AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

# GCSE
# METHODS IN MATHEMATICS (LINKED PAIR)

**F**

## Foundation Tier Unit 1 Algebra and Probability (Section B)

Thursday 26 May 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 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.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

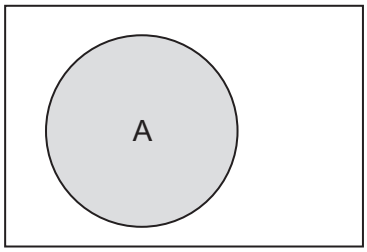
### Advice

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

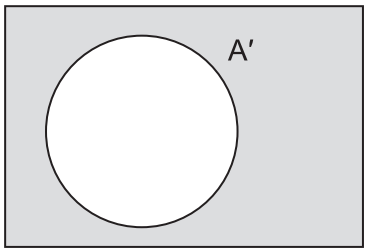
## Formulae Sheet: Foundation Tier

### Set notation

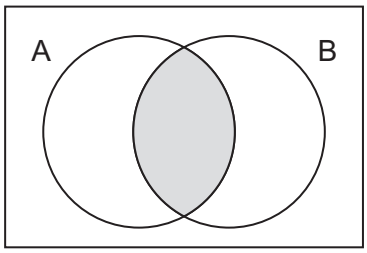
A



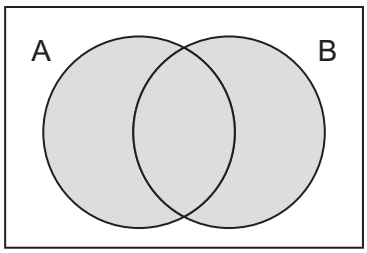

A′




$A \cap B$




$A \cup B$



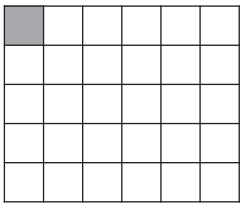
Answer **all** questions in the spaces provided.

**13 (a)** Here are four grids.

**A**

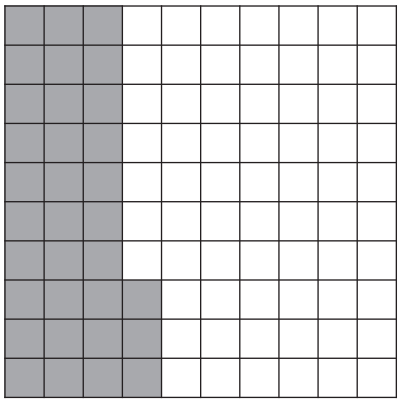
3 squares with 1 shaded

**B**



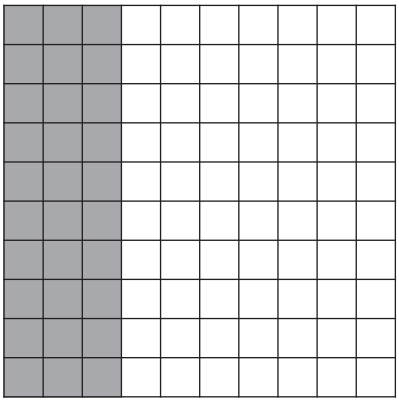
30 squares with 1 shaded

**C**



100 squares with 33 shaded

**D**



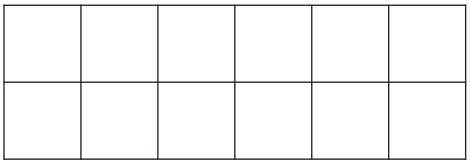
100 squares with 30 shaded

Which grid has exactly 30% shaded?
Circle your answer.

