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 – 15	
TOTAL	

AQA

General Certificate of Secondary Education
Foundation Tier
November 2014

Methods in Mathematics (Linked Pair) 93651F/B

F

Unit 1 Algebra and Probability
Section B Non-Calculator

Monday 10 November 2014 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 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.
- 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.

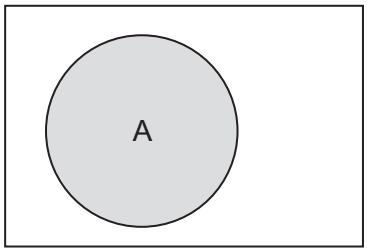
Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 40.
- The quality of your written communication is specifically assessed in Questions 23 and 28.
  These questions are indicated with an asterisk (*)
- You may ask for more answer paper, graph paper and tracing paper.
  These must be tagged securely to this answer book.

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

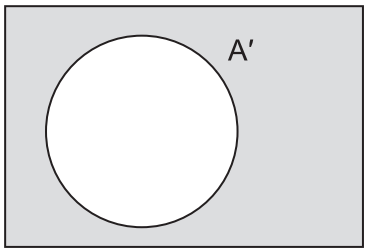
Formulae Sheet: Foundation Tier

Set notation

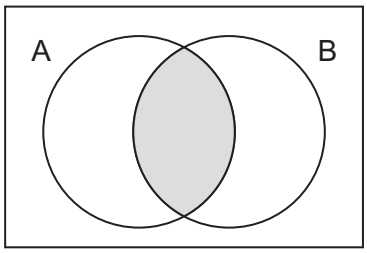
A



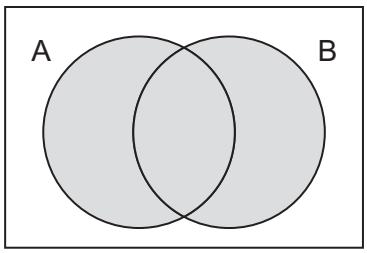
A′



$A \cap B$

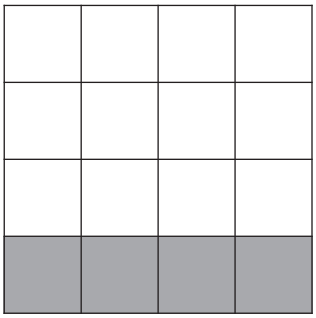


$A \cup B$



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

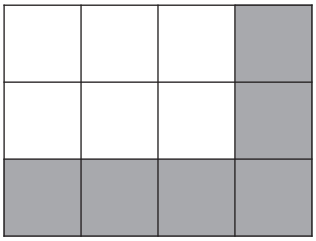
15 (a) What percentage of this square grid is shaded?



[1 mark]

Answer ..... %

15 (b) Here is another grid.



How many **more** squares need to be shaded so that 75% of this grid is shaded?

[1 mark]

Answer .....

2

16 (a) Complete the boxes to make the calculations correct.

$24 + \square = 40$

$\square \times 5 = 70$

$\square \div 6 = 15$

[3 marks]

16 (b) Work out 264×17

[3 marks]

.....

.....

.....

.....

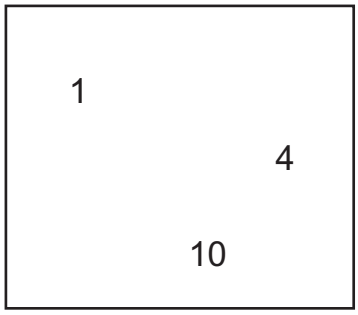
.....

.....

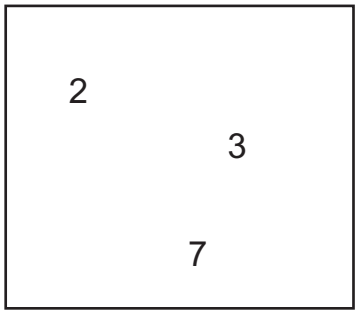
Answer .....

17 Here are two groups of numbers.

Group A



Group B



Put **one** new number in Group A and **one** new number in Group B so that

- all the numbers are **different**
- the **sum** of the numbers in Group A is the same as the **sum** of the numbers in Group B.

[2 marks]

.....

.....

.....

.....

Number put in Group A .....

Number put in Group B .....

