Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

For Examiner's Use

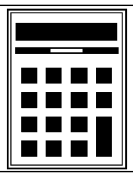
General Certificate of Secondary Education
November 2008

MATHEMATICS (MODULAR) (SPECIFICATION B) 43051/HA
Module 1 Higher Tier Section A
Non-coursework Specification

H

Thursday 13 November 2008 1.30 pm to 2.00 pm

In addition to this paper you must have:
- a calculator
- mathematical instruments
- a treasury tag.



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 or on blank pages 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.

For Examiner's Use			
Section A		**Section B**	
Question	Mark	Question	Mark
1		5	
2		6	
3		7	
4		8	
		9	
Total Section A			
Total Section B			
TOTAL			
Examiner's Initials			

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

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

1 A field is divided into 160 equal areas.
The table shows the number of diseased plants in each area.

Number of diseased plants	**Number of areas**	
0	25	
1	48	
2	49	
3	23	
4	10	
5	5	
Total	160	

Calculate the mean number of diseased plants per area.

.....

.....

.....

.....

.....

Answer ..... *(3 marks)*

3

Turn over ▶

2 An ordinary six-sided dice is repeatedly thrown 10 times.
The number of sixes are counted for each set of 10 throws.
The table shows the results.

Set of 10 throws	**Number of sixes**	**Total number of sixes**	**Total number of throws**	**Relative frequency**
1st	2	2	10	0.20
2nd	3	5	20	0.25
3rd	4	9	30	0.30
4th	3	12	40	0.30
5th	2	14	50	0.28
6th	4	18	60	0.30
7th	4	22	70	0.31
8th	2		80	
9th	3		90	
10th	4		100	

2 (a) Complete the table.

.....

.....

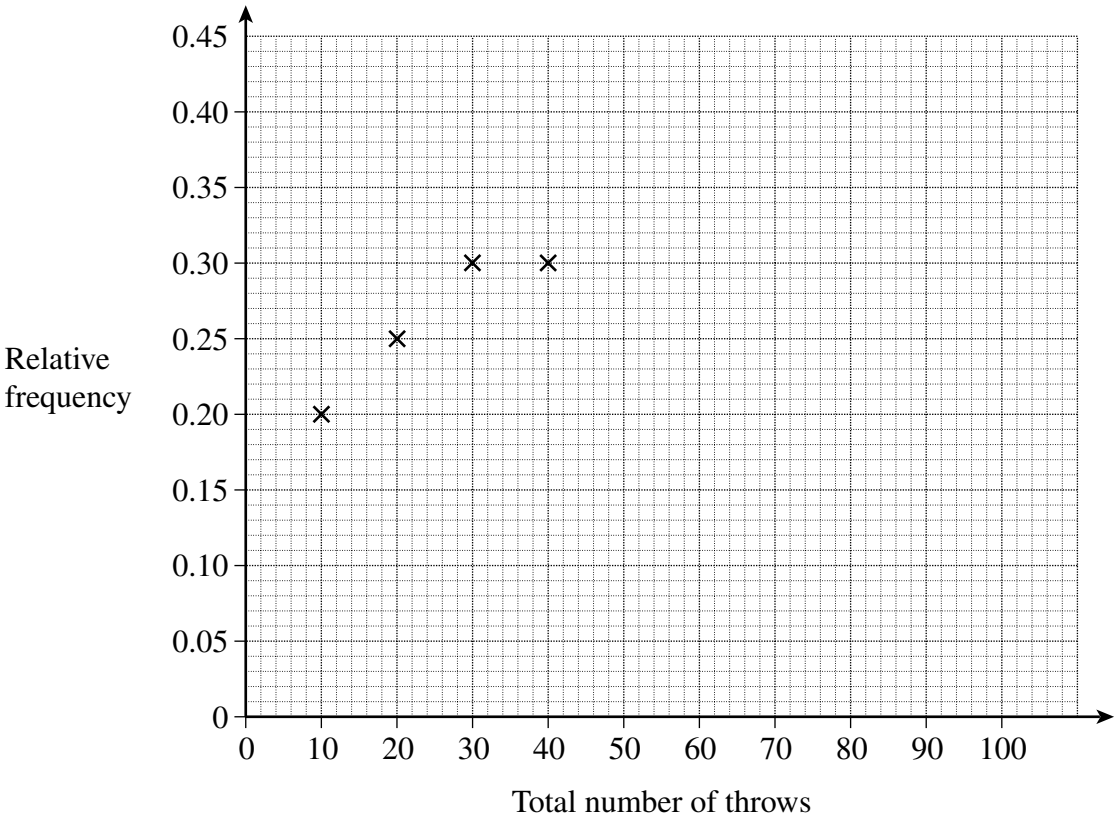
.....

