

Name: _____

GCSE (1 – 9)

Averages from Frequency Tables

Instructions

- Use **black** ink or ball-point pen.
- Answer all Questions.
- Answer the Questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

Information

- The marks for each Question are shown in brackets
– *use this as a guide as to how much time to spend on each Question.*

Advice

- Read each Question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every Question.
- Check your answers if you have time at the end

- 1 The table shows information about the number of points scored in a game.

Points		Frequency	
0	X	9	0
1	X	11	11
2	X	18	36
3	X	7	21
4	X	4	16
5	X	1	5
		50	<u>89</u>

Work out the mean number of points per game.

$$\frac{89}{50} = \frac{178}{100} = 1.78$$

.....1.78

(Total for question 1 is 3 marks)

- 2 The table shows information about the number of goals scored in a game by a football team.

Points	Frequency	
0	10	0
1	12	12
2	x	$2x$
3	7	21
4 or more	0	0

The team scored a total of 55 goals.
Find the value of x .

$$12 + 2x + 21 = 55$$

$$2x + 33 = 55$$

$$2x = 22$$

$$x = 11$$

.....11

(Total for question 2 is 3 marks)

3 The table shows information about the number of goals a team scored in 38 games.

Points	Frequency
0	7
1	14
2	11
3	6
4 or more	0

(a) Find the median number of goals scored.

.....
|
.....
(1)

(b) Write down the mode

.....
|
.....
(1)

(c) Work out the total number of goals the team scored in all 38 games.

$$\begin{aligned}0 \times 7 &= 0 \\1 \times 14 &= 14 \\2 \times 11 &= 22 \\3 \times 6 &= 18\end{aligned}$$

$$14 + 22 + 18 = 54$$

.....
54
.....
(2)

(Total for question 3 is 4 marks)

4 Adam is measuring the heights in cm of his tomato plants.

Height (cm)	m.p		Frequency
$140 < h \leq 150$	145	x	7
$150 < h \leq 160$	155	x	10
$160 < h \leq 170$	165	x	15
$170 < h \leq 180$	175	x	19
$180 < h \leq 200$	190	x	9

m.p x f

1015

1550

2475

3325

1710

60

10075

(a) Estimate the mean height.
Give your answer correct to 1 decimal place.

$$\frac{10075}{60} = 167.9 \text{ (1dp)}$$

.....167.9.....cm
(3)

(b) Explain why your answer to part (a) is an estimate.

.....we do not know the exact height of each.....
.....plant as the data is grouped.....
(we use the midpoint to estimate the heights of plants (1)
in each group)

(Total for question 4 is 4 marks)

5 The table below gives information about the time taken for 20 people to run 5 km.

Time (minutes)	m.p	Frequency	$m.p \times f$
$15 < t \leq 20$	17.5	3	52.5
$20 < t \leq 25$	22.5	6	135
$25 < t \leq 30$	27.5	7	192.5
$30 < t \leq 40$	35	4	140
			520

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

$25 < t \leq 30$ minutes
(1)

(b) Work out an estimate for the mean time.

$$\frac{520}{20} = 26$$

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

(Total for question 5 is 4 marks)

6 Michael recorded the maximum temperature every day in September.

The table shows information about his results.

Temperature ($^{\circ}\text{C}$)	mp		Frequency	$mp \times f$
$14 < t \leq 18$	16	\times	4	64
$18 < t \leq 20$	19	\times	10	190
$20 < t \leq 22$	21	\times	8	168
$22 < t \leq 24$	23	\times	5	115
$24 < t \leq 28$	26	\times	3	78

Calculate an estimate for the mean maximum temperature.

615

$$\frac{615}{30} = 20.5$$

.....20.5..... $^{\circ}\text{C}$

(Total for question 6 is 3 marks)

7 The frequency table shows the time taken for 100 people to travel to an event.

Time (minutes)	mp		Frequency
$0 < t \leq 10$	5	\times	14
$10 < t \leq 20$	15	\times	16
$20 < t \leq 30$	25	\times	23
$30 < t \leq 40$	35	\times	29
$40 < t \leq 50$	45	\times	12
$50 < t \leq 60$	55	\times	6

$mp \times f$

70

240

575

1015

540

330

2770

(a) Find the percentage of people that travelled for more than 30 minutes to the event

$$29 + 12 + 6 = 47$$

$$\frac{47}{100} = 47\%$$

..... 47 %
(1)

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

..... $20 < t \leq 30$ minutes
(1)

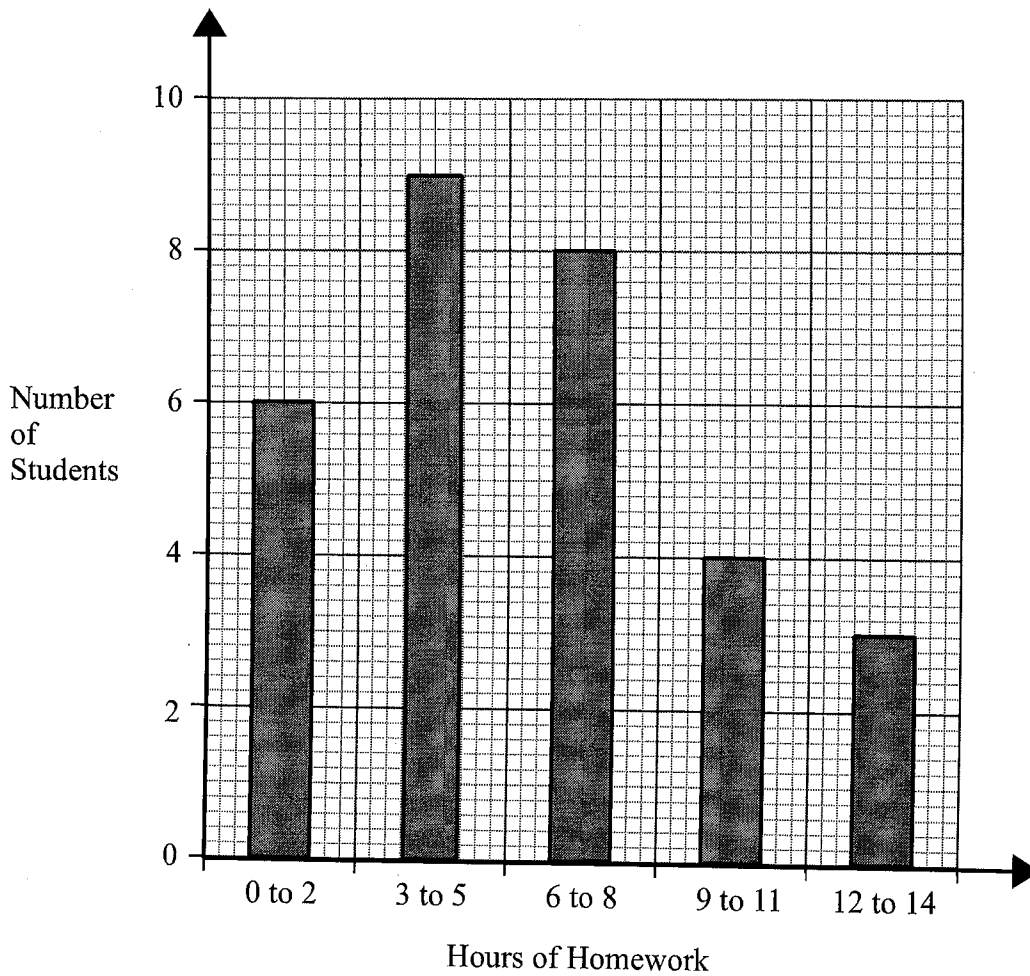
(c) Find an estimate for the mean time taken for people to travel to the event.

$$\frac{2770}{100} = 27.7$$

..... 27.7 minutes
(3)

(Total for question 7 is 5 marks)

8 The bar chart shows how many hours of homework 30 students did last week.



Calculate an estimate for the mean number of hours of homework.
~~Give your answer to 2 decimal places.~~

$$\begin{aligned}
 1 \times 6 &= 6 \\
 4 \times 9 &= 36 \\
 7 \times 8 &= 56 \\
 10 \times 4 &= 40 \\
 13 \times 3 &= 39
 \end{aligned}$$

$$177$$

$$\frac{177}{30} = 5.9$$

..... 5.9 hours

(Total for question 8 is 3 marks)