2.16 Frequency Polygons: 1-hour Pack

EDEXCEL 1ST0 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A histogram shows the length, in minutes, of films watched. The frequency densities of the bars are given in the table.

Class (minutes)	Frequency density
$10 < x \leq 40$	3
$40 < x \leq 80$	10
$80 < x \leq 90$	5
$90 < x \leq 110$	3
$110 < x \leq 115$	8

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

(Total for Question 1 is 4 marks)

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2 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
$0 < x \leq 20$	1.5
$20 < x \leq 30$	4
$30 < x \leq 50$	3
$50 < x \leq 55$	5
$55 < x \leq 65$	6

(a) Work out the frequency for each class.

(b) Work out the total frequency.

(Total for Question 2 is 4 marks)

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

Class (minutes)	Frequency
$0 < x \leq 20$	13
$20 < x \leq 40$	7
$40 < x \leq 60$	3
$60 < x \leq 80$	17
$80 < x \leq 100$	15
$100 < x \leq 120$	15

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 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
$10 < x \leq 30$	5
$30 < x \leq 40$	2
$40 < x \leq 50$	8
$50 < x \leq 80$	3
$80 < x \leq 85$	3

(a) Work out the frequency for each class.

(b) Work out the total frequency.

(Total for Question 4 is 4 marks)

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

Class (years)	Frequency
$0 < x \leq 30$	180
$30 < x \leq 35$	30
$35 < x \leq 45$	30
$45 < x \leq 65$	40
$65 < x \leq 105$	400

A histogram is drawn from this table. Use it to estimate the number of values greater than 55. Assume the values are spread evenly within each class.

(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
$5 < x \leq 10$	12
$10 < x \leq 15$	6
$15 < x \leq 20$	18
$20 < x \leq 25$	2
$25 < x \leq 30$	14

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $10 < x \leq 15$.

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 6 is 4 marks)

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7 A histogram shows the amount, in pounds, spent in a shop. The frequency densities of the bars are given in the table.

Class (pounds)	Frequency density
$0 < x \leq 30$	2
$30 < x \leq 35$	5
$35 < x \leq 55$	5
$55 < x \leq 75$	4
$75 < x \leq 85$	5

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

(Total for Question 7 is 4 marks)

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8 A histogram shows the amount, in pounds, spent in a shop. The frequency densities of the bars are given in the table.

Class (pounds)	Frequency density
$10 < x \leq 30$	1
$30 < x \leq 50$	1.5
$50 < x \leq 90$	5
$90 < x \leq 120$	10
$120 < x \leq 130$	2.5

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

(Total for Question 8 is 4 marks)

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

Class (years)	Frequency
$0 < x \leq 10$	10
$10 < x \leq 20$	3
$20 < x \leq 30$	9
$30 < x \leq 40$	14

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 time, in minutes, that customers waited. A histogram is to be drawn.

Class (minutes)	Frequency	Class width
$0 < x \leq 10$	20	10
$10 < x \leq 30$	10	20
$30 < x \leq 40$	20	10
$40 < x \leq 80$	80	40
$80 < x \leq 110$	90	30

(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 mass, in kilograms, of parcels. A histogram is to be drawn.

Class (kg)	Frequency	Class width
$10 < x \leq 50$	80	40
$50 < x \leq 70$	40	20
$70 < x \leq 80$	40	10
$80 < x \leq 90$	10	10
$90 < x \leq 120$	30	30

(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 amount, in pounds, spent in a shop.

Class (pounds)	Frequency
$0 < x \leq 10$	8
$10 < x \leq 20$	9
$20 < x \leq 30$	17
$30 < x \leq 40$	11
$40 < x \leq 50$	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 A histogram shows the time, in minutes, that customers waited. The frequency densities of the bars are given in the table.

Class (minutes)	Frequency density
$10 < x \leq 15$	2
$15 < x \leq 35$	10
$35 < x \leq 45$	3
$45 < x \leq 75$	3
$75 < x \leq 95$	2

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

(Total for Question 13 is 4 marks)

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14 A histogram shows the age, in years, of people at a swimming pool. The frequency densities of the bars are given in the table.