.....

.....

(3 marks)

2 (b) Complete the relative frequency graph.



(2 marks)

2 (c) Do these results suggest that the dice is biased towards the number six?

Tick a box.

☐ Yes ☐ No

Explain your answer.

.....

.....

.....

(2 marks)

7

Turn over ▶

3 Sarfraz and Becki are drivers for a parcel delivery company.
The weights, w (kg), of the parcels in Sarfraz's van on Monday are summarised below.

Weight, w (kg)	**Frequency**	**Cumulative Frequency**
$2 < w \leqslant 4$	4	4
$4 < w \leqslant 6$	11	15
$6 < w \leqslant 8$	15	
$8 < w \leqslant 10$	13	
$10 < w \leqslant 12$	17	

3 (a) Complete the cumulative frequency column above.

(1 mark)

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

(3 marks)

3 (c) The box plot opposite represents the weights of the parcels on Becki's van on that Monday.

Becki says that the weights of the parcels on her van do **not** vary as much as those on Sarfraz's van.

Is Becki correct?
You **must** show your working.

.....

.....

.....

.....

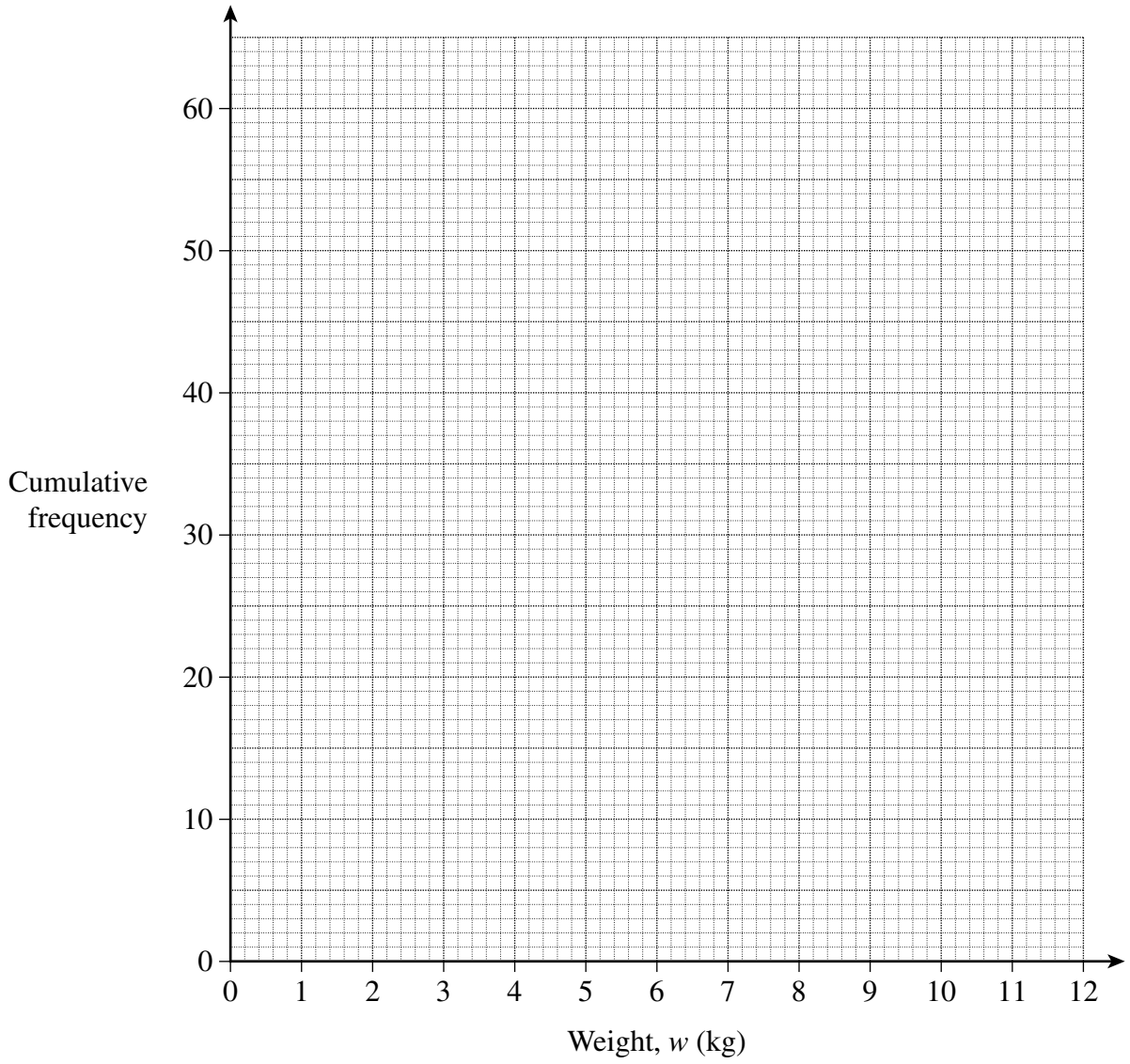
.....

