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Centre Number						Candidate Number					
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For Examiner's Use

General Certificate of Secondary Education
June 2009



MATHEMATICS (MODULAR) (SPECIFICATION B)
Module 1 Higher Tier Section A

43051/HA

H

Thursday 11 June 2009 1.30 pm to 2.00 pm

<p>For this paper you must have:</p> <ul style="list-style-type: none"> • a calculator • mathematical instruments • a treasury tag. 	
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For Examiner's Use			
Section A		Section B	
Question	Mark	Question	Mark
1		6	
2		7	
3		8	
4		9	
5		10	
Total Section A			
Total Section B			
TOTAL			
Examiner's Initials			

Time allowed for Section A: 30 minutes

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins will not be marked.
- Use a calculator where appropriate.
- Do all rough work in this book.
- This paper is divided into two sections: Section A and Section B.
- After the 30 minutes allowed for Section A, you must put your calculator on the floor under your seat. You will then be given Section B.
- When you have answered Section B you may work again on Section A but you may **not** use your calculator. It must remain on the floor under your seat.
- At the end of the examination tag Section A and Section B together with Section A on top.

Information

- The maximum mark for Section A is 23.
- The marks for questions are shown in brackets.
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer book.

Advice

- In all calculations, show clearly how you work out your answer.



J U N 0 9 4 3 0 5 1 H A 0 1

Answer **all** questions in the spaces provided.

1 A driving instructor listed the number of lessons that 11 of his learner drivers had before they passed their test.

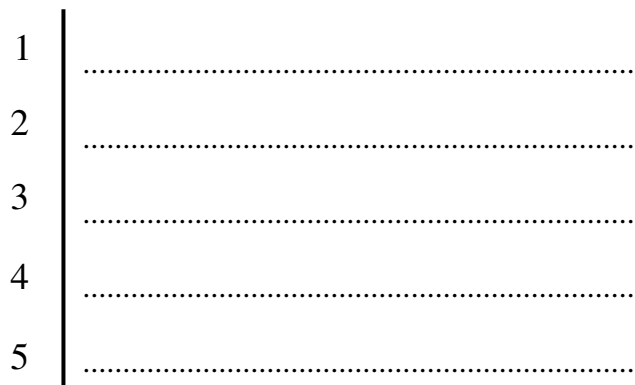
His results are

25 33 41 50 21 43
54 37 42 18 24

1 (a) Complete an ordered stem-and-leaf diagram to show this data. Remember to complete the key.

.....
.....
.....
.....
.....

Key: | represents lessons



(3 marks)

1 (b) The driving instructor claimed that his learner drivers took, on average, less than 30 lessons to pass their test.

Does this data support his claim?

Tick the correct box.

Yes

No

Cannot tell

Explain your answer.

.....
..... (1 mark)

4



2 A school recorded the number of days that Year 9 pupils were absent last week.

Number of days absent	Number of pupils
0	144
1	27
2	18
3	8
4	2
5	1
Total	200

2 (a) Calculate the mean number of days absent.

.....

.....

.....

.....

Answer (3 marks)

2 (b) One Year 9 pupil is chosen at random.

Calculate the probability that this pupil was absent for more than one day last week.

.....

.....

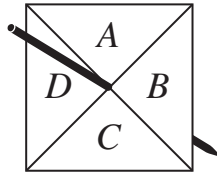
Answer (2 marks)

5

Turn over ►



3 A four-sided spinner is shown.



The spinner is biased.

Some of the probabilities of the spinner landing on a letter are shown in the table.

Letter	Probability
<i>A</i>	0.3
<i>B</i>	
<i>C</i>	
<i>D</i>	0.1

The probability that the spinner lands on *C* is double the probability that the spinner lands on *D*.

The spinner is spun 60 times.

Calculate the number of times you would expect it to land on *B*.

.....

.....

.....

.....

.....

.....

.....

Answer (5 marks)

5



4 The table shows the population of a small town.

Men	2999
Women	3071
Children	2425
Total	8495

A stratified sample of 500 people is to be chosen from this town.

Calculate the number of women that should be chosen.

.....

.....

.....

.....

.....

Answer (2 marks)

2

Turn over for the next question

Turn over ►



5 (a) What is the purpose of moving averages?

.....

(1 mark)

5 (b) Julie is a hairdresser.

Her shop is open Tuesday, Wednesday, Friday and Saturday each week.

