

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	
12 – 13	
14 – 15	
TOTAL	



General Certificate of Secondary Education
Foundation Tier
November 2014


Methods in Mathematics (Linked Pair)

93651F/A

F

Unit 1 Algebra and Probability
Section A Calculator

Monday 10 November 2014 9.00 am to 9.45 am

<p>For this paper you must have:</p> <ul style="list-style-type: none"> • a calculator • mathematical instruments. 	
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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 a 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 4.
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.

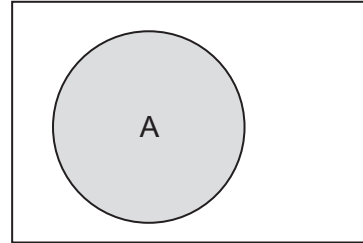
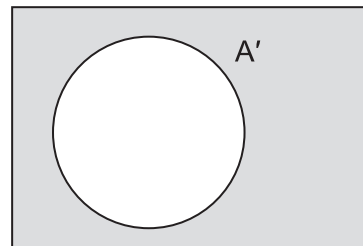
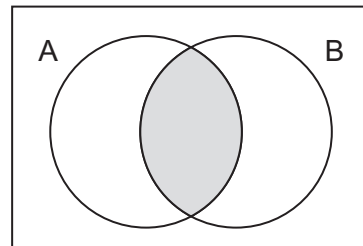
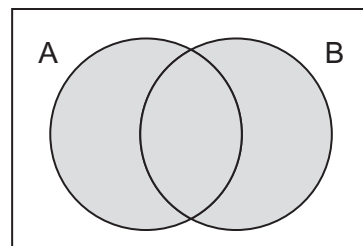


N 0 V 1 4 9 3 6 5 1 F A 0 1

Formulae Sheet: Foundation Tier

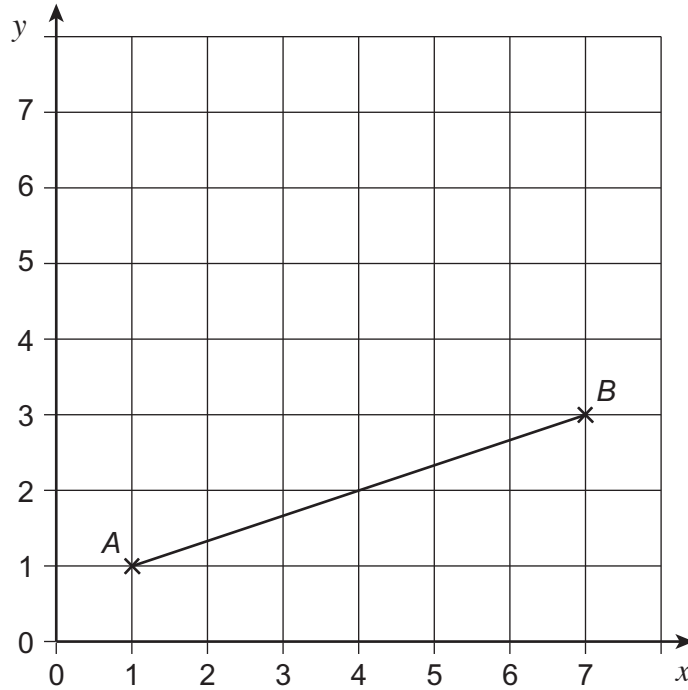
Set notation

A

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

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

1



1 (a) Write down the coordinates of the midpoint of the line AB .

[2 marks]

Answer (..... ,)

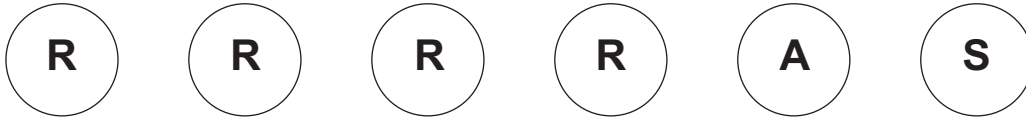
1 (b) The y -coordinate of C is **1 more** than its x -coordinate.

Plot **one** possible position of C .

