Surname		Other Names	
Centre Number			Candidate Number	
Candidate Signature			

Leave blank

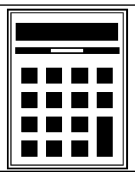
General Certificate of Secondary Education
November 2005

ASSESSMENT and QUALIFICATIONS ALLIANCE

MATHEMATICS (MODULAR) (SPECIFICATION B) 33001/IA
Module 1 Intermediate Tier Section A

Monday 14 November 2005 1.30 pm to 1.55 pm

In addition to this paper you will require:
- a calculator
- mathematical instruments
- a treasury tag.



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

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 in the spaces provided.
- Do all rough work in this booklet.
- 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.
- Mark allocations are shown in brackets.
- Additional answer paper and graph paper will be issued on request and must be tagged securely to this answer booklet.
- You are expected to use a calculator where appropriate.

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

NO QUESTIONS APPEAR ON THIS PAGE

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

1 The table shows the destinations of 180 girls after leaving school.

Destination	Number of girls
College	82
Training scheme	55
Employment	31
Other	12

(a) Draw and label a pie chart to represent this information.

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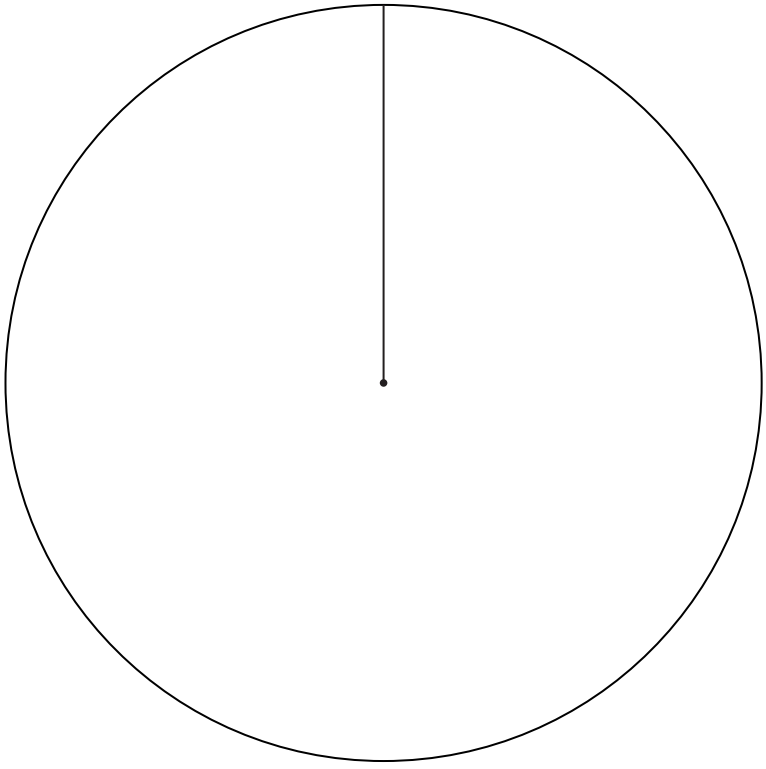

(4 marks)

(b) One girl was chosen at random.
Write down the probability that this girl was on a training scheme.

.....

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

5

Turn over ▶

2 The manager of Cost-U-Less supermarket wants to carry out a survey of her customers. She asks customers to complete a questionnaire.

(a) Here is one of the questions she asks:

"Don't you agree that Cost-U-Less is the best supermarket?"

Write down **one** criticism of this question.

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(1 mark)

(b) The manager collects her data by asking 100 shoppers who visit the supermarket on Friday evening.

Explain why this sample may not be representative of all the shoppers who use this supermarket.

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(1 mark)

(c) The manager wants to find out how often shoppers use this supermarket.

Write a question that the manager could ask.
Include a response section.

Question .....

.....

.....

Response

(2 marks)

4

3 In a survey about favourite methods of travel people could choose car, train, coach or aeroplane.
The following probabilities were calculated from the results.

Method of travel	Probability
Car	0.45
Train	
Coach	0.17
Aeroplane	0.12

200 people took part in this survey.

How many chose train?

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

4

4 (a) 120 men took part in a fitness test.
The times taken to complete the test are shown in the table.

Time, t (minutes)	**Frequency**
$10 < t \leqslant 12$	21
$12 < t \leqslant 14$	49
$14 < t \leqslant 16$	37
$16 < t \leqslant 18$	13
Total	120

Calculate an estimate of the mean time taken by these 120 men to complete the test.

