30	**B1**
$20 < x \leq 30$	**B1**

Answer: (a) 6, 26, 42, 52, 60; (b) position 30; class $20 < x \leq 30$

Question 2

running totals of the frequencies	**M1**
20, 28, 36, 48, 68 cao	**A1**
uses 34 on the cumulative frequency axis	**M1**
linear interpolation within the class	**M1**
65 cao (accept values within 1 of this)	**A1**
reads or interpolates the cumulative frequency at 80	**M1**
42 cao	**A1**

Answer: (a) 20, 28, 36, 48, 68; (b) 65; (c) 42

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