

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	
TOTAL	



General Certificate of Secondary Education  
Foundation Tier  
June 2015

# Methods in Mathematics (Linked Pair)

93651F/A

**F**

**Unit 1 Algebra and Probability**  
**Section A Calculator**

Thursday 21 May 2015 9.00 am to 9.45 am

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>• a calculator</li> <li>• mathematical instruments.</li> </ul>	
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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 9.  
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.

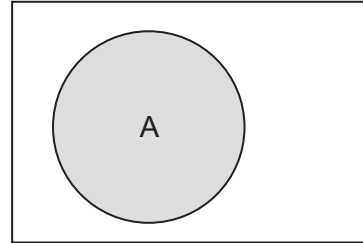
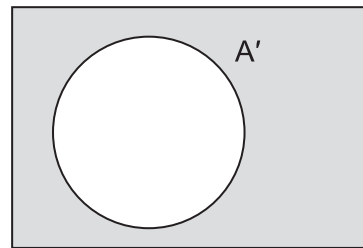
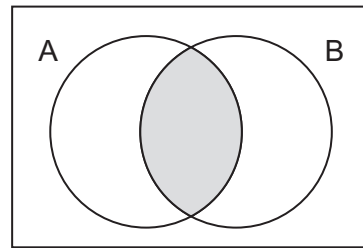
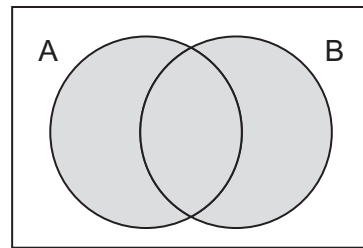


J U N 1 5 9 3 6 5 1 F A 0 1

## Formulae Sheet: Foundation Tier

## Set notation

A

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

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

1 (a) Write  $\frac{1}{4}$  as a decimal.

[1 mark]

Answer .....

1 (b) Write 30% as a decimal.

[1 mark]

Answer .....

1 (c) Work out  $\frac{3}{10} + 0.6$

[1 mark]

.....  
.....

Answer .....

1 (d) Circle the fraction which is **not** equal to 75%

[1 mark]

$\frac{3}{4}$                        $\frac{15}{20}$                        $\frac{25}{40}$                        $\frac{75}{100}$

Turn over for the next question

4

Turn over ►



**2 (a)** There are 10 textbooks on a shelf.

5 are Maths books.

3 are History books.

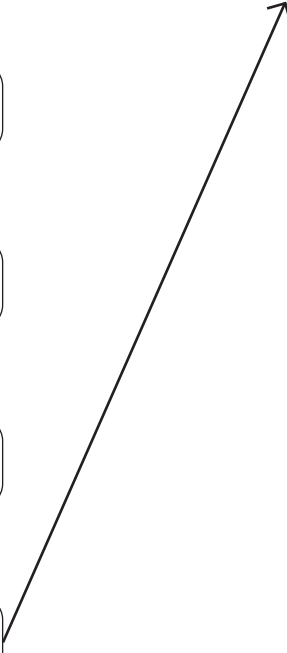
2 are French books.

You choose one book at random.

Match each event to the chance of the event happening.  
One has been done for you.

**[3 marks]**

Event	Chance
It is a Maths book	Impossible
It is a History book	Unlikely
It is <b>not</b> a French book	Evens
It is a Geography book	Likely
	Certain



**2 (b)** On another shelf there are only English books and Science books.  
There are 7 books in total.

Give a reason why the chance of choosing an English book is **not** even.

**[1 mark]**

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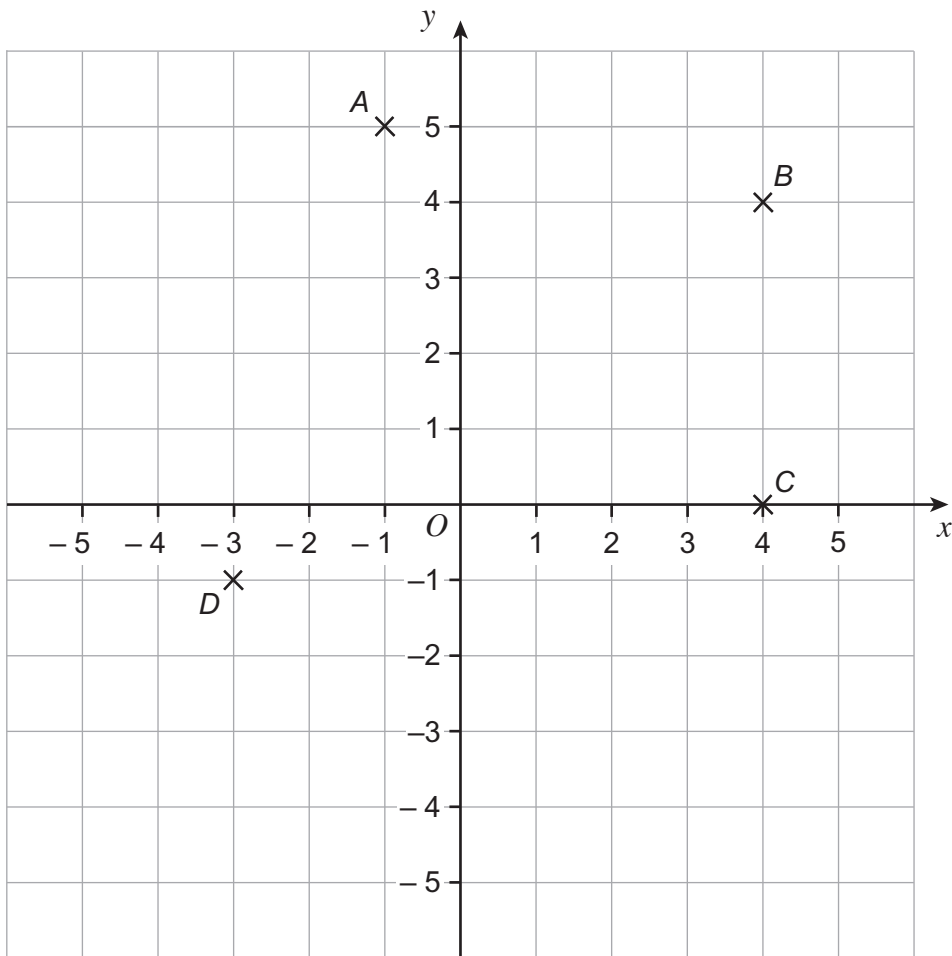
**Turn over for the next question**

4

**Turn over ►**



3 Four points are plotted on this grid.



For each point, tick the Yes box or the No box to say if the point fits the rule

$$x\text{-coordinate} + y\text{-coordinate} = 4$$

[4 marks]

	Yes	No
A	<input type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>
C	<input type="checkbox"/>	<input type="checkbox"/>
D	<input type="checkbox"/>	<input type="checkbox"/>



**4** For each statement, circle the correct ending.

**4 (a)**  $x + 4$  is

an equation

an expression

a formula

an inequality

[1 mark]

**4 (b)**  $y > 4$  is

an equation

an expression

a formula

an inequality

[1 mark]

**4 (c)**  $P = 2a + 2b$  is

an equation

an expression

a formula

an inequality

[1 mark]

**4 (d)**  $12a - 5a + 3a$  simplifies to

$7 + 3a$

$4a$

$10a$

$10a^3$

[1 mark]

Turn over for the next question



5 Here are nine numbers.

1 2 2 5 10 10 25 25 50

Sort the numbers into two groups, A and B, so that

the sum of the numbers in group A = the sum of the numbers in group B

**[3 marks]**

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Group A .....

Group B .....





**6 (a)** Use your calculator to work out  $1.7 \times (2.6 + 3.9)$  **[1 mark]**

.....

Answer .....

**6 (b)** Use your calculator to work out  $\sqrt[3]{9261}$  **[1 mark]**

Answer .....

**Turn over for the next question**



7 2025 is a square number.

Work out the next square number after 2025

[3 marks]

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

Answer .....

8 (a) Find **two** prime numbers that add together to give an **odd** number.

[1 mark]

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.....  
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.....

Answer ..... and .....

8 (b) Find **three** prime numbers that add together to give a **factor** of 30

[1 mark]

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.....

Answer ..... and ..... and .....



**8 (c)** Find **four** prime numbers that add together to give a **multiple** of 25

**[1 mark]**

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Answer ..... and ..... and ..... and .....

**\*9** Show that when you decrease 625 by 96% the answer is  $\sqrt{625}$   
You must show **all** your working.

**[3 marks]**

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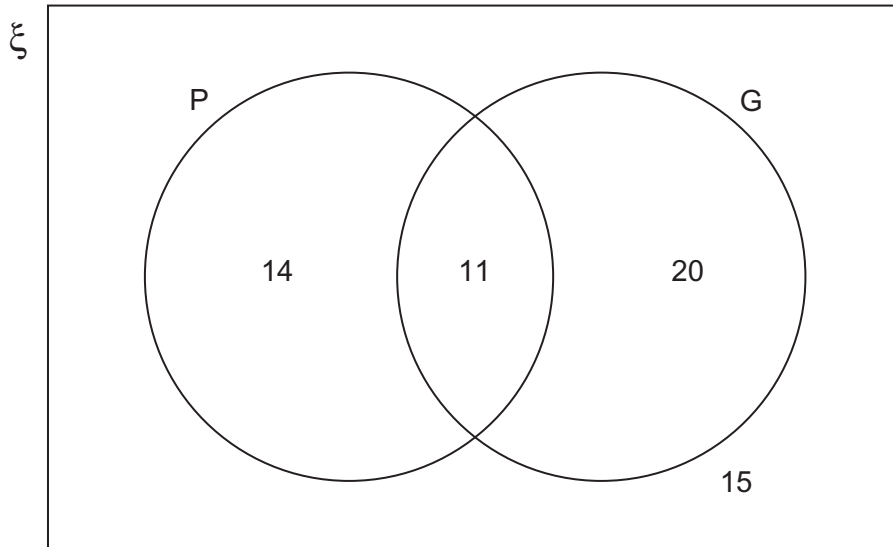
**Turn over for the next question**



**10** The Venn diagram shows information about 60 students.

P = students who play the piano

G = students who play the guitar



One of these 60 students is chosen at random.

**10 (a)** Work out the probability that the student plays the piano.

[1 mark]

Answer .....

**10 (b)** Work out the probability that the student plays the piano **and** the guitar.

[1 mark]

Answer .....



**10 (c)** One tenth of the 60 students are male and do not play the piano or the guitar.  
 Work out the probability that the student is female and does not play the piano or the guitar.

**[2 marks]**

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

Answer .....

**11** Simplify fully  $x(x + 3) - 4(x - 5)$

**[3 marks]**

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

Answer .....

**Turn over for the next question**



**12** A spinner has 3 sections.  
 One section is blue, one section is green and one section is red.  
 The spinner is spun 200 times.

**12 (a)** Here are some of the results for the first 50 spins.

Colour	Blue	Green	Red
Number of times spun	17		20

Work out the relative frequency for **green** after 50 spins.

**[2 marks]**

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.....

.....

Answer .....

**12 (b)** The table shows the relative frequencies for blue after 100, 150 and 200 spins.

Number of spins	100	150	200
Relative frequency for blue	0.32	0.42	0.39

Which relative frequency is the best estimate of the probability of spinning blue?  
 Give a reason for your answer.

**[1 mark]**

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**END OF SECTION A**



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