Class (years)	Frequency density
$0 < x \leq 10$	5
$10 < x \leq 40$	2
$40 < x \leq 45$	1
$45 < x \leq 65$	3
$65 < x \leq 75$	4

(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 time, in minutes, that customers waited.

Class (minutes)	Frequency
$0 < x \leq 5$	2
$5 < x \leq 10$	14
$10 < x \leq 15$	2
$15 < x \leq 20$	16
$20 < x \leq 25$	7

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $15 < x \leq 20$.

(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 · 2.16 Frequency Polygons: 1-hour Pack

Question 1

frequency = frequency density x class width	M1
at least 3 frequencies correct	A1
all frequencies 90, 400, 50, 60, 40 cao	A1
total 640	B1

Answer: (a) 90, 400, 50, 60, 40; (b) 640

Question 2

frequency = frequency density x class width	M1
at least 3 frequencies correct	A1
all frequencies 30, 40, 60, 25, 60 cao	A1
total 215	B1

Answer: (a) 30, 40, 60, 25, 60; (b) 215

Question 3

uses the midpoint of the class	M1
(10, 13) cao	A1
70 cao	B1
$60 < x \leq 80$	B1

Answer: (a) (10, 13); (b) 70; (c) $60 < x \leq 80$

Question 4

frequency = frequency density x class width	M1
at least 3 frequencies correct	A1
all frequencies 100, 20, 80, 90, 15 cao	A1
total 305	B1

Answer: (a) 100, 20, 80, 90, 15; (b) 305

Question 5

frequency density for the class 45 to 65 = 40/20	M1
10 x 2 for the part of the class above 55	M1
adds the frequencies of all later classes	M1
420 cao	A1

Answer: 420

Question 6

uses the midpoint of the class	M1
(12.5, 6) cao	A1
52 cao	B1
$15 < x \leq 20$	B1

Answer: (a) (12.5, 6); (b) 52; (c) $15 < x \leq 20$

Question 7

frequency = frequency density x class width	M1
at least 3 frequencies correct	A1
all frequencies 60, 25, 100, 80, 50 cao	A1
total 315	B1

Answer: (a) 60, 25, 100, 80, 50; (b) 315

Question 8

frequency = frequency density x class width	M1
at least 3 frequencies correct	A1
all frequencies 20, 30, 200, 300, 25 cao	A1
total 575	B1

Answer: (a) 20, 30, 200, 300, 25; (b) 575

Question 9

uses the midpoint of the class	M1
(25, 9) cao	A1
36 cao	B1
$30 < x \leq 40$	B1

Answer: (a) (25, 9); (b) 36; (c) $30 < x \leq 40$

Question 10

frequency divided by class width	M1
at least 3 frequency densities correct	A1
all frequency densities correct	A1
$80 < x \leq 110$	B1

Answer: (a) 2, 0.5, 2, 2, 3; (b) $80 < x \leq 110$

Question 11

frequency divided by class width	M1
at least 3 frequency densities correct	A1
all frequency densities correct	A1
$70 < x \leq 80$	B1

Answer: (a) 2, 2, 4, 1, 1; (b) $70 < x \leq 80$

Question 12

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

Answer: (a) (25, 17); (b) 53; (c) $20 < x \leq 30$

Question 13

frequency = frequency density x class width	M1
at least 3 frequencies correct	A1
all frequencies 10, 200, 30, 90, 40 cao	A1
total 370	B1

Answer: (a) 10, 200, 30, 90, 40; (b) 370

Question 14

frequency = frequency density x class width	M1
at least 3 frequencies correct	A1
all frequencies 50, 60, 5, 60, 40 cao	A1
total 215	B1

Answer: (a) 50, 60, 5, 60, 40; (b) 215

Question 15

uses the midpoint of the class	M1
(17.5, 16) cao	A1
41 cao	B1
$15 < x \leq 20$	B1

Answer: (a) (17.5, 16); (b) 41; (c) $15 < x \leq 20$

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