

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
3	
4–5	
6–7	
8–9	
10–11	
TOTAL	



General Certificate of Secondary Education
Foundation Tier
January 2012

Methods in Mathematics (Linked Pair Pilot)

93651F/A

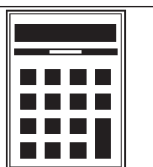
Unit 1 Algebra and Probability
Section A Calculator

F

Wednesday 11 January 2012 9.00 am to 9.45 am

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 that 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 Questions 2 and 9.
These questions are 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.



J A N 1 2 9 3 6 5 1 F A 0 1

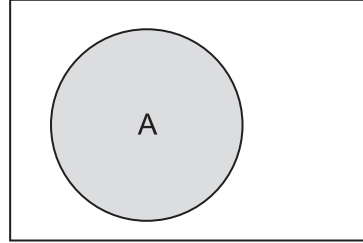
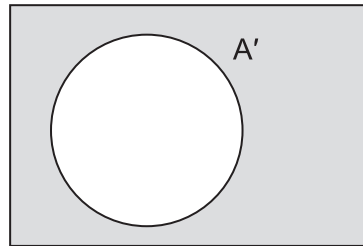
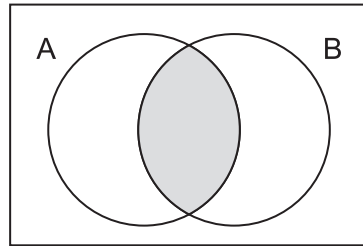
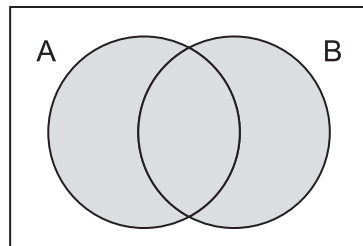
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Formulae Sheet: Foundation Tier

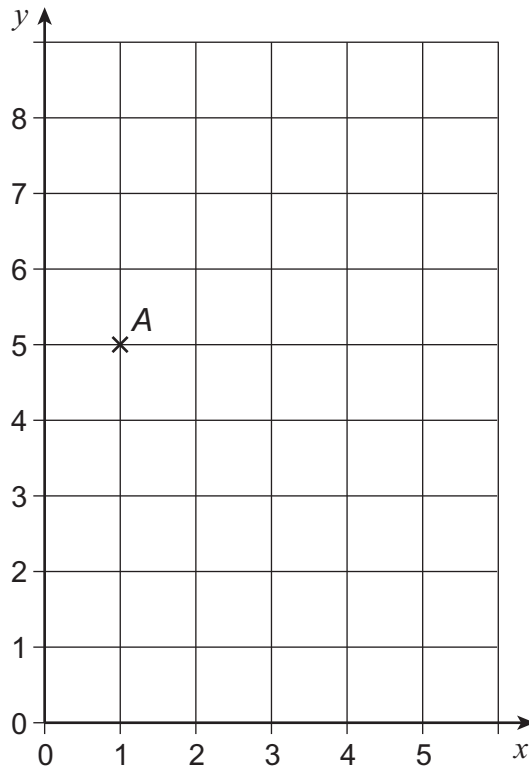
Set notation

A

 A'  $A \cap B$  $A \cup B$ 

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

- 1** Here is a coordinate grid.



- 1 (a)** Write down the coordinates of the point A.

Answer (.....,)

(1 mark)

- 1 (b)** Mark the point (4, 5) with a cross on the grid.
Label the point B.

(1 mark)

- 1 (c)** The point C has the same x -coordinate as the point A.
Its y -coordinate is an odd number.

Write down the coordinates of **two** possible positions of point C.

Answer (.....,) and (.....,)

(2 marks)



*2

The table shows the number of coins that Bethany has in her money box.

Coin	Number of coins
1p	8
2p	20
5p	6
10p	19
20p	15

How much money does Bethany have?

.....

.....

.....

.....

.....

Answer £ (4 marks)



3 (a) The consecutive numbers 1, 2 and 3 add up to 6.

3 (a) (i) Which **three** consecutive numbers add up to 12?

.....
.....

Answer, and (1 mark)

3 (a) (ii) Find **three** consecutive numbers that add up to an odd number between 20 and 30.

.....
.....

Answer, and (2 marks)

3 (b) The digits 1, 2, 3 and 4 are consecutive numbers in order.

A **24-hour** clock shows the time 12:34



How long is it from 12:34 to the next time the digits are consecutive numbers in order?
Give your answer in hours and minutes.

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

Answer hours minutes (3 marks)



4 (a) A code starts with one of the letters A, B, C or D.
Jamie tries one of the letters at random.

4 (a) (i) What is the probability that he gets the right letter?

Answer (1 mark)

4 (a) (ii) Jamie gets the wrong letter.
He tries one of the other letters at random.

What is the probability that he gets the right letter this time?

.....

Answer (1 mark)

4 (b) Another code uses two digits.
Each digit can be from 0 to 9.
For example, 00, 01 and 10 are possible codes.

How many possible codes are there?

.....

.....

Answer (2 marks)

5 (a) Calculate $\sqrt[3]{64\,000}$

Answer (1 mark)

5 (b) Change $\frac{3}{8}$ to a decimal.

Answer (1 mark)



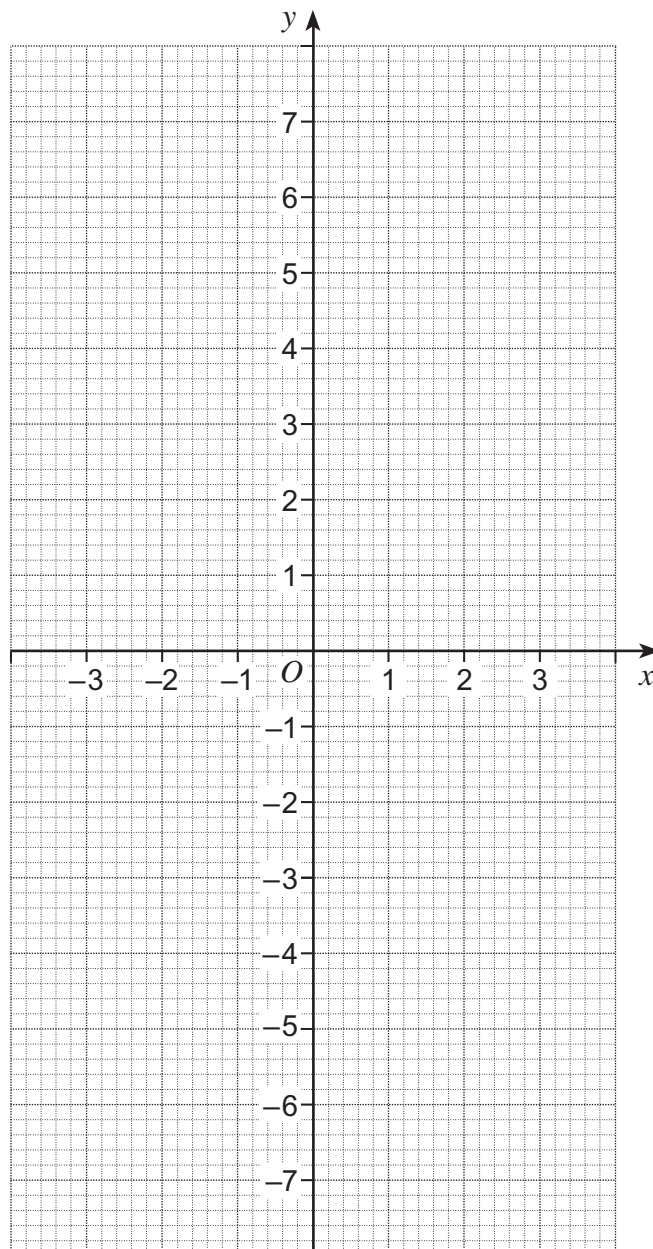
6 Here is a table of values for $y = 2x - 1$

x	-3	0	3
y		-1	5

6 (a) Complete the table.

(1 mark)

6 (b) Draw the graph of $y = 2x - 1$ for values of x from -3 to 3.

