HIGHER

7.16 Histograms: 1-hour Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

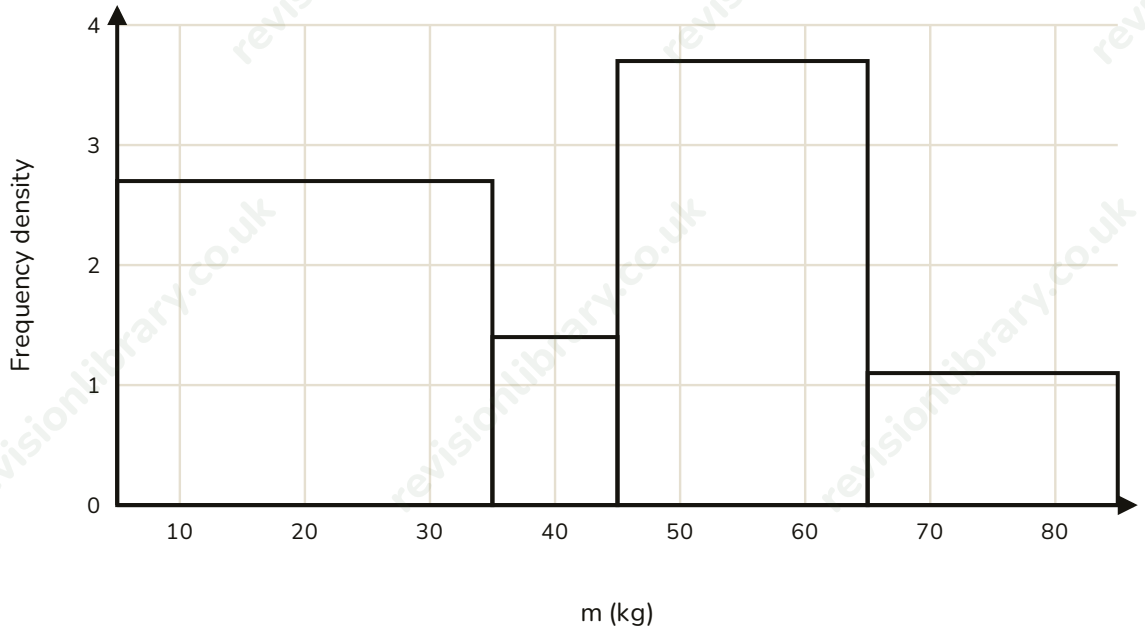
Answer ALL questions. Show all your working.

1 A histogram shows the time (t minutes) of some items. The bar for the class width 5 has a frequency of 18. Another bar has class width 30 and is 1.5 times as tall as that bar. Work out the frequency for the class of width 30.

(Total for Question 1 is 3 marks)

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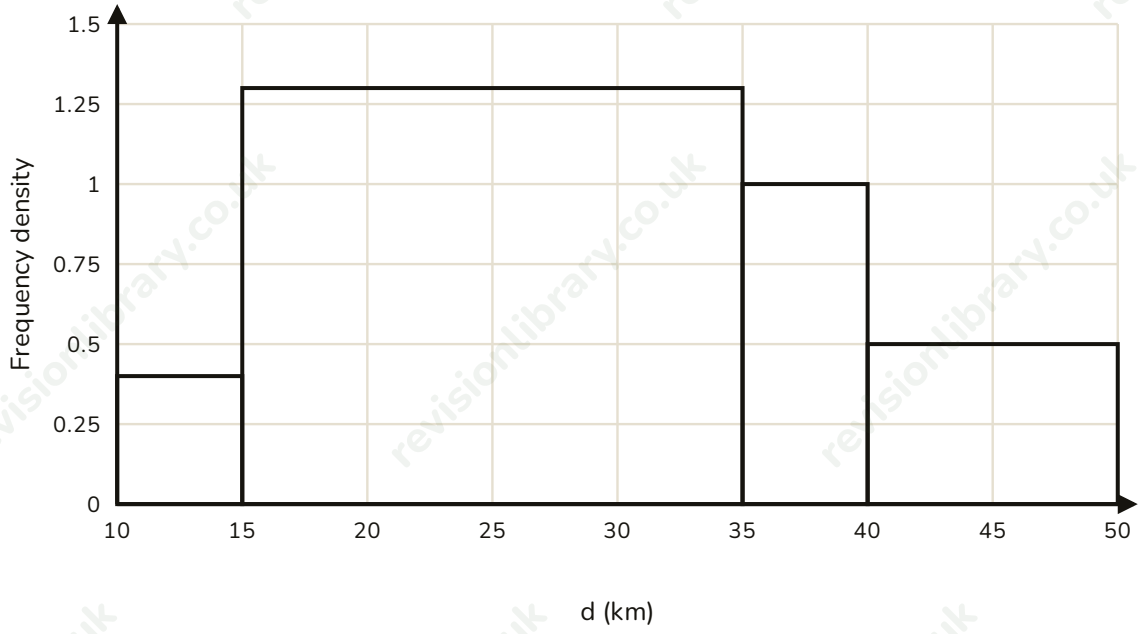
2 A histogram shows the mass (m kg) of some items. The heights of the bars (frequency densities) are: $5 < m \leq 35$: bar height 2.7; $35 < m \leq 45$: bar height 1.4; $45 < m \leq 65$: bar height 3.7; $65 < m \leq 85$: bar height 1.1. Work out the total frequency.



