Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

For Examiner's Use

General Certificate of Secondary Education
November 2007

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

H

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Monday 12 November 2007   1.30 pm to 1.55 pm

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.

43001/HA

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

1 The number of visitors to a park is recorded each day for two weeks.

121   118   128   144   100   111   129

146   137   123   118   109   135   132

Draw an ordered stem-and-leaf diagram to represent this information.
Remember to complete the key.

....

....

....

....

....

Key   …… | …… represents ……… visitors

10 | ....
11 | ....
12 | ....
13 | ....
14 | ....

(3 marks)

3

2 (a) Louis wants to find out how many CDs children buy.
This is his question and response section.

Question: How many CDs do you buy?

Response: Tick one box.

☐   ☐   ☐

1–2   3–4   5–6

Write down **one** criticism of the question and **one** criticism of the response section.

Criticism of question ....

....

Criticism of response section ....

....

(2 marks)

(b) Wynn wants to know how much money children spend on CDs.
He asks two groups of people.

Group 1   The boys on his school bus.

Group 2   A large group of Year 11 boys and girls.

Give a reason why each of these groups may give him a biased set of results.

Group 1 ....

....

Group 2 ....

....

(2 marks)

4

Turn over ▶

3 Rosie and Josh want to estimate the number of blue beads in a bag of 400 beads.
A trial consists of taking a bead at random, recording the colour and replacing the bead in the bag.
The results of their trials are shown in the table.

	Number of trials	**Number of blue beads chosen**
Rosie	25	7
Josh	100	19

(a) (i) Write down the relative frequency of Rosie taking a blue bead from the bag.

Answer .... *(1 mark)*

(ii) Write down the relative frequency of Josh taking a blue bead from the bag.

Answer .... *(1 mark)*

(b) Whose experiment gives the more reliable estimate of the number of blue beads in the bag?
Give a reason for your answer.

Answer ....

Reason ....

....
(1 mark)

3

4 A youth club is open on Monday, Wednesday and Friday evenings each week.
The table shows the number of people at the youth club each evening over two weeks.
One of the values in the table is missing.

Week 1			Week 2		
Monday	Wednesday	Friday	Monday	Wednesday	Friday
42	37	62	39		66

(a) Show that the first three-point moving average is 47.

....

....
(1 mark)

(b) The third three-point moving average is 51.

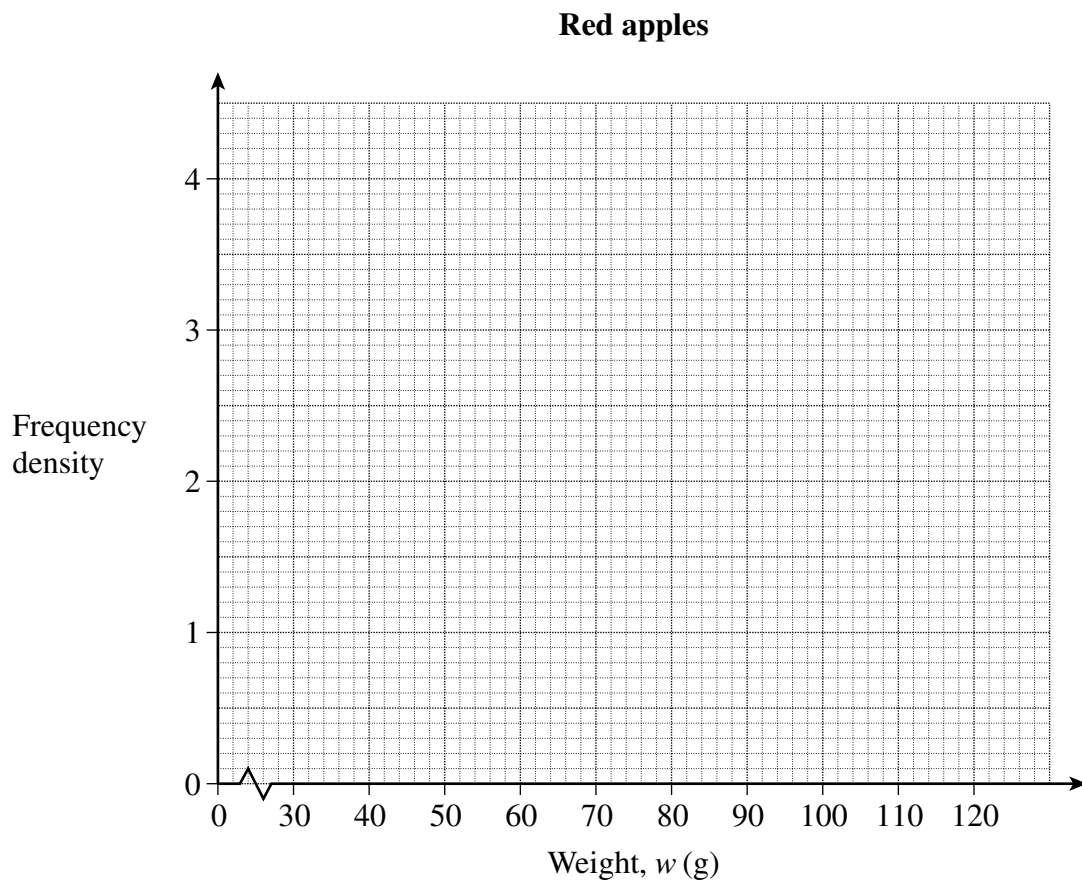Calculate the number of people at the youth club on Wednesday of Week 2.

