AQA

General Certificate of Secondary Education
Foundation Tier
June 2015

Methods in Mathematics (Linked Pair)

93651F/B

F

Unit 1   Algebra and Probability
Section B   Non-Calculator

Thursday 21 May 2015   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 18 and 20.
  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.

93651F/B

Formulae Sheet: Foundation Tier

Set notation

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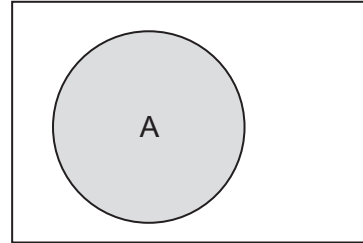
A'
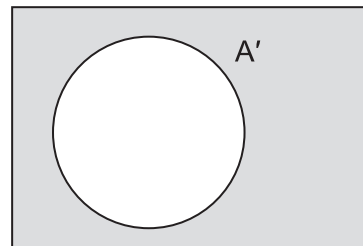
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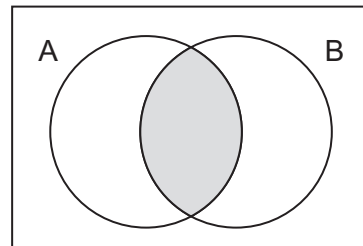
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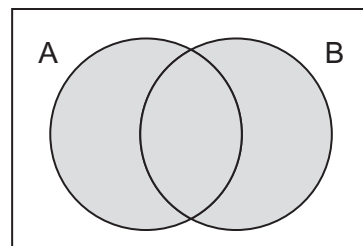
Answer **all** questions in the spaces provided.

13 (a) Circle the number   thirty thousand and fourteen.

3014   30 014   300 014   3 000 014

[1 mark]

13 (b) Circle the value of the digit 5 in the number   2507

5 thousandths   5 hundredths   5 hundreds   5 thousands

[1 mark]

13 (c) An **odd** number has five digits.
Three digits are odd and two digits are even.

Write down the largest number it could be.

[2 marks]

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Answer ....

Turn over for the next question

14 Three **different** whole numbers multiply to give 112

Work out one possible set of three numbers.

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$$\boxed{} \times \boxed{} \times \boxed{} = 112$$

[2 marks]

15 (a)   Work out   108 ÷ 6

[1 mark]

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Answer ....

15 (b)   Work out   −2 − 7 + 9

[1 mark]

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Answer ....

15 (c)   Work out   25% of 30

[1 mark]

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Answer ....

Turn over for the next question

5

Turn over ▶

16 (a) A fair coin can land on Heads (H) or Tails (T).
Two fair coins are thrown.

By listing all the ways the coins can land,

mark on the line the probability of both coins landing on Heads.

[2 marks]

0	0.25	0.5	0.75	1
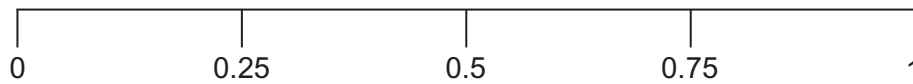
16 (b) The probability of throwing a head with a biased coin is 0.3

What is the probability of throwing a tail with this coin?

[1 mark]

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Answer ....

17 (a) Work out   2.8 − 1.54

[1 mark]

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Answer ....

17 (b) Work out $-2 \times -3 \times -4$

[1 mark]

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Answer ....

17 (c) Work out $\dfrac{1}{9} + \dfrac{2}{3}$

[2 marks]

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Answer ....

7

Turn over ▶

18 (a)   Complete the table of values for $y = 3 - 2x$

[1 mark]

x	0	1	2	3	4
y	3	1		–3	–5

18 (b)   On the grid draw the graph $y = 3 - 2x$ for values of x from 0 to 4

[2 marks]
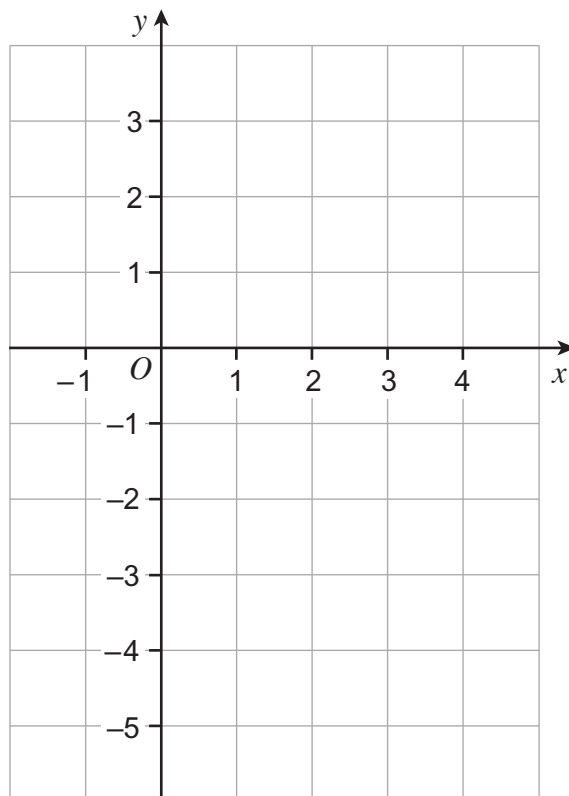
18 (c)   Here is a table of values for a straight line graph.

x	0	1	2	3	4
y	0	3	6	9	12

Work out the equation of the graph.

[2 marks]

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Answer ....

Turn over for the next question

5

Turn over ▶

19 400 tickets are sold in a raffle.
The tickets are numbered 1 to 400

Put the correct number in the box to make the statement true.

The probability that the winning number is greater than [   ] is 0.1

[2 marks]

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*20 $m = 1^3 + 2^3 + 3^3 + 4^3$

        $n = (1 + 2 + 3 + 4)^2$

        Tick the correct statement.
You **must** show working to support your answer.

        m is less than n ☐

        m is equal to n ☐

        m is greater than n ☐

[3 marks]

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21   Solve $7x + 1 = 3 - x$

[3 marks]

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        $x = $ ....

8

Turn over ▶

22   Jon and Zac are athletes.

Jon has won 53% of his races.

Zac has won 110 of his 200 races.

Who has won the greater proportion of his races?
You **must** show your working.

[2 marks]

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23   A spinner has only even numbers.
A different spinner has only odd numbers.

Both spinners are spun and the two numbers are added.

What is the probability that the total is odd?
Give a reason for your answer.

[2 marks]

Answer ....

Reason ....

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24 x is greater than –3 and less than 5

24 (a)   Write the information as a single inequality.

[2 marks]

Answer ....

24 (b)   Work out all the possible **integer** values of $\frac{x}{2}$

[2 marks]

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Answer ....

Turn over for the next question

8

Turn over ▶

25 (a)   A box contains only red pens and blue pens.

The ratio   red : blue = 3 : 2

There are 24 **red** pens.

Work out the number of pens in the box.

[2 marks]

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Answer ....

25 (b)   Another box contains only green pens and black pens.

$\frac{3}{4}$ of the pens are **green**.

What is the ratio of green pens to black pens?

[1 mark]

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Answer .... : ....

END OF QUESTIONS

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