.....

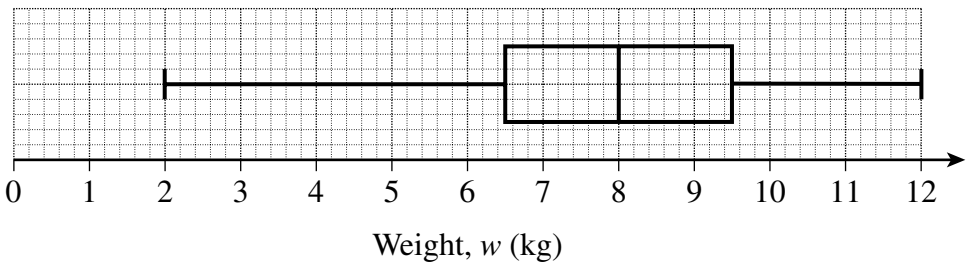
.....

(4 marks)

Sarfraz



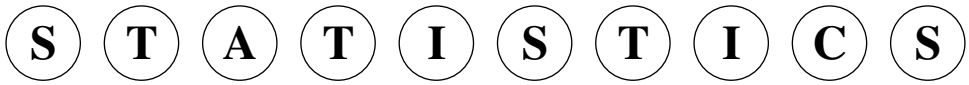
Becki



Turn over for the next question

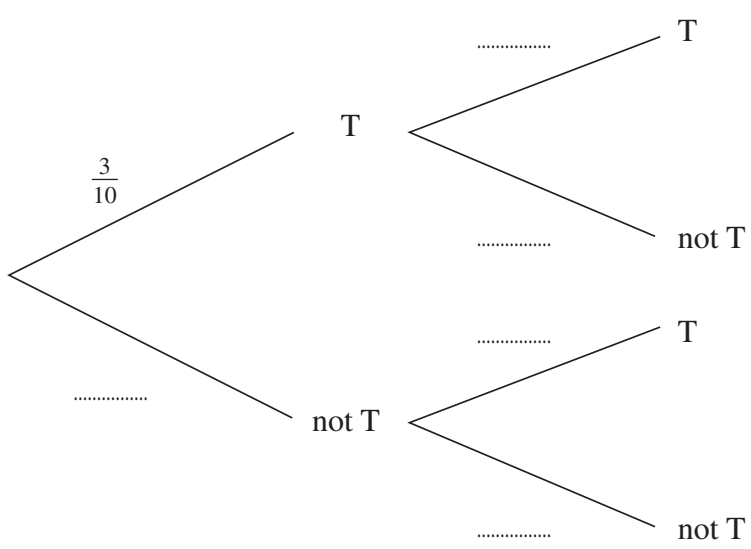
8

4 A bag contains these ten discs.



One disc is taken at random from the bag.
The disc is **not** replaced.
Another disc is taken at random from the bag.

4 (a) Complete the tree diagram.



(2 marks)

4 (b) Calculate the probability that exactly one T is taken from the bag.

.....

.....

.....

.....

Answer ..... *(3 marks)*

END OF SECTION A

5

Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

General Certificate of Secondary Education
November 2008

ASSESSMENT and QUALIFICATIONS ALLIANCE

MATHEMATICS (MODULAR) (SPECIFICATION B) 43051/HB
Module 1 Higher Tier Section B
Non-coursework Specification

H

Thursday 13 November 2008 2.05 pm to 2.35 pm

For this paper you must have:
- mathematical instruments.

