

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

For Examiner's Use

General Certificate of Secondary Education
November 2006



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

43001/HA

H
TWO TIER

Monday 13 November 2006 1.30 pm to 1.55 pm

<p>For this paper you must have:</p> <ul style="list-style-type: none"> • a calculator • mathematical instruments • a treasury tag. 	
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For Examiner's Use			
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			

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.

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

- 1 A snack bar only sells crisps, chocolate bars, drinks and fruit.
Every day Moneeb buys one item from the snack bar.
The table shows the probabilities of Moneeb buying certain items.

Snack	Probability
Crisps	0.50
Chocolate bar	0.25
Drink	0.15
Fruit	

- (a) What is the probability that Moneeb buys a chocolate bar or a drink?

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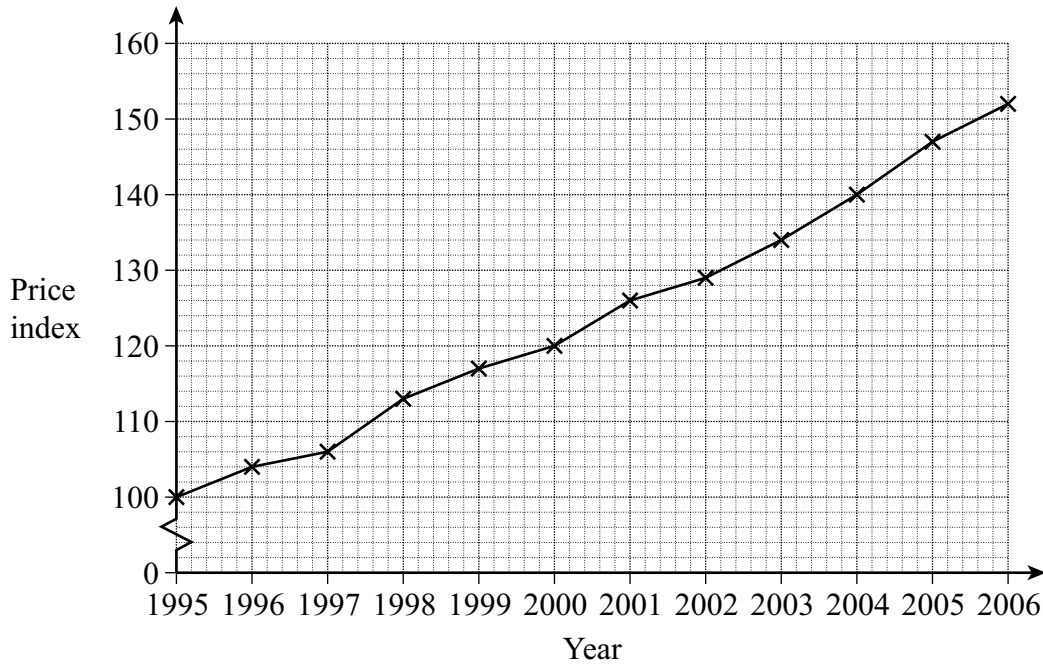
Answer (2 marks)

- (b) What is the probability that Moneeb buys fruit?

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Answer (2 marks)

2 The graph shows the price index of the colour TV licence from 1995 to 2006.



The base year is 1995.

(a) In which year was the price of the licence 20% more than the price in 1995?

Answer (1 mark)

(b) What was the percentage increase in the price of the licence from 1995 to 2006?

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Answer % (2 marks)

- 3 100 students recorded the number of hours in a week they spent using a computer. The table shows the results.

Number of hours	Frequency
0 to less than 5	17
5 to less than 10	23
10 to less than 15	18
15 to less than 20	16
20 to less than 25	15
25 to less than 30	11

- (a) Which class interval is the modal class?

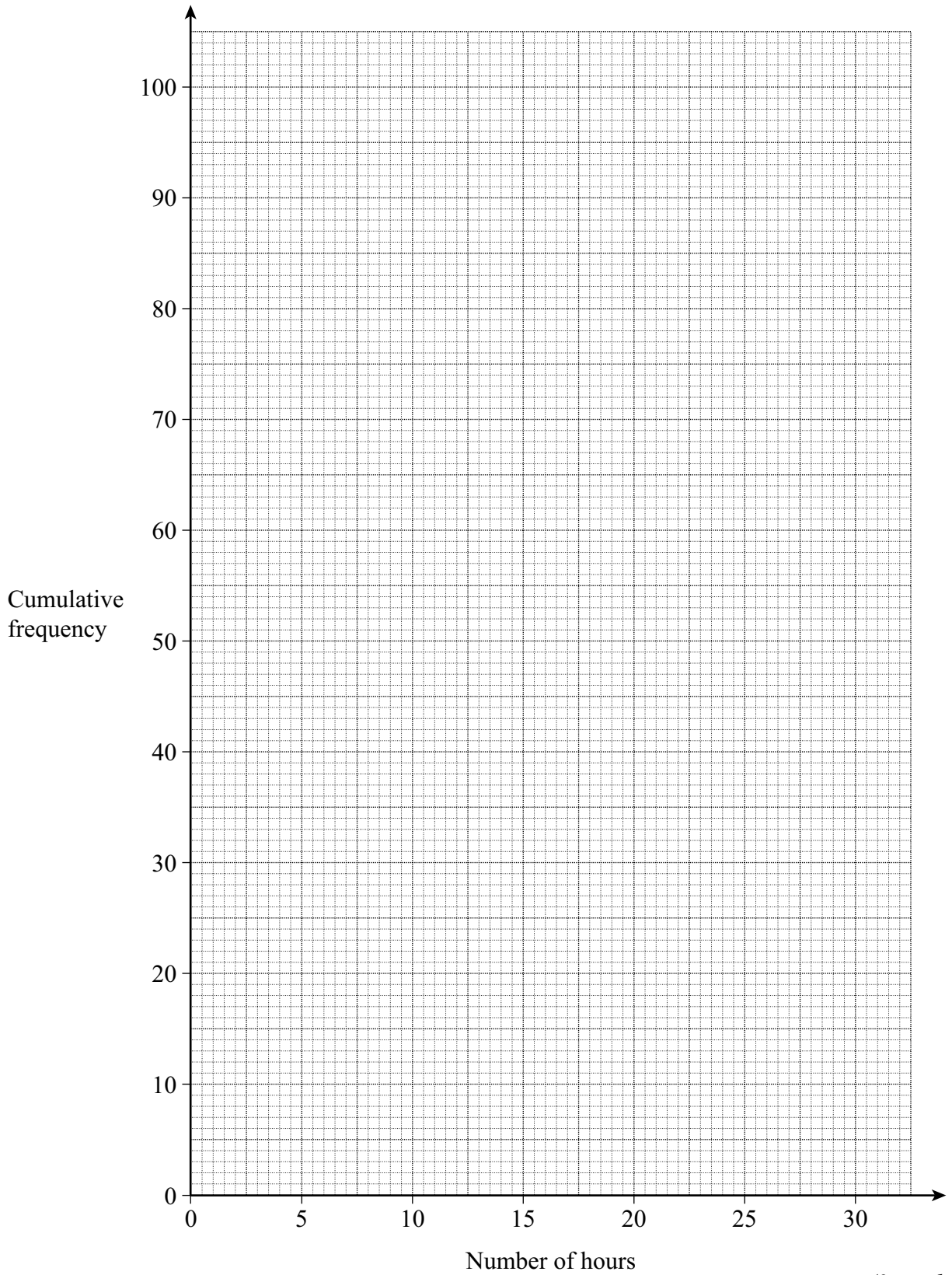
Answer (1 mark)

- (b) Complete the cumulative frequency table below.

Number of hours	Cumulative frequency
Less than 5	17
Less than 10	40
Less than 15	
Less than 20	
Less than 25	
Less than 30	

(1 mark)

- (c) Draw a cumulative frequency diagram on the grid opposite.



(3 marks)

- (d) Use your graph to estimate the number of students who spent more than 17 hours using a computer.

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Answer (2 marks)

7

Turn over

- 4 Corri works in an electrical shop.
She is asked to test a sample of 50 light bulbs stratified by type of light bulb.
The table shows the number of each type of bulb in the shop.

Type of bulb	40 W	60 W	100 W
Number of bulbs	240	680	150

Calculate the number of 60 W bulbs required for her stratified sample.

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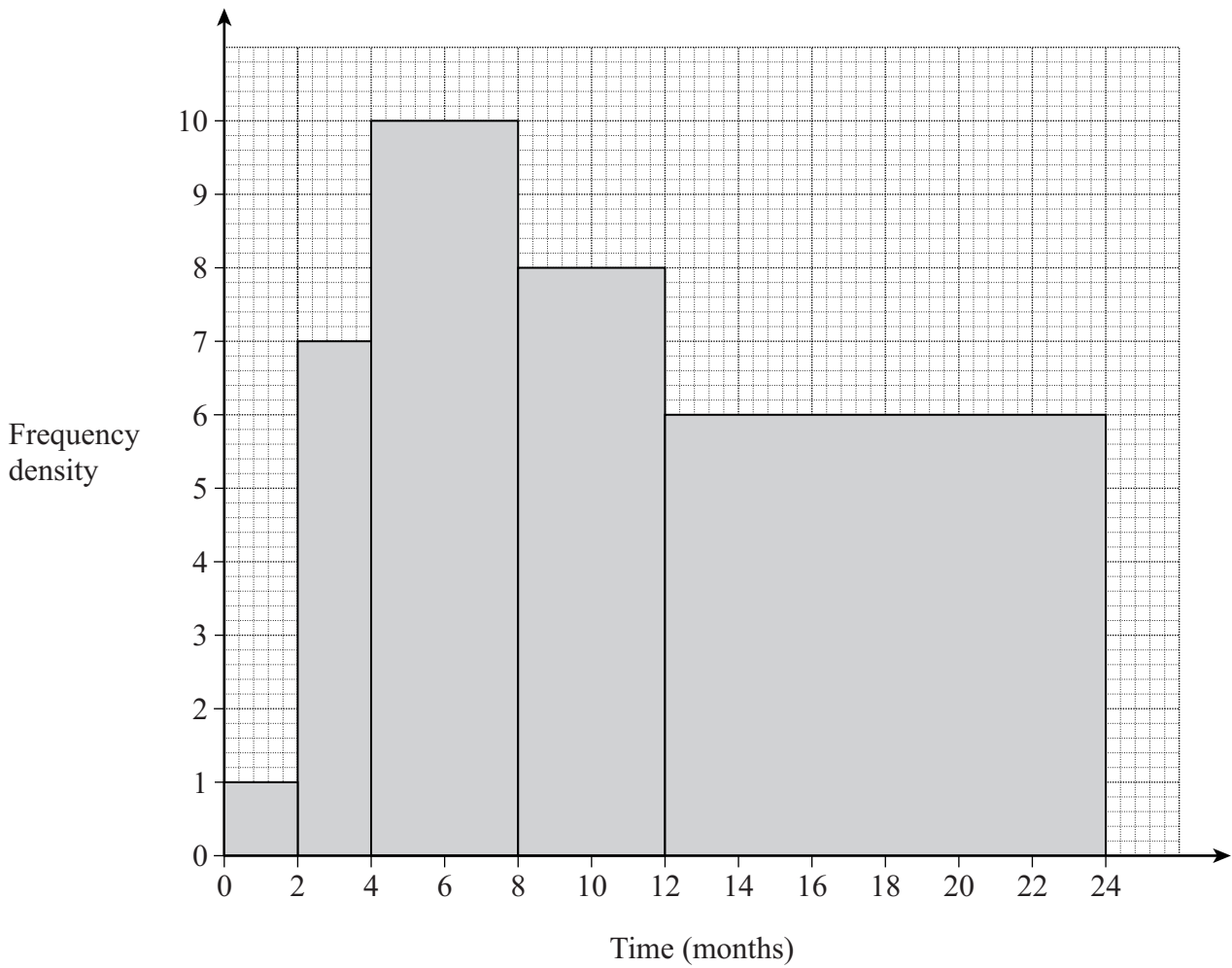
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Answer (3 marks)

5 The histogram shows the time it takes to sell 160 houses on an estate.



Calculate an estimate of the median time to sell a house on the estate.
Show your working.

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Answer months (3 marks)

END OF SECTION A

3

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General Certificate of Secondary Education
November 2006



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

43001/HB

H

TWO TIER

Monday 13 November 2006 2.00 pm to 2.25 pm

<p>For this paper you must have:</p> <ul style="list-style-type: none"> mathematical instruments. <p>You must not use a calculator.</p>	
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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

