Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

For Examiner's Use

General Certificate of Secondary Education
June 2007

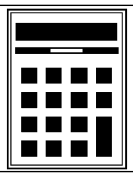
MATHEMATICS (MODULAR) (SPECIFICATION B) **43001/HA**
Module 1 Higher Tier Section A

Monday 18 June 2007 1.30 pm to 1.55 pm

H

TWO TIER

For this paper you must have:
- a calculator
- mathematical instruments
- a treasury tag.



Time allowed for Section A: 25 minutes

Instructions
- Use blue or black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- 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 25 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 20.
- 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	
Total Section A			
Total Section B			
TOTAL			
Examiner's Initials			

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

1 The number of pupils absent from a school on one day is shown in the two-way table.

	Year 8	**Year 9**	**Year 10**	**Year 11**
Boys	6	14	19	4
Girls	16	14	12	11

(a) How many Year 10 girls were absent?

Answer ..... *(1 mark)*

(b) How many more girls than boys were absent altogether?

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

(c) The number of pupils absent from a school each week is listed below.

125 134 121 111 105 109 118 122 119 126 133

Show the data in an ordered stem-and-leaf diagram.

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Key 12 | 5 represents 125 pupils

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(3 marks)

2 The table summarises the travelling time to work of 80 people.

Travelling time, t (minutes)	**Number of people**
$0 < t \leqslant 10$	6
$10 < t \leqslant 20$	17
$20 < t \leqslant 30$	19
$30 < t \leqslant 40$	23
$40 < t \leqslant 50$	15

Calculate an estimate of the mean travelling time.

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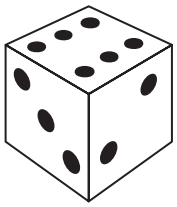
Answer ..... minutes *(4 marks)*

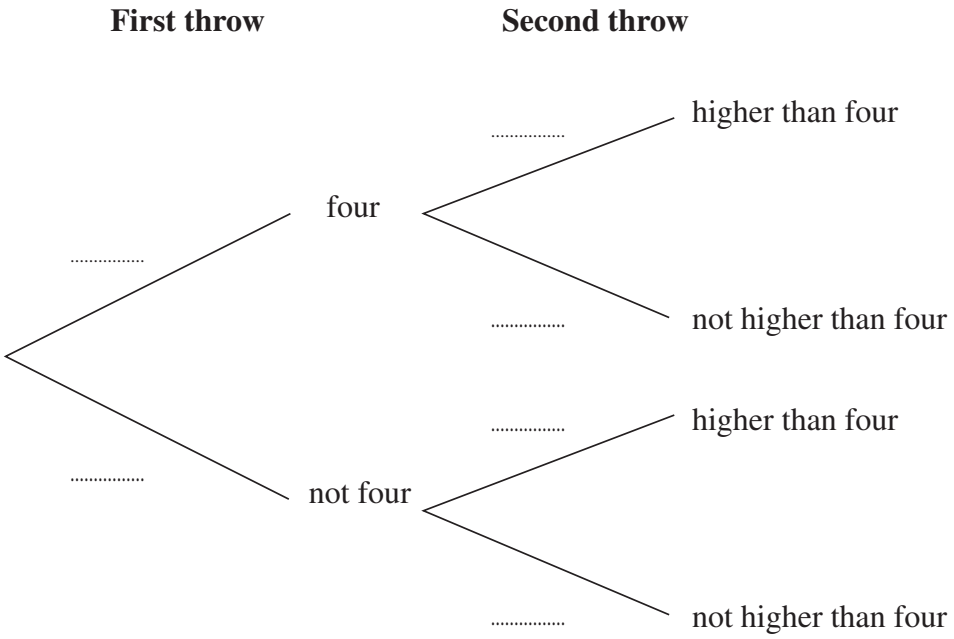
4

Turn over for the next question

3 Alia has a fair six-sided dice.
She throws it twice.



(a) Complete the tree diagram.



(3 marks)

(b) Calculate the probability that Alia throws a four and then throws a number higher than four in that order.

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

5

4 The table shows the gender and number of two types of employee in a college.

	Manager	**Teacher**
Male	14	26
Female	8	52

Two of these employees are chosen at random to attend a meeting.