The number of customers at her shop each day over a period of 3 weeks is shown in the table.

Week	Day	Number of customers
1	Tuesday	15
	Wednesday	10
	Friday	20
	Saturday	25
2	Tuesday	21
	Wednesday	14
	Friday	22
	Saturday	27
3	Tuesday	21
	Wednesday	20
	Friday	26
	Saturday	33

Julie wants to know how her business is performing.

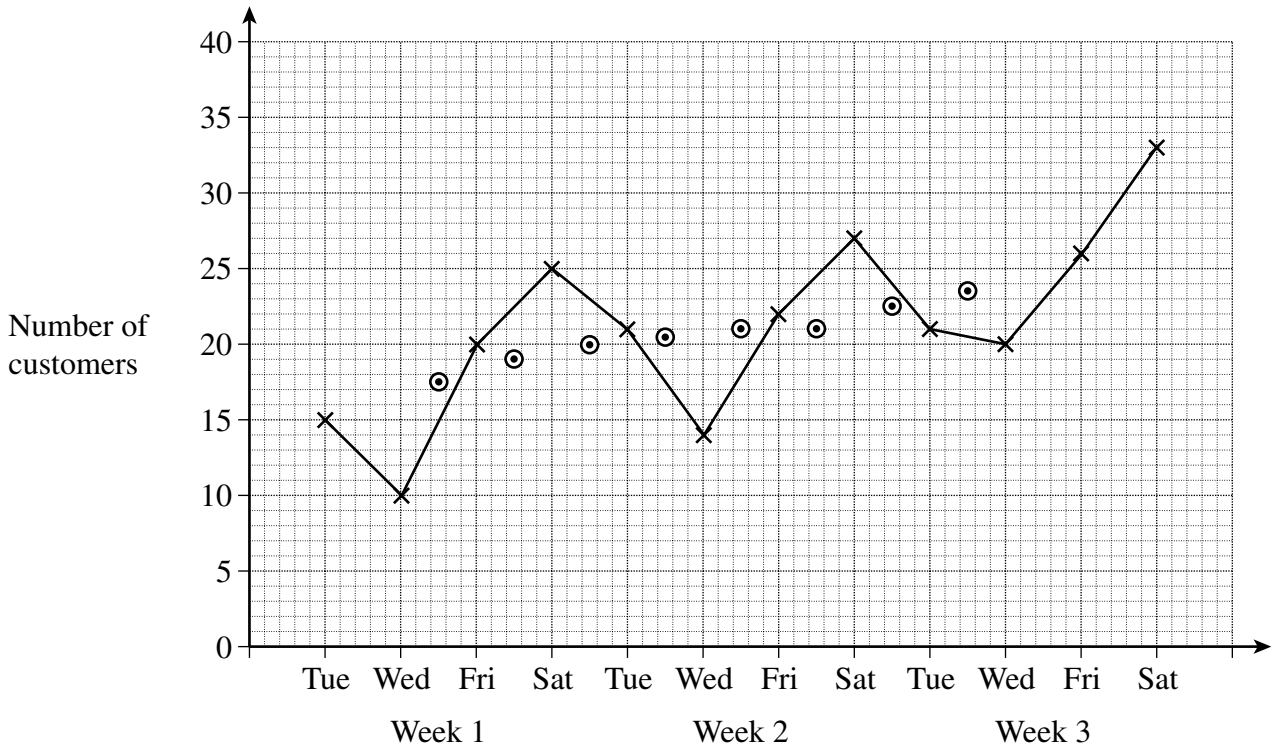
Explain why a four-point moving average would be appropriate for Julie to use.

.....

(1 mark)



5 (c) The graph shows the raw data (x) and some of the four-point moving averages (o).



5 (c) (i) The last four-point moving average is **not** plotted.

Use the table to calculate this moving average and plot it on the graph. You **must** show your working.

.....

.....

Answer (2 marks)

5 (c) (ii) Use a trend line to find the next moving average. Hence calculate a prediction of the number of customers on the Tuesday of week 4. You **must** show your working.

.....

.....

.....

.....

Answer (3 marks)

END OF SECTION A



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General Certificate of Secondary Education
June 2009



MATHEMATICS (MODULAR) (SPECIFICATION B)
Module 1 Higher Tier Section B

43051/HB

H

Thursday 11 June 2009 2.05 pm to 2.35 pm

<p>For this paper you must have:</p> <ul style="list-style-type: none"> mathematical instruments. <p>You must not use a calculator.</p>	
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Time allowed for Section B: 30 minutes

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
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Information

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Advice

- In all calculations, show clearly how you work out your answer.



