Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

General Certificate of Secondary Education
March 2007

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

H

Monday 5 March 2007   1.30 pm to 1.55 pm

TWO TIER

AQA
ASSESSMENT and
QUALIFICATIONS
ALLIANCE

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   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

(a)   Calculate the probability that the marble is

(i)   yellow

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Answer .... *(2 marks)*

(ii)   not blue.

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Answer .... *(2 marks)*

(b)   There are 200 marbles in the bag.

Calculate the number of red marbles in the bag.

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Answer .... *(2 marks)*

2 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

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

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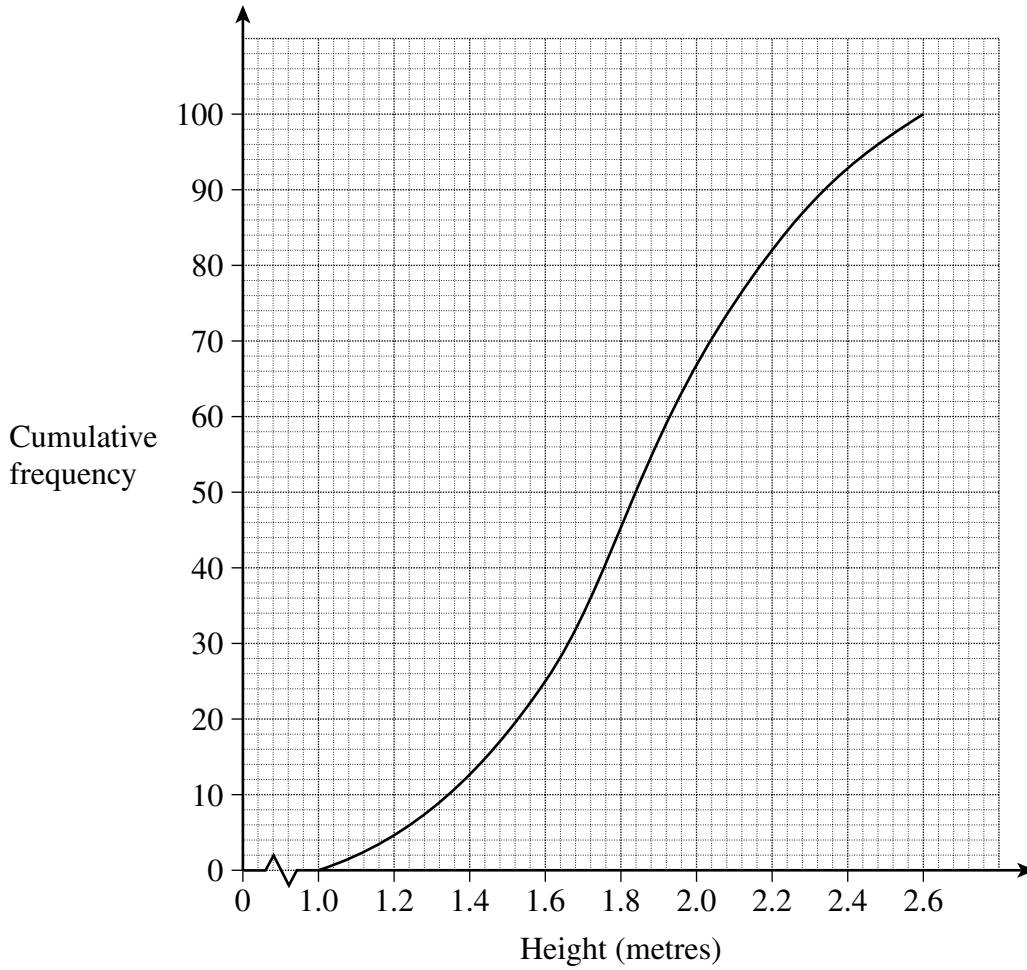Answer .... minutes *(4 marks)*

4

Turn over for the next question

Turn over ▶

3 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

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

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

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Answer .... *(2 marks)*

4

4 A children's athletics club has 300 members.
   The table shows the number of members in each age group.

Under 11 yrs	11 - 12 yrs	13 - 14 yrs	15 yrs and over
45	78	96	81

Ciaran wants a stratified sample of 25 members.

Calculate the number of members that he should choose from each age group.

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Answer   Under 11 yrs ....

11 - 12 yrs ....

13 - 14 yrs ....

15 yrs and over .... *(3 marks)*

3

Turn over for the next question

5   A bag contains 7 mint sweets, 3 fruit sweets and 5 toffee sweets.
Sam chooses two sweets from the bag at random.

Calculate the probability that she chooses one mint sweet and one fruit sweet.

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Answer .... *(3 marks)*

3

END OF SECTION A

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General Certificate of Secondary Education
March 2007

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

H

TWO TIER

Monday 5 March 2007   2.00 pm to 2.25 pm

AQA
ASSESSMENT and
QUALIFICATIONS
ALLIANCE

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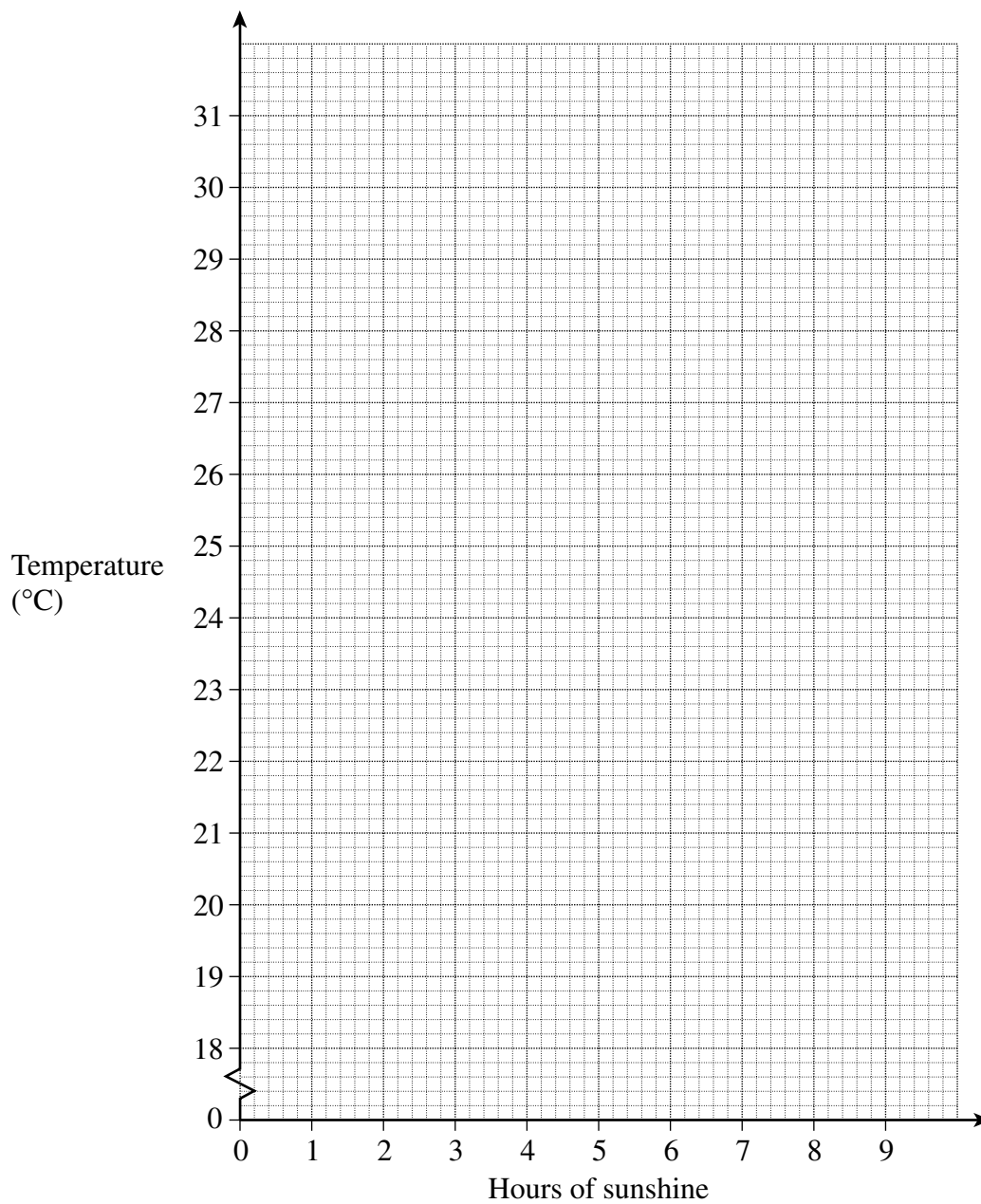
Advice
- In all calculations, show clearly how you work out your answer.

