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	

AQA

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

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 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.

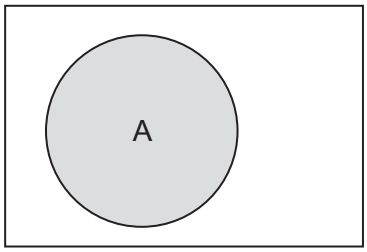
Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 40.
- The quality of your written communication is specifically assessed in Questions 2 and 12. These questions are indicated with an asterisk (*).
- You may ask for more answer paper, graph paper and tracing 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.

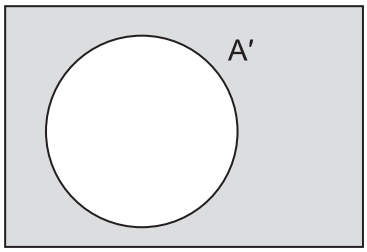
Formulae Sheet: Foundation Tier

Set notation

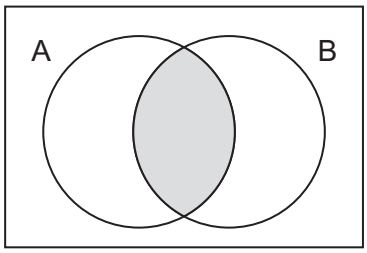
A



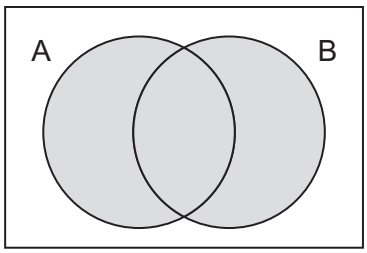
A′



$A \cap B$



$A \cup B$



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

3

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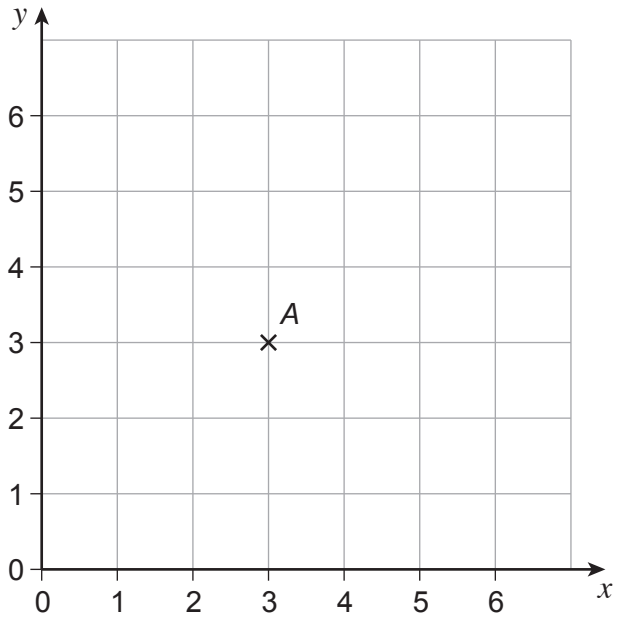
3 Point *A* (3, 3) is plotted on the centimetre grid.



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 (..... , ...)

7

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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Answer .....

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

[2 marks]

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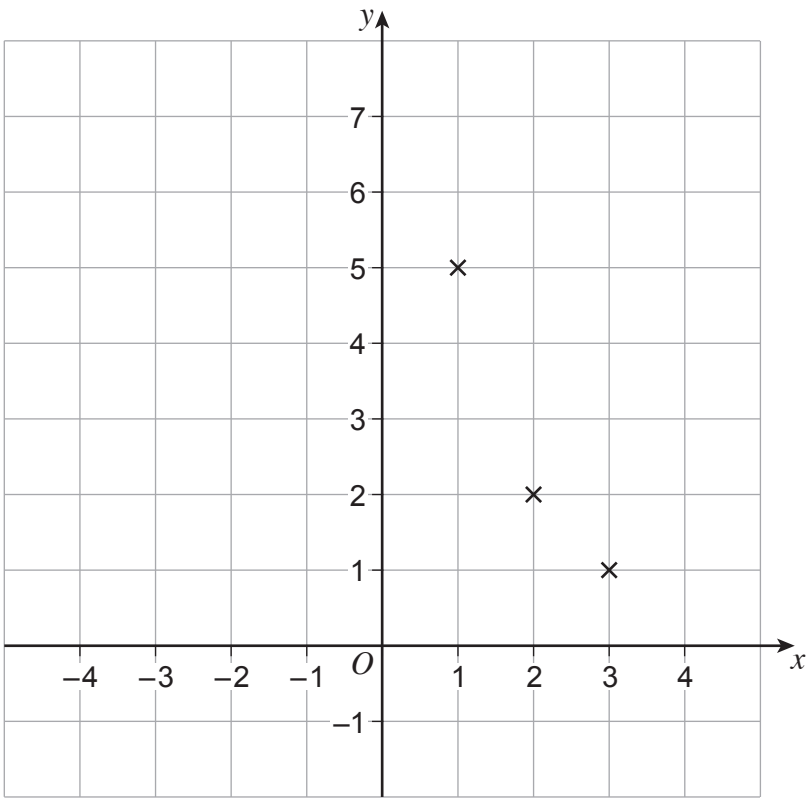
Answer .....

Turn over for the next question

7

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

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 ☐

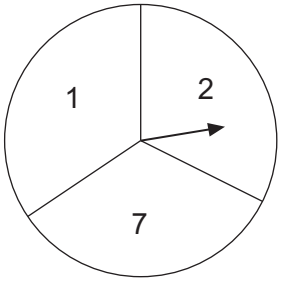
more time between trials ☐

less time between trials ☐

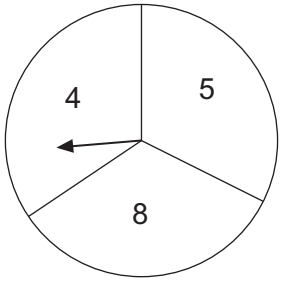
6

11 (a) Here are two fair spinners.

Spinner A



Spinner B



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

Spinner B	1	2	7
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.

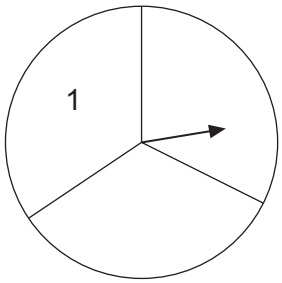
Score	1	2	3	4	5	6
Probability	0	0	$\frac{2}{9}$	$\frac{2}{9}$	$\frac{2}{9}$	$\frac{3}{9}$

Complete the numbers on spinners C and D.

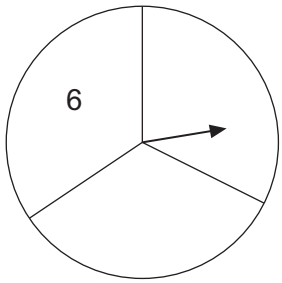
[2 marks]

Practise on these spinners.

Spinner C

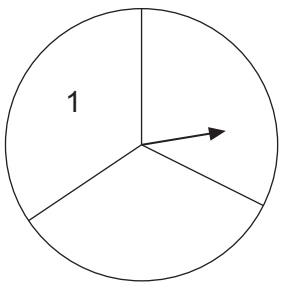


Spinner D

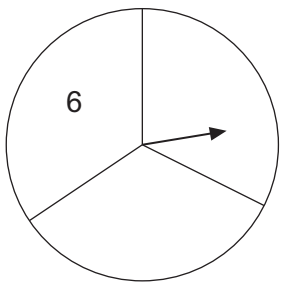


Put your final answer on these spinners.

Spinner C



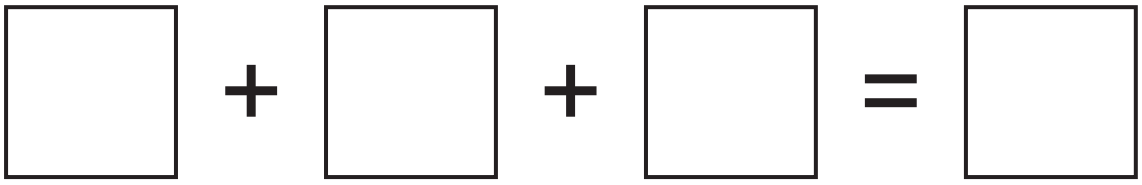
Spinner D



4

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

[2 marks]



***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

4

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