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

(b) 90 women also took part in this fitness test.
An estimate of the mean time taken by these 90 women was calculated.
It was found to be 15.8 minutes.

Calculate an estimate of the mean time taken by all the 210 people to complete this test.

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

7

END OF SECTION A

Surname		Other Names	
Centre Number						Candidate Number				
Candidate Signature										

General Certificate of Secondary Education
November 2005

ASSESSMENT and QUALIFICATIONS ALLIANCE

MATHEMATICS (MODULAR) (SPECIFICATION B) 33001/IB
Module 1 Intermediate Tier Section B

Monday 14 November 2005 2.00 pm to 2.25 pm

In addition to this paper you will require: 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 in the spaces provided.
- Do all rough work in this booklet.
- 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.
- Mark allocations are shown in brackets.
- Additional answer paper and graph paper will be issued on request and must be tagged securely to this answer booklet.

Advice

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

NO QUESTIONS APPEAR ON THIS PAGE

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

5 The time taken, in minutes, by each of 15 pupils to travel to school, is shown in the ordered stem-and-leaf diagram.

Key 3 | 2 represents 32 minutes

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

(a) One of these pupils is chosen at random.
What is the probability that this pupil took less than 20 minutes to travel to school?

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

(b) What was the median number of minutes taken to travel to school?

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

(c) Another pupil takes 37 minutes to travel to school.
Tick the correct box to show what effect, if any, this has on

(i) the median,

☐	☐	☐
Decreases	Stays the same	Increases

(ii) the range.

☐	☐	☐
Decreases	Stays the same	Increases

(2 marks)

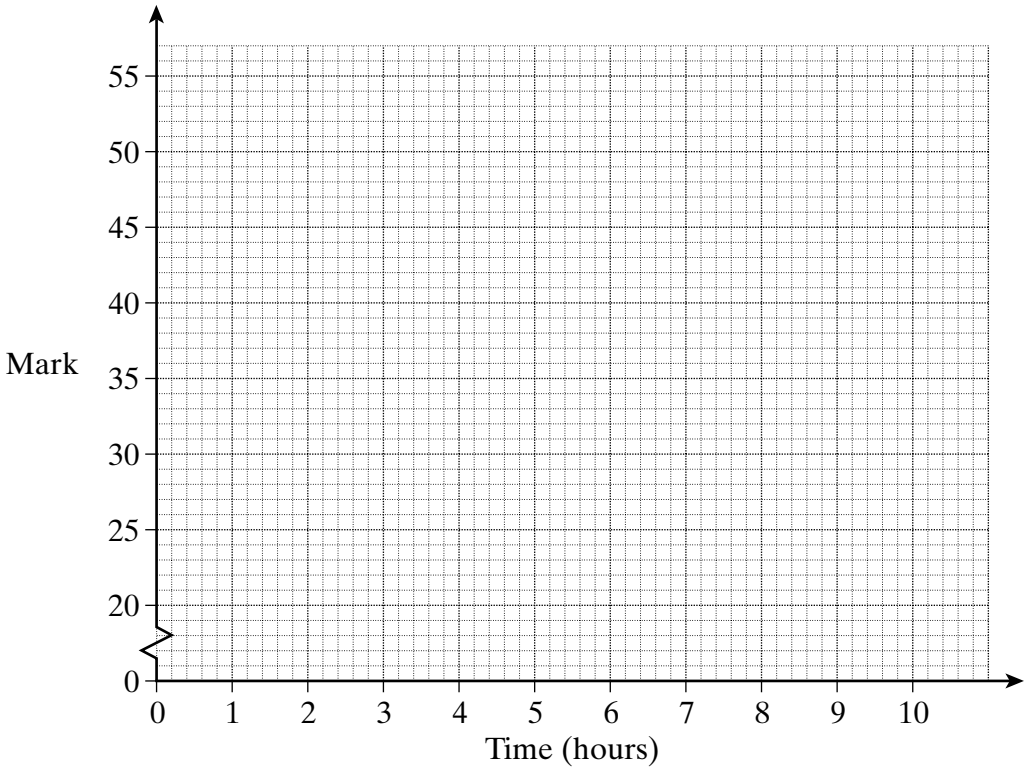
5

Turn over ▶

6 Six pupils revise for a test.
The table shows the time each pupil spent revising and their mark in the test.

Time (hours)	2	3	5	7	8	10
Mark	30	26	34	38	45	48

(a) Plot the data as a scatter graph on the grid below.



(2 marks)

(b) Draw a line of best fit on the scatter graph. *(1 mark)*

(c) Use your line of best fit to estimate the mark of a pupil who revised for 4 hours.

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

(d) State the type of correlation shown by the graph.

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

(e) Explain why it would not be sensible to use your line of best fit to estimate the mark of a pupil who revised for 15 hours.

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.....

(1 mark)

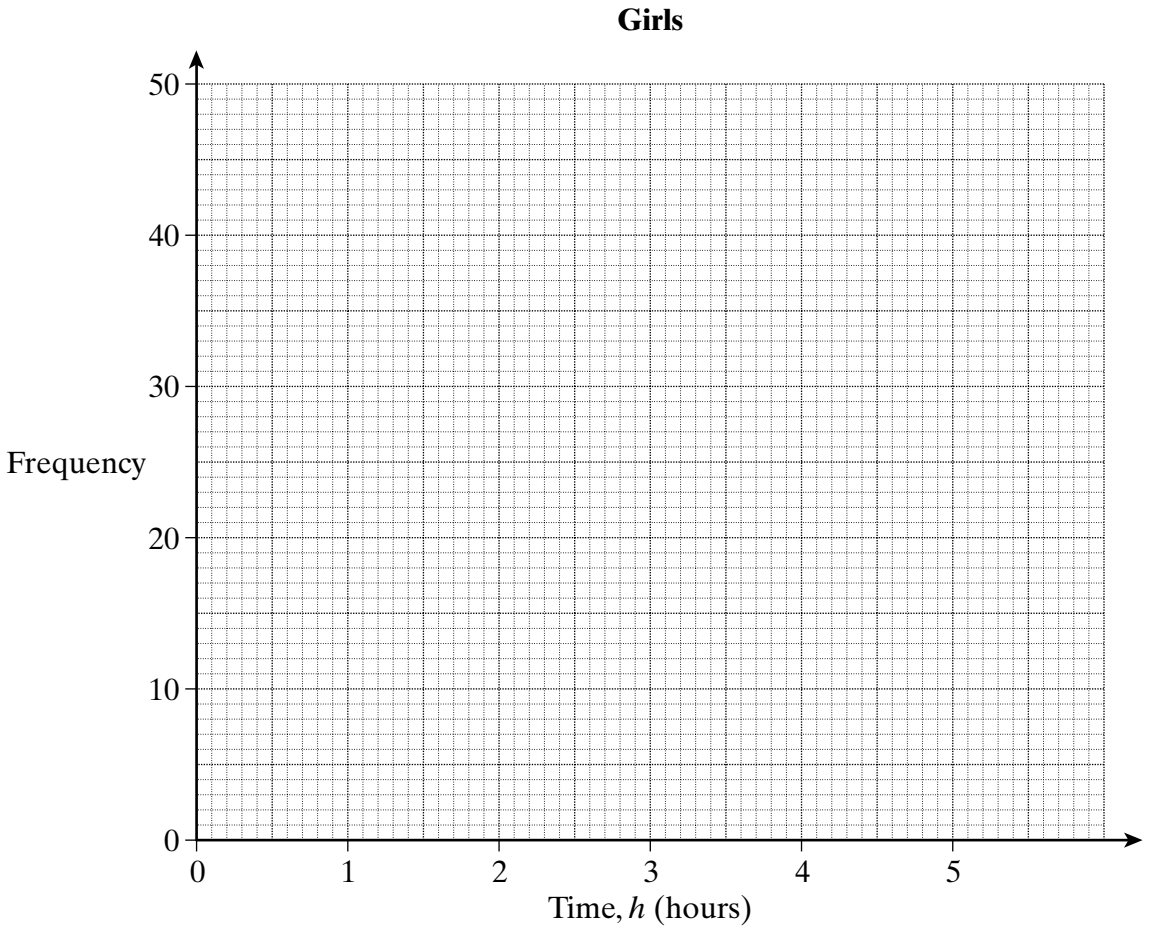
6

TURN OVER FOR THE NEXT QUESTION

7 The Year 9 girls in a school were asked how long they spent using a computer one day. The results are shown in the table.

