Centre Number						Candidate Number				
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Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
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12	
TOTAL	

General Certificate of Secondary Education
Foundation Tier
June 2011

Mathematics 43601F

Unit 1

Monday 13 June 2011 1.30 pm to 2.30 pm

F

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 1 and 5. 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 book.

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

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

1 (a) Matthew records the types of birds that visit his garden one morning.

1 (a) (i) Complete the table.

Type of bird	Tally	Frequency
robin	IIII	
blackbird	III	
starling	𝍸 𝍸 II	
sparrow	𝍸 IIII	
	Total	

(3 marks)

1 (a) (ii) What fraction of the birds are robins?
Give your answer in its simplest form.

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

***1 (b)** This table shows the types of birds that Leah records in her garden one morning.

Type of bird	robin	blackbird	starling	sparrow
Frequency	4	6	5	3

She has finished the first row of a pictogram to show the results.

Complete the key and pictogram.

Key: ⌒ represents ..... birds

robin	⌒ ⌒
blackbird	
starling	
sparrow	

(4 marks)

1 (c) 500 000 people record the types of birds in their gardens.
In total, they record eight million birds.

On average, how many birds does each person record?

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Answer ..... *(3 marks)*

1 (d) Here is a list of the birds at a bird table.

robin	robin	sparrow	blackbird	starling
blackbird	starling	blackbird	robin	blackbird

One bird flies away.
Another bird arrives at the bird table.

The new mode is robin.

What type of bird flies away and what type of bird arrives?
Complete the table.

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	Type of bird
Flies away	
Arrives	

(2 marks)

14

2 Ella has these coins.

Jayden has these coins.

Ella gives Jayden one coin.
They now have the same amount of money as each other.

Which coin does Ella give to Jayden?

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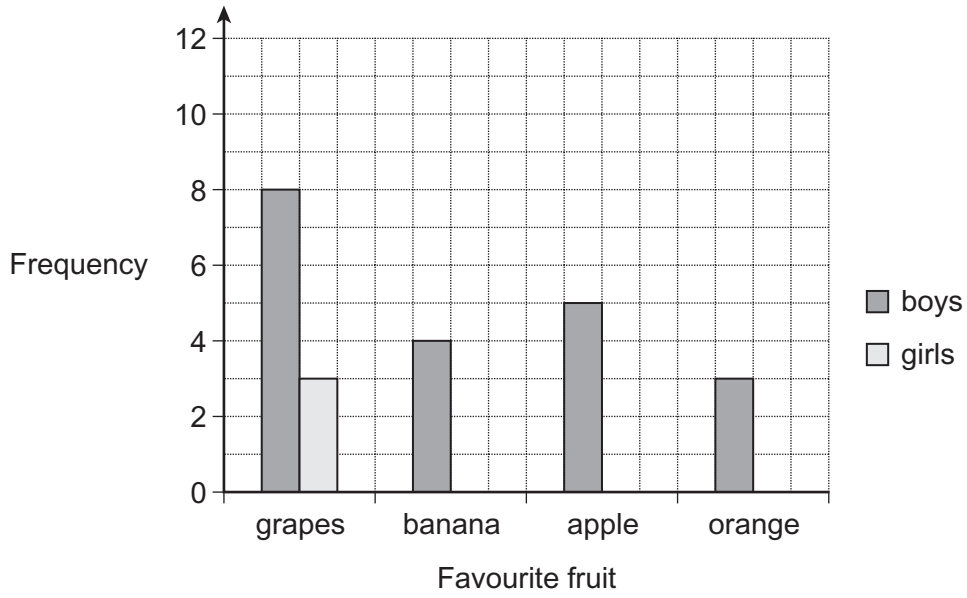
Answer ..... p *(2 marks)*

3 Callum asks some boys and girls to choose their favourite fruit.
He is drawing a dual bar chart of the results.
Callum has only drawn the first bar of the results for the girls.



3 (a) How many more boys than girls choose grapes?

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

3 (b) How many boys does Callum ask altogether?

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

3 (c) Callum asks the same number of boys and girls.
Two girls choose apple.
Twice as many girls choose banana as choose orange.

Complete the bar chart.

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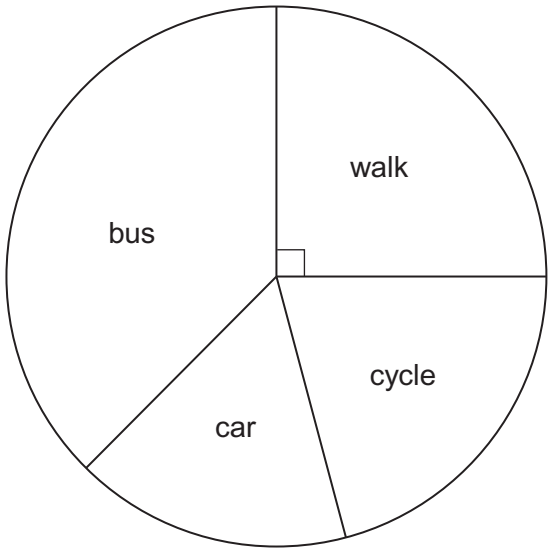
(3 marks)

9

4 The pie chart shows information about how year 10 students travel to a school.



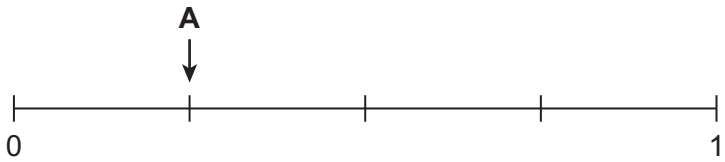
4 (a) A student from year 10 is chosen at random.

Mark, with the letter, the probabilities of each of the following on the scale below.
The first one has been done for you.

A: The student walks to school.

B: The student does **not** walk to school.

C: The student travels to school by train.



(2 marks)

4 (b) 40 students travel to school by car.

How many year 10 students are there?

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Answer ..... *(3 marks)*

4 (c) There are 252 students in year 11.
The same proportion of students walk to school as in year 10.

Work out the number of year 11 students that walk to school.

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

Turn over for the next question

7

***5** Danni and Ed are in the same quiz team.
In each round a person can score up to 10 points.

Here are the scores for Danni.

1 1 10 2 10 1 3

The scores for Ed have a range of 3.
The mean score for Ed is 5.

5 (a) Compare the scores for Danni and Ed.

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(5 marks)

5 (b) In the final round, only one person can play.
Their team needs 9 points to win.

Who would you choose, Danni or Ed?
Give a reason for your answer.

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(1 mark)

6 A bag only contains red and blue counters.
It contains 24 red counters.

A counter is chosen at random from the bag.

The probability of choosing a blue counter is $\frac{1}{4}$.

How many counters are in the bag?

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Answer ..... *(3 marks)*

7 A train ticket costs £23.50
The price increases by 6%.
Felix has £100.

Can Felix buy four tickets at the new price?

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(4 marks)

13

8 A newspaper headline states:

> Only 80% of teenagers think
> Winston Churchill was a real person.

8 (a) Show that the ratio of the number of teenagers who think Winston Churchill was a real person to those who do not is 4 : 1

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(1 mark)

8 (b) Hana claims:

> GCSE History students are more likely than other teenagers to know that Winston Churchill was a real person

Design a data collection sheet for Hana to investigate her claim.

(2 marks)

8 (c) The ratio of GCSE History students who think Winston Churchill was a real person to those who do not is 17 : 3

Is Hana's claim true?
Show how you decide.

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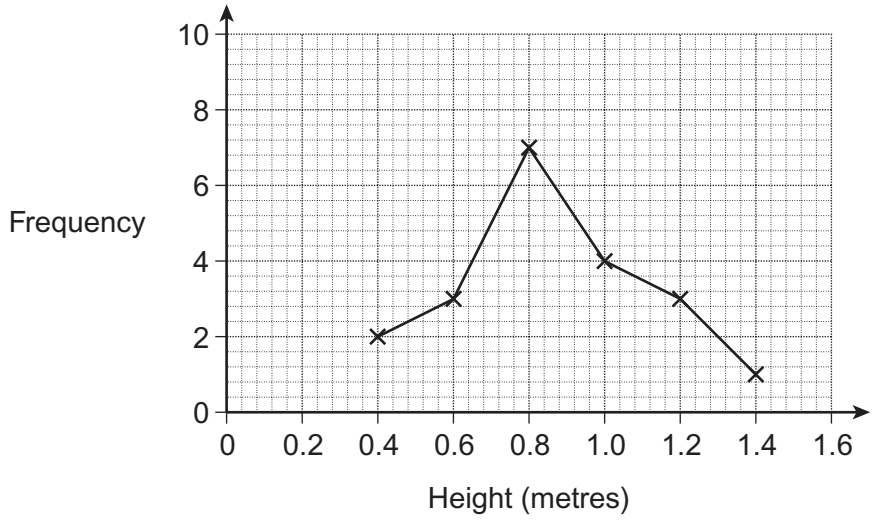
(2 marks)

9 (a) Amir drops different balls from the same height onto a wood floor.
He measures the height, to the nearest 0.2 metres, of their first bounce.
The frequency polygon shows his results.



Calculate an estimate of the mean bounce height.

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Answer ..... m *(3 marks)*

Question 9 continues on the next page

8

Turn over ▶

9 (b) Amir wants to test this hypothesis.

Balls bounce higher on concrete than on wood.

Use the Data Handling Cycle to write a plan for Amir.

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(3 marks)

END OF QUESTIONS

3