(Total for Question 2 is 3 marks)

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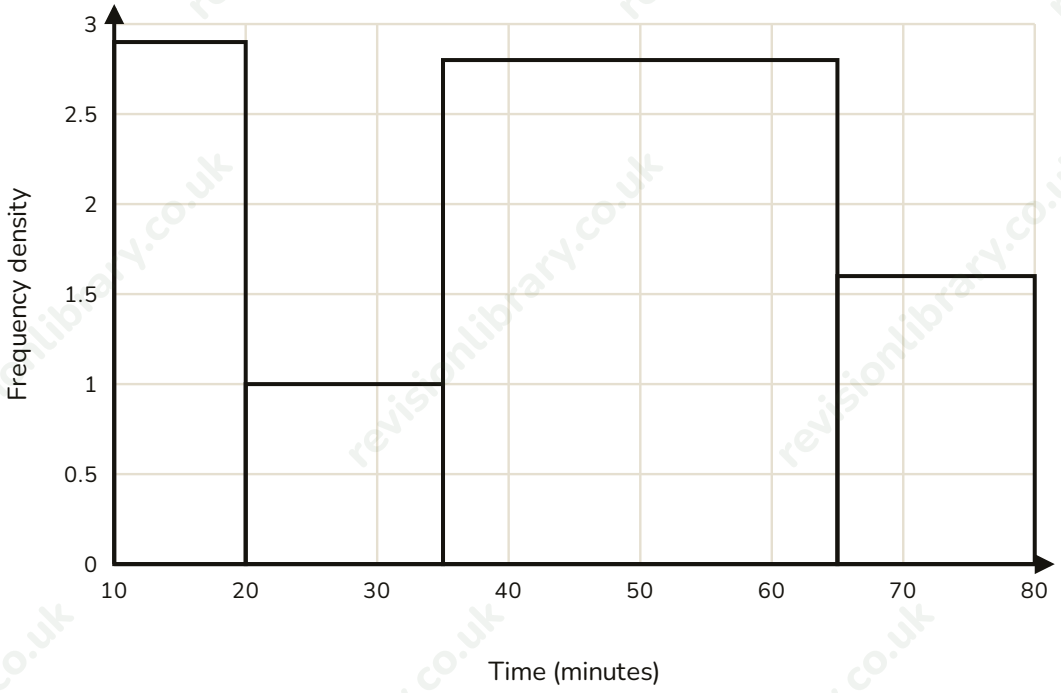
3 A histogram shows the distance (d km) of some items. The heights of the bars (frequency densities) are: $10 < d \leq 15$: bar height 0.4; $15 < d \leq 35$: bar height 1.3; $35 < d \leq 40$: bar height 1; $40 < d \leq 50$: bar height 0.5. Work out an estimate for the mean distance. Give your answer correct to 1 decimal place.



(Total for Question 3 is 4 marks)

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4 A histogram shows the time (t minutes) of some items. The heights of the bars (frequency densities) are: $10 < t \leq 20$: bar height 2.9; $20 < t \leq 35$: bar height 1; $35 < t \leq 65$: bar height 2.8; $65 < t \leq 80$: bar height 1.6. Work out an estimate for the mean time. Give your answer correct to 1 decimal place.



(Total for Question 4 is 4 marks)

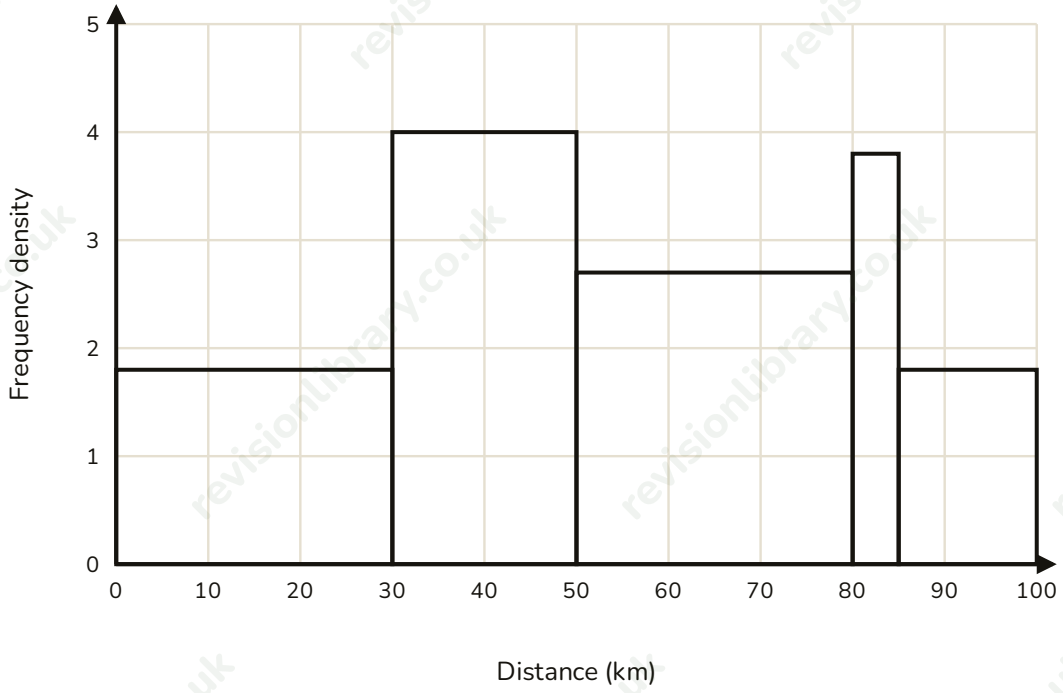
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5 A histogram shows the time (t minutes) of some items. The bar for the class width 5 has a frequency of 22. Another bar has class width 15 and is 2 times as tall as that bar. Work out the frequency for the class of width 15.

(Total for Question 5 is 3 marks)

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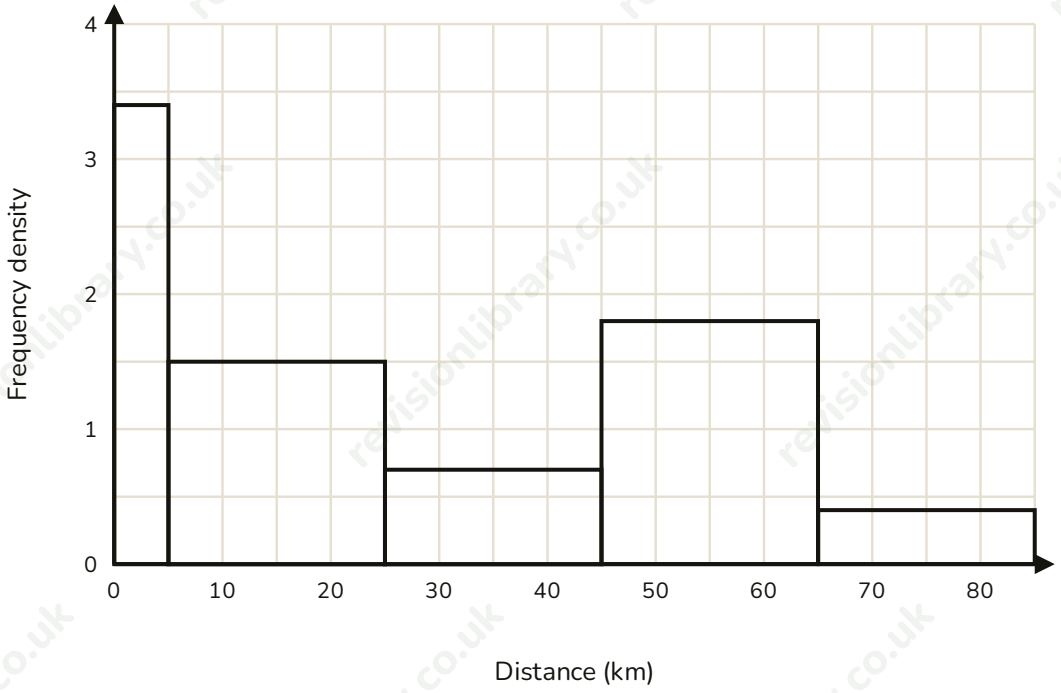
6 A histogram shows the distance (d km) of some items. The heights of the bars (frequency densities) are: $0 < d \leq 30$: bar height 1.8; $30 < d \leq 50$: bar height 4; $50 < d \leq 80$: bar height 2.7; $80 < d \leq 85$: bar height 3.8; $85 < d \leq 100$: bar height 1.8. Work out the total frequency.



