Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

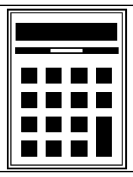
For Examiner's Use

General Certificate of Secondary Education
March 2007

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

Monday 5 March 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

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Section A		**Section B**	
Question	Mark	Question	Mark
1		6	
2		7	
3		8	
4		9	
5		10	
Total Section A			
Total Section B			
TOTAL			
Examiner's Initials			

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.

LEAVE MARGIN BLANK

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

1 120 women were asked what colour car they own.
The results are shown in the table.

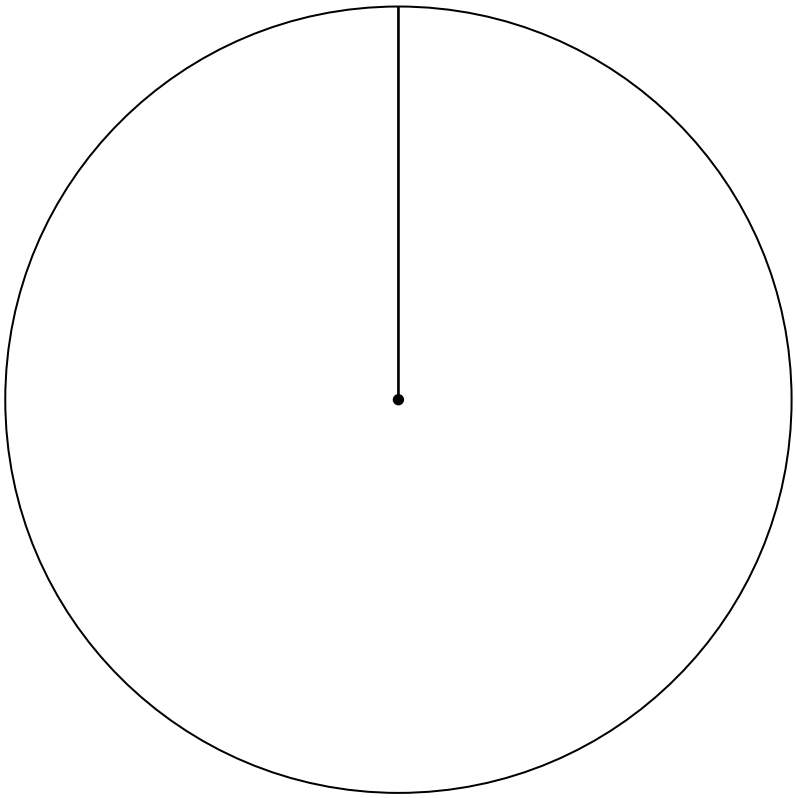
Colour	**Number of women**
White	42
Blue	35
Silver	25
Red	10
Other	8

Draw and label a pie chart to show this information.

.....

.....

.....



(4 marks)

4

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2 Each day the number of pupils who were late for school was recorded.
The stem-and-leaf diagram shows the results for 15 days.

Key 3 | 4 represents 34 pupils

0	2	3	6	8		
1	2	2	3	4	6	7
2	1	3	6	9		
3	4					

(a) On how many days were more than 10 pupils late?

.....

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

(b) Work out the median.

.....

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

(c) On the next day 11 pupils were late.

Tick the box to show the effect this value would have on the range.

☐ Range would increase

☐ Range would stay the same

☐ Range would decrease

(1 mark)

3

Turn over ►

LEAVE MARGIN BLANK

3 A bag contains red, green, yellow and blue marbles.
A marble is taken from the bag at random.
The table shows some of the probabilities of choosing each colour.

Colour	**Probability**
Red	0.41
Green	0.15
Yellow	
Blue	0.32

Calculate the probability that the marble is

(a) yellow

.....

.....

.....

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

(b) not blue.

.....

.....

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

4

LEAVE MARGIN BLANK

4 A student recorded the time, in minutes, that 50 people spent in the library.

Time, t (minutes)	**Frequency**
$0 < t \leqslant 10$	2
$10 < t \leqslant 20$	8
$20 < t \leqslant 30$	20
$30 < t \leqslant 40$	12
$40 < t \leqslant 50$	8

(a) Calculate an estimate of the mean number of minutes spent in the library.