(a) Show that the probability that two male teachers are chosen is $\frac{13}{198}$

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(2 marks)

(b) Calculate the probability that the chosen employees are a male teacher and any female.

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

5

END OF SECTION A

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Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

General Certificate of Secondary Education
June 2007

ASSESSMENT and QUALIFICATIONS ALLIANCE

MATHEMATICS (MODULAR) (SPECIFICATION B) **43001/HB**
Module 1 Higher Tier Section B

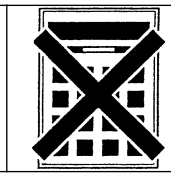
H

Monday 18 June 2007 2.00 pm to 2.25 pm

TWO TIER

For this paper you must have:
- mathematical instruments.

You must **not** use a calculator.



Time allowed for Section B: 25 minutes

Instructions
- Use blue or black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- 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 20.
- 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.

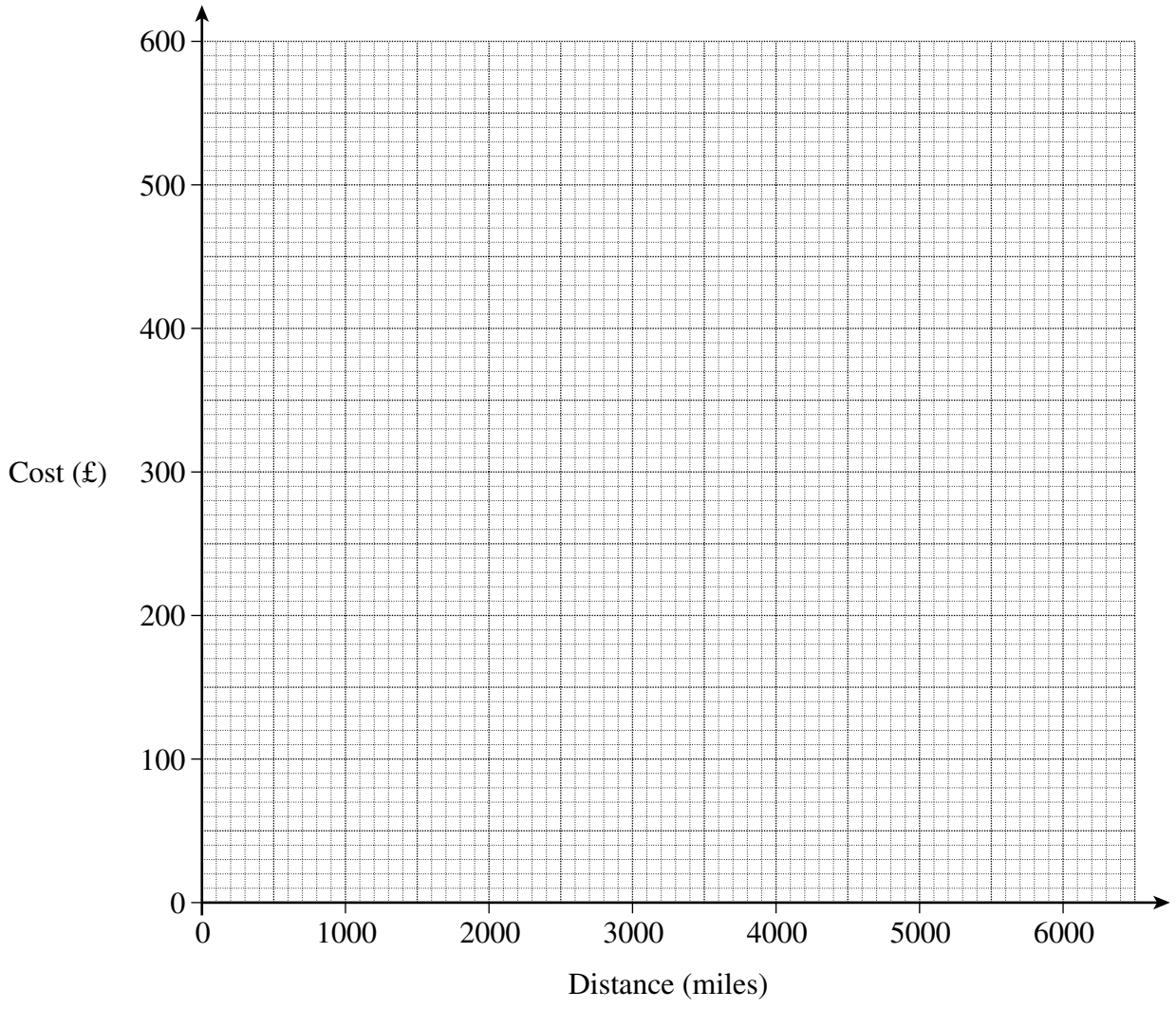
Advice
- In all calculations, show clearly how you work out your answer.

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

5 The distance and cost of various flights is shown in the table.

Distance (miles)	500	900	1100	2500	3500	5500	6000
Cost (£)	150	140	200	300	400	520	550

(a) Plot the data as a scatter graph.



(2 marks)

(b) Draw a line of best fit on your scatter graph.

(1 mark)

(c) Describe the relationship shown by your scatter graph.

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(1 mark)

(d) A flight is 5000 miles.

Use your line of best fit to estimate the cost of this flight.

Answer £ ..... *(1 mark)*

5

Turn over for the next question

6 Joe carries out a survey about fast foods.
This is one of his questions.

> Do you agree that eating fast foods is unhealthy?

(a) Explain why this question is **not** suitable.

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(1 mark)

(b) Rewrite the question so that it is suitable.
Include response boxes.

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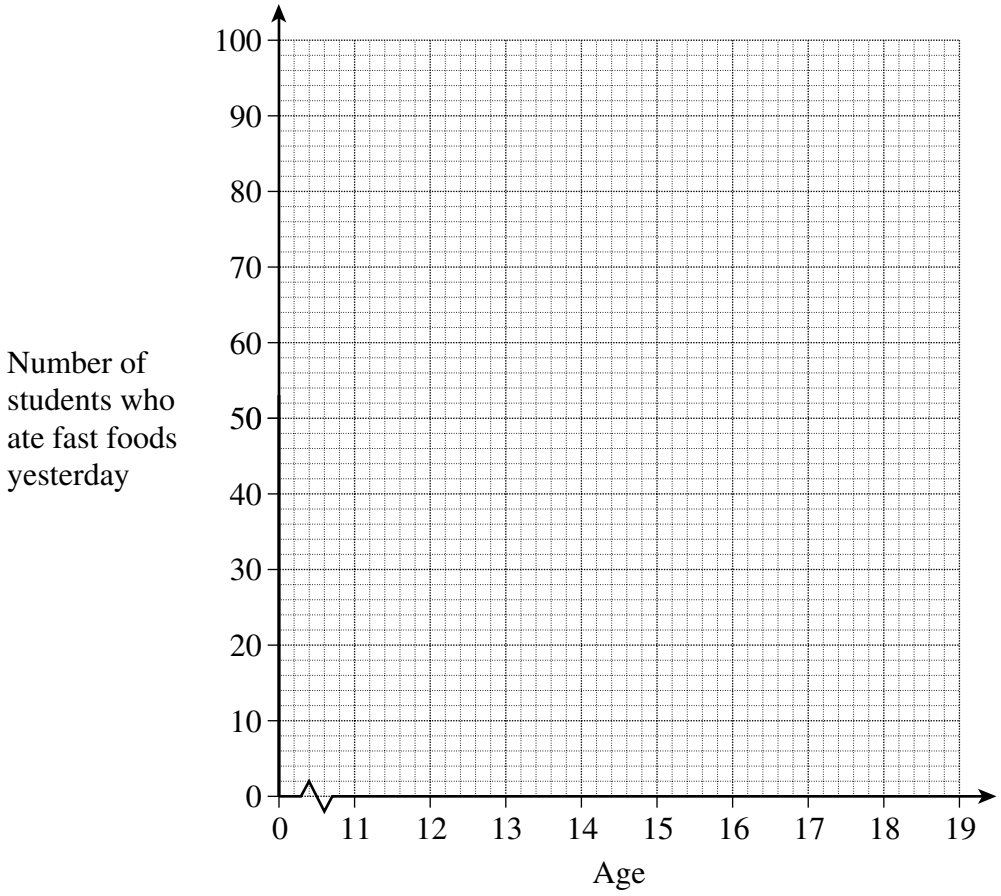
(2 marks)

(c) Joe surveyed 100 students from each age group at his school.
The table shows Joe's results.