43001/HB

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

6 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.

Hours of sunshine

(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)*

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

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(1 mark)

(e) Explain why this data may **not** be representative of the maximum temperatures in June at this seaside resort.

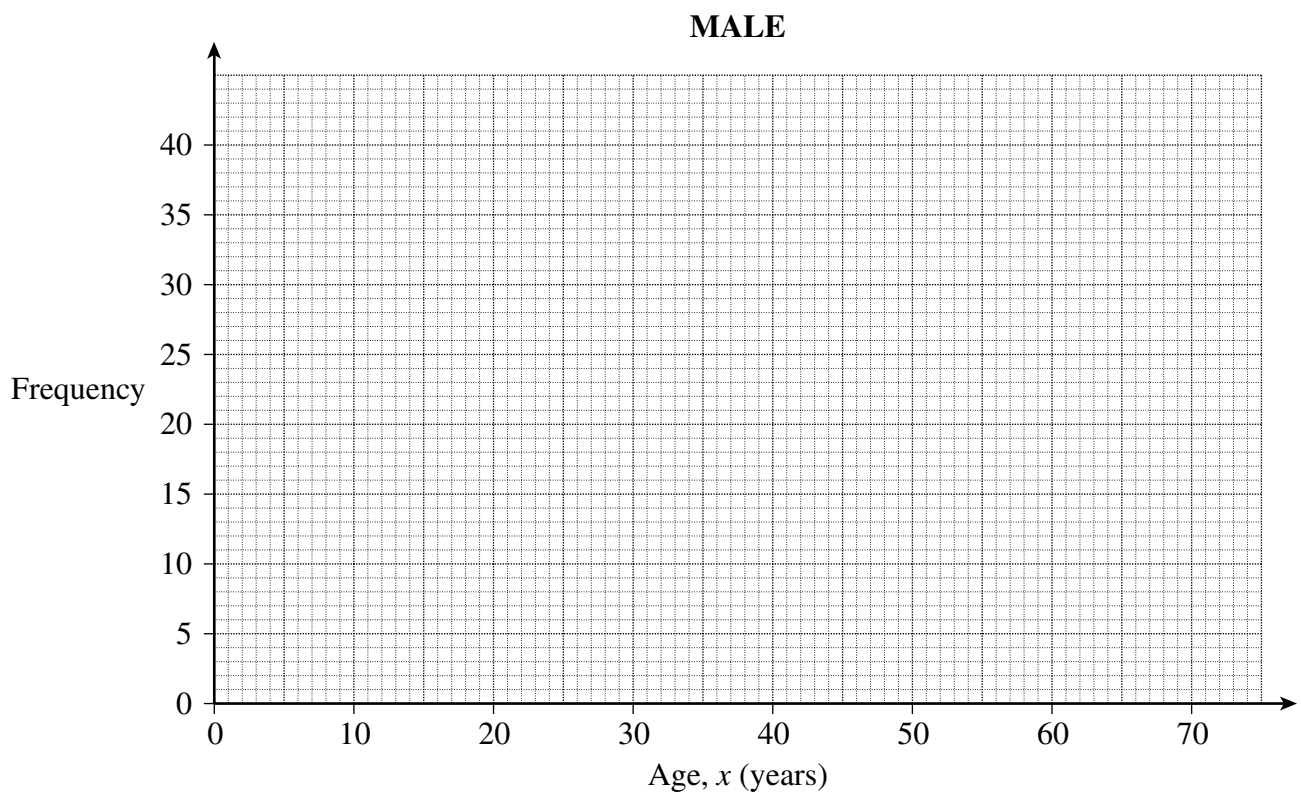..

