

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
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TOTAL	



General Certificate of Secondary Education  
Higher Tier  
March 2011

# Mathematics

# 43601H

Unit 1

Monday 7 March 2011 9.00 am to 10.00 am

# H

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>• a calculator</li> <li>• mathematical instruments.</li> </ul>	
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### Time allowed

- 1 hour

### 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 spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.

### Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 54.
- The quality of your written communication is specifically assessed in Questions 2, 3 and 8. These questions are indicated with an asterisk (\*)
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer booklet.

### Advice

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



M A R 1 1 4 3 6 0 1 H 0 1

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

**1** Is money discrete or continuous?  
Tick a box.

Discrete

Continuous

Give a reason for your answer.

.....  
.....

(1 mark)

**\*2** A company pays people to visit shops and test customer service.  
Paul works for this company.  
His fees in October are shown.

Fee (£)	Frequency
8	10
10	18
12	7
15	4
20	1

**2 (a)** Calculate his mean fee.

.....  
.....  
.....

Answer £ ..... (3 marks)

**2 (b)** Paul says that his modal fee and his median fee are both £10.  
Is he correct?  
Give reasons and working to show how you decide.

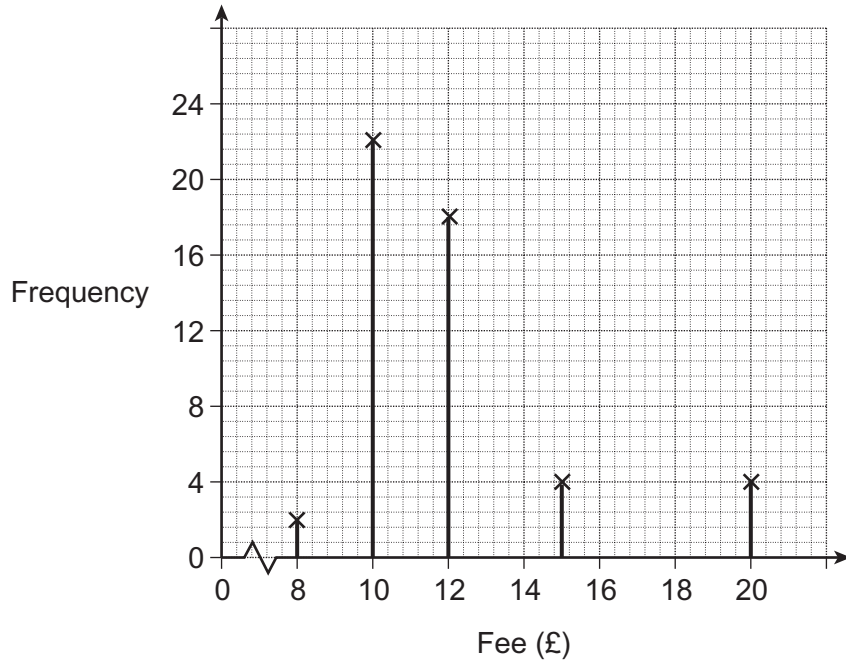
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(2 marks)



2 (c) Shelley also works for this company. Her fees in the same month are shown.

Shelley's fees



Give **one** similarity and **one** difference in the fees of Paul and Shelley.

Similarity .....

.....

Difference .....

.....

(2 marks)

Turn over for the next question



**\*3** Each day 147 trains leave Lea Road station.  
One day, most trains are on time (0 minutes late).  
19 trains are late.

**3 (a)** What percentage of trains are late?  
Give your answer to 1 decimal place.

.....  
.....  
.....

Answer ..... % (3 marks)

**3 (b)** The station manager records the number of minutes late for each of the 19 trains.

6    11    1    21    8    10    17    4    35    22  
2    3    41    8    23    7    16    28    19

**3 (b) (i)** Draw an ordered stem-and-leaf diagram to show the data for the late trains.  
Complete the key.

Key: ..... | ..... represents ..... minutes late

.....  
.....  
.....  
.....  
.....

(4 marks)



3 (b) (ii) For the 19 late trains, write down the modal number of minutes late.

Answer ..... minutes (1 mark)

3 (b) (iii) Write down the modal number of minutes late for all 147 trains.

Answer ..... minutes (1 mark)

3 (c) The station manager says,  
“The late times are all one minute less than I recorded.  
For example, the train I recorded as 6 minutes late was actually only 5 minutes late.”

Which modal number of minutes late changes?  
Tick a box.