Turn over for the next question

8

18 (a) Here are all the **2-digit** whole numbers that can be made using only digits 3 and 4

33 34 43 44

Write down all the **2-digit** whole numbers that can be made using only digits 5, 6 and 7

[2 marks]

18 (b) A **2-digit** whole number made using only digits 5, 6 and 7 is selected at random.

Work out the probability that the number is **greater** than 60

[1 mark]

Answer .....

19 (a) Work out 10% of 350

[1 mark]

.....

Answer .....

19 (b) Work out 1% of 350

[1 mark]

.....

Answer .....

19 (c) Work out 21% of 350

[1 mark]

.....

.....

.....

.....

Answer .....

Turn over for the next question

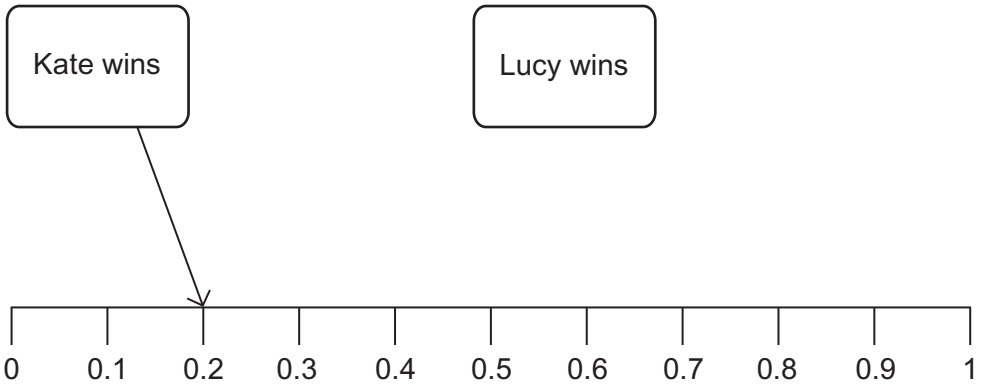
6

20 Kate and Lucy take part in a competition.

The probability of Kate winning is shown on the probability scale.

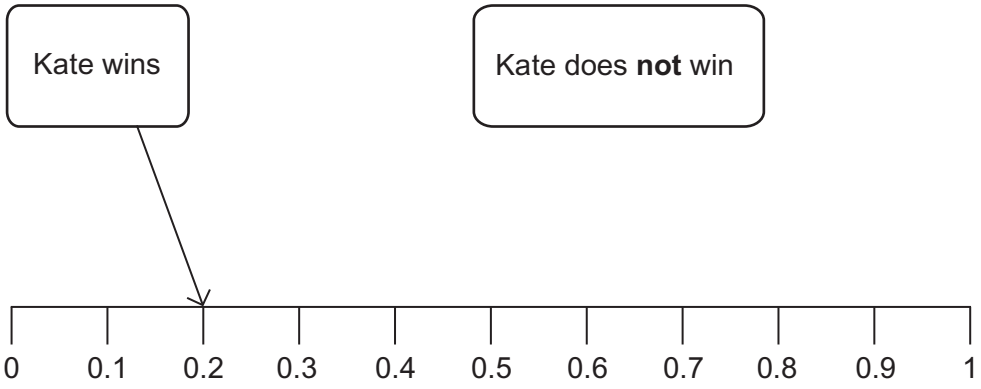
20 (a) Lucy is twice as likely to win as Kate.

Draw an arrow to show the probability that Lucy wins.



[1 mark]

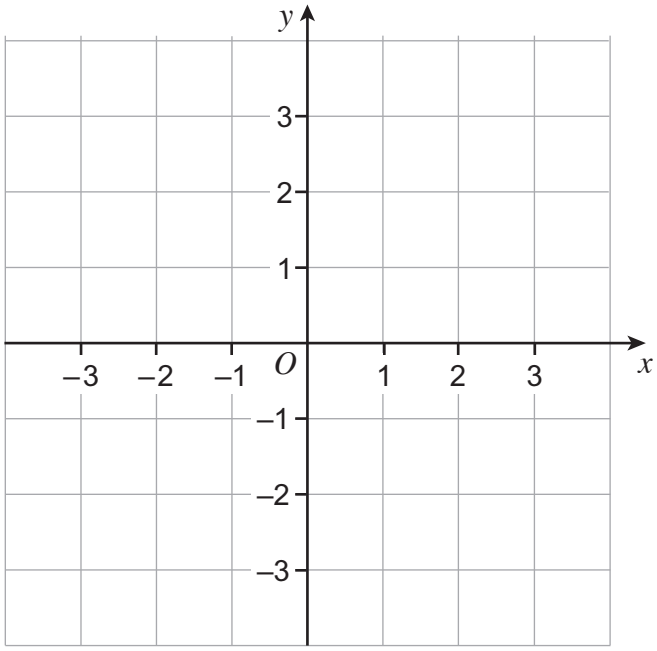
20 (b) Draw an arrow to show the probability that Kate does **not** win.



