Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

General Certificate of Secondary Education
November 2005

AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

MATHEMATICS (MODULAR) (SPECIFICATION B)   33001/HA
Module 1 Higher Tier Section A

H

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.

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.

33001/HA

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

1 120 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

(a) Which class interval contains the median time taken by these men to complete the test?
You **must** show your working.

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Answer .... $< t \leqslant$ .... *(2 marks)*

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

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

(c) 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)*

9

TURN OVER FOR THE NEXT QUESTION

Turn over ▶

2 A fair spinner has six sections of equal size.
One section is blue, two sections are green and three sections are red.
The spinner is spun twice.

(a) Calculate the probability that it lands on the same colour both times.

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Answer .... *(3 marks)*

(b) When the spinner lands on a blue section 7 points are scored.
When the spinner lands on a green section 5 points are scored.
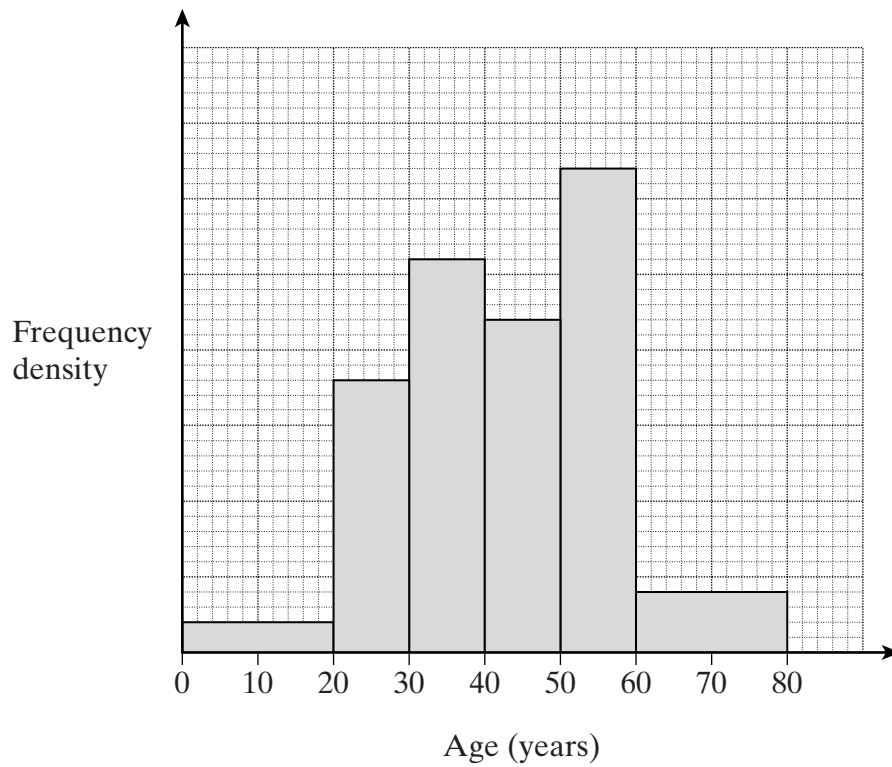When the spinner lands on a red section 3 points are scored.

Calculate the probability of scoring exactly ten points in two spins.

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Answer .... *(4 marks)*

7

3   The histogram represents the ages of the members of a golf club.

Frequency density

Age (years)

There are 44 members who are aged under 30.

Calculate the number of members who are aged 55 or over.

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Answer ....   *(4 marks)*

END OF SECTION A

Surname			Other Names		
Centre Number			Candidate Number		
Candidate Signature					

General Certificate of Secondary Education
November 2005

MATHEMATICS (MODULAR) (SPECIFICATION B) 33001/HB
Module 1 Higher Tier Section B

H

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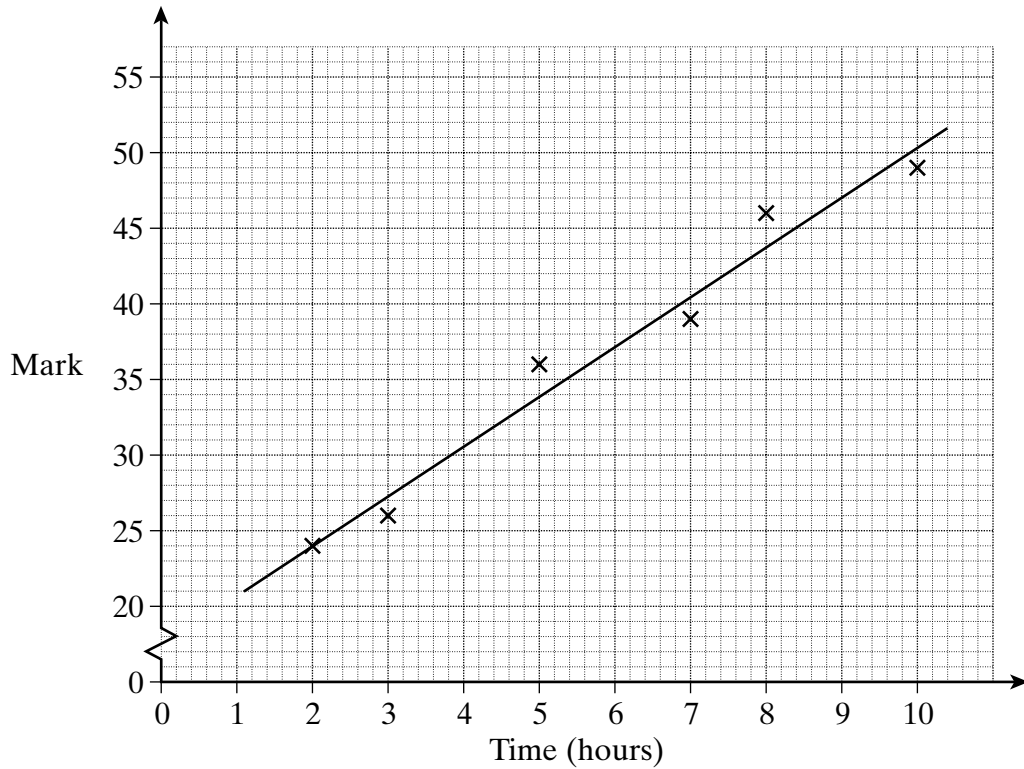
Advice
- In all calculations, show clearly how you work out your answer.

33001/HB

NO QUESTIONS APPEAR ON THIS PAGE

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

4 Six pupils revise for a test.
The scatter graph shows the time each pupil spent revising and their mark in the test.

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

Answer .... *(1 mark)*

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

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(1 mark)

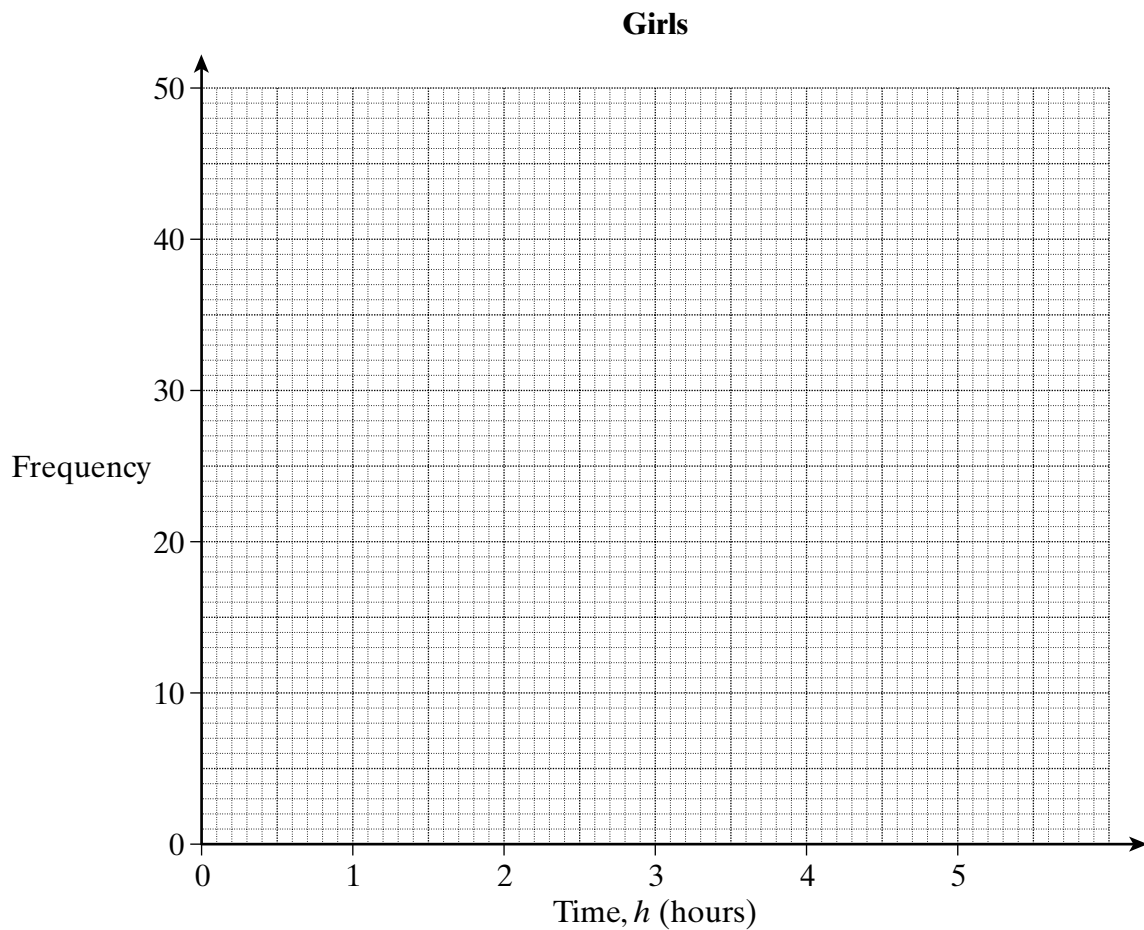$\dfrac{}{2}$

Turn over ▶

5 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.

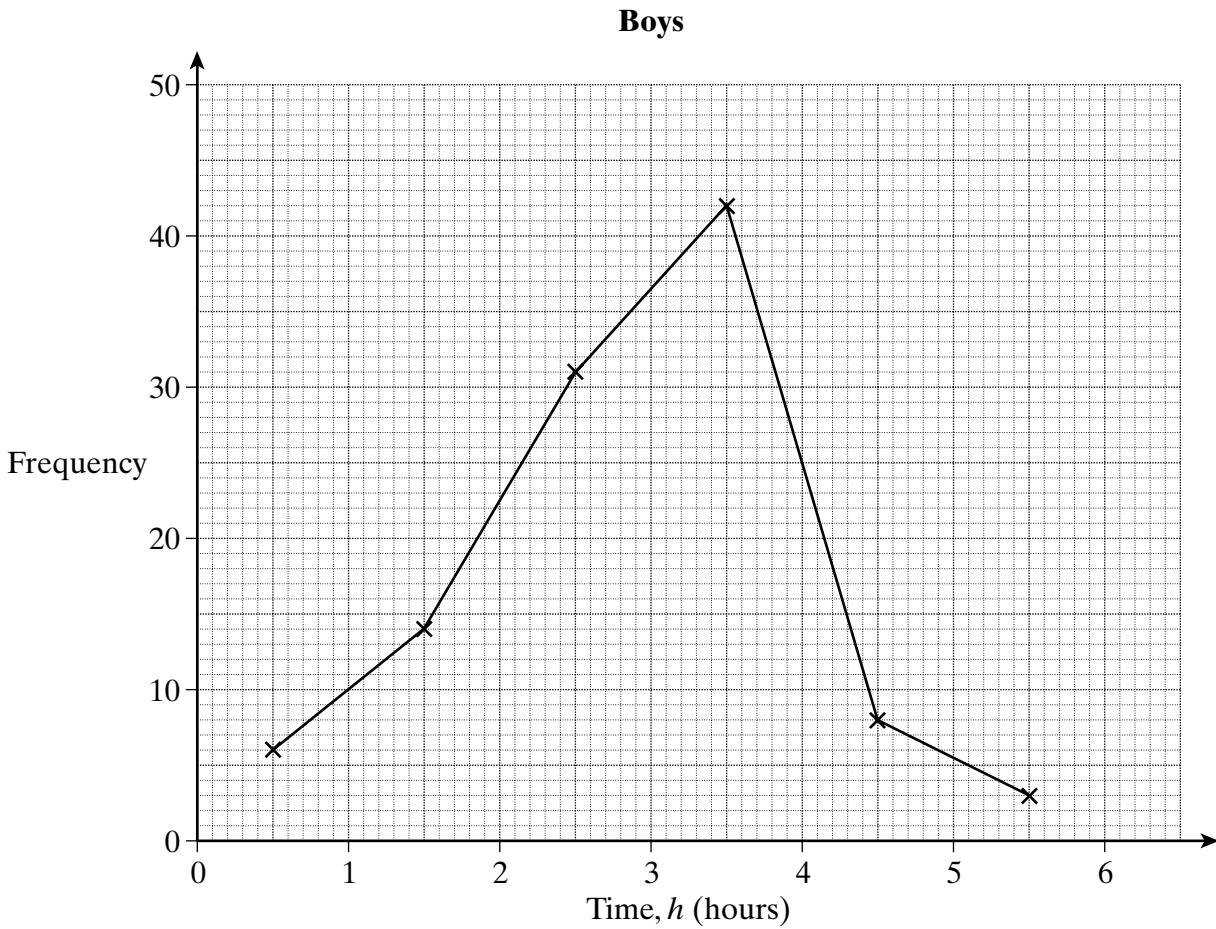| Time, *h* (hours)	Number of girls
$0 \leqslant h < 1$	30
$1 \leqslant h < 2$	46
$2 \leqslant h < 3$	14
$3 \leqslant h < 4$	5

(a) Draw a frequency polygon for this data.

Girls

(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.

Boys

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

Comparison 1 ....

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Comparison 2 ....

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(2 marks)

Turn over ▶

6 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.
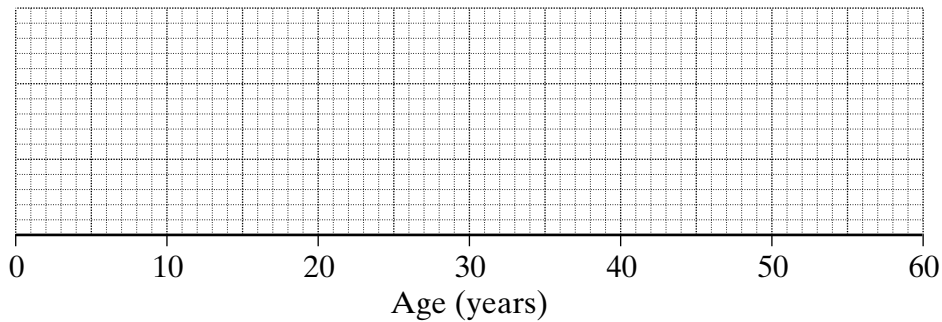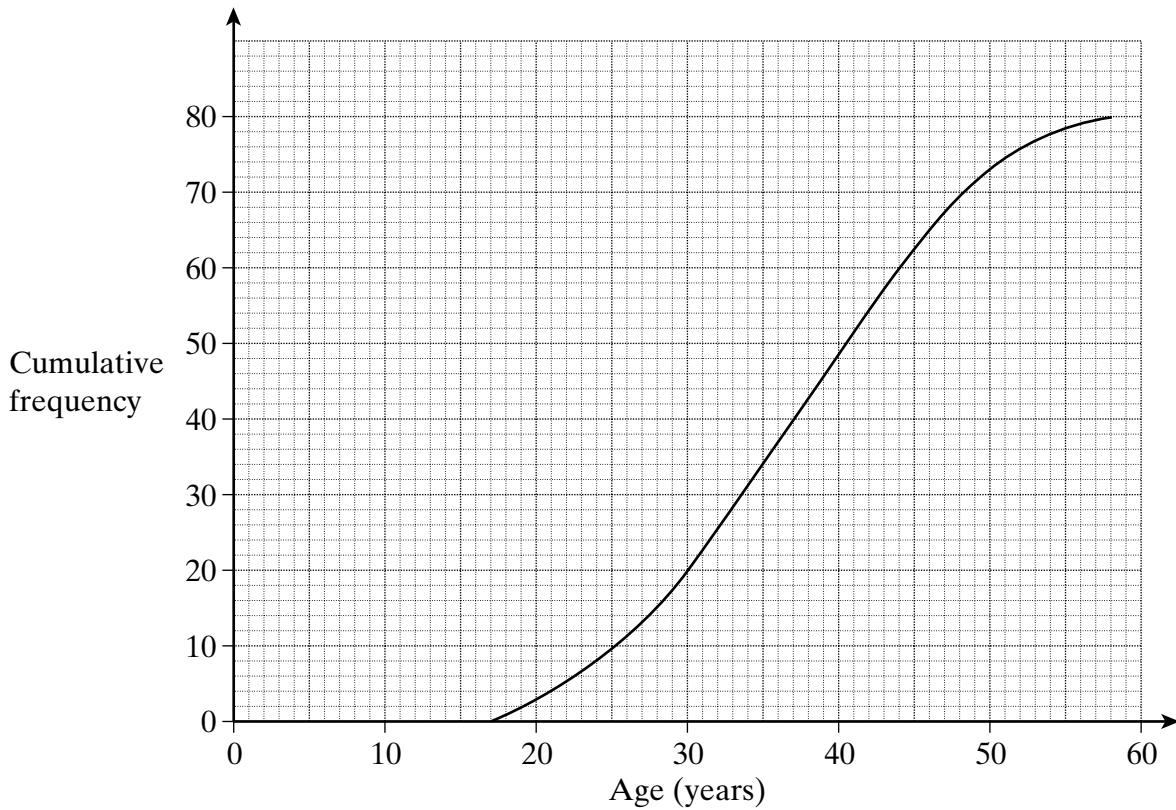
(a) Those workers who were aged 50 or over were offered early retirement.
Use the cumulative frequency diagram to estimate how many workers were offered early retirement.

....

Answer .... *(2 marks)*

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

(3 marks)

5

7 500 pupils in a boarding school are divided into 3 houses.
The number of pupils in each house is shown in the table.

House	Kingfisher	Magpie	Blackbird
Number of pupils	170	120	210

The headteacher wants to form a council of representatives from each house.

(a) The headteacher decides to take a sample of 25 pupils, stratified by house.
Calculate the number of pupils chosen from each house.
Show your working.

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Answer   Kingfisher ....

Magpie ....

Blackbird ....   *(3 marks)*

(b) Explain how the headteacher could choose the pupils from Magpie House.

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(1 mark)

4

TURN OVER FOR THE NEXT QUESTION

Turn over ▶

8   All the pupils at a stage school audition for parts in a musical.

If a pupil is male then the probability of getting a part is $\frac{4}{5}$

If a pupil is female then the probability of getting a part is $\frac{3}{10}$

The probability that a pupil is male is $\frac{1}{3}$

(a)   Calculate the probability that a pupil chosen at random gets a part in the musical.

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          Answer ....   *(3 marks)*

(b)   77 pupils get parts in the musical.

How many pupils are there in the school?

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          Answer ....   *(2 marks)*

5

END OF QUESTIONS