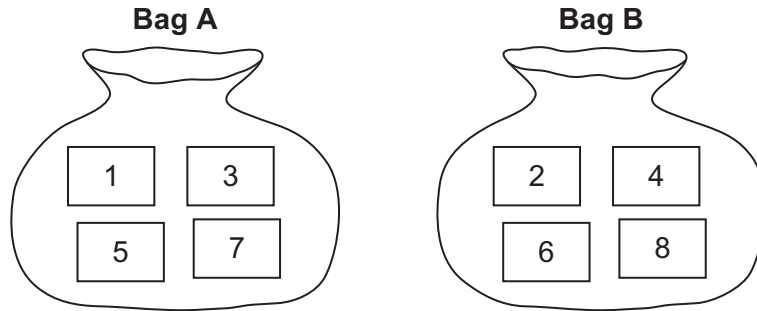


(2 marks)

Turn over ►



7 Here are two bags, A and B.
Each bag contains four tickets.



One ticket is picked at random from **each** bag.
The numbers on the two tickets are added to give a total.

7 (a) Complete the table to show the possible totals.

		Bag A			
		1	3	5	7
Bag B	2	3			
	4			9	
	6				
	8				

(2 marks)

7 (b) Jared picks one ticket at random from each bag.

What is the probability that his total is a prime number?

.....

.....

Answer (2 marks)



8 Harry has been alive for one million minutes.

How old is Harry?
Give your answer in years and months.

.....

.....

.....

.....

.....

Answer year(s) months (4 marks)

Turn over for the next question

8

Turn over ►



*9 Serena follows these instructions.

Think of a number

Add 4

Multiply by 4

Write down the answer

Thomas follows these instructions.

Think of a number

Multiply by 4

Add 4

Write down the answer

9 (a) They both think of the number 5.

Show that the difference between their answers is 12.

.....

.....

.....

(2 marks)

9 (b) If they both think of the same number, show that the difference between their answers will **always** be 12.

.....

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.....

(3 marks)



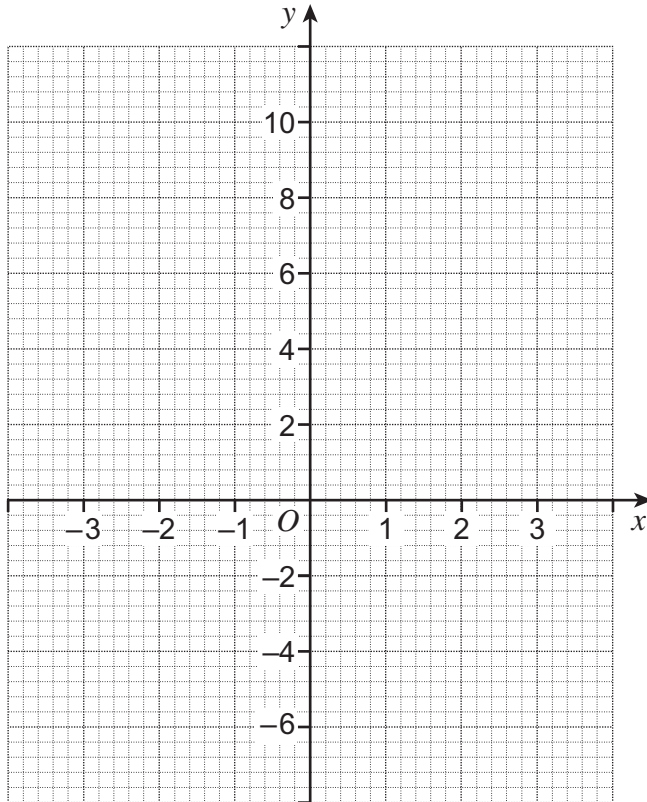
10 (a) Complete the table of values for $y = x^2 + 2x - 5$

x	-3	-2	-1	0	1	2	3
y	-2	-5	-6	-5	-2	3	

.....

 (1 mark)

10 (b) Draw the graph of $y = x^2 + 2x - 5$ for values of x between -3 and 3.



(2 marks)

10 (c) Use your graph to work out the value of y when $x = 1.5$

Answer (1 mark)

END OF SECTION A



There are no questions printed on this page

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