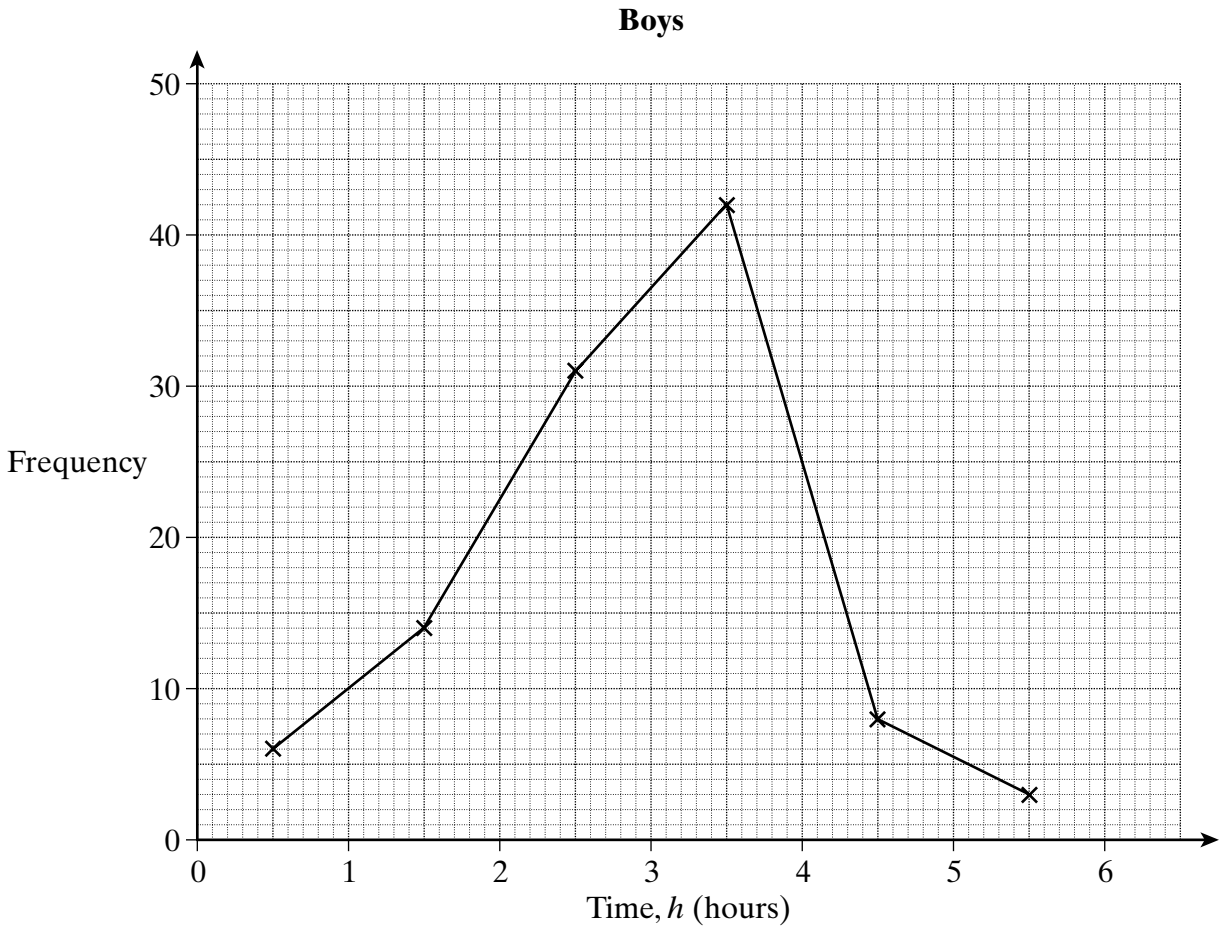
Time, h (hours)	**Number of girls**
$0 \leqslant h < 1$	30
$1 \leqslant h < 2$	46
$2 \leqslant h < 3$	14
$3 \leqslant h < 4$	5

(a) Draw a frequency polygon for this data.



(2 marks)

(b) The frequency polygon below shows the number of hours spent using a computer by the Year 9 boys on the same day.



Write down **two** comparisons between the time spent using a computer by the boys and the girls.

Comparison 1 .....

.....

.....

Comparison 2 .....

.....