[1 mark]

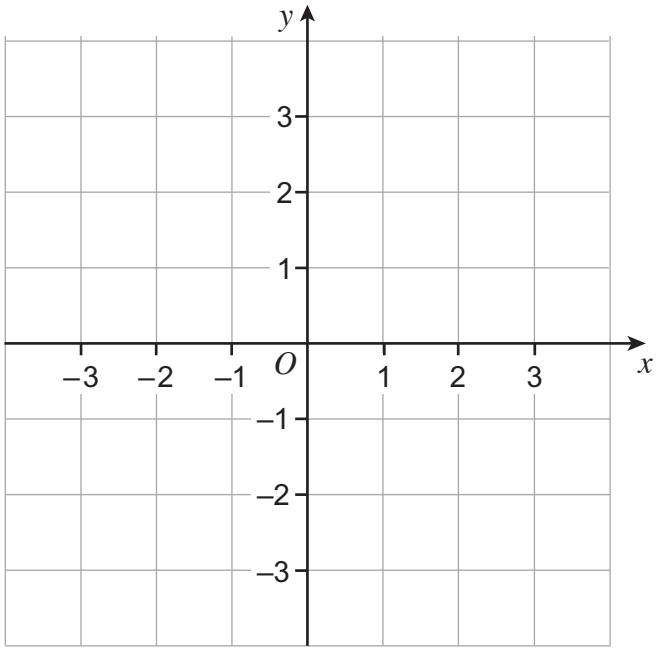
21 (a) Plot **three** points that lie on the line with equation $x = 2$
Mark each point with a cross.

[1 mark]



21 (b) Plot **three** points that lie on the line with equation $y = -1$
Mark each point with a cross.

[1 mark]



4

22 Work out 0.6 + 0.27 – 0.08

[2 marks]

.....

.....

.....

.....

.....

.....

Answer .....

23 n, $n + 1$ and $n + 2$ are three consecutive whole numbers.

***23 (a)** The smallest and largest of the numbers are added.

Write a formula for the sum, S, of these **two** numbers.

[2 marks]

.....

Answer .....

23 (b) Show that the sum of the smallest and largest numbers is always **double** the middle number.

[1 mark]

.....

.....

.....

24 (a) Work out (–8) + (–3)

[1 mark]

.....

Answer .....

24 (b) Work out $6 \times (-4)$

[1 mark]

.....

Answer .....

24 (c) Work out $\frac{-14}{-2}$

[1 mark]

.....

Answer .....

Turn over for the next question

8

25 $\frac{33}{40} - \frac{18}{40} = \frac{x}{8}$

Work out the value of x.
You **must** show your working.

[2 marks]

.....

.....

.....

.....

.....

.....

Answer .....

26 Circle the correct answer.

26 (a) 4 more than n is

$4n$ n^4 $n + 4$ $4 - n$

[1 mark]

26 (b) $6x + 3$ factorises to

$3(x + 1)$ $3(2x + 1)$ $6(x + 1)$ $6(x + 3)$

[1 mark]

26 (c) $E = VR$ rearranges to

$R = E - V$ $R = V - E$ $R = \frac{E}{V}$ $R = \frac{V}{E}$

[1 mark]

Turn over for the next question

5

27 Some people are at a concert.

Half are women.

One-sixth are men.

The rest are children.

There are 40 children.

How many **men** are at the concert?

[4 marks]

.....

.....

.....

.....

.....

.....

.....

.....

.....

Answer .....

***28** Is 80% of $0.2 \times 4\frac{1}{2}$ greater than $\frac{3}{4}$?

You **must** show your working.

[3 marks]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

END OF QUESTIONS

7

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED