AQA

General Certificate of Secondary Education
Foundation Tier
June 2012

Methods in Mathematics (Linked Pair Pilot) 93651F/A

F

Unit 1 Algebra and Probability
Section A Calculator

Monday 11 June 2012 1.30 pm to 2.15 pm

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

Time allowed
- 45 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. Cross through any work you do not want to be marked.
- This paper is divided into two sections: Section A and Section B.
- After the 45 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 must **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 this paper is 40.
- The quality of your written communication is specifically assessed in Question 1.
  This question is indicated with an asterisk (*)
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer booklet.
- You are expected to use a calculator where appropriate.

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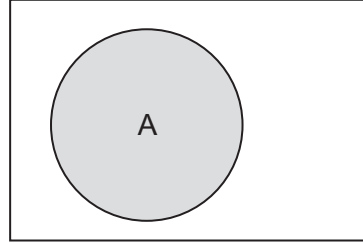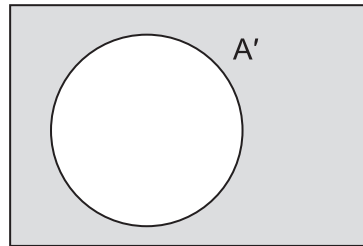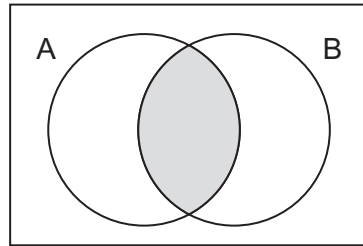- In all calculations, show clearly how you work out your answer.

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Formulae Sheet: Foundation Tier

Set notation

A

A′

A ∩ B

A ∪ B

0 2
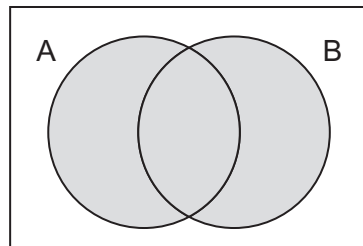
Answer **all** questions in the spaces provided.

1 (a) There are 60 minutes in one hour.

How many minutes are there in a quarter of an hour?

....

....

Answer .... minutes   *(1 mark)*

1 (b) There are 24 hours in one day.

How many minutes are there in one day?

....

....

Answer .... minutes   *(1 mark)*

*1 (c) There are 365 days in a normal year.
There are 366 days in a leap year.

Why are there **never** exactly 52 weeks in a year?

....

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....

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(3 marks)

5

2 (a)   Ruth buys 15 stamps.
They cost 42p each.
She pays with four £2 coins.

What change should she get?

....

....

Answer £ ....   *(3 marks)*

2 (b)   What is the greatest number of 42p stamps that can be bought with £10?

....

....

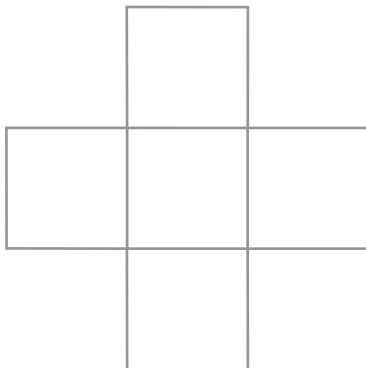Answer ....   *(2 marks)*

3   Put all the numbers 1, 2, 3, 4 and 5 into the grid so that

the row adds up to 9
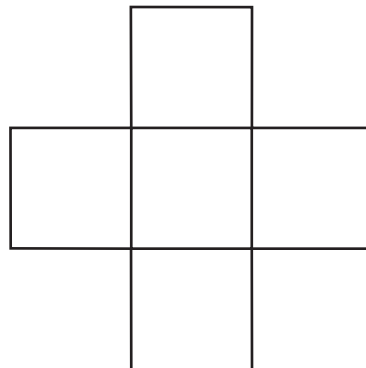
and

the column adds up to 9.

Do your working on the grid on the left.
Put your **final** answer in the grid on the right.

Working   **Answer**

(2 marks)

4 A bag contains some counters.
There is an **even** chance of picking a **red** counter from the bag.

Here are four statements about the counters in the bag.

Tick whether each statement is true or false or you cannot tell.

	True	**False**	**Cannot tell**
Half of the counters are blue			
There is an odd number of counters			
There are at least ten counters			
50% of the counters are red			

(3 marks)

5 Asif and Brad each have some sweets.
Chloe has no sweets.

Asif gives 4 sweets to Chloe.
Brad gives 2 sweets to Chloe.
Now they all have the same number of sweets.

How many sweets did Asif have to begin with?

....

....

....

....

Answer .... *(3 marks)*

13

Turn over ▶

6   In each part, match the statement to the expression.
Circle your answer.

6 (a)   Two more than x.

$2x$ $x + 2$ $x - 2$ x^2

(1 mark)

6 (b)   Four less than x.

$4 - x$ $4x$ $\dfrac{x}{4}$ $x - 4$

(1 mark)

6 (c)   Three times x.

$3x$ $\dfrac{x}{3}$ $x + 3$ x^3

(1 mark)

6 (d)   Half of x.

$x \div 0.5$ $\dfrac{2}{x}$ $\dfrac{x}{2}$ $2x$

(1 mark)

7   Cards are put in a pile.
Four are black.
The rest are red.

The probability that a card is **red** is $\dfrac{2}{3}$

How many cards are in the pile?

....

....

Answer ....   *(2 marks)*

8 (a)   Complete the table of values for $y = \frac{1}{2}x + 1$

x	−3	−2	−1	0	1	2	3
y	−0.5		0.5	1	1.5	2	2.5

.... *(1 mark)*

8 (b)   Draw the graph of $y = \frac{1}{2}x + 1$ for values of *x* from −3 to 3

(2 marks)

Turn over ▶

9
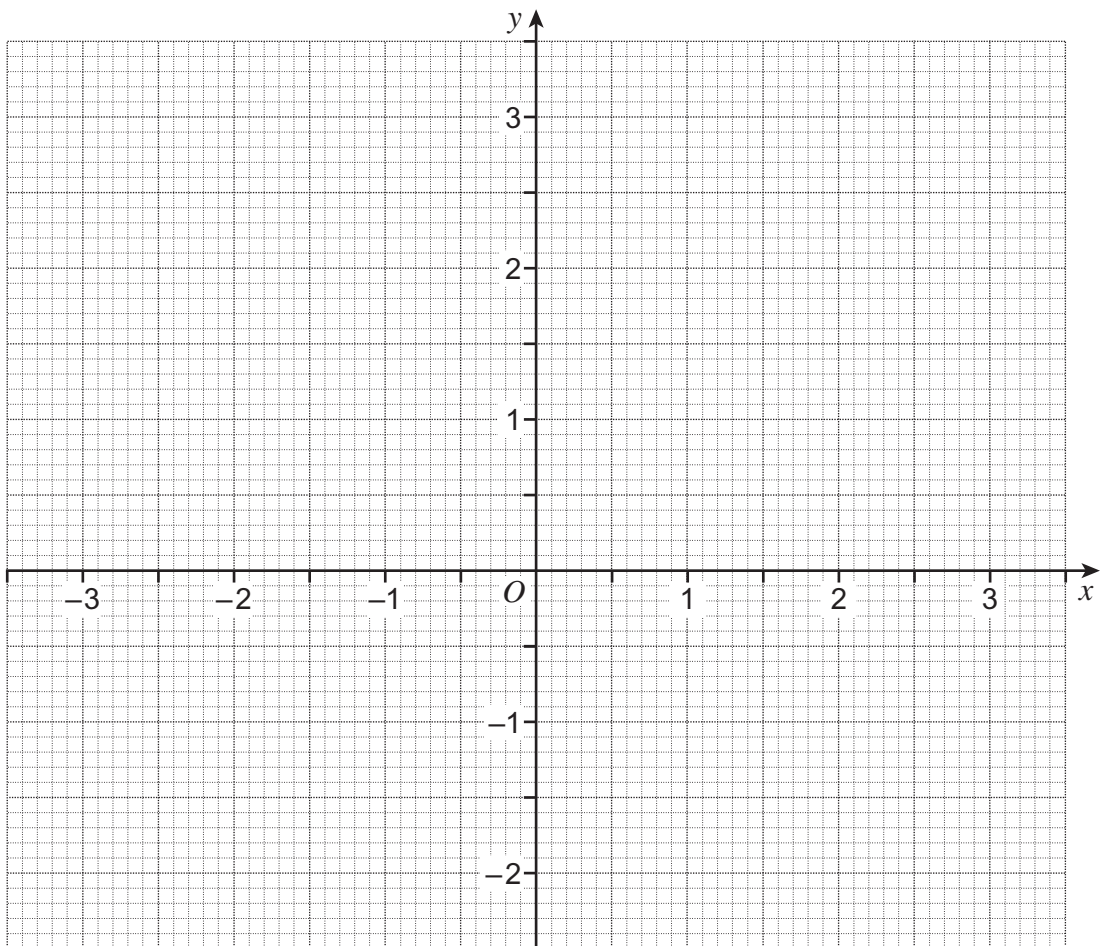
9 (a)   Simplify $8x + 6y - 3x + y$

....

Answer .... *(2 marks)*

9 (b)   Multiply out $5(a - 2)$

....

Answer .... *(1 mark)*

10   Here are four piles of coins.

Not drawn accurately

Each pile has 4 more coins than the pile before it.
Altogether there are 100 coins.

How many coins are there in the smallest pile?

....

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....

....

....

Answer .... *(3 marks)*

11   An amount increases **from** 1600 **to** 2200.

Work out the percentage increase.

....

....

....

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

12 (a)   You are given that $7r - 2s = 8$

12 (a) (i)   Work out the value of $14r - 4s$

....

Answer ....   *(1 mark)*

12 (a) (ii) Work out the value of $2s - 7r$

....

Answer ....   *(1 mark)*

12 (b)   You are given that $7r - 2s = 8$ **and** $r + t = 5$

Write down an expression using r, s and t which is equal to 18.
Write your expression as simply as possible.

....

....

Answer ....   *(2 marks)*

END OF SECTION A

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