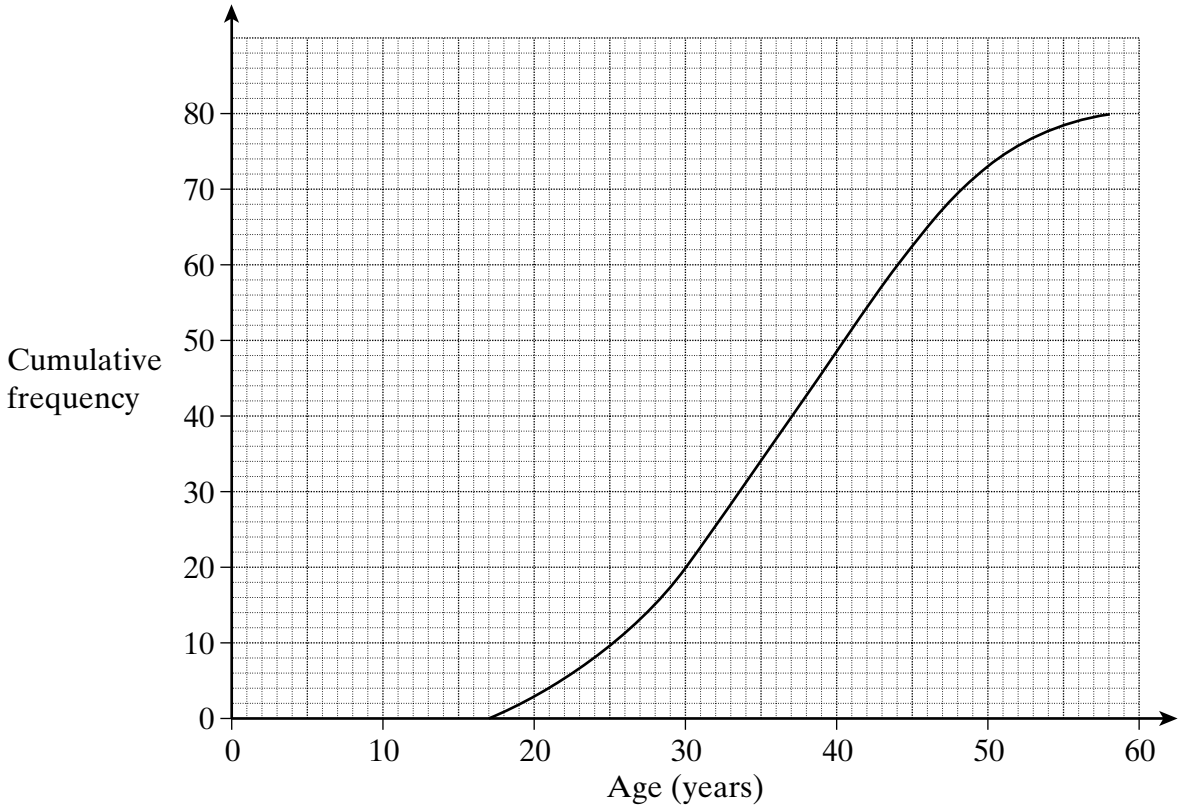
.....

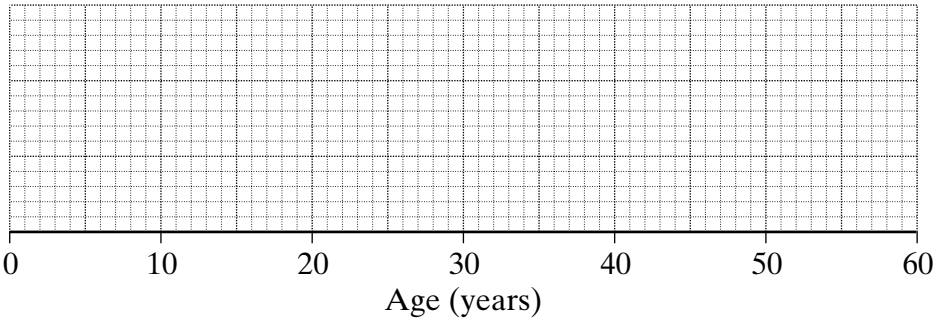
(2 marks)

TURN OVER FOR THE NEXT QUESTION

4

8 The ages of 80 workers in a factory are represented by the cumulative frequency diagram. The youngest worker is 17 and the oldest is 57.





(a) Those workers who were aged 50 or over were offered early retirement.
Use the cumulative frequency diagram to estimate how many workers were offered early retirement.

.....

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

(b) Use the information in the diagram to draw a box plot on the grid above.

(3 marks)

END OF QUESTIONS