4.18 Averages from Frequency Tables: 30-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Priya asked 20 pupils in her class how many siblings they have. The table shows her results.

Number of siblings (x): 0, 1, 2, 3, 4
Frequency (f): 6, 9, 3, 1, 1
Total number of pupils = 20

Write down the mode of the number of siblings.

(Total for Question 1 is 1 mark)

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2 A shop recorded how many apples customers bought. The table is:
Apples: 1, 2, 3
Frequency: 8, 5, 3
Find the modal class and the mode number of apples.

(Total for Question 2 is 3 marks)

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3 A weather station recorded the minimum temperature, in degrees Celsius, on each of 20 days in January in Leeds. The frequency table shows the results. Calculate the mean minimum temperature.

Minimum daily temperature, x °C (January)
recorded over 20 days

x (°C)	-3	-2	-1	0	1
Frequency	2	5	6	4	3

(Total for Question 3 is 3 marks)

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4 The table shows information about shoe size for a group of people.
Shoe size: 3, 4, 5, 6, 7, 8
Frequency: 12, 3, 7, 9, 8, 6
Work out the mean. Give your answer correct to 1 decimal place.

(Total for Question 4 is 3 marks)

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5 30 pupils were asked how many hours of TV they watched last night. The table shows the results, but one frequency, c, is missing.

Hours watched (x): 0, 1, 2, 3, 4
Frequency (f): 6, 10, c, 4, 2
Total number of pupils = 30

(a) Find the value of c. **(2)**

.....

(b) Write down the modal number of hours watched. **(1)**

.....

(c) Find the median number of hours watched. **(2)**

.....

(Total for Question 5 is 5 marks)

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6 Here is a grouped frequency table showing time in minutes taken by 15 students to complete a quiz.

Time (minutes): 0-4, 5-9, 10-14

Frequency: 4, 7, 4

Use the midpoints of the groups to estimate the mean time. Give your answer to 1 decimal place.

(Total for Question 6 is 4 marks)

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7 A group of students recorded the time, t minutes, each spent on homework one evening. The estimated mean time was 25 minutes. One frequency value, p, is unknown. Find the value of p.

Homework time, t minutes

Time, t (min)	$0 \leq t < 15$	$15 \leq t < 30$	$30 \leq t < 45$	$45 \leq t < 60$
Frequency, f	5	p	8	3

(Total for Question 7 is 5 marks)

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Mark scheme · 4.18 Averages from Frequency Tables: 30-minute Pack

Question 1

1 cao	**B1**

Answer: 1

Question 2

modal class 1 apple cao	**B1**
state mode as 1 because frequency 8 is highest	**M1**
mode 1 cao	**A1**

Answer: Modal class: 1 apple. Mode: 1 apple (frequency 8 is highest).

Question 3

correct use of negative values, sum(fx) = -19 oe	**M1**
-19 / 20 (dependent on previous M1)	**M1**
-0.95 cao	**A1**

Answer: -0.95°C

Question 4

products frequency x value	**M1**
sum of products 241 divided by 45	**M1**
5.4	**A1**

Answer: 5.4

Question 5

(a) 6 + 10 + 4 + 2 (= 22) oe, or 30 - 22	**M1**
(a) 8 cao	**A1**

(a) Answer: 8

(b) ft 1 cao, using their value of c	**B1**

(b) Answer: 1

(c) ft correct use of cumulative frequencies to identify the 15th and 16th values (6, 16, 24, 28, 30), using their value of c	**M1**
(c) ft 1 cao	**A1**

(c) Answer: 1

Question 6

use midpoints 2, 7, 12 and multiply by frequencies	**M1**
correct totals: 2*4 + 7*7 + 12*4 = 8 + 49 + 48 = 105	**M1**
divide by 15: 105 / 15 = 7	**M1**
7.0 awrt	**A1**

Answer: 7.0 minutes (midpoint method gives total 105; mean = 105/15 = 7.0).

Question 7

midpoints 7.5, 22.5, 37.5, 52.5 identified	**M1**
sum(f x midpoint) = 495 + 22.5p oe	**M1**
total frequency = 16 + p oe	**M1**
correct equation formed and rearranged, e.g. 495 + 22.5p = 25(16 + p) oe	**M1**
p = 38 cao	**A1**

Answer: p = 38

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