.....

.....

.....

.....

.....

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

(b) As each person left the library, the student gave them a questionnaire containing the following question.

Question: How many books did you borrow from the library today?

Response:
(Tick one box)

☐ 1 or 2 ☐ 3 or 4 ☐ 4 or more

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

.....

.....

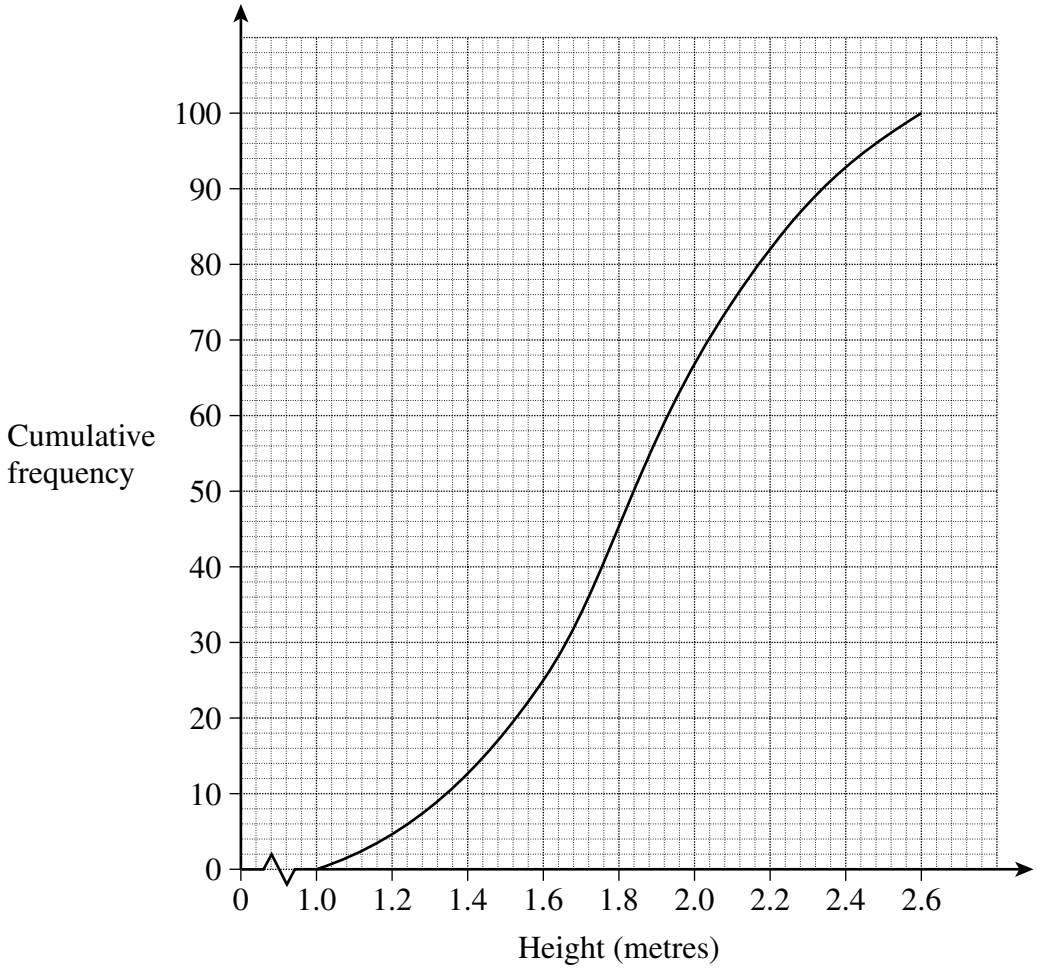
(1 mark)

5

Turn over ►

LEAVE MARGIN BLANK

5 The cumulative frequency diagram represents the heights of 100 sunflowers.



Use the diagram to estimate

(a) the interquartile range of the heights of these sunflowers

.....