[1 mark]



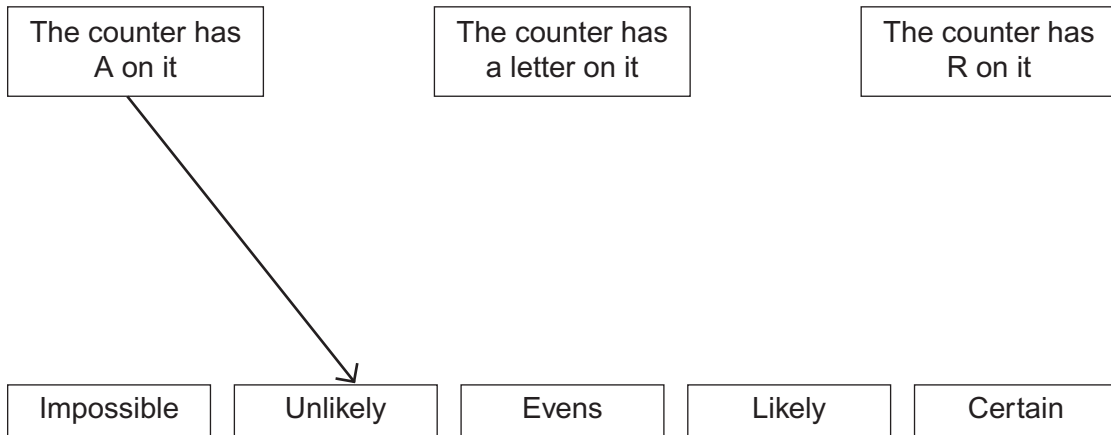
2 (a) These counters are in a bag.



A counter is taken at random.

Join each event to the chance of it happening.

One has been done for you.



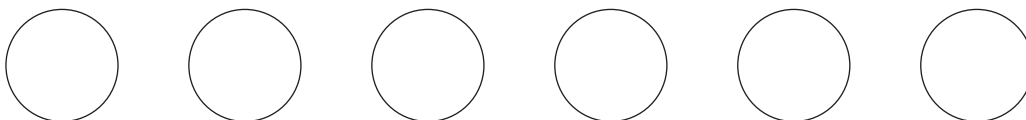
[2 marks]

2 (b) Six counters are in a different bag.

When a counter is taken at random

- it is **likely** to have a letter on it
- it is **evens** to have M on it
- it is **impossible** to have L on it.

Show one possible set of counters.



[2 marks]



3 Ravi is less than 30 years old.

If his age is divided by 2 the answer is an odd number.

If 6 is added to his age the answer is a multiple of 5

How old is Ravi?

[2 marks]

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Answer

***4 (a)** Circle the word that describes $5a + 2b$

Equation

Expression

Inequality

Term

[1 mark]

4 (b) Work out the value of $5a + 2b$ when $a = 4$ and $b = 3$

[1 mark]

.....

.....

Answer



5 The numbers 1 to 20 can be put into the grid so that

each row of four numbers adds up to 55

each column of seven numbers adds up to 55

Complete the grid using the numbers 5, 7, 10, 13, 14, 17, 18, 19 and 20

[4 marks]

Use this grid for practice.

11			9
1			3
2			4
15		12	8
6			16



Use this grid for your answer.

11			9
1			3
2			4
15		12	8
6			16

Turn over for the next question

Turn over ►



6 Simplify fully $3x - 8 + x + 7$

[2 marks]

.....
.....

Answer

7 (a) Write $\frac{5}{8}$ as a decimal.

[1 mark]

Answer

7 (b) Work out $\frac{100}{0.4^2}$

[1 mark]

.....

Answer



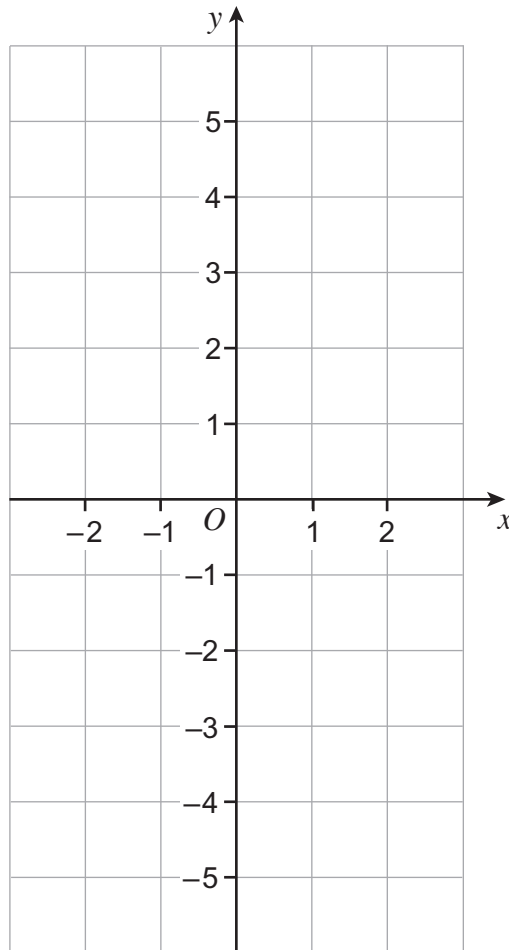
8 (a) Complete the table of values for $y = 2x - 1$

[1 mark]

x	-2	-1	0	1	2
y		-3	-1	1	3

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

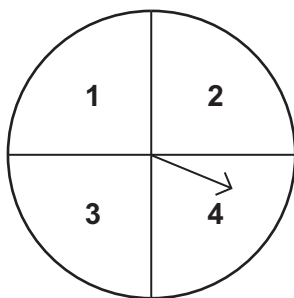
[2 marks]



Turn over for the next question



9 In a game this fair spinner is spun **twice**.



If the two numbers are the **same** the score is 0

If the two numbers are **different** the score is the **higher** number.

9 (a) Complete the table to show the possible scores.

		Number on first spin			
		1	2	3	4
Number on second spin	1	0	2	3	4
	2	2			
	3	3			
	4	4			

[2 marks]

9 (b) Work out the probability that the score is 4

[1 mark]

.....

Answer



9 (c) The same game is played with a **different** fair spinner.

The fair spinner is spun **twice**.

If the two numbers are the **same** the score is 0

If the two numbers are **different** the score is the **higher** number.

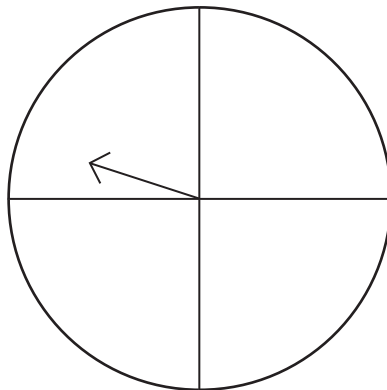
All four numbers on the spinner are **square** numbers.

Here is the table of possible scores.

		Number on first spin			
Number on second spin		0	9	9	16
		9	0	0	16
		9	0	0	16
		16	16	16	0

Write **one** possible set of numbers on the spinner to match the table.

[2 marks]



5

Turn over ►



10 a and b are different prime numbers.

$\sqrt{a + b}$ is also a prime number.

Work out **one** possible pair of values for a and b .

[2 marks]

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$a = \dots\dots\dots b = \dots\dots\dots$



11 $\xi = \{ 20, 40, 60, 80, 100, 120, 140, 160, 180, 200 \}$

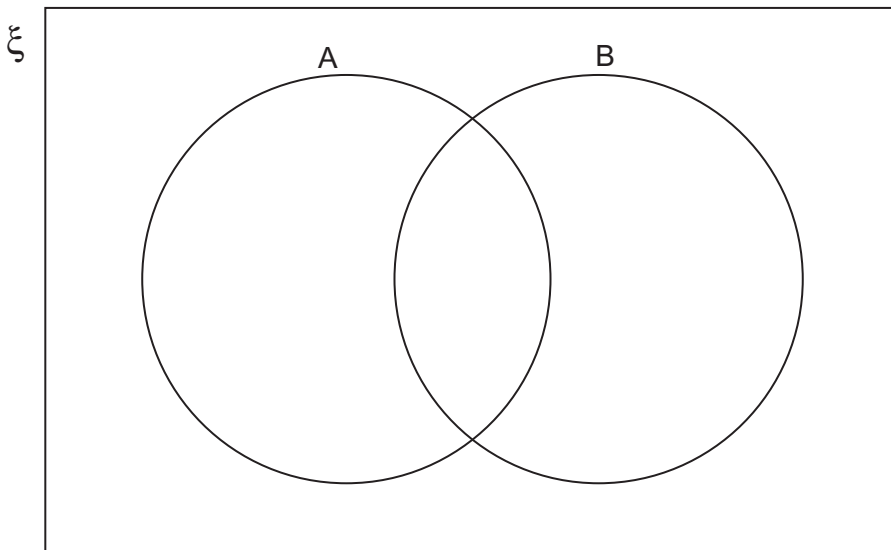
Set A = multiples of 3

Set B = multiples of 8

11 (a) Put these ten numbers into the diagram.

20 40 60 80 100 120 140 160 180 200

[2 marks]



11 (b) One of the ten numbers is chosen at random.

Show that

the probability of **not** choosing a multiple of 3

is the same as

the probability of choosing a multiple of 3 or 8 or both.

[1 mark]

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Turn over for the next question

Turn over ►



12 Solve $7(x + 2) = 3x + 4$

[3 marks]

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$x =$



13 500 counters are either red or blue.
The ratio of red counters to blue counters is 3 : 7

How many **more** blue counters are there than red counters?

[3 marks]

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Answer

14 Solve $3x < x + 10$

[2 marks]

.....

Answer

END OF SECTION A



There are no questions printed on this page

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