Age group	Number of students who ate fast foods yesterday
11 to less than 13	64
13 to less than 15	88
15 to less than 17	56
17 to less than 19	24

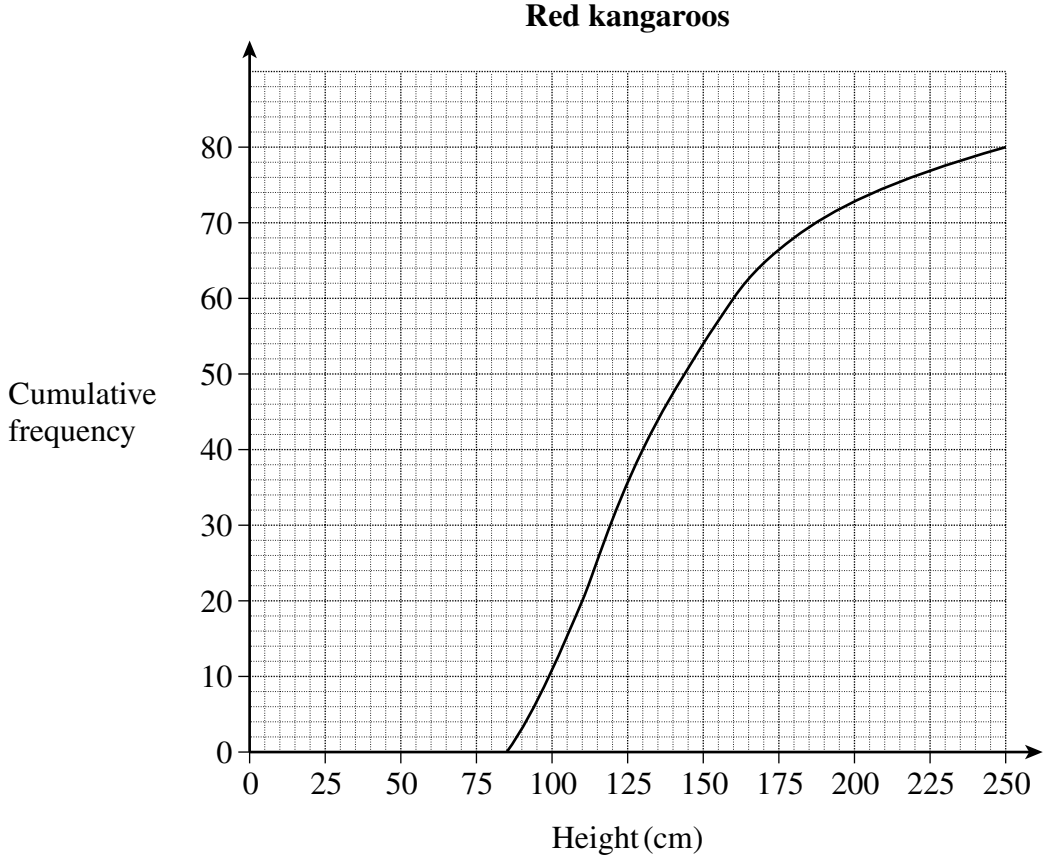
Draw a frequency polygon for this data.



(2 marks)

5

7 The cumulative frequency diagram of the heights of 80 red kangaroos is shown below.



The table below summarises the heights of 80 grey kangaroos.

Grey kangaroos

Lower quartile	Median	Upper quartile
85 cm	105 cm	120 cm

Explain why the heights of the grey kangaroos are more consistent than the heights of the red kangaroos.
You **must** show your working.

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(4 marks)

4

8 (a) What is a census?

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(1 mark)

The table shows the number of each type of staff at three hospitals.

Staff	Hospital A	Hospital B	Hospital C
Doctors	8	15	22
Nurses	26	50	75
Others	46	80	120

(b) Simon wants to take a stratified sample of size 10 from the staff at hospital A.

Calculate the number of each type of staff that Simon should choose.

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Answer Doctors .....

Nurses .....

Others .....

(3 marks)

(c) Tracy wants a stratified sample of size 30 from the doctors in the three hospitals.

Calculate how many doctors Tracy should choose from hospital B.

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

END OF QUESTIONS

6

There are no questions printed on this page