.....

.....

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

(b) the number of sunflowers with a height of more than 2.3 metres.

.....

.....

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

END OF SECTION A

4

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There are no questions printed on this page

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Candidate Signature			

General Certificate of Secondary Education
March 2007

ASSESSMENT and QUALIFICATIONS ALLIANCE

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

Monday 5 March 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 book.

Advice

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

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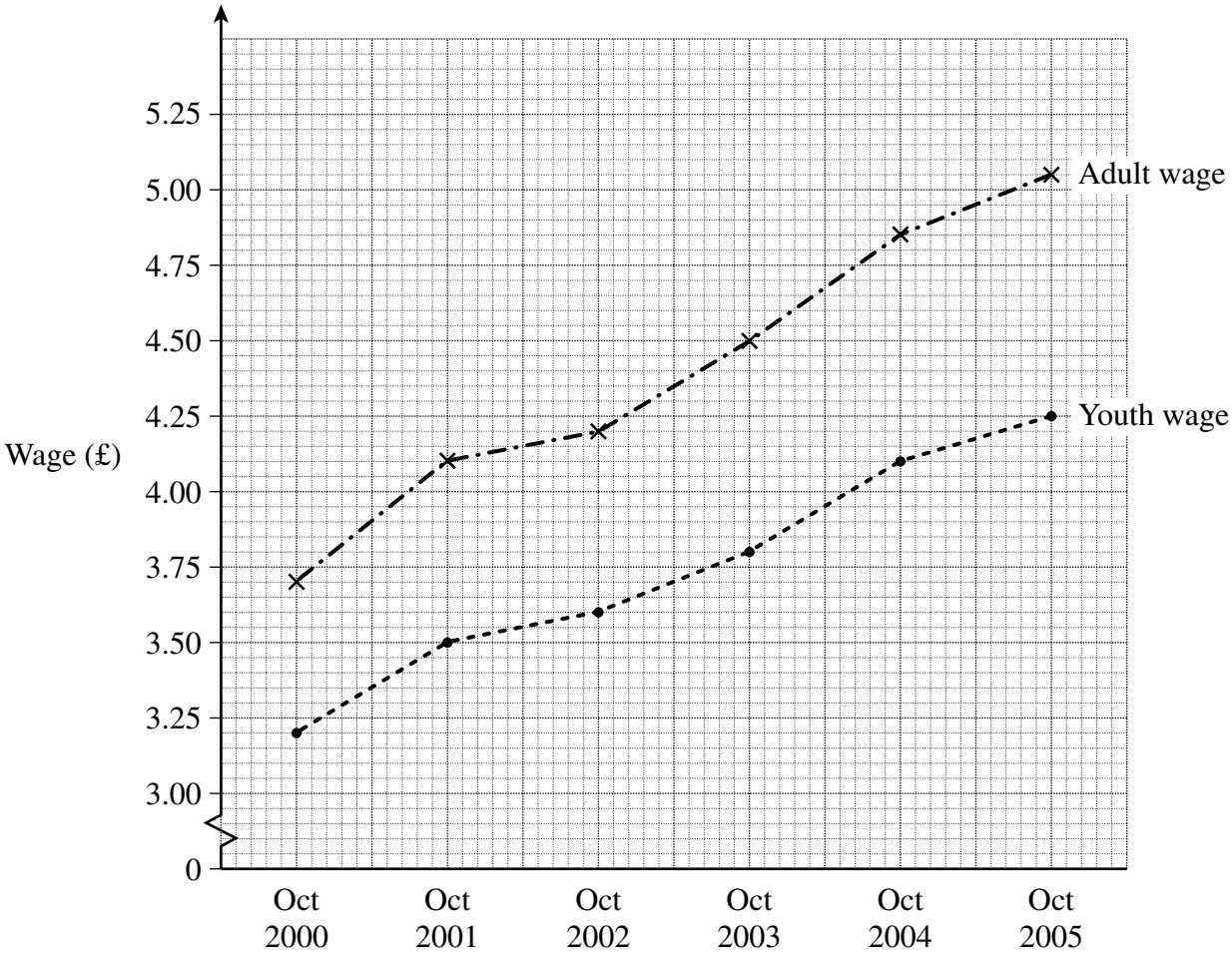
Answer **all** questions in the spaces provided.

6 The graph shows the National Minimum Wage for adults and youths from October 2000 to October 2005.



(a) Work out the increase in the Youth wage from October 2001 to October 2002.
Give your answer in pence.

.....

.....

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

(b) Over the period shown by the graph, has the Adult wage or the Youth wage increased the most?
Explain your answer.

.....

.....

.....

(2 marks)

4

LEAVE MARGIN BLANK

7 The two-way table shows the possible total scores when two fair dice are thrown.

Dice 1

Dice 2

+	**1**	**2**	**3**	**4**	**5**	**6**
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

(a) Write down the probability of scoring more than 8.

.....

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

(b) If two fair dice are thrown 360 times, how many times would you expect to score 11?

.....

.....

.....

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

4

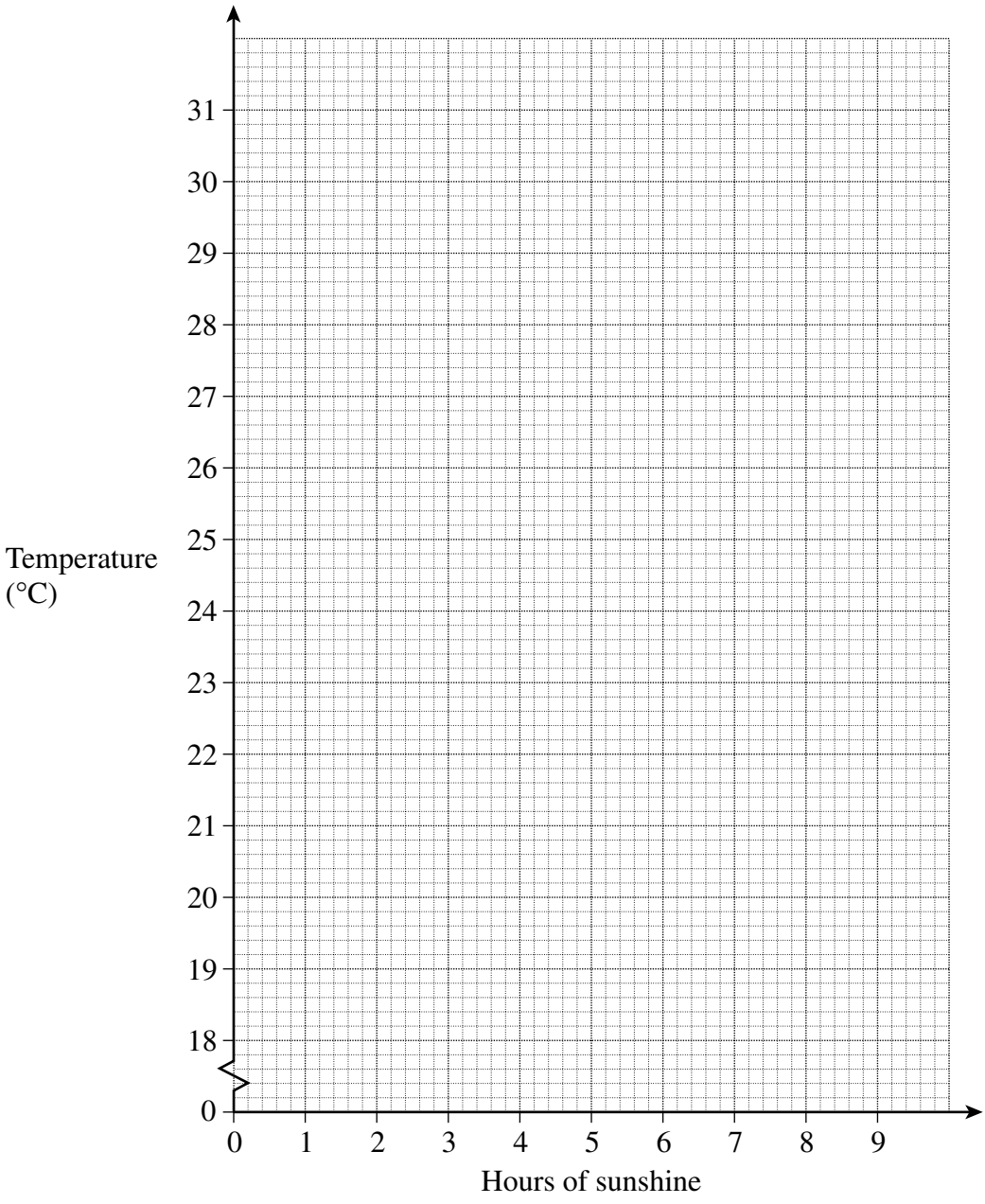
Turn over for the next question

LEAVE MARGIN BLANK

8 The number of hours of sunshine and the maximum temperature at a seaside resort were measured on seven days in June.

Hours of sunshine	5	9	8	6	5	2	4
Temperature (°C)	26	30	29	26	24	19	23

(a) Plot this data as a scatter graph.



(2 marks)

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

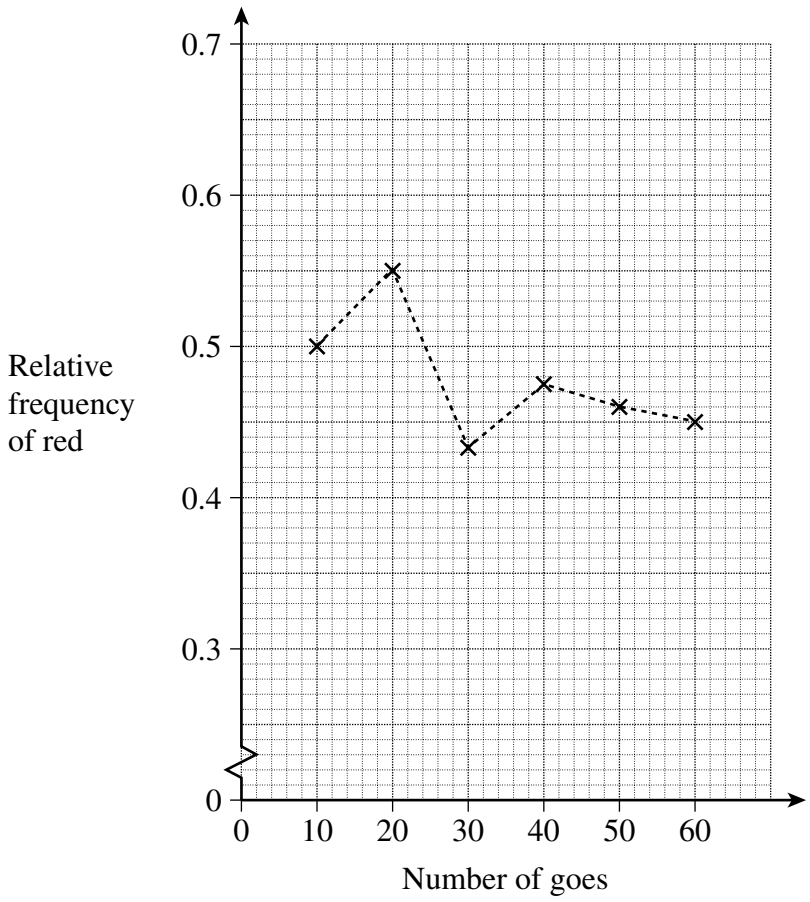
(c) Use your line of best fit to estimate the maximum temperature on a day in June when there are 7 hours of sunshine.

Answer ..... °C *(1 mark)*

4

LEAVE MARGIN BLANK

9 Amy has a bag containing red, green and blue balls.
She wants to know the probability of picking a red ball from the bag.
She picks a ball at random from the bag, records the colour and replaces the ball in the bag.
Amy does this 60 times and calculates the relative frequency of red after every 10 goes.
Her results are shown on the graph.



(a) Use the graph to calculate the number of times Amy picked a red ball in the first 10 goes.

.....

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

(b) What is the best estimate for the probability of picking a red ball?
Explain your answer.

.....

.....

.....

(2 marks)

4

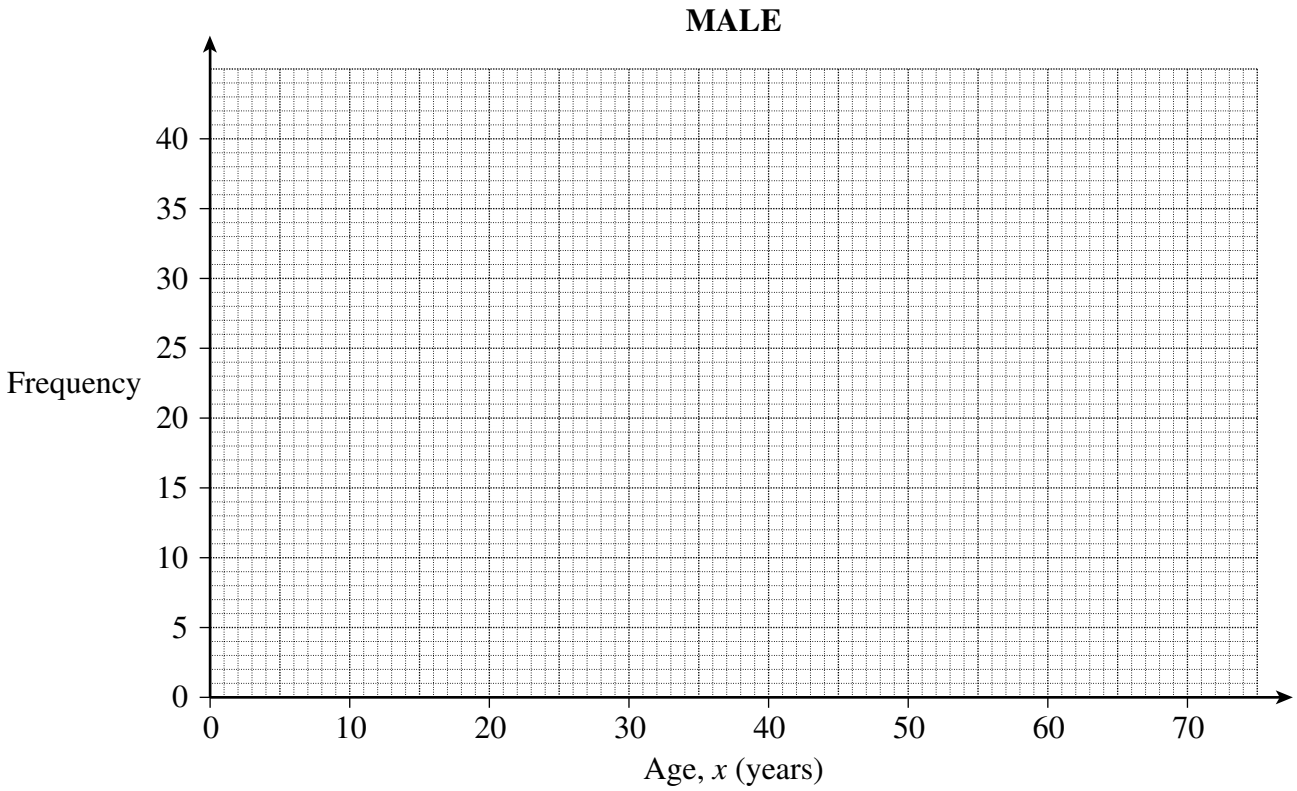
Turn over ►

LEAVE MARGIN BLANK

10 A badminton club has both male and female members.
The table shows the distribution of the ages of the male club members.

