Averages and time series

Topics

Mean, median, mode and range – Moving averages
Averages from stem and leaf tables, frequency tables and grouped frequency tables

Questions

1.   Ratul collected data about the age of 30 passengers on a bus.

Ratul showed his results in a stem and leaf diagram.

1	8 8 9
2	1 2 3 4 4 8 9
3	0 3 5 5 7 7 8
4	2 2 3 3 6 6 8 8
5	1 2 3 3 5

Key 4│1   stands for 41 years old

(a)   Write down the number of people aged 37.

....
(1)

(b)   Work out the range.

....
(1)

(c)   Work out the median.

....
(1)
(Total 3 marks)

2. Alan found out the length of reign of each of 41 kings.
He used the information to complete the frequency table.

Length of reign (*L* years)	Number of kings		
$0 < L \leq 10$	14		
$10 < L \leq 20$	13		
$20 < L \leq 30$	8		
$30 < L \leq 40$	4		
$40 < L \leq 50$	2		

(a)   Write down the class interval that contains the median.

....

(2)

(b)   Calculate an estimate for the mean length of reign.

.... years

(4)

(Total 6 marks)

3. 30 students in a Year 9 class took a science SAT test.
The table gives information about the level they achieved.

Level	Number of students	
3	2	
4	3	
5	5	
6	13	
7	7	

Work out the mean level achieved.

....

(Total 3 marks)

4.   A swimming club has 60 members.

25 of the members are boys.
35 of the members are girls.

The mean weight of all 60 members is 59.20 kg
The mean weight of the 25 boys is 67.18 kg

(a)   Calculate the mean weight of the 35 girls.

....

(3)

There are two Year 6 classes in a primary school.
The mean height of pupils in the first class is p metres.
The mean height of pupils in the second class is q metres.

Mr Cane, the headmaster, says 'The mean height of all year 6 pupils is equal to $\frac{p+q}{2}$.'

One of two conditions must be satisfied for Mr Cane to be correct.

(b)   Write down each of these conditions.

Condition 1

....

....

Condition 2

....

....

(2)
(Total 5 marks)

5. The table shows the number of orders received each month by a small company.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Number of orders received	13	21	15	29	24	36	37	42

Work out the first two 4-month moving averages for this data.

.... and ....

(Total 3 marks)

6. Timothy Softee starts a new ice-cream business, selling ice-creams from a van. The table shows his sales figures for the first ten days.

Day	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon
Takings (£)	153	258	85	68	95	104	102	296	350	103

(a) Timothy wants to use moving averages to analyse his sales figures. Explain why he should use a **seven day** moving average.

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(1)

(b) Calculate the four seven day moving averages for this data.

…………… , …………… , …………… , ……………

(3)

(c) What does this show about the general trend of Timothy's sales?

……………………………………………………………………………………………

(1)

(Total 5 marks)