Surname	
Other Names	
Candidate Signature	

AQA

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

For this paper you must have:
- a calculator
- mathematical instruments.

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.

WMP/Mar11/43601H

43601H

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.

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....

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.
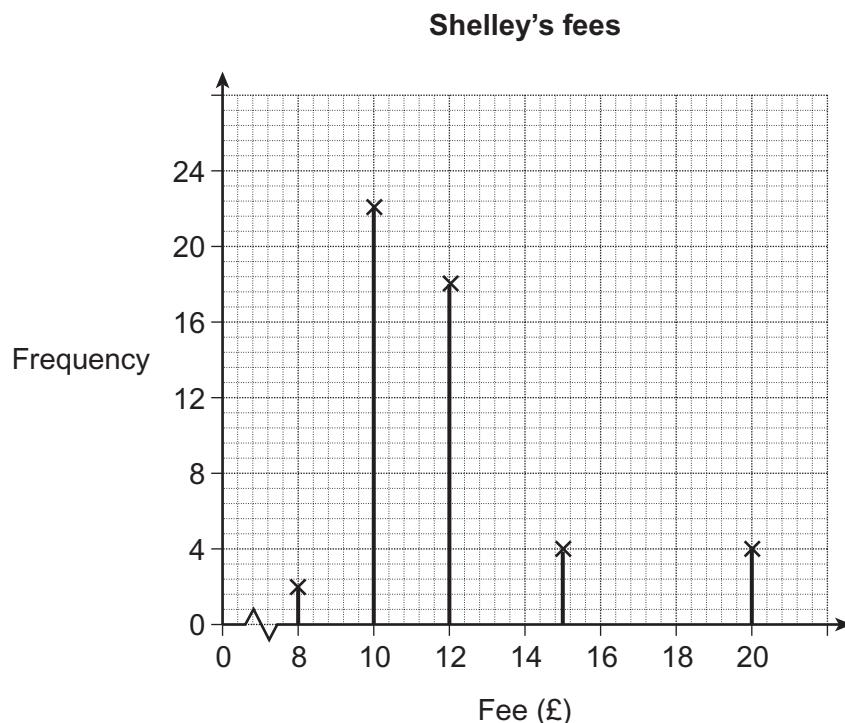
Shelley's fees

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

Similarity ....

....

Difference ....

....

(2 marks)

Turn over for the next question

8

Turn over ▶

*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.

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....

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

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(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)

11

Turn over ▶

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.

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Male	
Female	

(2 marks)

Turn over for the next question

8

Turn over ▶

*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.

Cumulative frequency

Weight loss (kilograms)
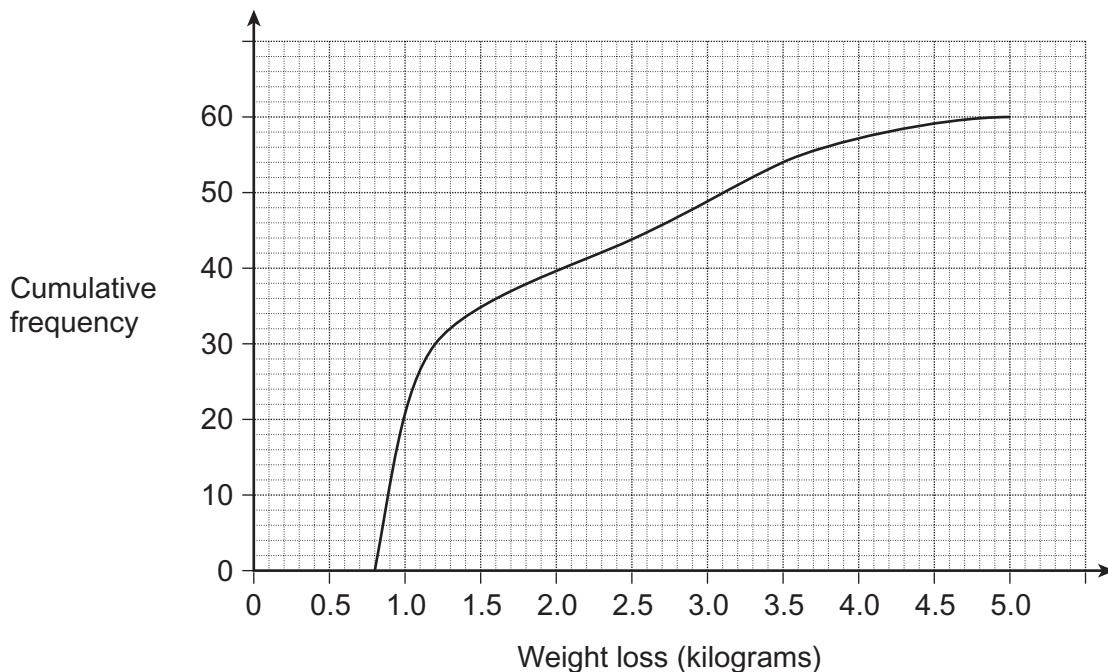
8 (a) (i) How many people are in group A?