Age, x (years)	**Frequency**
$10 \leqslant x < 20$	6
$20 \leqslant x < 30$	28
$30 \leqslant x < 40$	36
$40 \leqslant x < 50$	23
$50 \leqslant x < 60$	14
$60 \leqslant x < 70$	2

(a) Draw a frequency polygon for this data.



(2 marks)

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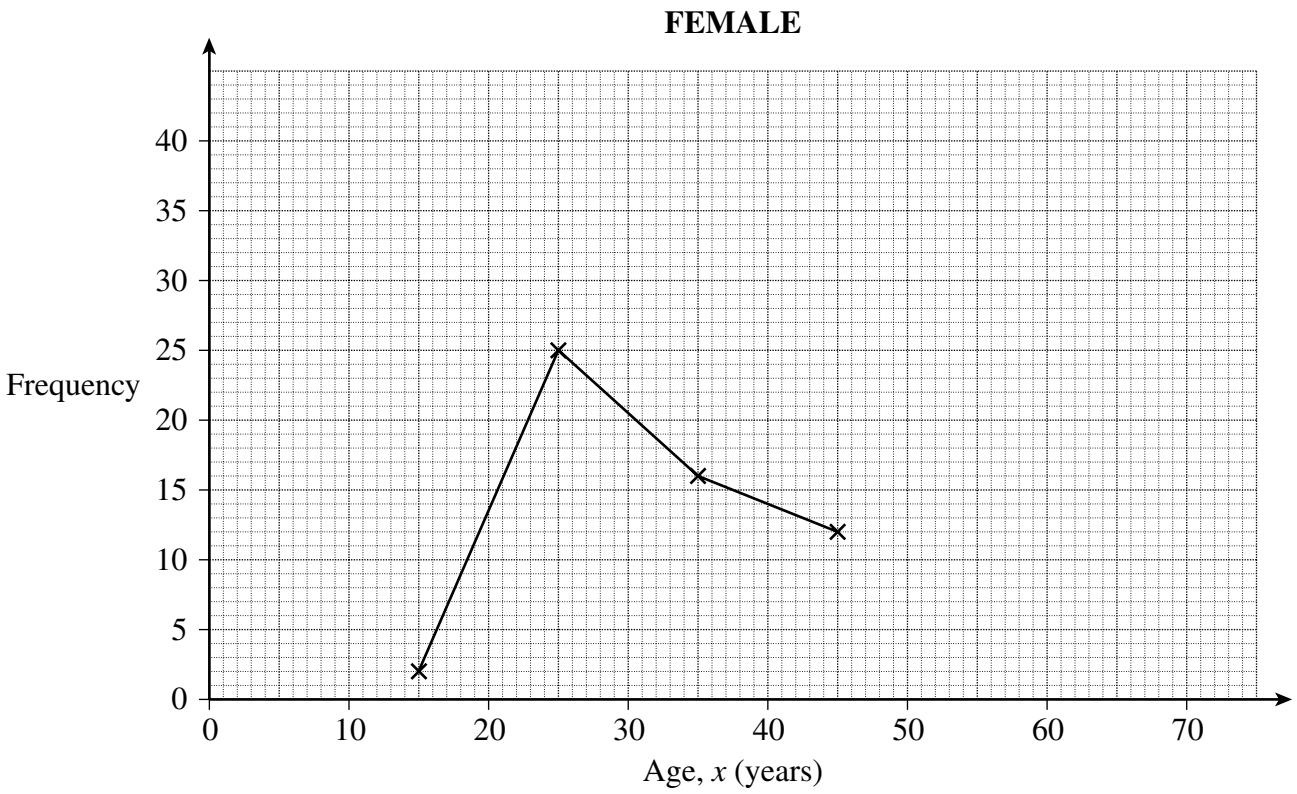
(b) The frequency polygon below shows the age distribution of the female club members.



Write down **two** comparisons between the ages of the male and female members at this club.

Comparison 1: .....

.....

.....

Comparison 2: .....

.....

.....

(2 marks)

4

END OF QUESTIONS

There are no questions printed on this page

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