You must **not** use a calculator.

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.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book.
- You may **not** use your calculator in Section B. Your calculator must remain on the floor under your seat.
- 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 B 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 booklet.

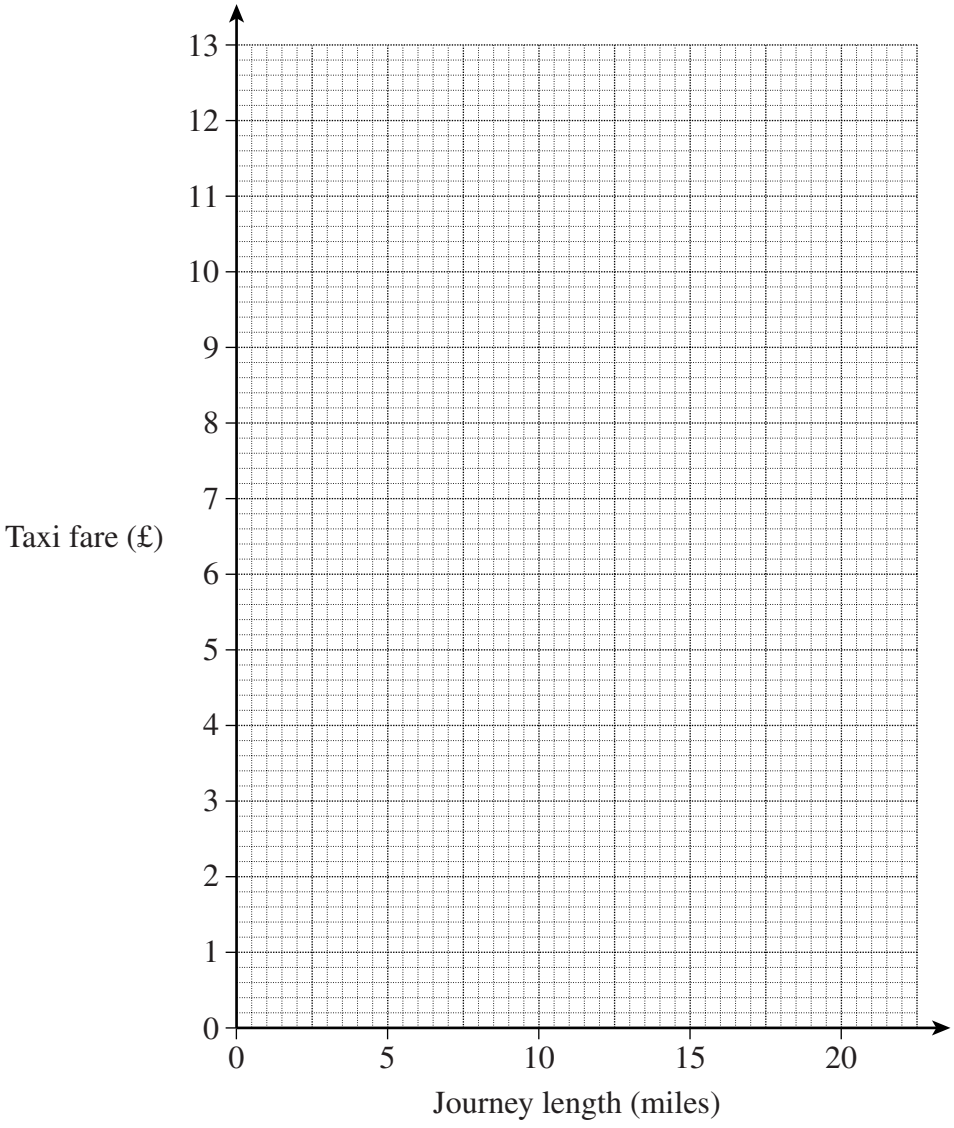
Advice
- In all calculations, show clearly how you work out your answer.

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

5 The table shows the taxi fare (£) for different journey lengths (miles).

Journey length (miles)	3	5	9	10	15	17	20
Taxi fare (£)	4.00	6.00	7.00	8.50	10.80	11.20	12.40

5 (a) Plot the data on the scatter graph below.



(2 marks)

5 (b) Describe the correlation.

.....

.....

(1 mark)

5 (c) Draw a line of best fit on the scatter diagram.

(1 mark)

5 (d) Use your line of best fit to estimate the taxi fare for a journey of 12 miles.

Answer £ ..... *(1 mark)*

5 (e) Explain why it may **not** be appropriate to use your line of best fit to estimate the taxi fare for a journey of 100 miles.

.....

.....

(1 mark)

6

Turn over for the next question

6 The monthly UK rainfall figures, in mm, for one year are

79 97 86 62 89 43 58 82 97 89 95 70

Complete an ordered stem-and-leaf diagram for these figures.

.....

.....

.....

.....

.....

.....

Key ..... | ..... represents ..... mm

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

(3 marks)

3

7 A five-sided spinner is labelled A, B, C, D and E.
The spinner is biased.
The table shows some of the probabilities of the spinner landing on each letter.

Letter	Probability
A	0.40
B	0.25
C	
D	
E	0.05

The probability that the spinner lands on C is equal to the probability that it lands on D.

7 (a) Calculate the probability that the spinner lands on D.

.....

.....

.....

.....

Answer ..... *(3 marks)*

7 (b) Calculate the probability that the spinner lands on either A or B.

.....

.....

Answer ..... *(2 marks)*

5

8 The examination scores of a group of students are summarised in the table.

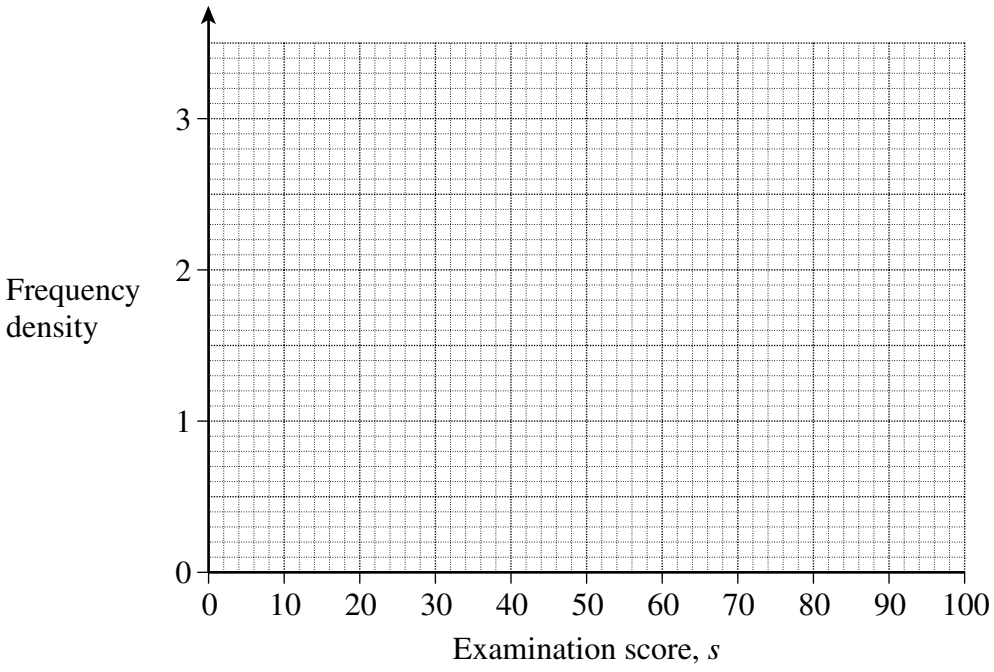
Examination score, *s*	**Frequency**
$0 \leqslant s < 20$	10
$20 \leqslant s < 40$	18
$40 \leqslant s < 50$	25
$50 \leqslant s < 60$	20
$60 \leqslant s < 80$	16
$80 \leqslant s < 100$	2

8 (a) Draw a histogram for this data.

.....

.....

.....



(3 marks)

8 (b) A Merit is awarded for a mark between 48 and 75.

Calculate an estimate of the number of students awarded a Merit.

.....

.....

Answer ..... *(3 marks)*

6

9 A company wants to obtain a stratified sample of total size 2000 from the members of three teaching unions.
The table shows the number of members, in thousands, of the three unions.

Union	**Number of members in thousands**
NUT	260
ATL	170
NATFHE	70

Calculate the number of members of each union selected for the stratified sample.

.....

.....

.....

.....

.....

.....

.....

.....

.....

Answer NUT .....

ATL .....

NATFHE .....

(3 marks)

3

END OF QUESTIONS

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED