2.10 Grouped Frequency Tables: 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 length, in minutes, of films watched.

Class (minutes)	Frequency
$0 < x \leq 20$	2
$20 < x \leq 40$	15
$40 < x \leq 60$	8
$60 < x \leq 80$	14
$80 < x \leq 100$	16
$100 < x \leq 120$	11

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $40 < x \leq 60$.

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 1 is 4 marks)

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2 The table shows the distance, in kilometres, that employees travel to work. A histogram is to be drawn.

Class (km)	Frequency	Class width
$10 < x \leq 40$	90	30
$40 < x \leq 50$	10	10
$50 < x \leq 90$	120	40
$90 < x \leq 100$	40	10
$100 < x \leq 105$	5	5

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

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

(Total for Question 2 is 4 marks)

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

Class (years)	Frequency
$0 < x \leq 5$	12
$5 < x \leq 10$	9
$10 < x \leq 15$	5
$15 < x \leq 20$	4

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $0 < x \leq 5$.

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 3 is 4 marks)

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4 Here are the marks of 20 students in a test out of 50.

7, 25, 17, 13, 23, 31, 14, 18, 6, 22, 44, 31, 46, 29, 12, 12, 14, 6, 24, 24

(a) Complete a grouped frequency table using the classes $0 < x \leq 10$, $10 < x \leq 20$, $20 < x \leq 30$, $30 < x \leq 40$, $40 < x \leq 50$.
(b) Write down the modal class.
(c) What fraction of the values are in the modal class? Give your answer in its simplest form.

(Total for Question 4 is 4 marks)

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5 The table shows the amount, in pounds, spent in a shop.

Class (pounds)	Frequency
$10 < x \leq 20$	3
$20 < x \leq 30$	2
$30 < x \leq 40$	5
$40 < x \leq 50$	6
$50 < x \leq 60$	14
$60 < x \leq 70$	3

A frequency polygon is to be drawn from this table.
(a) Write down the coordinates of the point plotted for the class $50 < x \leq 60$.
(b) Work out the total frequency.
(c) Write down the modal class.

(Total for Question 5 is 4 marks)

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6 Here are the marks of 20 students in a test out of 50.

29, 44, 23, 7, 30, 13, 31, 10, 16, 44, 45, 43, 18, 12, 43, 13, 45, 47, 31, 36

(a) Complete a grouped frequency table using the classes $0 < x \leq 10$, $10 < x \leq 20$, $20 < x \leq 30$, $30 < x \leq 40$, $40 < x \leq 50$.
(b) Write down the modal class.
(c) What fraction of the values are in the modal class? Give your answer in its simplest form.

(Total for Question 6 is 4 marks)

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7 A histogram shows the mass, in kilograms, of parcels. The frequency densities of the bars are given in the table.

Class (kg)	Frequency density
$0 < x \leq 30$	5
$30 < x \leq 50$	3
$50 < x \leq 60$	0.5
$60 < x \leq 80$	0.5
$80 < x \leq 90$	4

(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 Here are the masses, in kilograms, of 20 parcels.

2, 31, 19, 37, 28, 2, 19, 12, 4, 23, 7, 23, 31, 2, 1, 32, 26, 29, 33, 20

(a) Complete a grouped frequency table using the classes $0 < x \leq 10$, $10 < x \leq 20$, $20 < x \leq 30$, $30 < x \leq 40$.
(b) Write down the modal class.
(c) What fraction of the values are in the modal class? Give your answer in its simplest form.

(Total for Question 8 is 4 marks)

9 The table shows the amount, in pounds, spent in a shop.

Class (pounds)	Frequency
$0 < x \leq 10$	80
$10 < x \leq 30$	100
$30 < x \leq 50$	120
$50 < x \leq 80$	60
$80 < x \leq 85$	20

A histogram is drawn from this table. Use it to estimate the number of values greater than 40. Assume the values are spread evenly within each 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.

Class (years)	Frequency
$20 < x \leq 40$	5
$40 < x \leq 60$	15
$60 < x \leq 80$	11
$80 < x \leq 100$	4

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $20 < x \leq 40$.

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 10 is 4 marks)

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11 The table shows the amount, in pounds, spent in a shop.

Class (pounds)	Frequency
$0 < x \leq 40$	240
$40 < x \leq 50$	30
$50 < x \leq 55$	15
$55 < x \leq 65$	80
$65 < x \leq 95$	30

A histogram is drawn from this table. Use it to estimate the number of values greater than 45. Assume the values are spread evenly within each class.

(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
$20 < x \leq 40$	12
$40 < x \leq 60$	15
$60 < x \leq 80$	10
$80 < x \leq 100$	3
$100 < x \leq 120$	11

A frequency polygon is to be drawn from this table.

(a) Write down the coordinates of the point plotted for the class $100 < x \leq 120$.

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 12 is 4 marks)

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13 Here are the lengths, in centimetres, of 20 leaves.

3, 16, 16, 37, 35, 7, 6, 9, 19, 6, 37, 16, 31, 32, 27, 23, 34, 27, 9, 6

(a) Complete a grouped frequency table using the classes $0 < x \leq 10$, $10 < x \leq 20$, $20 < x \leq 30$, $30 < x \leq 40$.

(b) Write down the modal class.

(c) What fraction of the values are in the modal class? Give your answer in its simplest form.

(Total for Question 13 is 4 marks)

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14 The table shows the amount, in pounds, spent in a shop.

Class (pounds)	Frequency
$0 < x \leq 10$	10
$10 < x \leq 20$	12
$20 < x \leq 30$	8
$30 < x \leq 40$	17
$40 < x \leq 50$	14

A frequency polygon is to be drawn from this table.

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

(b) Work out the total frequency.

(c) Write down the modal class.

(Total for Question 14 is 4 marks)

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15 Here are the marks of 20 students in a test out of 50.

35, 34, 31, 5, 33, 19, 13, 48, 34, 16, 26, 47, 8, 17, 28, 49, 8, 38, 24, 9

(a) Complete a grouped frequency table using the classes $0 < x \leq 10$, $10 < x \leq 20$, $20 < x \leq 30$, $30 < x \leq 40$, $40 < x \leq 50$.

(b) Write down the modal class.

(c) What fraction of the values are in the modal class? Give your answer in its simplest form.

(Total for Question 15 is 4 marks)

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Mark scheme · 2.10 Grouped Frequency Tables: 1-hour Pack

Question 1

uses the midpoint of the class	**M1**
(50, 8) cao	**A1**
66 cao	**B1**
$80 < x \leq 100$	**B1**

Answer: (a) (50, 8); (b) 66; (c) $80 < x \leq 100$

Question 2

frequency divided by class width	**M1**
at least 3 frequency densities correct	**A1**
all frequency densities correct	**A1**
$90 < x \leq 100$	**B1**

Answer: (a) 3, 1, 3, 4, 1; (b) $90 < x \leq 100$

Question 3

uses the midpoint of the class	**M1**
(2.5, 12) cao	**A1**
30 cao	**B1**
$0 < x \leq 5$	**B1**

Answer: (a) (2.5, 12); (b) 30; (c) $0 < x \leq 5$

Question 4

tally or count with consistent classes (a value on a boundary goes in the lower class)	**M1**
frequencies 3, 7, 6, 2, 2 cao	**A1**
$10 < x \leq 20$	**B1**
7/20 cao	**B1**

Answer: (a) 3, 7, 6, 2, 2; (b) $10 < x \leq 20$; (c) 7/20

Question 5

uses the midpoint of the class	**M1**
(55, 14) cao	**A1**
33 cao	**B1**
$50 < x \leq 60$	**B1**

Answer: (a) (55, 14); (b) 33; (c) $50 < x \leq 60$

Question 6

tally or count with consistent classes (a value on a boundary goes in the lower class)	**M1**
frequencies 2, 5, 3, 3, 7 cao	**A1**
$40 < x \leq 50$	**B1**
7/20 cao	**B1**

Answer: (a) 2, 5, 3, 3, 7; (b) $40 < x \leq 50$; (c) 7/20

Question 7

frequency = frequency density x class width	**M1**
at least 3 frequencies correct	**A1**
all frequencies 150, 60, 5, 10, 40 cao	**A1**
total 265	**B1**

Answer: (a) 150, 60, 5, 10, 40; (b) 265

Question 8

tally or count with consistent classes (a value on a boundary goes in the lower class)	**M1**
frequencies 6, 4, 5, 5 cao	**A1**
$0 < x \leq 10$	**B1**
3/10 cao	**B1**

Answer: (a) 6, 4, 5, 5; (b) $0 < x \leq 10$; (c) 3/10

Question 9

frequency density for the class 30 to 50 = 120/20	**M1**
10 x 6 for the part of the class above 40	**M1**
adds the frequencies of all later classes	**M1**
140 cao	**A1**

Answer: 140

Question 10

uses the midpoint of the class	**M1**
(30, 5) cao	**A1**
35 cao	**B1**
$40 < x \leq 60$	**B1**

Answer: (a) (30, 5); (b) 35; (c) $40 < x \leq 60$

Question 11

frequency density for the class 40 to 50 = 30/10	**M1**
5 x 3 for the part of the class above 45	**M1**
adds the frequencies of all later classes	**M1**
140 cao	**A1**

Answer: 140

Question 12

uses the midpoint of the class	**M1**
(110, 11) cao	**A1**
51 cao	**B1**
$40 < x \leq 60$	**B1**

Answer: (a) (110, 11); (b) 51; (c) $40 < x \leq 60$

Question 13

tally or count with consistent classes (a value on a boundary goes in the lower class)	**M1**
frequencies 7, 4, 3, 6 cao	**A1**
$0 < x \leq 10$	**B1**
7/20 cao	**B1**

Answer: (a) 7, 4, 3, 6; (b) $0 < x \leq 10$; (c) 7/20

Question 14

uses the midpoint of the class	**M1**
(15, 12) cao	**A1**
61 cao	**B1**
$30 < x \leq 40$	**B1**

Answer: (a) (15, 12); (b) 61; (c) $30 < x \leq 40$

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Question 15

tally or count with consistent classes (a value on a boundary goes in the lower class)	**M1**
frequencies 4, 4, 3, 6, 3 cao	**A1**
$30 < x \leq 40$	**B1**
3/10 cao	**B1**

Answer: (a) 4, 4, 3, 6, 3; (b) $30 < x \leq 40$; (c) 3/10

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