2.15 Histograms: 1-hour Pack

EDEXCEL 1ST0 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The table shows the amount, in pounds, spent in a shop. A histogram is to be drawn.

Class (pounds)	Frequency	Class width
$0 < x \leq 40$	40	40
$40 < x \leq 50$	40	10
$50 < x \leq 60$	5	10
$60 < x \leq 80$	20	20
$80 < x \leq 100$	40	20

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

(b) State the class that has the tallest bar.

(Total for Question 1 is 4 marks)

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2 The table shows the mass, in kilograms, of parcels.

Class (kg)	Frequency
$10 < x \leq 20$	10
$20 < x \leq 60$	400
$60 < x \leq 80$	80
$80 < x \leq 100$	20
$100 < x \leq 110$	50

A histogram is drawn from this table. Use it to estimate the number of values greater than 105. Assume the values are spread evenly within each class.

(Total for Question 2 is 4 marks)

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3 The table shows the distance, in kilometres, that employees travel to work.

Class (km)	Frequency
$0 < x \leq 20$	14
$20 < x \leq 40$	6
$40 < x \leq 60$	2
$60 < x \leq 80$	4
$80 < x \leq 100$	16

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $0 < x \leq 20$.

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 3 is 4 marks)

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4 The table shows the length, in minutes, of films watched.

Class (minutes)	Frequency
$0 < x \leq 30$	300
$30 < x \leq 50$	60
$50 < x \leq 70$	200
$70 < x \leq 80$	50
$80 < x \leq 90$	100

A histogram is drawn from this table. Use it to estimate the number of values greater than 75. Assume the values are spread evenly within each class.

(Total for Question 4 is 4 marks)

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5 The table shows the amount, in pounds, spent in a shop. A histogram is to be drawn.

Class (pounds)	Frequency	Class width
$10 < x \leq 20$	40	10
$20 < x \leq 25$	7	5
$25 < x \leq 65$	80	40
$65 < x \leq 75$	5	10
$75 < x \leq 95$	60	20

(a) Work out the frequency density for each class.
(b) State the class that has the tallest bar.

(Total for Question 5 is 4 marks)

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6 The table shows the length, in minutes, of films watched.

Class (minutes)	Frequency
$0 < x \leq 10$	14
$10 < x \leq 20$	2
$20 < x \leq 30$	13
$30 < x \leq 40$	8
$40 < x \leq 50$	16

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $10 < x \leq 20$.

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 6 is 4 marks)

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7 The table shows the age, in years, of people at a swimming pool.

Class (years)	Frequency
$10 < x \leq 50$	80
$50 < x \leq 70$	40
$70 < x \leq 80$	10
$80 < x \leq 110$	90
$110 < x \leq 120$	20

A histogram is drawn from this table. Use it to estimate the number of values greater than 95. Assume the values are spread evenly within each class.

(Total for Question 7 is 4 marks)

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8 The table shows the time, in minutes, that customers waited. A histogram is to be drawn.

Class (minutes)	Frequency	Class width
$0 < x \leq 10$	20	10
$10 < x \leq 15$	25	5
$15 < x \leq 35$	80	20
$35 < x \leq 45$	30	10
$45 < x \leq 65$	20	20

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

(b) State the class that has the tallest bar.

(Total for Question 8 is 4 marks)

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9 The table shows the mass, in kilograms, of parcels.

Class (kg)	Frequency
$10 < x \leq 20$	18
$20 < x \leq 30$	11
$30 < x \leq 40$	5
$40 < x \leq 50$	8
$50 < x \leq 60$	17

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $20 < x \leq 30$.

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 9 is 4 marks)

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10 The table shows the age, in years, of people at a swimming pool. A histogram is to be drawn.

Class (years)	Frequency	Class width
$0 < x \leq 20$	30	20
$20 < x \leq 50$	120	30
$50 < x \leq 70$	60	20
$70 < x \leq 80$	30	10
$80 < x \leq 90$	15	10

(a) Work out the frequency density for each class.
(b) State the class that has the tallest bar.

(Total for Question 10 is 4 marks)

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11 The table shows the age, in years, of people at a swimming pool. A histogram is to be drawn.

Class (years)	Frequency	Class width
$10 < x \leq 20$	10	10
$20 < x \leq 30$	20	10
$30 < x \leq 50$	30	20
$50 < x \leq 70$	20	20
$70 < x \leq 75$	7	5

(a) Work out the frequency density for each class.
(b) State the class that has the tallest bar.

(Total for Question 11 is 4 marks)

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12 The table shows the distance, in kilometres, that employees travel to work.

Class (km)	Frequency
$0 < x \leq 10$	6
$10 < x \leq 20$	9
$20 < x \leq 30$	14
$30 < x \leq 40$	8

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $20 < x \leq 30$.

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 12 is 4 marks)

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13 The table shows the amount, in pounds, spent in a shop. A histogram is to be drawn.

Class (pounds)	Frequency	Class width
$0 < x \leq 40$	80	40
$40 < x \leq 60$	40	20
$60 < x \leq 65$	10	5
$65 < x \leq 75$	10	10
$75 < x \leq 95$	80	20

(a) Work out the frequency density for each class.
(b) State the class that has the tallest bar.

(Total for Question 13 is 4 marks)

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14 A histogram shows the distance, in kilometres, that employees travel to work. The frequency densities of the bars are given in the table.

Class (km)	Frequency density
$0 < x \leq 40$	3
$40 < x \leq 45$	4
$45 < x \leq 65$	3
$65 < x \leq 95$	3
$95 < x \leq 105$	6

(a) Work out the frequency for each class.
(b) Work out the total frequency.

(Total for Question 14 is 4 marks)

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15 The table shows the length, in minutes, of films watched.

Class (minutes)	Frequency
$0 < x \leq 20$	18
$20 < x \leq 40$	2
$40 < x \leq 60$	10
$60 < x \leq 80$	11
$80 < x \leq 100$	14
$100 < x \leq 120$	13

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $60 < x \leq 80$.

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 15 is 4 marks)

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Mark scheme · 2.15 Histograms: 1-hour Pack

Question 1

frequency divided by class width	**M1**
at least 3 frequency densities correct	**A1**
all frequency densities correct	**A1**
$40 < x \leq 50$	**B1**

Answer: (a) 1, 4, 0.5, 1, 2; (b) $40 < x \leq 50$

Question 2

frequency density for the class 100 to 110 = 50/10	**M1**
5 x 5 for the part of the class above 105	**M1**
adds the frequencies of all later classes	**M1**
25 cao	**A1**

Answer: 25

Question 3

uses the midpoint of the class	**M1**
(10, 14) cao	**A1**
42 cao	**B1**
$80 < x \leq 100$	**B1**

Answer: (a) (10, 14); (b) 42; (c) $80 < x \leq 100$

Question 4

frequency density for the class 70 to 80 = 50/10	**M1**
5 x 5 for the part of the class above 75	**M1**
adds the frequencies of all later classes	**M1**
125 cao	**A1**

Answer: 125

Question 5

frequency divided by class width	**M1**
at least 3 frequency densities correct	**A1**
all frequency densities correct	**A1**
$10 < x \leq 20$	**B1**

Answer: (a) 4, 1.4, 2, 0.5, 3; (b) $10 < x \leq 20$

Question 6

uses the midpoint of the class	**M1**
(15, 2) cao	**A1**
53 cao	**B1**
$40 < x \leq 50$	**B1**

Answer: (a) (15, 2); (b) 53; (c) $40 < x \leq 50$

Question 7

frequency density for the class 80 to 110 = 90/30	**M1**
15 x 3 for the part of the class above 95	**M1**
adds the frequencies of all later classes	**M1**
65 cao	**A1**

Answer: 65

Question 8

frequency divided by class width	**M1**
at least 3 frequency densities correct	**A1**
all frequency densities correct	**A1**
$10 < x \leq 15$	**B1**

Answer: (a) 2, 5, 4, 3, 1; (b) $10 < x \leq 15$

Question 9

uses the midpoint of the class	**M1**
(25, 11) cao	**A1**
59 cao	**B1**
$10 < x \leq 20$	**B1**

Answer: (a) (25, 11); (b) 59; (c) $10 < x \leq 20$

Question 10

frequency divided by class width	**M1**
at least 3 frequency densities correct	**A1**
all frequency densities correct	**A1**
$20 < x \leq 50$	**B1**

Answer: (a) 1.5, 4, 3, 3, 1.5; (b) $20 < x \leq 50$

Question 11

frequency divided by class width	**M1**
at least 3 frequency densities correct	**A1**
all frequency densities correct	**A1**
$20 < x \leq 30$	**B1**

Answer: (a) 1, 2, 1.5, 1, 1.4; (b) $20 < x \leq 30$

Question 12

uses the midpoint of the class	**M1**
(25, 14) cao	**A1**
37 cao	**B1**
$20 < x \leq 30$	**B1**

Answer: (a) (25, 14); (b) 37; (c) $20 < x \leq 30$

Question 13

frequency divided by class width	**M1**
at least 3 frequency densities correct	**A1**
all frequency densities correct	**A1**
$75 < x \leq 95$	**B1**

Answer: (a) 2, 2, 2, 1, 4; (b) $75 < x \leq 95$

Question 14

frequency = frequency density x class width	**M1**
at least 3 frequencies correct	**A1**
all frequencies 120, 20, 60, 90, 60 cao	**A1**
total 350	**B1**

Answer: (a) 120, 20, 60, 90, 60; (b) 350

Question 15

uses the midpoint of the class	**M1**
(70, 11) cao	**A1**
68 cao	**B1**
$0 < x \leq 20$	**B1**

Answer: (a) (70, 11); (b) 68; (c) $0 < x \leq 20$

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