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.

Weight loss (kilograms)
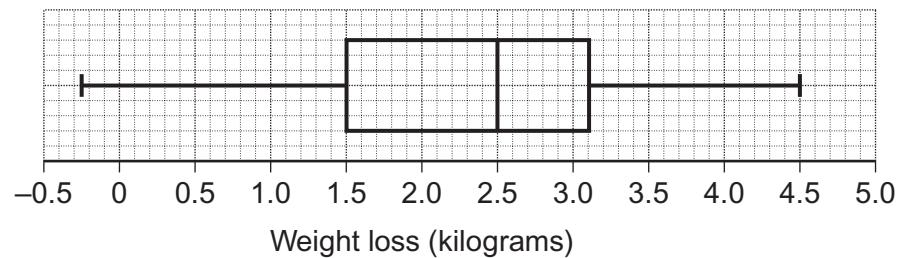
Does everyone in group B lose weight?
Write down how you decide.

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....
(1 mark)

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

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(5 marks)

Turn over ▶

8

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

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

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

Time, t (minutes)
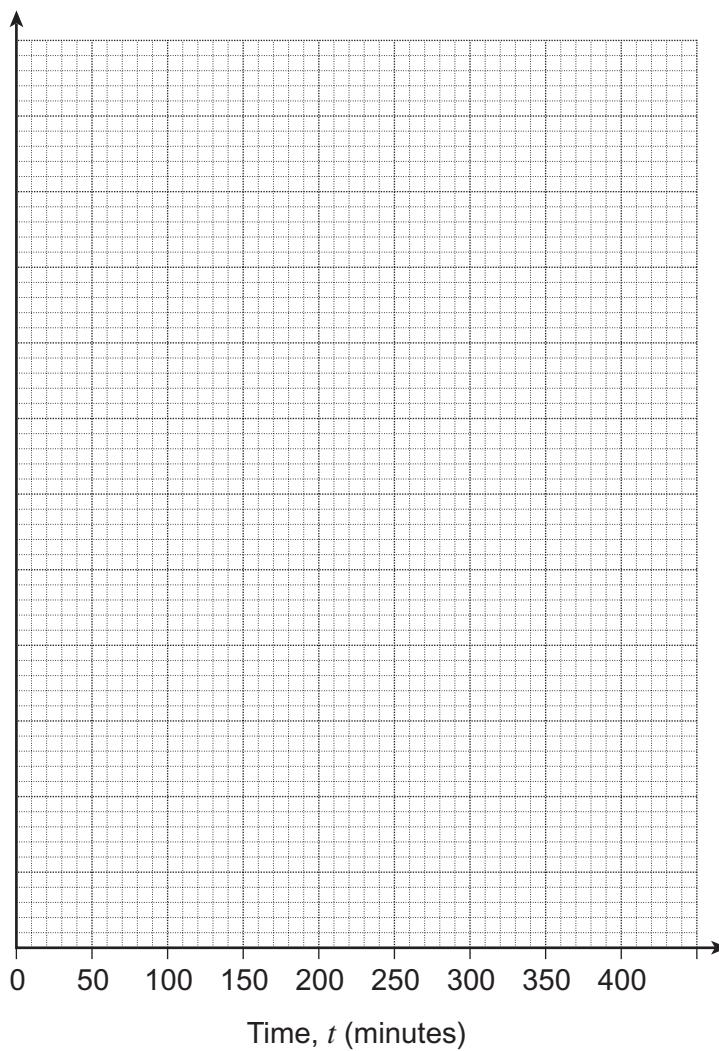
(3 marks)

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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