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(1 mark)

6

Turn over for the next question

7 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.

MALE

(2 marks)

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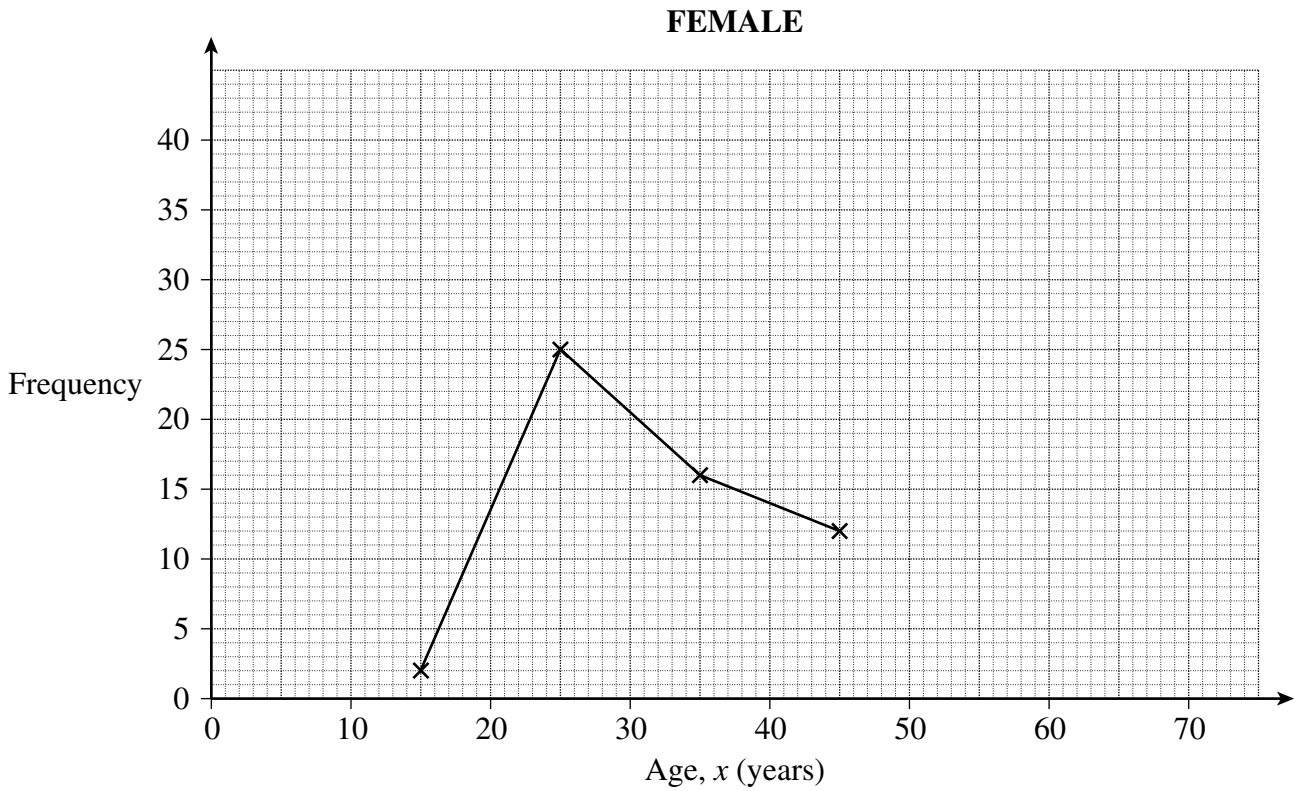
FEMALE

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

Comparison 1: ....

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Comparison 2: ....

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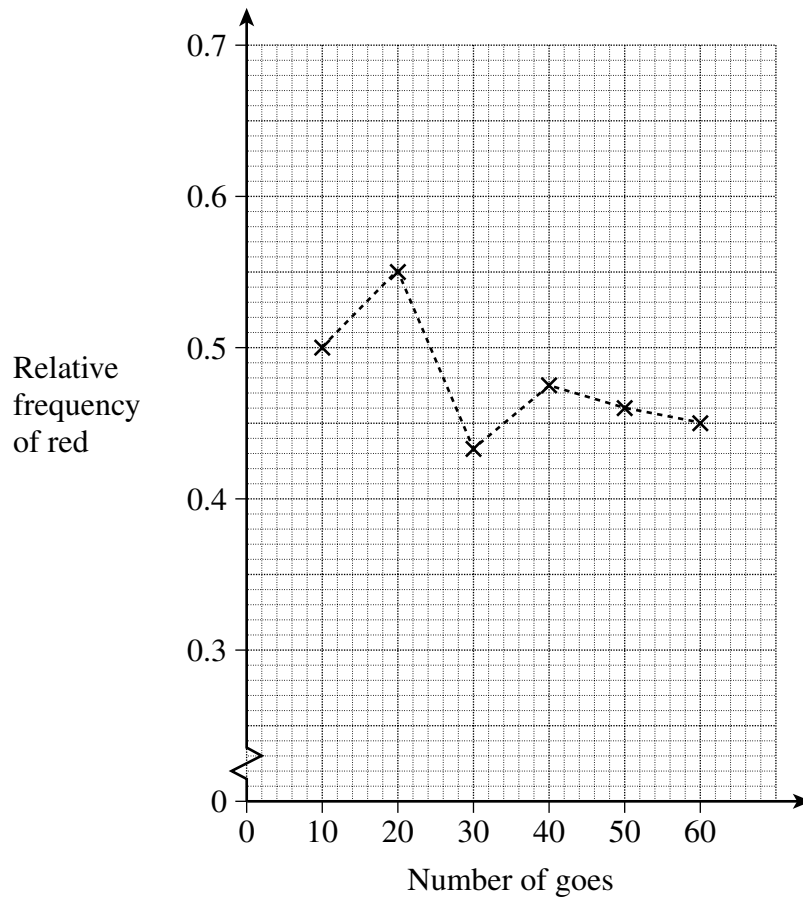
(2 marks)

4

Turn over ▶

8 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.

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Answer .... *(2 marks)*

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

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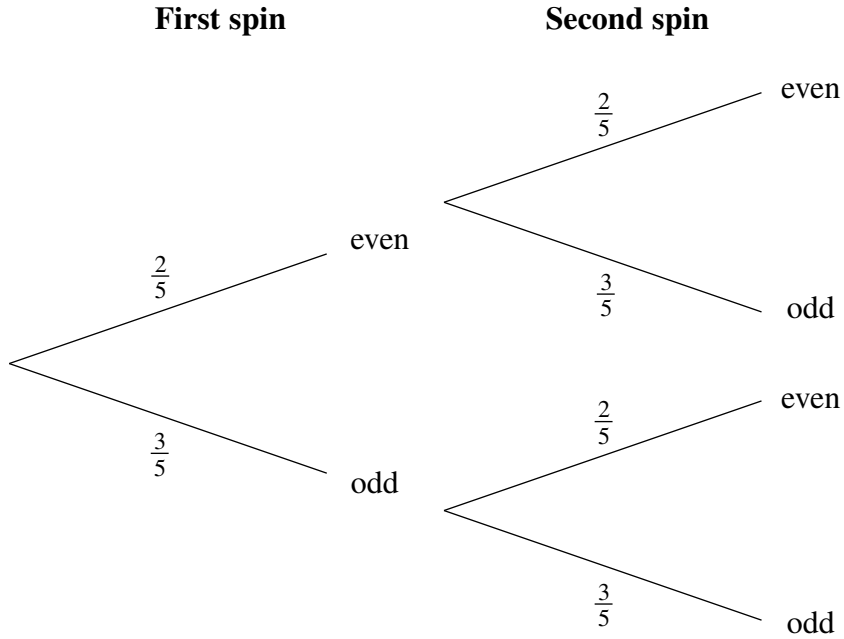
(2 marks)

4

9 Ingrid has a spinner labelled with even and odd numbers.

The probability that it will land on an even number is $\frac{2}{5}$.

Ingrid spins the spinner twice.

The tree diagram shows all the probabilities of obtaining even and odd numbers.

First spin   **Second spin**

$\frac{2}{5}$ even

even

$\frac{2}{5}$ $\frac{2}{5}$

$\frac{3}{5}$ odd

$\frac{3}{5}$ $\frac{2}{5}$ even

odd

$\frac{3}{5}$ odd

Calculate the probability of spinning two numbers which multiply to give an even number.

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Answer .... *(3 marks)*
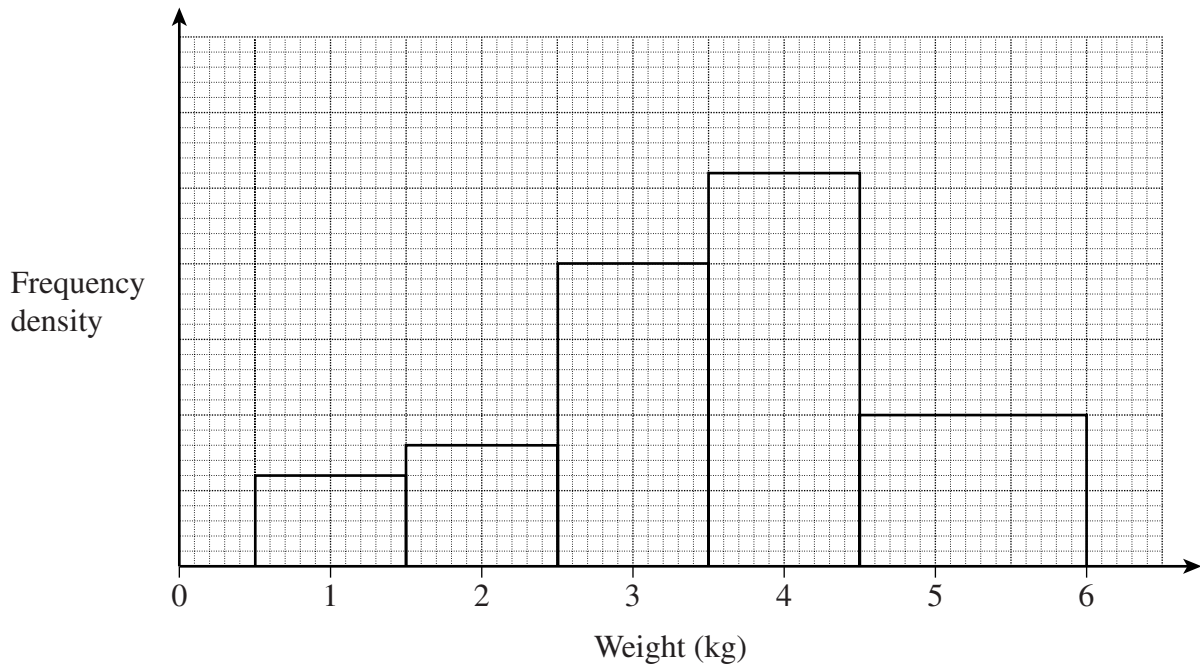
Turn over for the next question

Turn over ▶

10 The histogram represents the birth weights of 150 babies.

Thirty babies weighed over 4.5 kg
Babies weighing under 2 kg are taken to the Special Care Baby Unit.

Calculate the number of babies taken to the Special Care Baby Unit.

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Answer .... *(3 marks)*

3

END OF QUESTIONS