The 19 late trains

All 147 trains

Both

Neither

Give a reason for your answer.

.....  
.....

(2 marks)



**4 (a)** A shop sells red roses and white roses in the ratio 7 : 2  
One day 392 red roses are sold.

How many white roses are sold?

.....  
.....

Answer ..... (2 marks)

**4 (b)** A different shop sells red roses and white roses in the ratio 8 : 3

What is the probability that a rose, sold at random, is red?

.....

Answer ..... (1 mark)

**5** A company makes 200 Easter bunnies.  
It costs £2.46 to make each bunny.

28% of the bunnies are given to a charity.  
Three-quarters of the rest are sold for the full price of £4.  
Any left over are then sold at half price.

How much profit does the company make?

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Answer £ ..... (4 marks)



**6** Matt and Ruba each have one coin.  
The total amount of money is less than 50p.

Work out the probability that exactly one of the coins is a 10p piece.  
Assume that all possible coins are equally likely.

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.....

.....

.....

Answer ..... (4 marks)

**Turn over for the next question**



**7 (a)** Maggie interviews a random sample of local people.  
She asks,

“What percentage of Members of Parliament (MPs) do you think are female?”

Write a suitable response section for this question.

(2 marks)

**7 (b)** Give an advantage of interviewing people instead of using a postal questionnaire.

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.....

(1 mark)

**7 (c)** At the beginning of 2010 there were 126 female MPs.  
This was 19.5% of the total number of MPs.

**7 (c) (i)** Calculate the number of male MPs.

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.....  
.....  
.....

Answer ..... (3 marks)





7 (c) (ii) Maggie questions a sample of MPs stratified by gender.

Complete the table to show the number of MPs in a sample of 50.

.....

.....

.....

.....

.....

Male	
Female	

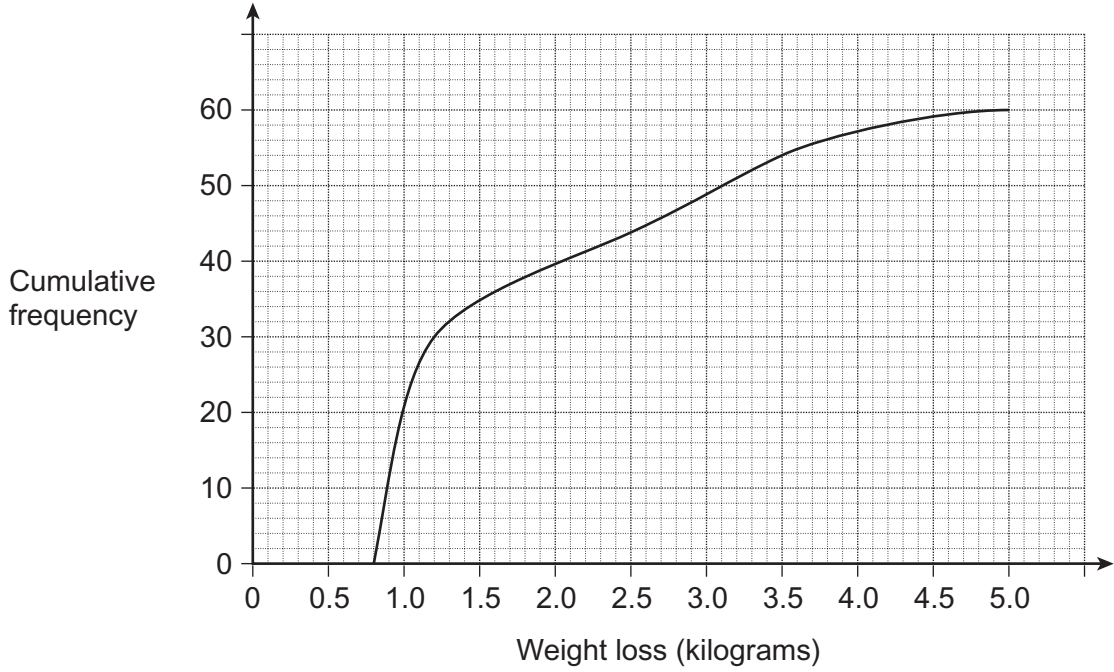
(2 marks)

Turn over for the next question



**\*8** Two groups of people are trying to lose weight.

**8 (a)** Group A join a gym.  
The graph shows information about their weight loss after one month.



**8 (a) (i)** How many people are in group A?

Answer ..... (1 mark)

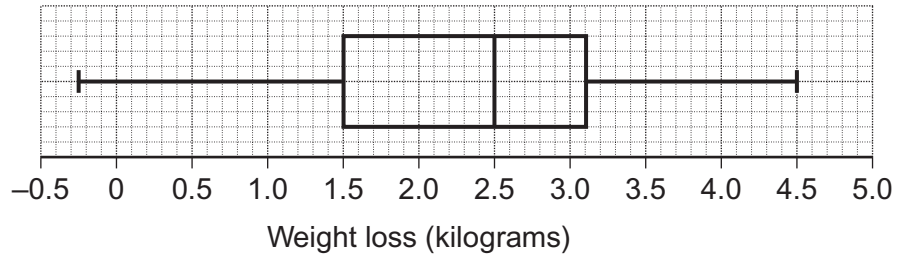
**8 (a) (ii)** Does everyone in group A lose weight?  
Write down how you decide.

.....  
.....

(1 mark)



**8 (b)** Group B follow a diet.  
The box plot shows information about their weight loss after one month.



Does everyone in group B lose weight?  
Write down how you decide.

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.....

(1 mark)

**8 (c)** Compare the weight loss of group A with group B.

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(5 marks)

8

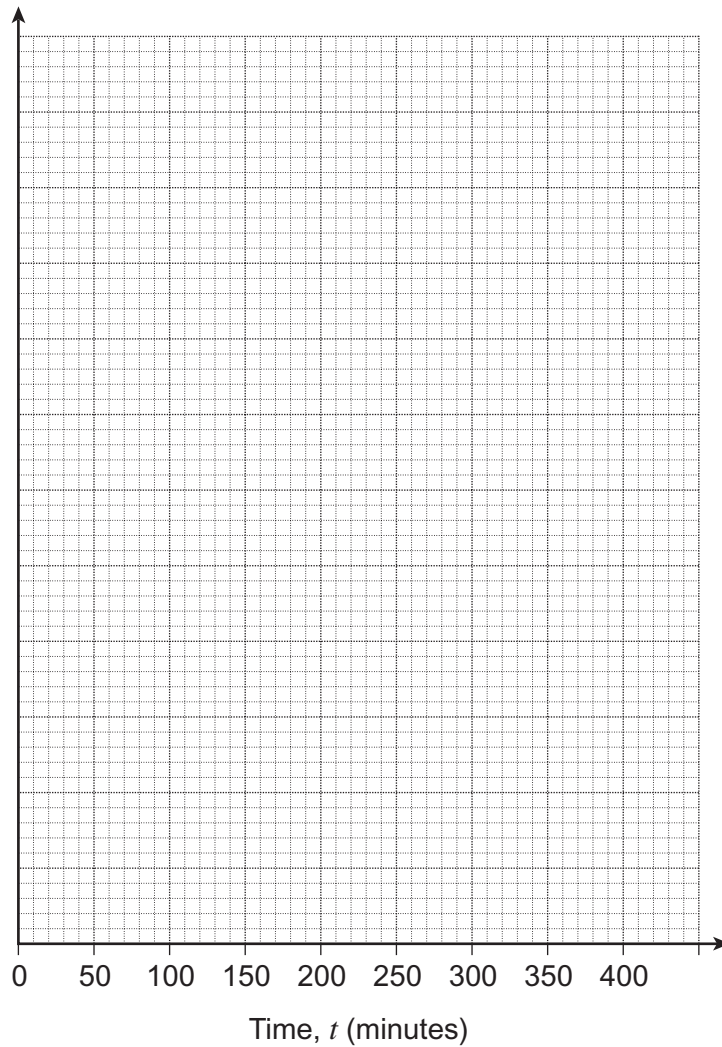
Turn over ►



- 9 The table shows information about the length of time that 180 people are shopping.

Time, $t$ (minutes)	Frequency
$60 < t \leq 150$	18
$150 < t \leq 180$	66
$180 < t \leq 240$	60
$240 < t \leq 360$	36

- 9 (a) Draw a suitable frequency diagram for the data.



(3 marks)



**9 (b)** Calculate an estimate of the average length of time for those people who are shopping for over three hours.

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.....  
.....

Answer ..... minutes (2 marks)

**9 (c)** Two people are chosen at random from the 180 people.  
Estimate the probability that both are shopping for less than two hours.

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Answer ..... (3 marks)

**END OF QUESTIONS**

8
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