

Averages from Frequency Tables

Mark Scheme

Level	GCSE
Subject	Maths
Exam Board	Edexcel GCSE
Topic	Averages from Frequency Tables
Grade Level	Grade 4
Booklet	Mark Scheme

Time Allowed: 60 minutes

Score: /50

Percentage: /100

Grade Boundaries:

1. Amanda collected 20 leaves and wrote down their lengths, in cm.

Here are her results.

5 6 5 2 4 5 8 7 5 4
7 6 4 3 5 7 6 4 8 5

- (a) Complete the frequency table to show Amanda's results.

Length in cm	Tally	Frequency
2		1
3		1
4		4
5		6
6		3
7		3
8		2

- (b) Write down the modal length5.....cm (1)
(c) Work out the range.6.....cm (1)

(4 marks)

2. Rosie had 10 boxes of drawing pins.

She counted the number of drawing pins in each box.

The table gives information about her results.

Number of drawing pins	Frequency	
29	2	58
30	5	150
31	2	62
32	1	32

$$302 \div 10$$

Work out the mean number of drawing pins in a box.

$$30.2$$

(3 marks)

3. Andy did a survey of the number of cups of coffee some pupils in his school had drunk yesterday.

The frequency table shows his results.

Number of cups of coffee	Frequency
2	1
3	3
4	5
5	8
6	5

2
9
20
40
30

- (a) Work out the number of pupils that Andy asked.

22 22

- (b) Work out the mean number of cups of coffee drunk.

$\frac{101}{22}$ 4.59 (2dp) (2)
(3)
(5 marks)

4. 20 students scored goals for the school hockey team last month.
The table gives information about the number of goals they scored.

Goals scored	Number of students	
1	9	9
2	3	6
3	5	15
4	3	12

20 42

- (a) Write down the modal number of goals scored.

..... 1 (1)

- (b) Work out the range of the number of goals scored.

..... 3 (1)

- (c) Work out the mean number of goals scored.

$42 \div 20$ 2.1

(3)
(5 marks)

5. Bob asked each of 40 friends how many minutes they took to get to work.

The table shows some information about his results.

Time taken (m minutes)	Frequency	mid point	midpoint $\times f$
$0 < m \leq 10$	3	5	15
$10 < m \leq 20$	8	15	120
$20 < m \leq 30$	11	25	275
$30 < m \leq 40$	9	35	315
$40 < m \leq 50$	9	45	405
			<hr/> 1130

- a) Work out an estimate for the mean time taken.

$$\frac{1130}{40}$$

.....28.25 minutes (4)

- b) State the modal class interval

..... $20 < m \leq 30$ (1)

- c) Find the group containing the median

..... $20 < m \leq 30$ (2)

(7 marks)

6. The table shows information about the numbers of hours 40 children watched television one evening.

Number of hours (h)	Frequency
$0 \leq h < 1$	3
$1 \leq h < 2$	8
$2 \leq h < 3$	7
$3 \leq h < 4$	10
$4 \leq h < 5$	12

1.5
12
17.5
35
54
120

- (a) Find the class interval that contains the median.

(1)

$3 \leq h < 4$

- (b) Work out an estimate for the mean number of hours.

(4)

120
40

3

..... hours
(5 marks)

7. 80 people work in Jenny's factory.

The table shows some information about the annual pay of these 80 workers.

Annual pay (£x)	Number of workers	M. P	M. P \times f
$10\,000 < x \leq 14\,000$	32	12000	384000
$14\,000 < x \leq 16\,000$	24	15000	360000
$16\,000 < x \leq 18\,000$	16	17000	272000
$18\,000 < x \leq 20\,000$	6	19000	114000
$20\,000 < x \leq 40\,000$	2	30000	60000
			<u>1190000</u>

(a) Write down the modal class interval.

$$\underline{10000 < x \leq 14000}$$

(1)

(b) Find the class interval that contains the median.

$$\underline{14000 < x \leq 16000}$$

(2)

(c) Work out an estimate for the mean annual pay.

$$\frac{1190000}{80}$$

$$\underline{\pounds 14875}$$

(3)

(d) Why is your answer to part (c) an estimate?

we used the mid point of each interval in place of the actual data

(1)
(7 marks)

8. Caleb measured the heights of 30 plants.

The table gives some information about the heights, h cm, of the plants.

Height (h cm) of plants	Frequency	<i>m.p</i>	<i>mp.xf</i>
$0 < h \leq 10$	2	5	10
$10 < h \leq 20$	8	15	120
$20 < h \leq 30$	9	25	225
$30 < h \leq 40$	7	35	245
$40 < h \leq 50$	4	45	180

- (a) Work out an estimate for the mean height of a plant.

$$780 \div 30$$

.....26.....
(3)

- (b) Write down the modal class interval.

..... $20 < h \leq 30$
(1)

- (c) Find the class interval that contains the median.

..... $20 < h \leq 30$
(2)

- (d) Why is your answer to part (a) an estimate?

.....(as a proxy for)
we used mid points instead of the
actual data.....

(1)
(7 marks)

9. Marcus collected some pebbles.
He weighed each pebble.

The grouped frequency table gives some information about weights.

Weight (w grams)	Frequency	$m.p$	$m.p \times f$
$50 \leq w < 60$	5	55	275
$60 \leq w < 70$	9	65	585
$70 \leq w < 80$	22	75	1650
$80 \leq w < 90$	27	85	2295
$90 \leq w < 100$	17	95	1615

- (a) Work out an estimate for the mean weight of the pebbles.

$$6420 \div 80 = 80.25$$

(3)

- (b) Write down the modal class interval.

$$80 \leq w < 90$$

(1)

- (c) Find the class interval that contains the median.

$$80 \leq w < 90$$

(2)

- (d) Why is your answer to part (a) an estimate?

we used midpoint as a proxy for the actual data. we do not know the actual weights of the pebbles.

(1)
(7 marks)