....

....

....

....

Answer .... *(3 marks)*

4

Turn over for the next question

Turn over ▶

5 The table shows the weights of 100 red apples.

Weight of apple, w (g)	Frequency
$30 \leqslant w < 50$	18
$50 \leqslant w < 60$	28
$60 \leqslant w < 70$	36
$70 \leqslant w < 90$	15
$90 \leqslant w < 120$	3

(a) Draw a histogram to represent this data.

Red apples

Frequency density vs Weight, w (g)

(3 marks)

(b)   This histogram represents the weight of 100 green apples.

Green apples

Frequency density

Weight, w (g)
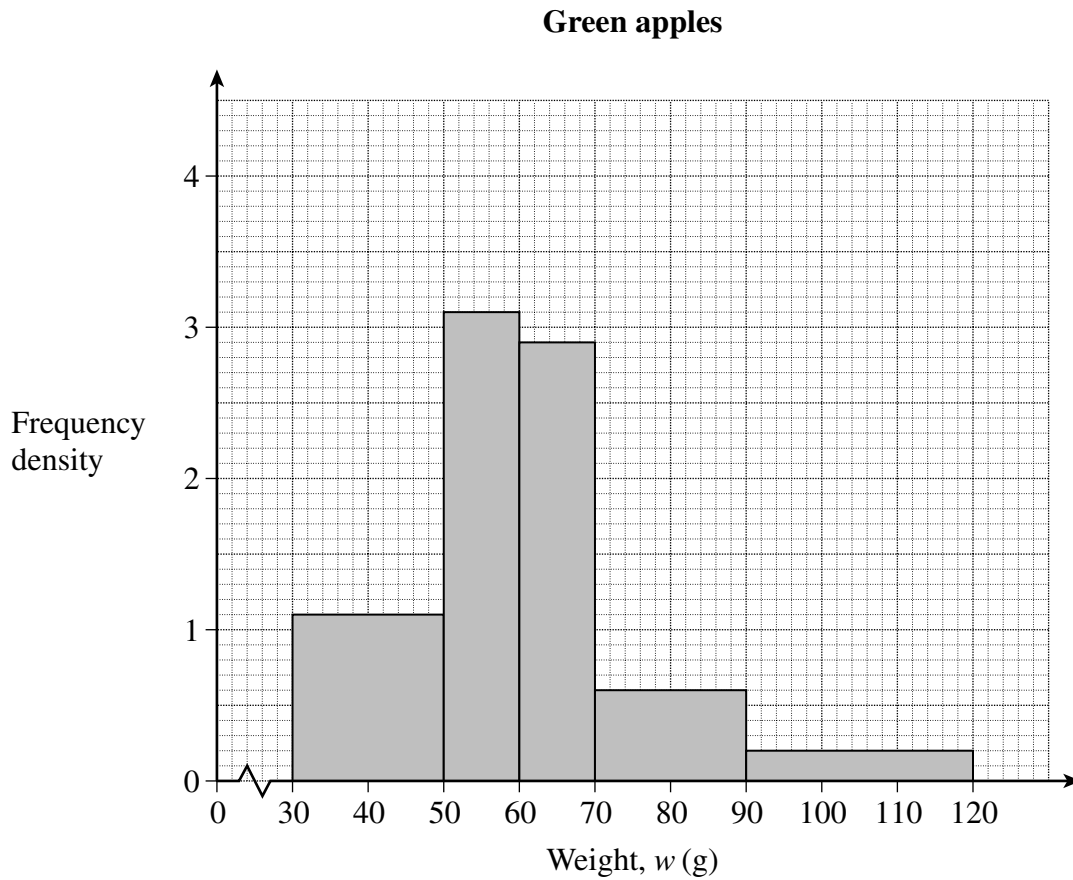
How many more green apples than red apples weighed less than 60 g?

....

....

....

....

Answer .... *(3 marks)*

6

END OF SECTION A

There are no questions printed on this page

General Certificate of Secondary Education
November 2007

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

H

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Monday 12 November 2007   2.00 pm to 2.25 pm

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.

43001/HB

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

6 200 pupils from a school were asked how they travel to school.
An equal number of boys and girls were asked.
Altogether 70 pupils take the bus to school.
The number of girls who travel by car is double the number of boys who travel by car.

The two-way table shows some of the information.

	walk	car	bus	cycle
boys	42		38	6
girls		28		1

(a) Complete the two-way table.

....

....

....
(4 marks)

(b) There are 1000 pupils in the school.

Estimate the total number of pupils who take the bus to school.

....

....

Answer .... *(2 marks)*

7 One hundred people were asked how many times they had visited the theatre in the last year. The table shows the results.

Number of visits	Frequency	Midpoint	
1 to 3	53		
4 to 6	30		
7 to 9	11		
10 to 12	6		

(a) Write down the modal class.

Answer .... *(1 mark)*

(b) Use midpoints to calculate an estimate of the mean number of visits.

....

....

....

....

Answer .... *(3 marks)*

Turn over for the next question

4

8 A group of students completed a cross-country run.
The table gives some information about the times taken, in minutes, to complete the run.

Quickest time	Lower quartile	Median	Upper quartile	Slowest time
14	18	24	29	35

(a) Draw a box plot on the grid below to represent this information.

10   12   14   16   18   20   22   24   26   28   30   32   34   36   38
Time, *t* (minutes)
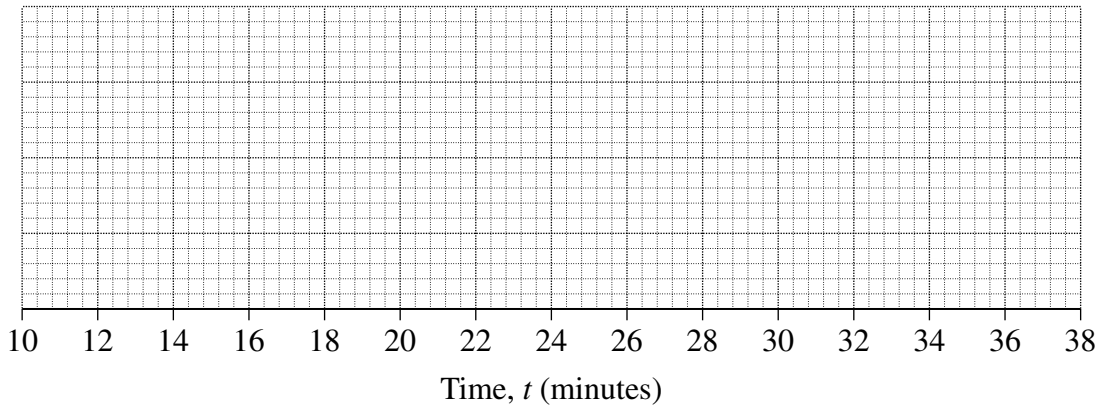
(2 marks)

(b) The students did some training.
They then completed the run again.
The box plot shows information about the times for the second run.

10   12   14   16   18   20   22   24   26   28   30   32   34   36   38
Time, *t* (minutes)
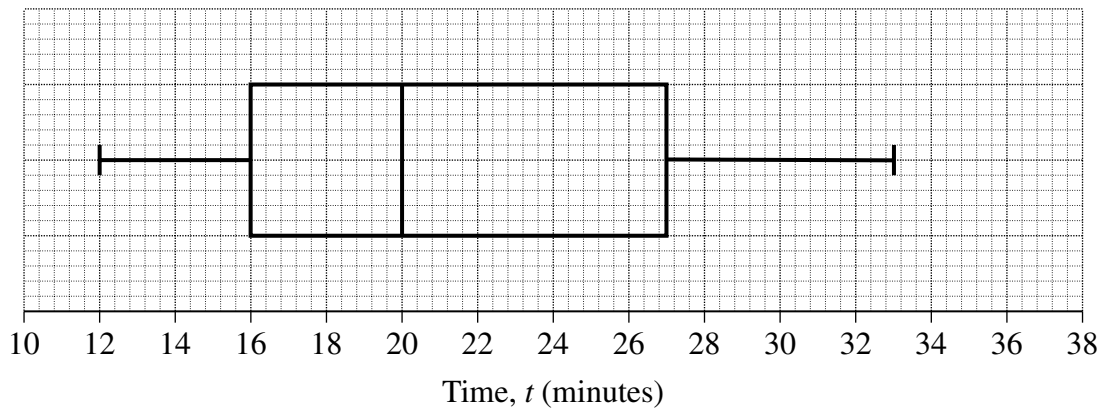
Compare the performances of the group on the first and the second run.

Comparison 1 ....

....

Comparison 2 ....

....

(2 marks)

4

9   The probability that Aaron goes to the gym on a Saturday is 0.9
   The probability that Dee goes to the gym on a Saturday is 0.6

(a)   Calculate the probability that both Aaron and Dee do **not** go to the gym next Saturday.

....

....

Answer .... *(3 marks)*

(b)   If Dee goes to the gym on Saturday the probability that she goes on Sunday is 0.2
If Dee does not go to the gym on Saturday the probability that she goes on Sunday is 0.7

Calculate the probability that Dee goes to the gym on only one day next weekend.

....

....

....

....

Answer .... *(3 marks)*

6

END OF QUESTIONS

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