

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
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TOTAL	



General Certificate of Secondary Education
Higher Tier
June 2010

Mathematics (Modular) (Specification B)

43051/HA

Module 1 Section A

H

Monday 21 June 2010 1.30 pm to 2.00 pm

For this paper you must have:

- a calculator
- mathematical instruments
- a treasury tag.



Time allowed for Section A

- 30 minutes

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the space provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.
- This paper is divided into two sections: Section A and Section B.
- After the 30 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 marks for questions are shown in brackets.
- The maximum mark for Section A is 23
- You may ask for more answer paper and graph paper. This must be tagged securely to this answer booklet.

Advice

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



J U N 1 0 4 3 0 5 1 H A 0 1

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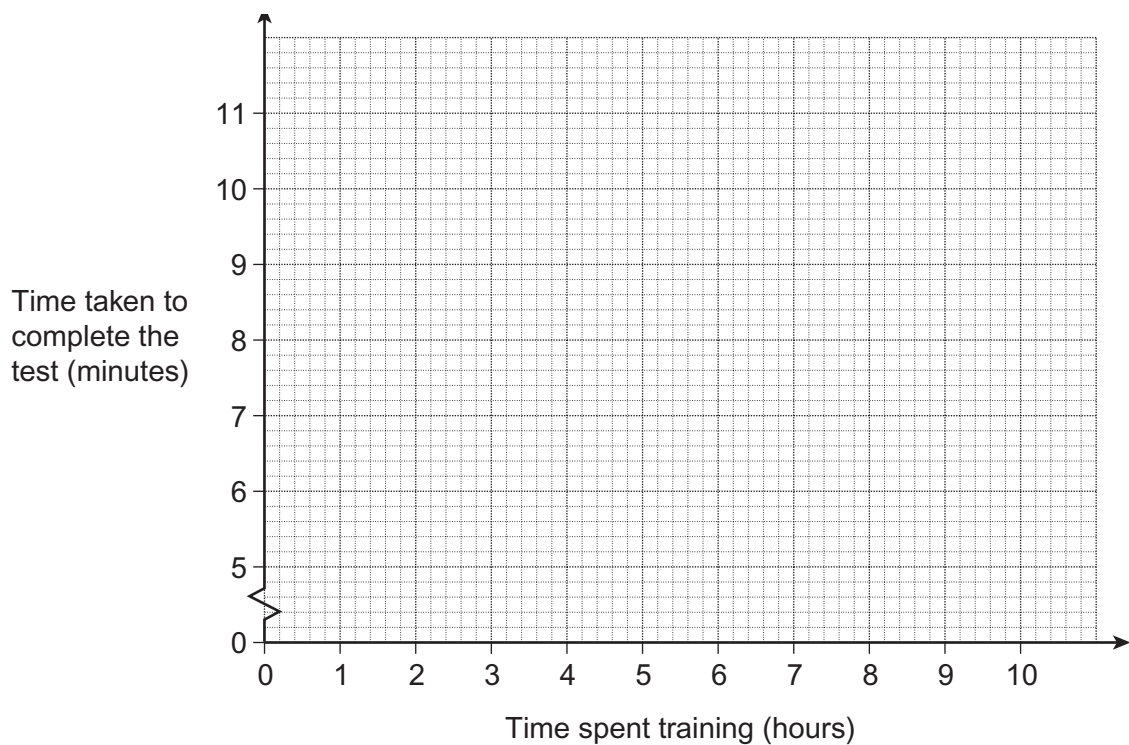
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Answer **all** questions in the spaces provided.

- 1** Seven students trained to complete a fitness test.
The table shows the time each student spent training and the time taken by each student to complete the test.

Time spent training (hours)	5	6	3	10	2	9	7
Time taken to complete the test (minutes)	8.5	8.1	10.2	6.3	10.5	6.1	7

- 1 (a)** Plot these results as a scatter diagram on the grid below.



(2 marks)

- 1 (b)** The graph shows negative correlation.

What does this tell you about the relationship between the time spent training and the time taken to complete the test?

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(1 mark)



2 Jake goes fishing on Saturdays in the fishing season.
He records the weight of every fish he catches.

Weight, w (kg)	Frequency		
$0 < w \leq 1$	10		
$1 < w \leq 2$	17		
$2 < w \leq 3$	3		
$3 < w \leq 4$	7		
$4 < w \leq 5$	3		

2 (a) Write down the modal class.

Answer $< w \leq$ (1 mark)

2 (b) Calculate an estimate of the mean weight of the fish.

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Answer kg (4 marks)

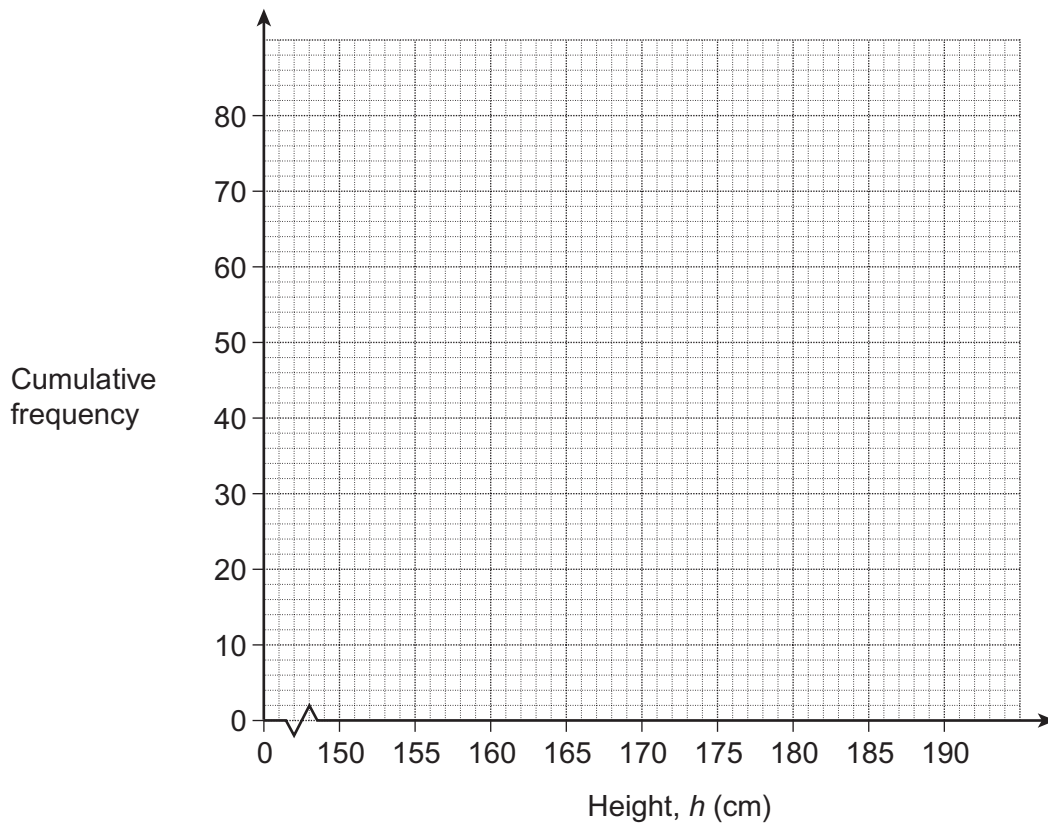
Turn over for the next question



3 (a) The heights of 80 boys aged 17 years are shown in the table.

Height, h (cm)	Frequency	
$150 \leq h < 165$	12	
$165 \leq h < 170$	23	
$170 \leq h < 175$	21	
$175 \leq h < 180$	16	
$180 \leq h < 190$	8	

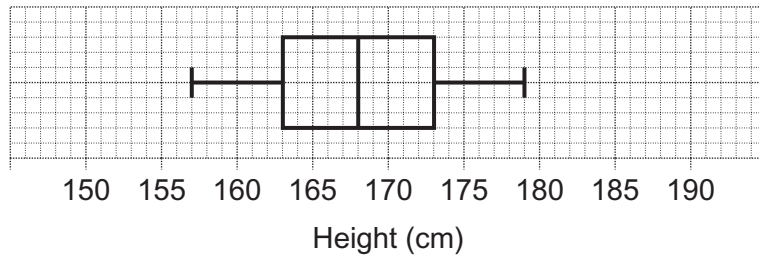
Draw a cumulative frequency diagram on the grid.



(3 marks)



3 (b) The box plot represents the heights of 80 girls aged 17 years.



Use the diagrams in part (a) and part (b) to work out how many more girls than boys have a height below 168 cm.

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Answer (4 marks)

Turn over for the next question



4 The table shows the number of pupils in each year group of a junior school.

	Year 3	Year 4	Year 5	Year 6
Number of pupils	96	101	123	80

The headteacher wants to ask a sample of pupils about after-school activities.

4 (a) Explain why a stratified sample is a fair way for the headteacher to choose the pupils to ask.

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(1 mark)

4 (b) A stratified sample, by year group, is taken.
Ten pupils in the sample are from Year 6.

Work out the number of pupils from each of the other year groups there should be in the sample.

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Answer Year 3.....

 Year 4.....

 Year 5.....

(3 marks)



5 Alesha travels to work by car, bus or train.
The table shows the probabilities.

Method of travel	Probability
Car	$\frac{1}{2}$
Bus	$\frac{3}{10}$
Train	$\frac{1}{5}$

If Alesha travels by car, the probability that she arrives on time is $\frac{9}{10}$

If she travels by bus, the probability that she arrives on time is $\frac{5}{6}$

If she travels by train, the probability that she arrives on time is $\frac{11}{12}$

Calculate the probability that Alesha does **not** arrive on time.

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Answer (4 marks)

END OF SECTION A

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**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**

