Week 11 – Lesson 1 Averages Answers

1)

2. Robbie played twenty football matches for his school team.
The number of goals scored in each game are shown in the table.

Goals x	Number of matches f	fx
0	3	$0 \times 3 = 0$
1	5	$1 \times 5 = 5$
2	9	$2 \times 9 = 18$
3	1	$3 \times 1 = 3$
4	+ 2	$4 \times 2 = 8$
	20	+ 34

Calculate the mean number of goals scored per game.

$34 \div 20 = 1.7$

$$20 \overline{)34.00} = 01.7$$

1.7
....
(3)

2)

3. Lily visits an arcade while on holiday in Weston-Super-Mare.
She plays 100 games and wins tickets that she can exchange for prizes.
The table below shows the results.

Number of tickets won x	Frequency f	fx
0	2	0
1	11	11
2	28	56
3	18	54
4	11	44
5	15	75
6	10	60
7	2	14
8	3	+ 24
	100	338

(a) Work out the total of tickets won.

100

.....

(2)

(b) Calculate the mean number of tickets per game.

$338 \div 100$

3.38

.....

(2)

3)

5. An internet company collected data about the number of internet devices in each of 50 households.
The table shows the results.

Number of devices	Number of households	f x
0	1	0
1	1	1
2	2	4
3	4	12
4	9	36
5	13	65
6	10	60
7	7	49
8	3	+ 24
	50	251

(a) Work out the total number of internet devices in these 50 households

251
(2)

(b) Calculate the mean number of internet devices per household.

251 ÷ 50 = 5.02

5.02
(2)

4)

6. Alex works for the council.
He records the number of people in cars travelling down a street over one hour.

Here are his results.

Number of people in each car x	Number of cars f	fx
1	41	41
2	54	108
3	32	96
4	20	80
5	3	15
	150	340

(a) Work out the total number of cars that travelled down the street.

150

(1)

(b) Work out the total number of people that travelled in cars down the street.

340

(2)

(c) Work out the mean number of people travelling in each car.

$340 \div 150 = 2.2\dot{6}$

2.267 to 3dp

(2)

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5)

7. Simon rolls a fair six-sided dice 30 times.
He records the results in a table, however misses two of the frequencies.

Number	Frequency
1	6
2	3
3	5
4	8
5	2
6	6

The mean result is 3.5

Work out the two missing numbers.

3.5 × 30 = 105

6 + 6 + 15 + 36 = 63

105 − 63 = 42

4 × 8 = 32

5 × 2 = 10

6 + 3 + 5 + 8 + 2 + 6 = 30

(4)

6)

1. The table below shows the length of 100 fish from a local river.

length, L, cm	Frequency	Midpoint	fx
$0 < L \leq 10$	21	5	105
$10 < L \leq 20$	11	15	165
$20 < L \leq 30$	31	25	775
$30 < L \leq 40$	12	35	420
$40 < L \leq 50$	25	45	1125
	+ 100		+ 2590

Calculate an estimate of the mean length of the fish.

2590 ÷ 100

25.9 .....cm

(4)

7)

2. The table shows the heights of 50 students.

Height, h, cm	Frequency	mid point	fx
110 ≤ h < 120	3	115	345
120 ≤ h < 130	8	125	1000
130 ≤ h < 140	9	135	1215
140 ≤ h < 150	23	145	3335
150 ≤ h < 160	7	155	1085
+	50		+ 6980

(a) Write down the modal class interval.

140 ≤ h < 150

.....

(1)

(b) Work out an estimate for the mean height of the students.

6980 ÷ 50 = 139.6

139.6 .....cm

(4)

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8)

3. James recorded the times, in minutes, for 20 students to complete a test. The information about these times is shown in the table.

Time (t minutes)	Frequency	midpoint	fx
$0 < t \leq 4$	4	2	8
$4 < t \leq 8$	11	6	66
$8 < t \leq 12$	4	10	40
$12 < t \leq 16$	1	14	14
	+ 20		+ 128

(a) Write down the modal class interval.

$4 < t \leq 8$

.....

(1)

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

$128 \div 20 = 6.4$

6.4

.....minutes

(4)

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9)

5. The time for ten students to complete a race is below.

Time (t seconds)	Frequency
$20 < t \leq 40$	3
$40 < t \leq 60$	5
$60 < t \leq 80$	2
	+ 10

midpoint | ft
30 | 90
50 | 250
70 | + 140
490

(a) Work out what fraction of students took over one minute.

$\frac{2}{10} = \frac{1}{5}$

(1)

(b) Write down the modal interval.

$40 < t \leq 60$

(1)

(c) Work out an estimate for the mean time taken.

$480 \div 10 = 48$

48 seconds

(4)