AQA

GCSE
METHODS IN MATHEMATICS (LINKED PAIR)

F

Foundation Tier   Unit 1   Algebra and Probability (Section B)

Wednesday 2 November 2016   **Morning**   Time allowed: 45 minutes

Materials
For this paper you must have:
● mathematical instruments.
You must **not** use a calculator.

Instructions
● Use black ink or black ball-point pen. Draw diagrams in pencil.
● 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 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
● You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

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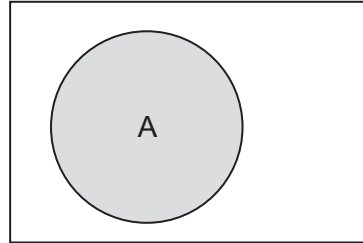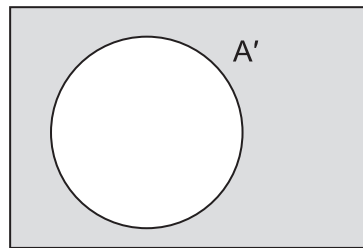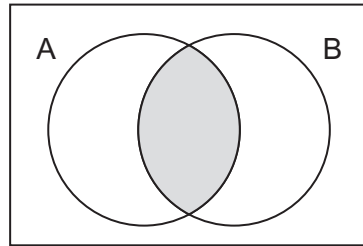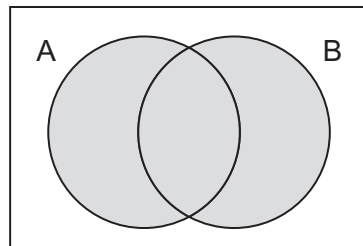● In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

Set notation

A

A′

A ∩ B

A ∪ B

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

13 You are given that $\qquad$ 27 × 12 = 324

13 (a) Work out $\qquad$ 270 × 12

[1 mark]

_____

Answer _____

13 (b) Work out $\qquad$ 27 × 24

[1 mark]

_____

_____

Answer _____

Turn over for the next question

Turn over ▶

14 (a)   Work out $927 - 391$

[1 mark]

Answer _____

14 (b)   Work out 148×7

[1 mark]

Answer _____

14 (c)   Work out $858 \div 6$

[1 mark]

Answer _____

14 (d)   Work out $16 + 13 \times 5$

[2 marks]

Answer _____

15 (a)   A number between 40 and 50 is divided by 7
The remainder is 4

Work out the number.

[1 mark]

Answer _____

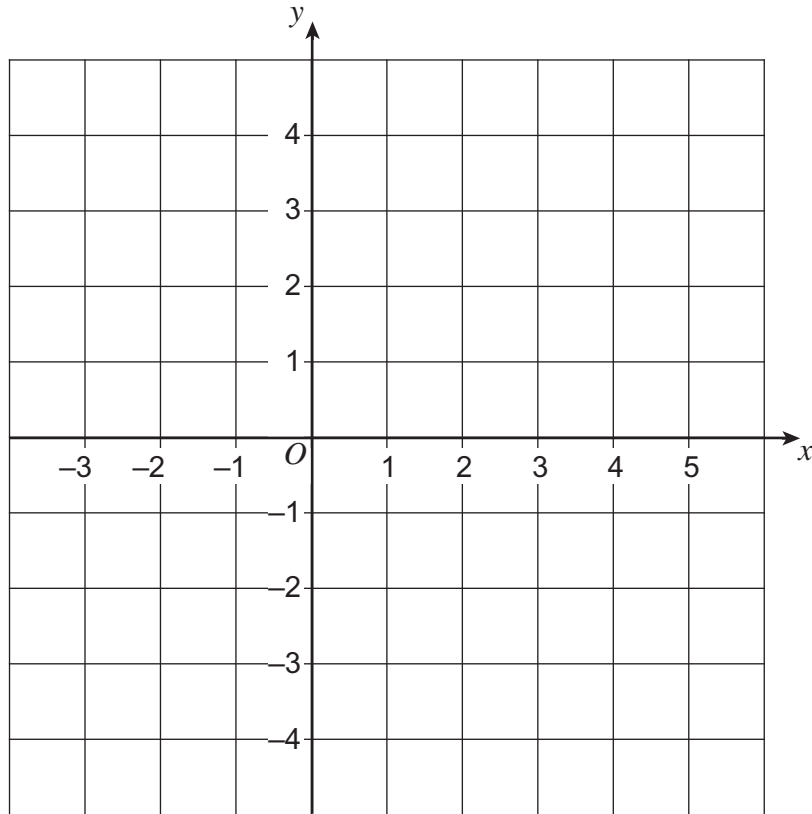**15 (b)**   20 is divided by a number.
The remainder is 2

Work out **all** the possible numbers 20 could have been divided by.

[2 marks]

Answer _____

Turn over ▶

8

16

D, *E* and *F* are three points.

$\qquad$ *D* is (1, –1)

$\qquad$ *E* is (2, 2)

$\qquad$ *DF = DE*

The coordinates of *F* are whole numbers.

Work out **three** possible points for *F*.

[3 marks]

_____

_____

Answer (_____ , _____) (_____ , _____) (_____ , _____)

17 (a) 40% of the people in room J are men.
30% of the people in room K are men.

Pat says,

There are more men in room J than room K

Is Pat correct?
Tick a box.
Give a reason for your answer.

Yes ☐   No ☐   Cannot tell ☐

[1 mark]

Reason _____

_____

17 (b) There are 100 people in room L.
70 are men.

There are 300 people in room M.
The percentage of men in room M is the same as in room L.

Work out the number of men in room M.

[2 marks]

_____

_____

_____

Answer _____

18 (a)   A box contains some pens.

The probability of choosing a black pen is $\frac{11}{15}$

What is the probability of choosing a pen that is **not** black?

[1 mark]

Answer _____

18 (b)   A different box contains only red pens, blue pens and green pens.
13 are red and 20 are blue.

The probability of choosing a blue pen at random is $\frac{1}{2}$

Work out the probability of choosing a **green** pen at random.

[3 marks]

Answer _____

19 (a)   Circle the expression below that simplifies to $6y$

[1 mark]

$2 + 4 + y$ $y + 2y + 3y$ $2y \times 3y$ $y \times y \times y \times y \times y \times y$

19 (b)   Write an expression in the box to make the statement true.
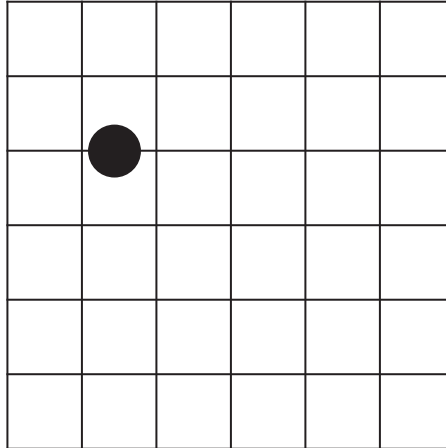
[3 marks]

$$5x + 13 \quad + \quad \boxed{} \quad = \quad 2(4x + 3)$$

Turn over for the next question

8

Turn over ▶

20 A coin is rolled onto a square grid 10 times.

The place the coin stops is recorded each time.

The table shows the results.

	Coin stops completely inside one square	**Coin stops on at least one line**
Number of times	1	9

20 (a) Work out the relative frequency of the coin stopping completely inside one square.

[1 mark]

Answer _____

20 (b) Is your relative frequency in part (a) likely to be a good estimate of the probability of the coin stopping completely inside one square?
Give a reason for your answer.

[1 mark]

20 (c)　　The coin is rolled 10 more times.

Which statement is correct?
Tick a box.

[1 mark]

The results will definitely be the same as the first 10　　☐

The results will probably be the same as the first 10　　☐

The results will probably be different from the first 10　　☐

The results will definitely be different from the first 10　　☐

Turn over for the next question

Turn over ▶

21 (a) Work out the value of 2^4

[1 mark]

Answer _____

21 (b) a and b are whole numbers.
$a^b = 64$

Work out three possible pairs of values for a and b.

[2 marks]

Answer $a =$ _____ $b =$ _____

$a =$ _____ $b =$ _____

$a =$ _____ $b =$ _____

22 A footballer scored all her goals with her left foot, right foot or head.

She scored,

$\frac{1}{4}$ with her left foot

$\frac{2}{3}$ with her right foot

7 with her head.

How many goals did she score with her **right** foot?

[5 marks]

_____

_____

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Answer _____

Turn over for the next question

8

Turn over ▶

23 You can use these steps to work out the sum of consecutive integers starting with 1

Steps	Example To work out the sum of the integers from 1 to 8 $(1 + 2 + 3 + 4 + 5 + 6 + 7 + 8)$
Write down the biggest integer	8
Add 1	9
Multiply these numbers	$8 \times 9 = 72$
Divide by 2	$72 \div 2 = 36$
This is the answer	36

23 (a) Work out the sum of the integers from 1 to 30

[2 marks]

_____

_____

_____

Answer _____

23 (b)   The sum of the integers from 1 to 50 is 1275

Work out the sum of the integers from 51 to 100

[3 marks]

_____

_____

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_____

_____

Answer _____

5

END OF QUESTIONS

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED