

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

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



General Certificate of Secondary Education  
Foundation Tier  
January 2012

## Methods in Mathematics (Linked Pair Pilot)

93651F/B

**F**

Unit 1 Algebra and Probability  
Section B Non-Calculator

Wednesday 11 January 2012 9.50 am to 10.35 am

For this paper you must have:

- mathematical instruments.



You must **not** use a calculator.

### 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.
- You must **not** use your calculator in Section B. Your calculator must remain on the floor under your seat.
- 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 15.  
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.

### Advice

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



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

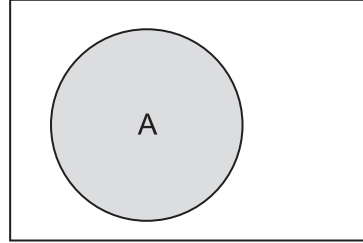
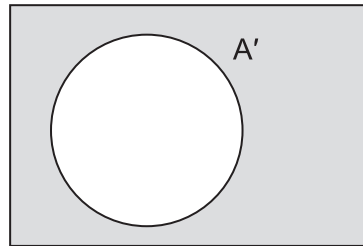
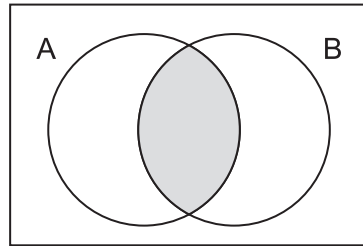
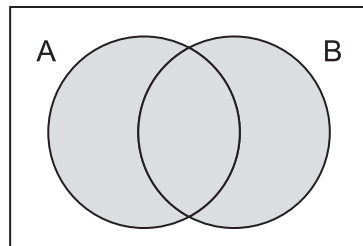
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## Formulae Sheet: Foundation Tier

## Set notation

A

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

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

**11 (a)** Work out  $800 - 26$

.....  
.....

Answer ..... (2 marks)

**11 (b)** Work out 25% of 48

.....  
.....

Answer ..... (1 mark)

**11 (c)** Work out  $(-4) + (-5)$

.....

Answer ..... (1 mark)

**11 (d)** What is the remainder when 450 is divided by 7?  
Show your working.

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

Answer ..... (3 marks)

**11 (e)** Work out  $12.4 + 0.76 + 5$

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

Answer ..... (2 marks)



**12** Put signs in the boxes to make these calculations correct.

You may use the signs  $+$ ,  $-$ ,  $\times$  and  $\div$

**12 (a)**      1  2  3 = 0

(1 mark)

**12 (b)**      1  2  3 = 5

(1 mark)

**12 (c)**      1  2  3 = -4

(1 mark)

**13** The numbers 1 to 8 are put in a grid.  
The positions of 1, 3 and 6 are shown.

1		6
3		

Each side of the grid must add up to 12.

Complete the grid.

(3 marks)



14 Here are three groups of numbers.

<p><b>Group A</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px;">4</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;">3</td> </tr> </table>	2	4	3		<p><b>Group B</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">5</td> <td style="padding: 5px;">7</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;">6</td> </tr> </table>	5	7	6		<p><b>Group C</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">8</td> <td style="padding: 5px;">10</td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;">9</td> </tr> </table>	8	10	9	
2	4													
3														
5	7													
6														
8	10													
9														

A number is moved from one group to another.  
The sum of the numbers in each group is now the same.

Which number is moved to which group?

.....

.....

.....

Answer Move ..... to Group ..... (3 marks)

\*15 Given the formula  $P = w + 4$

15 (a) (i) Find  $P$  when  $w = 8$

.....

Answer ..... (1 mark)

15 (a) (ii) Find  $w$  when  $P = 20$

.....

Answer ..... (2 marks)

15 (b) Given also the formula  $T = P + 2$

Use this and  $P = w + 4$  to give a formula that links  $T$  and  $w$ .  
Give your answer in its simplest form.

.....

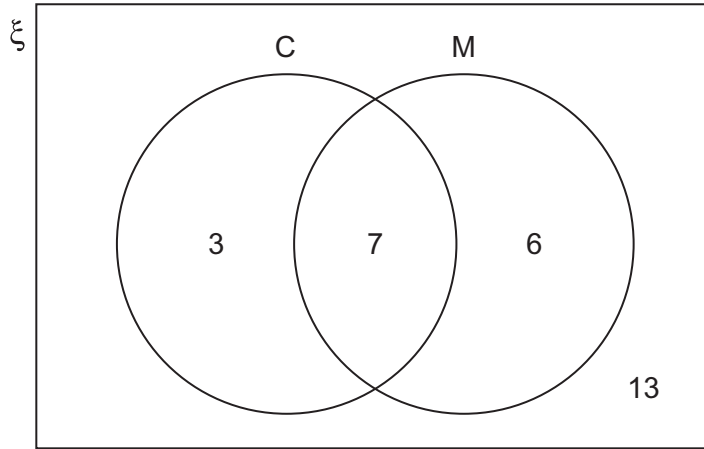
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Answer ..... (2 marks)





**18** The Venn diagram shows the number of students in Form 10X.  
 Set C shows the number of students in the Chess club.  
 Set M shows the number of students in the Maths club.



**18 (a)** How many students are there in Form 10X?

.....

Answer ..... (1 mark)

**18 (b)** One of the students is chosen at random.

**18 (b) (i)** What is the probability that the student is in the Chess club?

.....

Answer ..... (1 mark)

**18 (b) (ii)** What is the probability that the student is **not** in the Maths club?

.....

Answer ..... (1 mark)

**Turn over for next question**



19  $x$  and  $y$  are two numbers.

$$7x = 28 \quad \text{and} \quad 3x + 5y = 2$$

What is the value of  $2x + 4y$ ?

.....  
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.....

Answer ..... (4 marks)

20 Penny has a bag containing 6 marbles.  
All her marbles are red.

20 (a) Penny picks a marble from her bag.

What is the probability that the marble is blue?

Answer ..... (1 mark)

20 (b) Farook has a bag containing red marbles and blue marbles.  
The probability of picking a red marble from the bag is  $\frac{1}{5}$

What is the probability of picking a marble that is **not** red?

Answer ..... (1 mark)

20 (c) Penny puts all of her 6 marbles into Farook's bag.  
Farook now has the same number of red marbles as blue marbles.

How many marbles does Farook now have in his bag?

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.....  
.....

Answer ..... (3 marks)

**END OF QUESTIONS**

