

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
3	
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10 – 11	
12 – 13	
TOTAL	



General Certificate of Secondary Education
Foundation Tier
June 2013

Methods in Mathematics (Linked Pair Pilot)

93651F/A

Unit 1 Algebra and Probability
Section A Calculator

F

Thursday 20 June 2013 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 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 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 Questions 10 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.



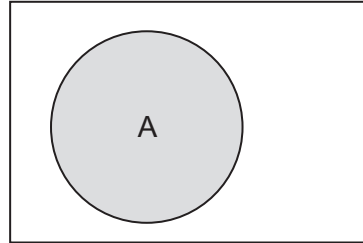
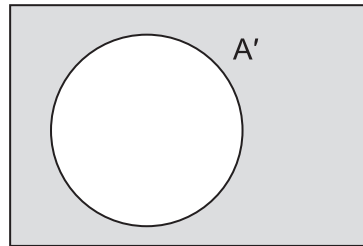
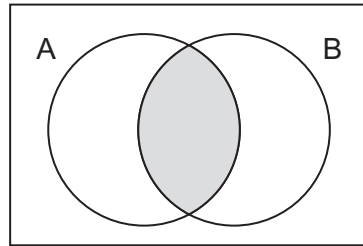
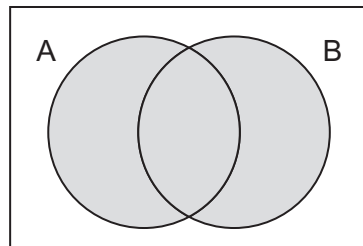
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93651F/A

Formulae Sheet: Foundation Tier

Set notation

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

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

1 (a) Shade 50 % of the grid.

(1 mark)

1 (b) Work out 25 % of 120

.....
.....

Answer (1 mark)

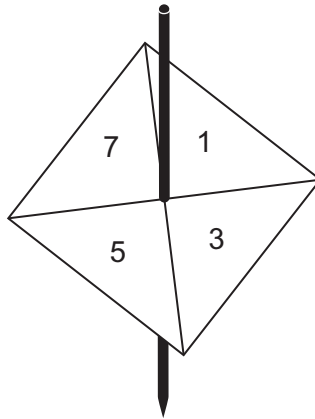
1 (c) Write 80 % as a decimal.

Answer (1 mark)

Turn over for the next question



2 (a) Here is a fair spinner.



Circle the word that describes the chance of the spinner landing on an **odd** number.

Impossible

Unlikely

Evens

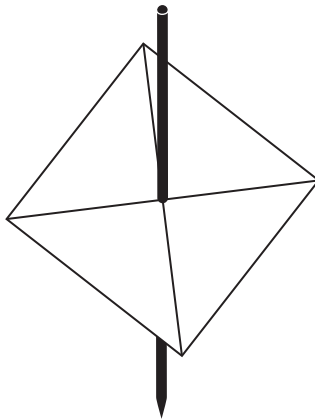
Likely

Certain

(1 mark)

2 (b) Put numbers on this fair spinner so that

- it is impossible to land on an odd number
- it is likely to land on a multiple of 10.



(2 marks)



- 3 The numbers 1 to 12 are put in a grid.
The positions of 2, 3, 6, 7, 8 and 12 are shown.

2			8
12			
6			
		3	7

Each of the four sides of the grid must add up to 25.

Complete the grid using the numbers

1, 4, 5, 9, 10 and 11.

(3 marks)

6

Turn over ►



4 Cards with the letters L, M and P are placed next to each other.

4 (a) List all the possible orders of the letters.
One has been done for you.

L	M	P

(2 marks)

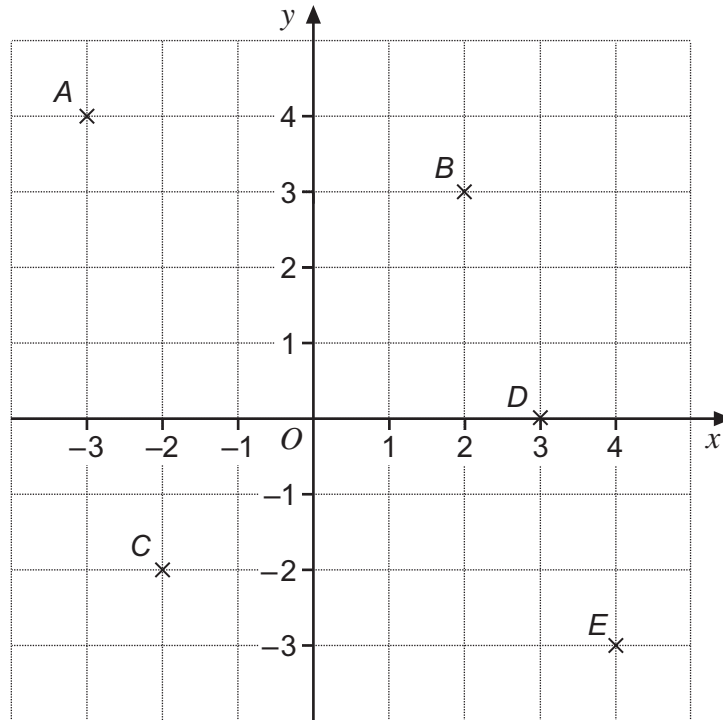
4 (b) The three cards are placed next to each other at random.

What is the probability that L is the middle letter?

Answer (1 mark)



5



5 (a) Which point has coordinates $(4, -3)$?

Answer (1 mark)

5 (b) Which point has a negative x -coordinate and a negative y -coordinate?

Answer (1 mark)

5 (c) A point, F , has the same x -coordinate as B .
It has a negative y -coordinate.

Plot a possible position of F on the grid.

(1 mark)



- 6 (a)** Two numbers are **added**.
The result is the same as one of the numbers.

What could the two numbers be?

Answer and (1 mark)

- 6 (b)** Two numbers are **multiplied**.
The result is the same as one of the numbers.

What could the two numbers be?

Answer and (1 mark)



7 (a) $P = 4x + 5y$

Work out the value of P when $x = 2$ and $y = 6$

.....
.....

Answer (2 marks)

7 (b) $Q = 2x - 3y$

x and y are both positive whole numbers less than 10.

What is the greatest possible value of Q ?

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

Answer (2 marks)

8 (a) Work out $\sqrt{1.96}$

Answer (1 mark)

8 (b) Work out $\frac{10.6 - 7.45}{2.5}$

Answer (1 mark)



9 This is how points are scored in a game.

Win scores 5 points

Draw scores 1 point

Loss scores 0 points

9 (a) How many points are scored for 7 wins and 2 draws?

.....
.....

Answer points (2 marks)

9 (b) Complete this table for 30 games.

Games Played	Games Won	Games Drawn	Games Lost	Total Points Scored
30		8		103

(3 marks)



***10** Year 10 has 210 students.
112 are boys.

Year 11 has 240 students.
132 are boys.

Which year group has the greater proportion of boys?
You **must** show your working.

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

(4 marks)

11 150 people work in an office.
The ratio of men to women is 2 : 3

How many **men** are there?

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

Answer (2 marks)



***12 (a)** $T = 5n - 2$

n is an **odd** number.

Tick the correct statement.

T is always even

T is always odd

T could be even or odd

Give a reason for your answer.

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

(2 marks)

12 (b) Rearrange $T = 5n - 2$ to make n the subject.

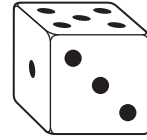
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Answer (2 marks)



13

An ordinary six-sided dice is rolled 300 times.
It lands on five 120 times.



Do you think the dice is fair?
Give a reason for your answer.

.....

.....

.....

.....

(2 marks)

END OF SECTION A

6



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