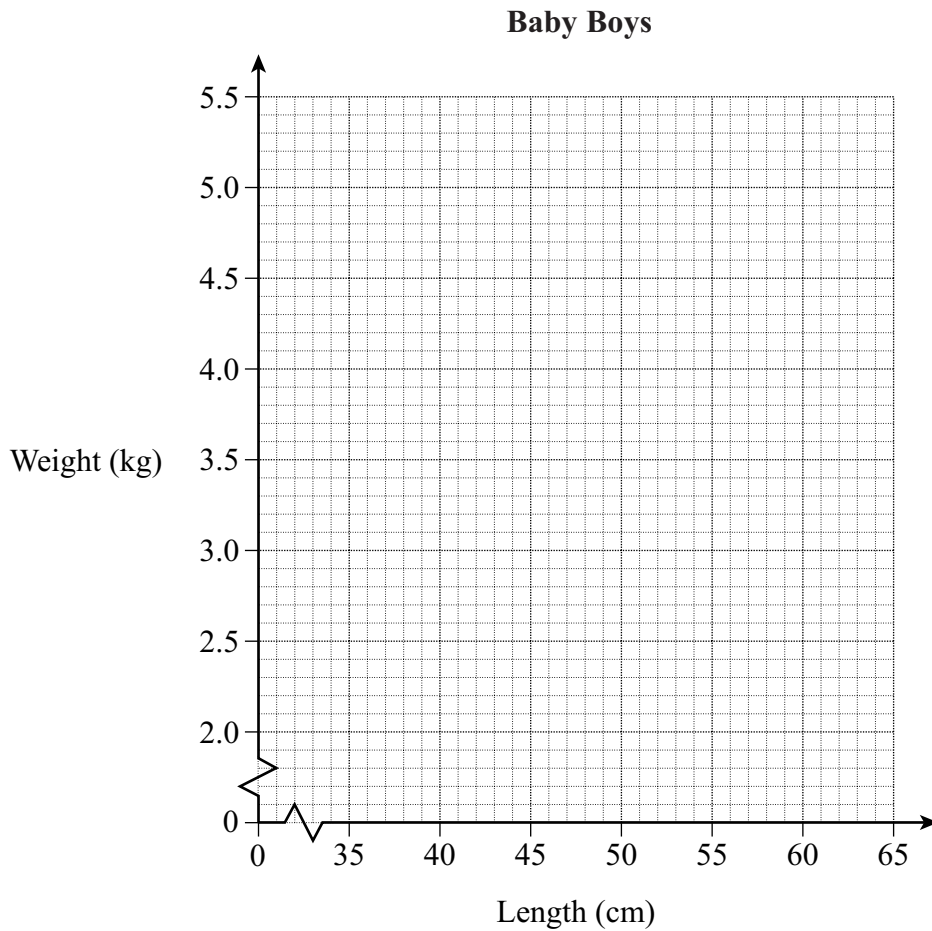
- In all calculations, show clearly how you work out your answer.

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

- 6 The table shows the lengths, in centimetres (cm), and the weights, in kilograms (kg), of eight newborn baby boys in a town.

Length (cm)	40	44	48	50	52	56	57	58
Weight (kg)	2.0	2.6	3.1	3.7	3.5	4.5	4.2	4.9

- (a) Draw a scatter graph to show this information.



(2 marks)

- (b) Draw a line of best fit on your scatter graph.

(1 mark)

- (c) Describe the relationship shown by your scatter graph.

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(1 mark)

- (d) Use your line of best fit to estimate the weight of a newborn baby boy whose length is 54 cm.

Answer kg (1 mark)

- (e) Explain why this sample of babies may **not** be representative of the babies born in the town.

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(1 mark)

6

Turn over for the next question

Turn over 

- 7 Phil wants to test if a six-sided dice is biased.
He rolls the dice 20 times.
Here are his results.

2 3 5 6 1 2 4 5 6 2
3 4 2 1 2 3 5 6 2 1

- (a) Complete the relative frequency table.

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Number	1	2	3	4	5	6
Relative frequency						

(2 marks)

- (b) Phil concludes that the dice is biased towards a number.

Write down the number that you think the dice is biased towards.
Explain your answer.

Number

Explanation

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(1 mark)

- (c) Phil decides to roll the dice 100 times.
Calculate an estimate of the number of times that the dice will land on 4.

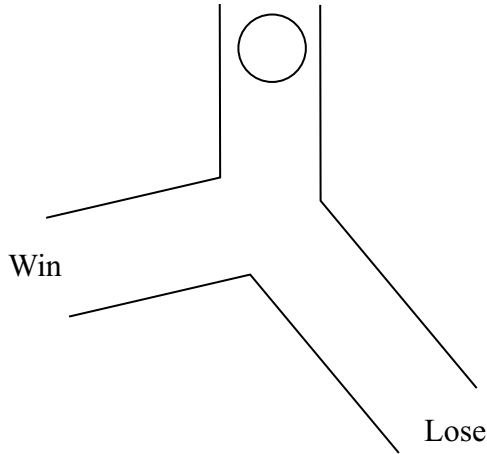
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Answer (2 marks)

8 In a game a ball is dropped down a chute as shown in the diagram.

The ball falls into either the Win slot or the Lose slot.

The probability that the ball falls into the Win slot is always $\frac{3}{10}$



(a) Write down the probability that the ball falls into the Lose slot.

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Answer (1 mark)

(b) Andrea plays the game twice.

Calculate the probability that Andrea loses both times.

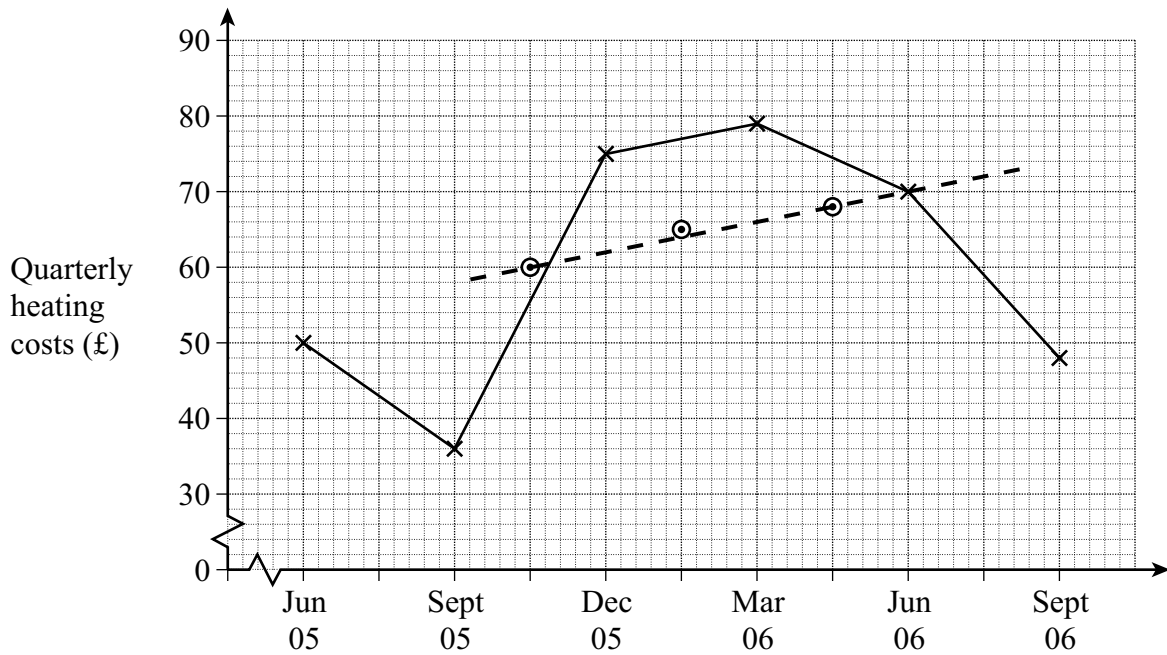
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Answer (2 marks)

9 The quarterly heating costs for a house are shown in the table.

Date	Jun 05	Sept 05	Dec 05	Mar 06	Jun 06	Sept 06	Dec 06
Heating costs (£)	50	36	75	79	70	48	

The heating costs and the four-point moving averages are plotted below.



Use the trend line given on the diagram to calculate an estimate of the heating costs for December 2006.

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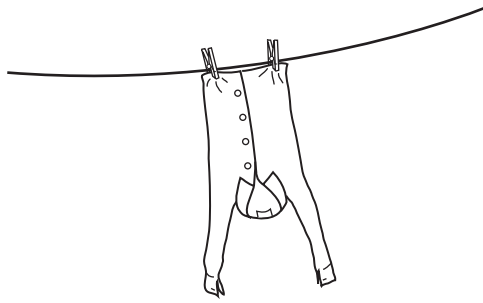
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Answer £ (3 marks)

3

10 Joe hangs a shirt on the washing line using coloured pegs from a bag.



The bag contains 10 red, 5 yellow and 5 green pegs.
Joe picks two pegs at random from the bag to hang the shirt.

Calculate the probability that he picks two red pegs.

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Answer (3 marks)

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END OF QUESTIONS

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