(Total for Question 6 is 3 marks)

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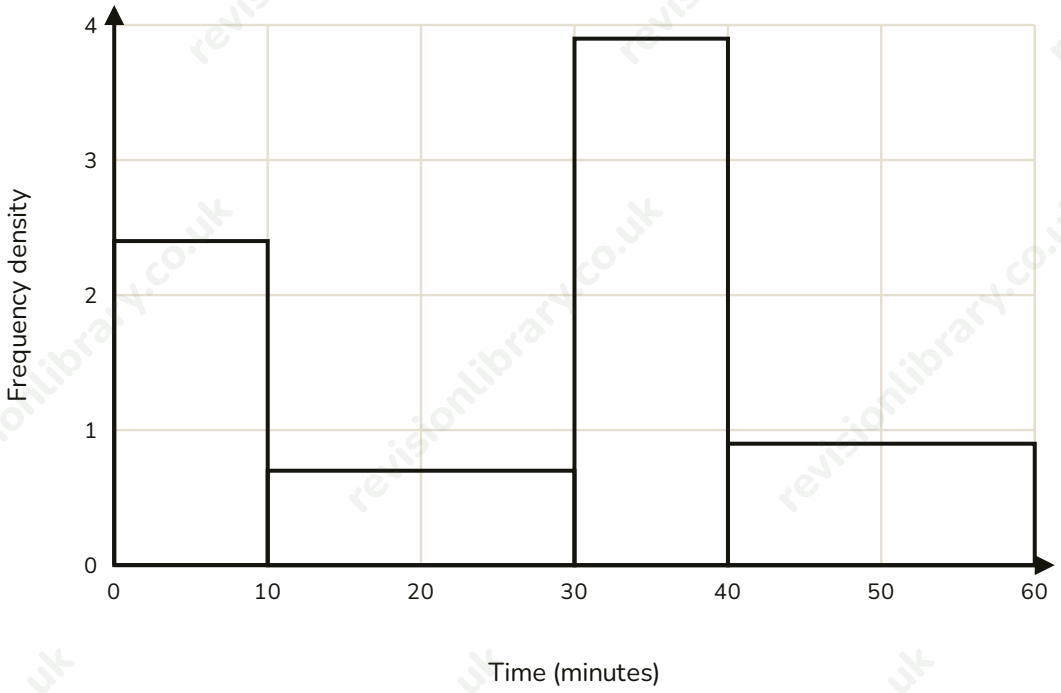
7 A histogram shows the distance (d km) of some items. The heights of the bars (frequency densities) are: $0 < d \leq 5$: bar height 3.4; $5 < d \leq 25$: bar height 1.5; $25 < d \leq 45$: bar height 0.7; $45 < d \leq 65$: bar height 1.8; $65 < d \leq 85$: bar height 0.4. Work out an estimate for the mean distance. Give your answer correct to 1 decimal place.



(Total for Question 7 is 4 marks)

