

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 2014

Methods in Mathematics (Linked Pair Pilot)

93651F/A

F

Unit 1 Algebra and Probability
Section A Calculator

Thursday 19 June 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 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 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 Questions 2 and 12. 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 book.
- You are expected to use a calculator where appropriate.

Advice

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

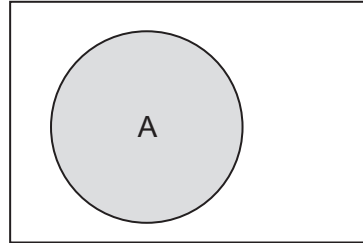
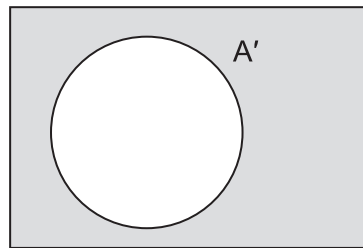
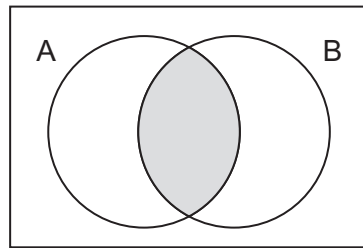
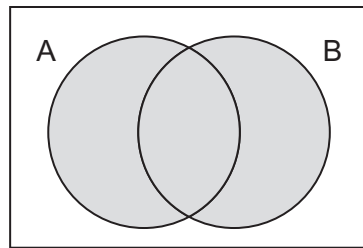


J U N 1 4 9 3 6 5 1 F A 0 1

Formulae Sheet: Foundation Tier

Set notation

A

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

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

1 (a) Circle the number that is fifteen thousand written in digits.

[1 mark]

150

1500

15 000

150 000

1 500 000

1 (b) Circle the fraction that is equivalent to $\frac{1}{2}$

[1 mark]

$\frac{3}{7}$

$\frac{4}{8}$

$\frac{5}{9}$

$\frac{6}{10}$

$\frac{7}{11}$

1 (c) Circle the percentage that is more than $\frac{1}{4}$ and less than $\frac{1}{2}$

[1 mark]

15%

20%

35%

55%

60%

Turn over for the next question



*2 The total number of days in four years is 1461

Is the total number of minutes in 1461 days more than two million?
You **must** show your working.

[3 marks]

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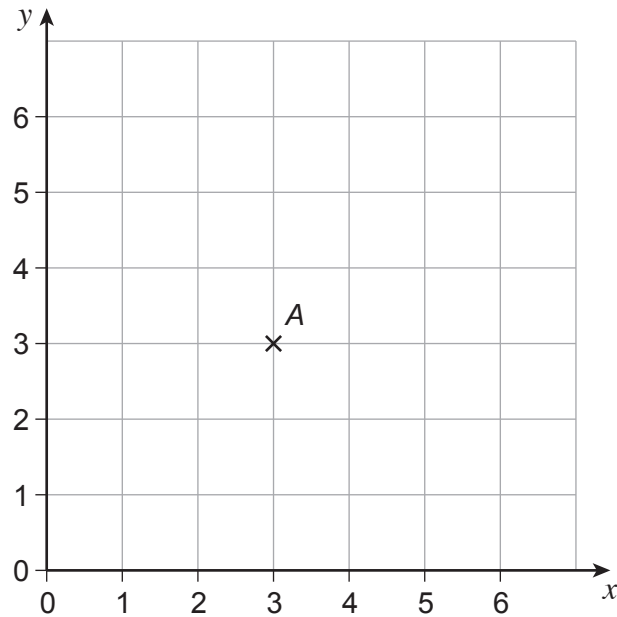
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- 3** Point A (3, 3) is plotted on the centimetre grid.



- 3 (a)** Plot B at (5, 1).

[1 mark]

- 3 (b)** C and D are each

2 cm from A
and
2 cm from B .

Plot C and D on the grid.

[2 marks]

- 3 (c)** Join C and D with a straight line.

Write down the coordinates of the midpoint of the line.

[1 mark]

Answer (..... ,)



4 A code is made with two 2-digit numbers.

The first 2-digit number is a square number bigger than 30
The second 2-digit number is a factor of 122
The four digits are all **different**.

What is the code?

[3 marks]

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Answer



5 (a) Work out 11% of 1400

[2 marks]

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.....
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Answer

5 (b) Work out $\frac{4}{5}$ of 295

[2 marks]

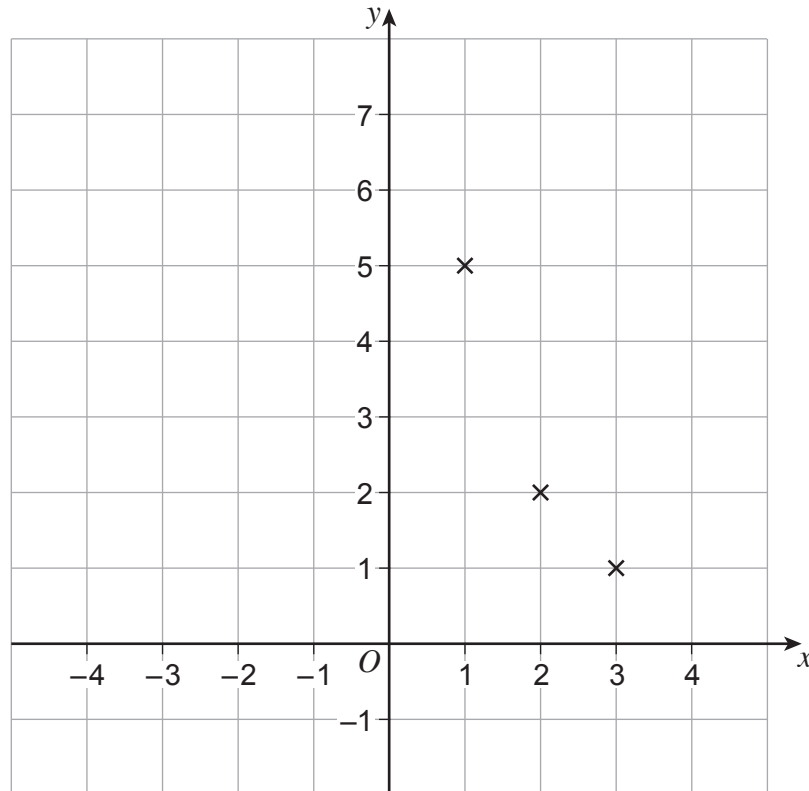
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Answer

Turn over for the next question



6



6 (a) Three points are shown on the grid.

Circle the point which does **not** lie on the line $2x + y = 7$

[1 mark]

6 (b) Work out the coordinates of the point where the line $2x + y = 7$ crosses the x -axis.

[2 marks]

Answer (..... ,)



7 There are 30 passengers on a bus.
13 of them are **male**.

At the next stop 8 people get off the bus and nobody gets on.
The probability that a passenger, picked at random, is **male** is now $\frac{1}{2}$

How many of the people who got off the bus were **female**?

[3 marks]

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

Answer

8 Solve $6x - 11 = 4x + 7$

[3 marks]

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.....

$x =$



9 180 counters are red or blue.
The ratio of red to blue is 4 : 1

9 (a) How many of the counters are red?

[2 marks]

.....
.....

Answer

9 (b) What percentage of the counters are red?

[2 marks]

.....
.....

Answer %



10 (a) In a statistical experiment a fair, ordinary dice is rolled.

Tick a box to show the correct ending to the sentence below.

[1 mark]

When this statistical experiment is repeated you will

always get the same outcome

usually get the same outcome

usually get a different outcome

always get a different outcome

10 (b) Tick a box to show the correct ending to the sentence below.

[1 mark]

An estimate of probability based on a statistical experiment is more reliable with

more trials

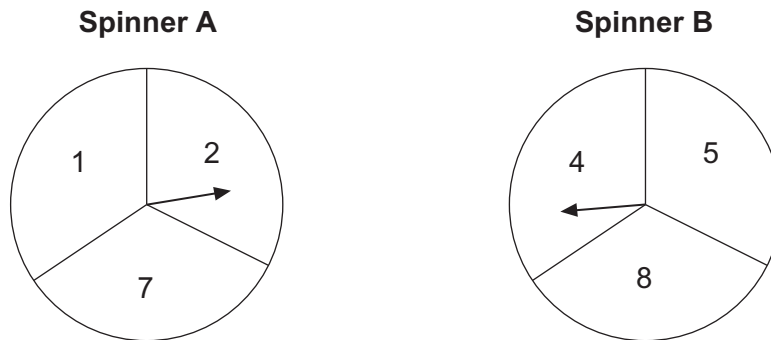
fewer trials

more time between trials

less time between trials



11 (a) Here are two fair spinners.



In a game, both spinners are spun and the **higher** number is the final score.
For example, if 2 and 4 are spun the score is 4

Complete the table to show the possible scores when both spinners are spun.

[2 marks]

Spinner A		1	2	7
Spinner B	4		4	
	5			
	8			



11 (b) The same game is played with spinners C and D.

Using spinners C and D the probability of each score is shown below.

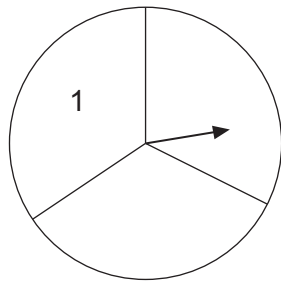
Score	1	2	3	4	5	6
Probability	0	0	$\frac{2}{9}$	$\frac{2}{9}$	$\frac{2}{9}$	$\frac{3}{9}$

Complete the numbers on spinners C and D.

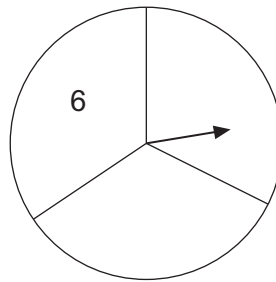
[2 marks]

Practise on these spinners.

Spinner C

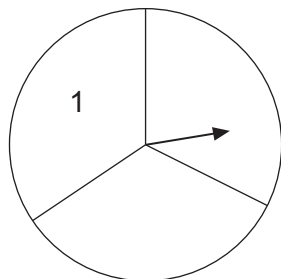


Spinner D

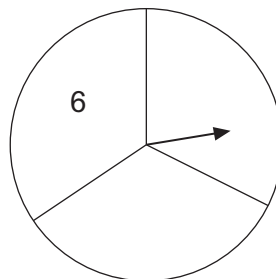


Put your final answer on these spinners.

Spinner C



Spinner D



12 (a) Put four **different** prime numbers into the boxes to make the calculation true. **[2 marks]**

$$\square + \square + \square = \square$$

***12 (b)** Why can 2 never be one of the four prime numbers used in part (a)? **[2 marks]**

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END OF SECTION A



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