J U N 0 9 4 3 0 5 1 H B 0 1

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ANSWER IN THE SPACES PROVIDED**

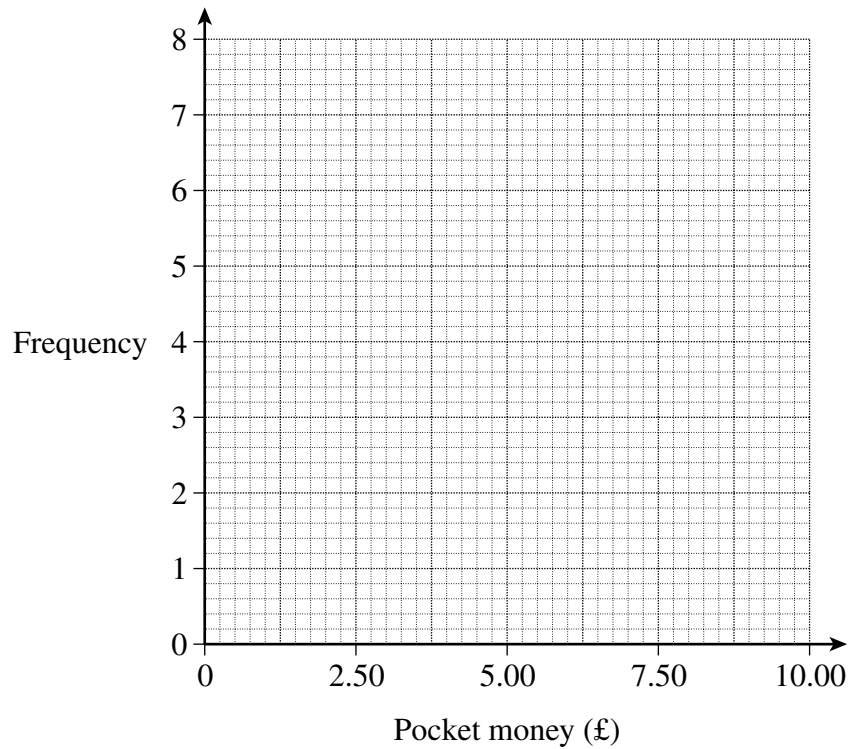


Answer **all** questions in the spaces provided.

6 The pocket money of 14 children last week is shown.

Pocket money			Frequency
£0	to less than	£2.50	6
£2.50	to less than	£5.00	2
£5.00	to less than	£7.50	5
£7.50	to less than	£10.00	1

6 (a) Draw a frequency diagram on the grid below.



(2 marks)

6 (b) Write down the modal class.

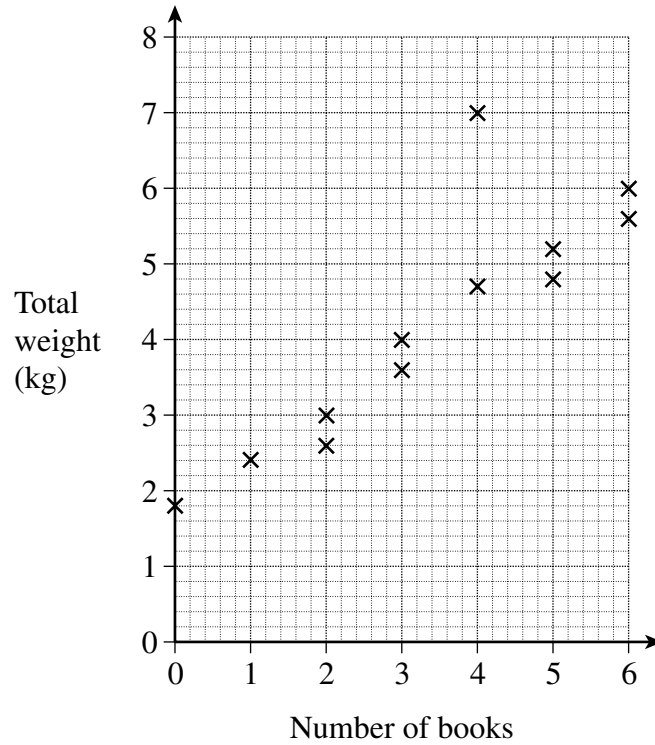
Answer £ to less than £
(1 mark)

3

Turn over ►



7 12 students carried out an investigation. They counted the number of books in their bags. Each student weighed their bag with the books and recorded the total weight. The results are shown on the scatter diagram.



7 (a) Describe the relationship between the number of books and the total weight.

.....

 (1 mark)

7 (b) (i) Draw a circle around the point that does not fit the general pattern. (1 mark)

7 (b) (ii) If this point is removed from the scatter diagram what effect would this have on the correlation?

Tick the correct box.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weaker	No effect	Stronger

Explain your answer.

.....

 (2 marks)



- 8 Will and Janey each throw an ordinary dice a number of times.
The table shows some of their results.

	Number of throws	Number of sixes	Relative frequency of throwing a six
Will	50	13	
Janey	80		0.20

Complete the table.

.....
.....

(2 marks)

2

Turn over for the next question

Turn over ►



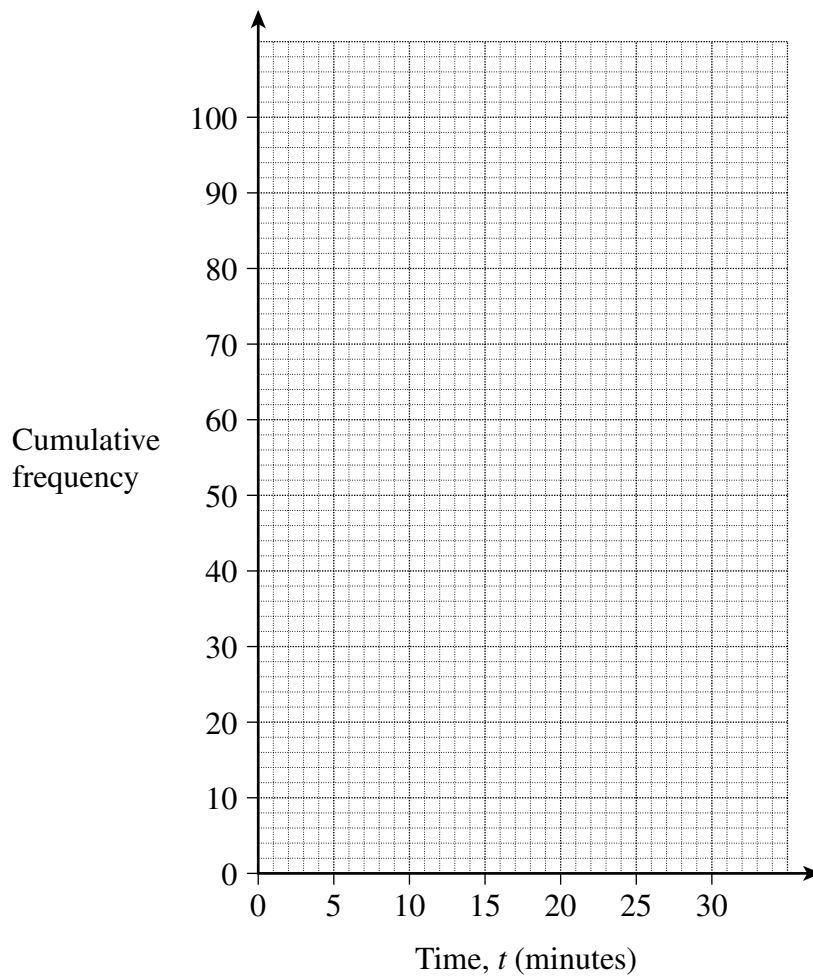
9 The table shows how long 100 people had to wait to go on the London Eye.

Time, t (minutes)	Number of people (frequency)	Cumulative frequency
$0 < t \leq 10$	22	
$10 < t \leq 15$	32	
$15 < t \leq 20$	26	
$20 < t \leq 25$	15	
$25 < t \leq 30$	5	

9 (a) Complete the cumulative frequency column.

(1 mark)

9 (b) Draw a cumulative frequency diagram on the grid.



(3 marks)



9 (c) Use your diagram to estimate

9 (c) (i) the interquartile range of the waiting times

.....

Answer minutes (2 marks)

9 (c) (ii) the number of people who waited for more than 17 minutes.

.....

Answer (2 marks)

8

Turn over for the next question

Turn over ►