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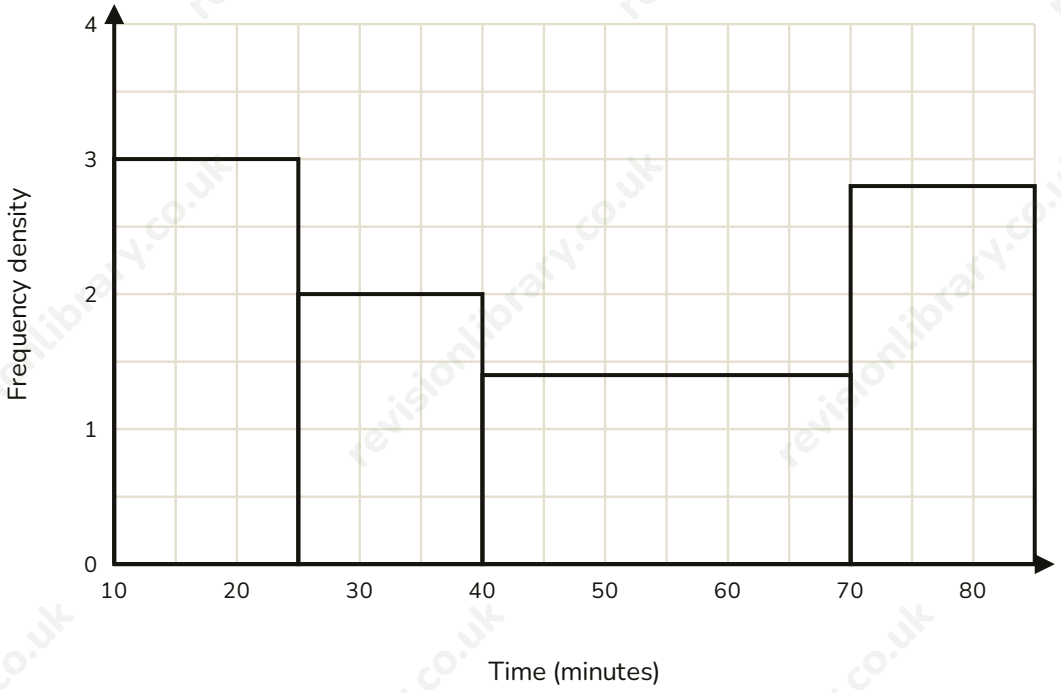
8 A histogram shows the time (t minutes) of some items. The heights of the bars (frequency densities) are: $0 < t \leq 10$: bar height 2.4; $10 < t \leq 30$: bar height 0.7; $30 < t \leq 40$: bar height 3.9; $40 < t \leq 60$: bar height 0.9. Work out an estimate for the number of items with t greater than 24.



(Total for Question 8 is 4 marks)

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9 A histogram shows the time (t minutes) of some items. The heights of the bars (frequency densities) are: $10 < t \leq 25$: bar height 3; $25 < t \leq 40$: bar height 2; $40 < t \leq 70$: bar height 1.4; $70 < t \leq 85$: bar height 2.8. Work out an estimate for the mean time. Give your answer correct to 1 decimal place.



(Total for Question 9 is 4 marks)

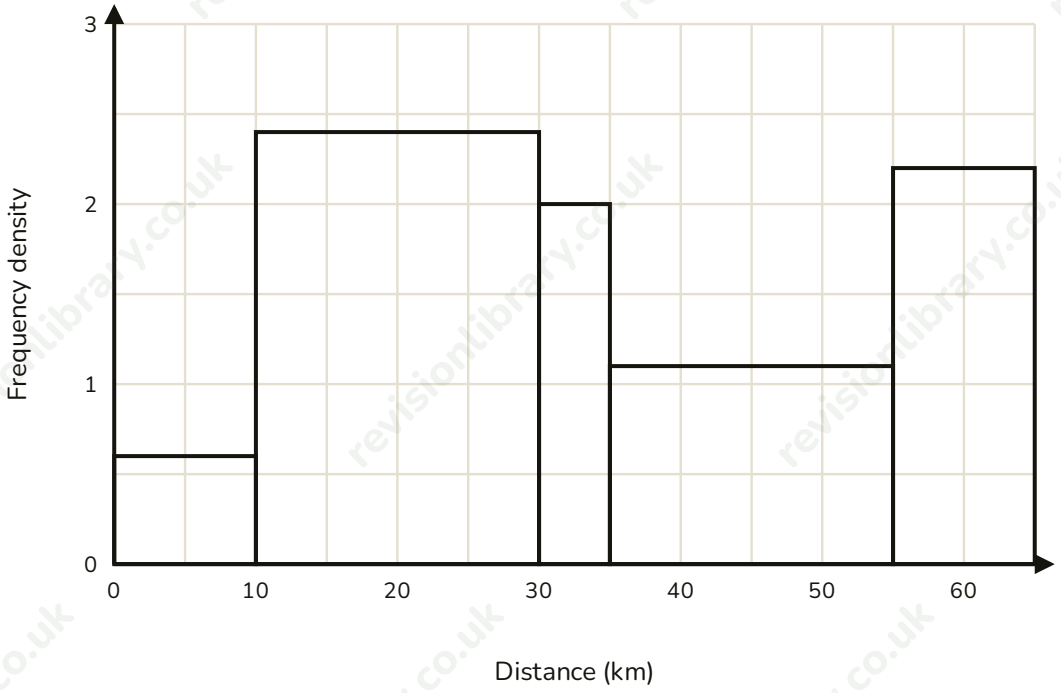
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10 A histogram shows the distance (d km) of some items. The bar for the class width 20 has a frequency of 40. Another bar has class width 15 and is 2.5 times as tall as that bar. Work out the frequency for the class of width 15.

(Total for Question 10 is 3 marks)

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11 A histogram shows the distance (d km) of some items. The heights of the bars (frequency densities) are: $0 < d \leq 10$: bar height 0.6; $10 < d \leq 30$: bar height 2.4; $30 < d \leq 35$: bar height 2; $35 < d \leq 55$: bar height 1.1; $55 < d \leq 65$: bar height 2.2. Work out an estimate for the mean distance. Give your answer correct to 1 decimal place.



(Total for Question 11 is 4 marks)

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12 A histogram shows the mass (m kg) of some items. The heights of the bars (frequency densities) are: $5 < m \leq 15$: bar height 3.1; $15 < m \leq 45$: bar height 3.5; $45 < m \leq 65$: bar height 1; $65 < m \leq 70$: bar height 1; $70 < m \leq 90$: bar height 2.3. Work out an estimate for the number of items with m greater than 54.

(Total for Question 12 is 4 marks)

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13 A histogram has two adjacent classes. The class $10 < x \leq 25$ has frequency density 4. The next class, $25 < x \leq (25 + w)$, has frequency density 6 and a frequency three times that of the first class. Find the value of w.

(Total for Question 13 is 3 marks)

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Mark scheme · 7.16 Histograms: 1-hour Pack

Question 1

frequency density of first bar = 18/5	**M1**
frequency density of second bar = 1.5 x 18/5	**M1**
162 cao	**A1**

Answer: 162

Question 2

frequency = frequency density x class width for at least two classes	**M1**
all frequencies found	**M1**
191 cao	**A1**

Answer: 191

Question 3

frequencies found using frequency density x width	**M1**
midpoints used	**M1**
sum of frequency x midpoint divided by total frequency	**M1**
28.6 km cao	**A1**

Answer: 28.6 km

Question 4

frequencies found using frequency density x width	**M1**
midpoints used	**M1**
sum of frequency x midpoint divided by total frequency	**M1**
44.7 minutes cao	**A1**

Answer: 44.7 minutes

Question 5

frequency density of first bar = 22/5	**M1**
frequency density of second bar = 2 x 22/5	**M1**
132 cao	**A1**

Answer: 132

Question 6

frequency = frequency density x class width for at least two classes	**M1**
all frequencies found	**M1**
261 cao	**A1**

Answer: 261

Question 7

frequencies found using frequency density x width	**M1**
midpoints used	**M1**
sum of frequency x midpoint divided by total frequency	**M1**
33.9 km cao	**A1**

Answer: 33.9 km

Question 8

fd x (30 - 24) for the class containing 24	**M1**
frequencies of the later classes found	**M1**
adds all the parts	**M1**
61.2 cao	**A1**

Answer: 61.2

Question 9

frequencies found using frequency density x width	**M1**
midpoints used	**M1**
sum of frequency x midpoint divided by total frequency	**M1**
46.1 minutes cao	**A1**

Answer: 46.1 minutes

Question 10

frequency density of first bar = 40/20	**M1**
frequency density of second bar = 2.5 x 40/20	**M1**
75 cao	**A1**

Answer: 75

Question 11

frequencies found using frequency density x width	**M1**
midpoints used	**M1**
sum of frequency x midpoint divided by total frequency	**M1**
33.6 km cao	**A1**

Answer: 33.6 km

Question 12

fd x (65 - 54) for the class containing 54	**M1**
frequencies of the later classes found	**M1**
adds all the parts	**M1**
62 cao	**A1**

Answer: 62

Question 13

frequency of first class = 15 x 4 = 60	**M1**
frequency of second class = 3 x 60 = 180	**M1**
w = 180 / 6 = 30 cao	**A1**

Answer: w = 30

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