

Centre Number						Candidate Number				
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Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12	
TOTAL	



General Certificate of Secondary Education  
Foundation Tier  
November 2013

# Methods in Mathematics (Linked Pair Pilot)

93651F/A

**F**

Unit 1 Algebra and Probability  
Section A Calculator

Wednesday 6 November 2013 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 spaces 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 5.  
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 book.
- 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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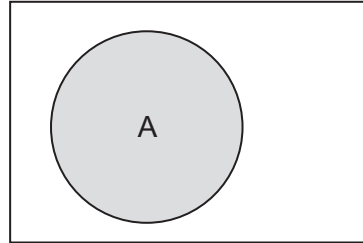
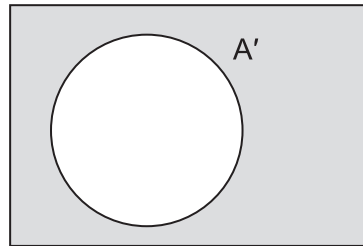
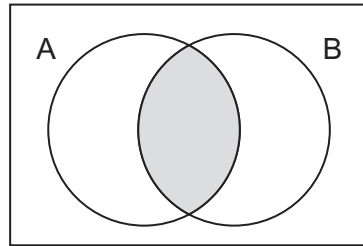
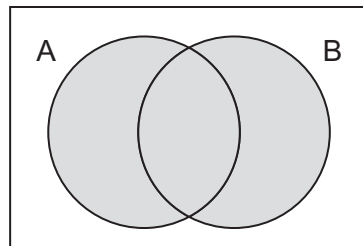
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## Formulae Sheet: Foundation Tier

## Set notation

A

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

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

1 (a) Write  $\frac{1}{2}$  as a decimal.

Answer ..... (1 mark)

1 (b) Write 40% as a decimal.

Answer ..... (1 mark)

1 (c) Write six thousand three hundred and twenty four in figures.

Answer ..... (1 mark)

1 (d) Write down the largest number that has five digits.

Answer ..... (1 mark)

2 Three ordinary six-sided dice are rolled.

The numbers rolled on the first and second dice add up to 3

The numbers rolled on the second and third dice add up to 8

Write the numbers rolled on each dice.

First dice

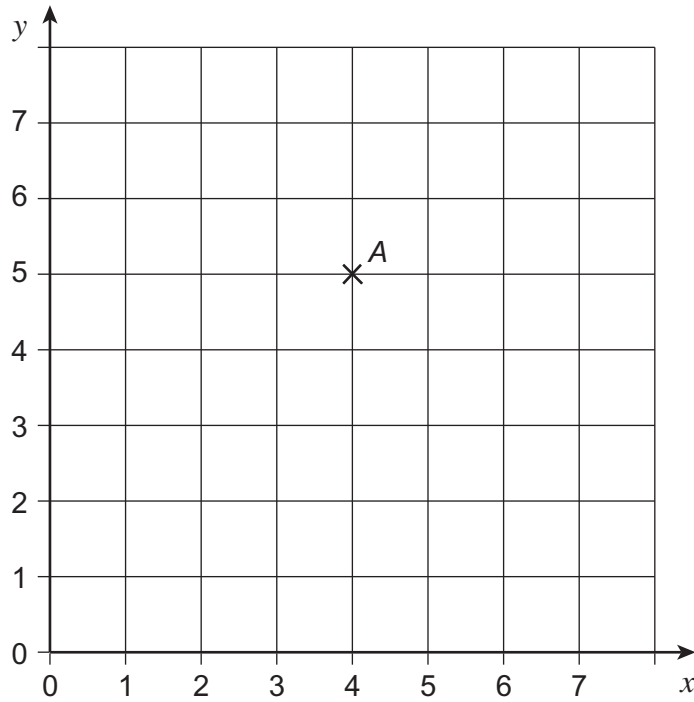
Second dice

Third dice

(2 marks)



3



3 (a) Write down the coordinates of A.

Answer ( ..... , ..... ) (1 mark)

3 (b) Plot the point (2, 0).

Label this point B.

(1 mark)

3 (c) The coordinates of C add up to 6

Plot a possible position for C.

(1 mark)



**4** 200 counters are put into bags.  
Each full bag holds 12 counters.

**4 (a)** How many full bags can be made?

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

Answer ..... (2 marks)

**4 (b)** How many counters are left over?

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

Answer ..... (1 mark)

**Turn over for the next question**



\*5 Which is longer,  $\frac{1}{4}$  of a day or 400 minutes?

You **must** show your working.

.....

.....

.....

.....

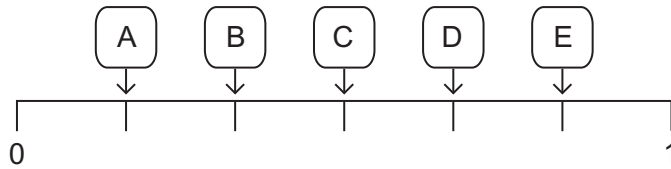
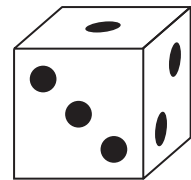
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(4 marks)

6 A fair six-sided dice is rolled.

The probabilities of five events are marked on the probability scale.



Write the letter that shows the probability of each of these three events.

The number rolled is a six .....

The number rolled is odd .....

The number rolled is a multiple of 3 .....

(3 marks)



7 In each part, circle the correct expression.

7 (a) Three more than  $x$ .

$3x$

$x + 3$

$x - 3$

$x^3$

(1 mark)

7 (b) Five less than  $x$ .

$5 - x$

$5x$

$\frac{x}{5}$

$x - 5$

(1 mark)

7 (c) Two times  $x$ .

$2x$

$\frac{x}{2}$

$x + 2$

$x^2$

(1 mark)

Turn over for the next question

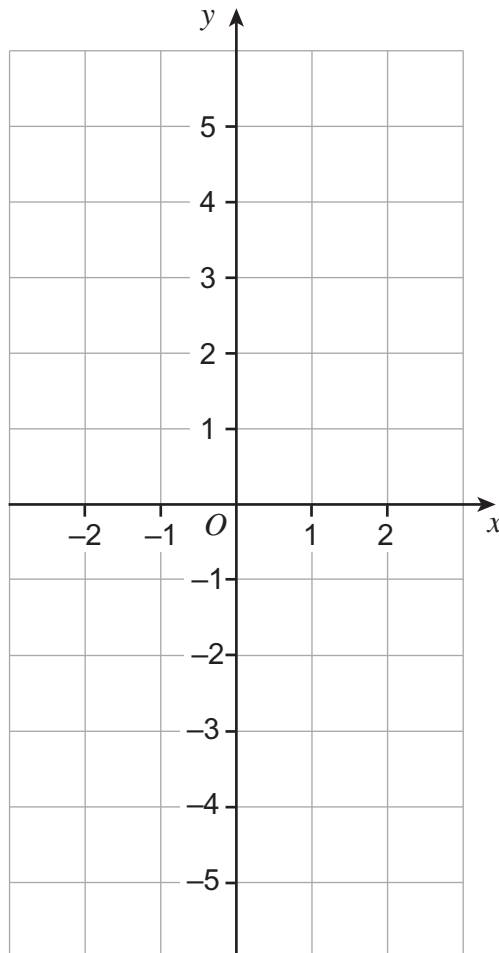


**8 (a)** Complete the table of values for  $y = 2x + 1$

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

(1 mark)

**8 (b)** On the grid below, draw the graph of  $y = 2x + 1$  for values of  $x$  from -2 to 2

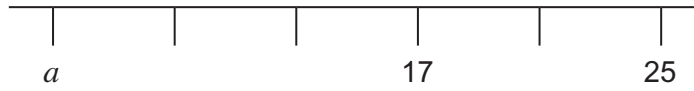


(2 marks)





- 9 Each mark on the number line represents a number.  
The numbers are equally spaced.



Work out the value of  $a$ .

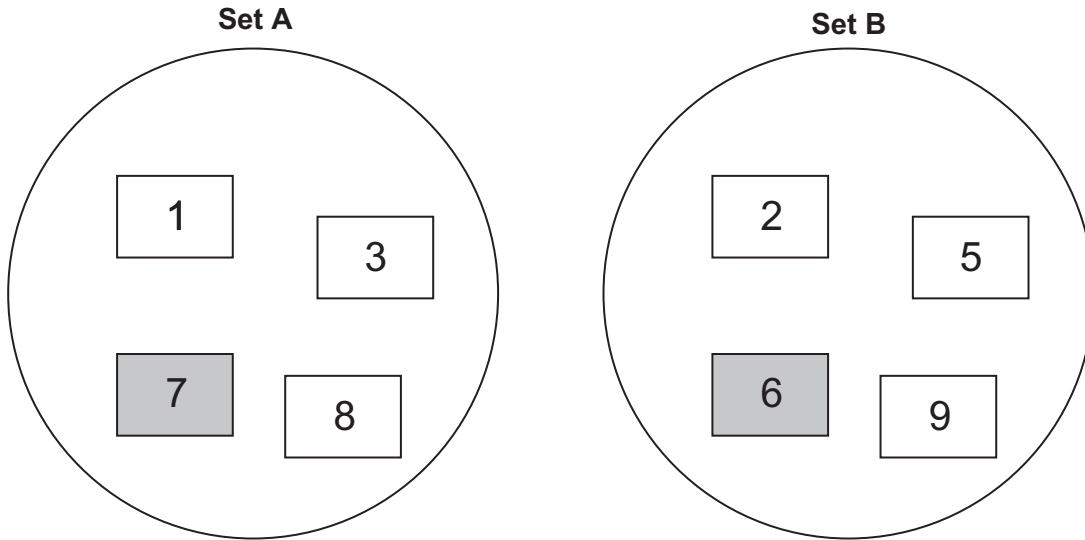
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$a =$  ..... (3 marks)

**Turn over for the next question**



10 Here are two sets of cards.



One card is chosen at random from each set.  
The numbers on the two cards are added.

For example,  $7 + 6 = 13$

You may use the grid below to help you answer the question.

+	1	3	7	8
2				
5				
6			13	
9				

What is the probability that the total is **more than 11**?

.....

.....

.....

Answer ..... (3 marks)



11 A, B, C and D are the four possible outcomes of an experiment.

$P(A) = 0.12$   
D is twice as likely as A.  
B and C are equally likely.

Complete the table.

<b>Outcome</b>	A	B	C	D
<b>Probability</b>	0.12			

(3 marks)

12 Solve  $9x - 6 = 5x + 22$

.....

.....

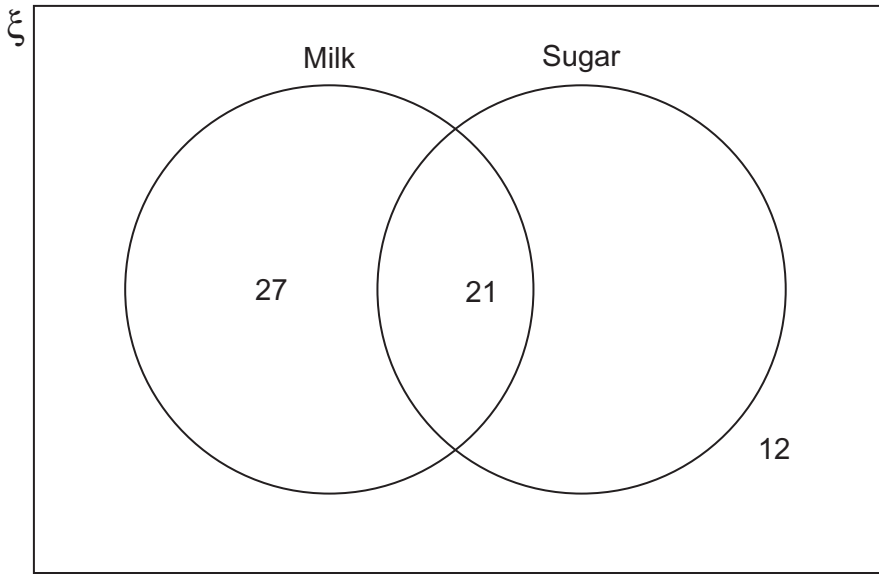
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$x =$  ..... (3 marks)



13 100 men who drink coffee were asked if they have milk and sugar in their coffee. Some of the results are shown in the Venn diagram.



13 (a) Complete the Venn diagram. (1 mark)

13 (b) What is the probability that one of the men, chosen at random, has milk but **no** sugar in his coffee?

Answer ..... (1 mark)

13 (c) What is the probability that one of the men, chosen at random, has **no** milk and **no** sugar in his coffee?

Answer ..... (1 mark)

**END OF SECTION A**