**[1 mark]**

A B C D

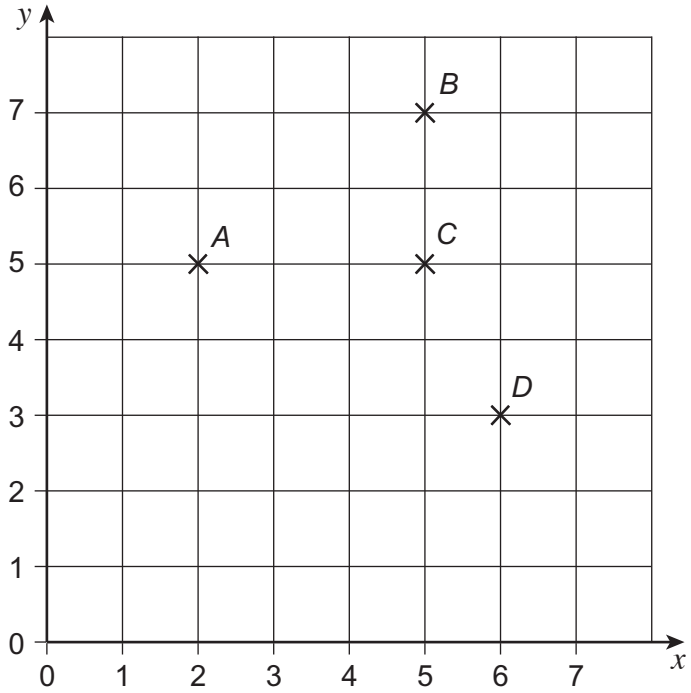
**13 (b)** Shade $\frac{2}{3}$ of this grid.



**[1 mark]**

**2**

**14** Four points have been plotted on this grid.




**14 (a)** Which point has an $x$-coordinate greater than its $y$-coordinate?
Circle your answer.

**[1 mark]**

*A* *B* *C* *D*

**14 (b)** Which point has coordinates with a difference of 2?
Circle your answer.

**[1 mark]**

*A* *B* *C* *D*

**14 (c)** Point *E*

- is nearer to *C* than to *A*
- is nearer to *B* than to *C*.

Write down one possible pair of coordinates of point *E*.

**[2 marks]**

Answer ( _____ , _____ )

**Turn over for the next question**

4

**15** Put numbers in the boxes to make the calculations correct.

**[2 marks]**

**160** × ☐ **= 1600**

☐ **÷ 7 = 16**

**16 (a)** Circle the calculation that has the **smallest** answer.

**[1 mark]**

3 – 9 –3 – 5 –10 + 6 1 – 8

**16 (b)** Here is a list of numbers.

–6 –4 –1 4 6

Use two numbers from the list to make the calculation correct.

**[1 mark]**

3 – ☐ = ☐ – 2

**Turn over for the next question**

4

**17** You are given that

$$1000 \div 32 = 31 \text{ remainder } 8$$

**17 (a)** What is the smallest whole number greater than 1000 that can be divided exactly by 32?

**[2 marks]**

Answer _____

**17 (b)** Complete the boxes.

**[1 mark]**

$$2000 \div 32 = \square \text{ remainder } \square$$

**18 (a)** $F = 3c - 2d$

Work out the value of $F$ when $c = 11$ and $d = 12$

**[2 marks]**

Answer _____

**18 (b)** $P = 4a + 4b$

When $P = 12a$ work out the ratio $a : b$

**[2 marks]**

Answer _____ : _____

**Turn over for the next question**

7

**19 (a)** Work out 15 – (10 – 3)

**[1 mark]**

Answer _____

**19 (b)** Put brackets in each of the following calculations to make them correct.

**[3 marks]**

$2 - 3 + 4 + 5 = 0$

$1 + 3 \times 5 + 7 = 27$

$1 + 2 \times 3 + 4 = 21$

**20** Some red marbles, blue marbles and green marbles are put into bags.
Marbles are picked at random from the bags.

**20 (a)** The probability of picking a red marble from bag A is 1

What does this tell you about the marbles in bag A?

**[1 mark]**

**20 (b)** Helen knows that there are only red marbles and blue marbles in bag B.

She says,

"The probability of picking a red marble from bag B is $\frac{1}{2}$"

Why might Helen be wrong?

**[1 mark]**

**20 (c)** Waqas completes this table for picking a marble from bag C.

| **Colour** | Red | Blue | Green |
|---|---|---|---|
| **Probability** | 0.2 | 0.3 | 0.6 |

Give a reason why his table must be incorrect.

**[1 mark]**

7

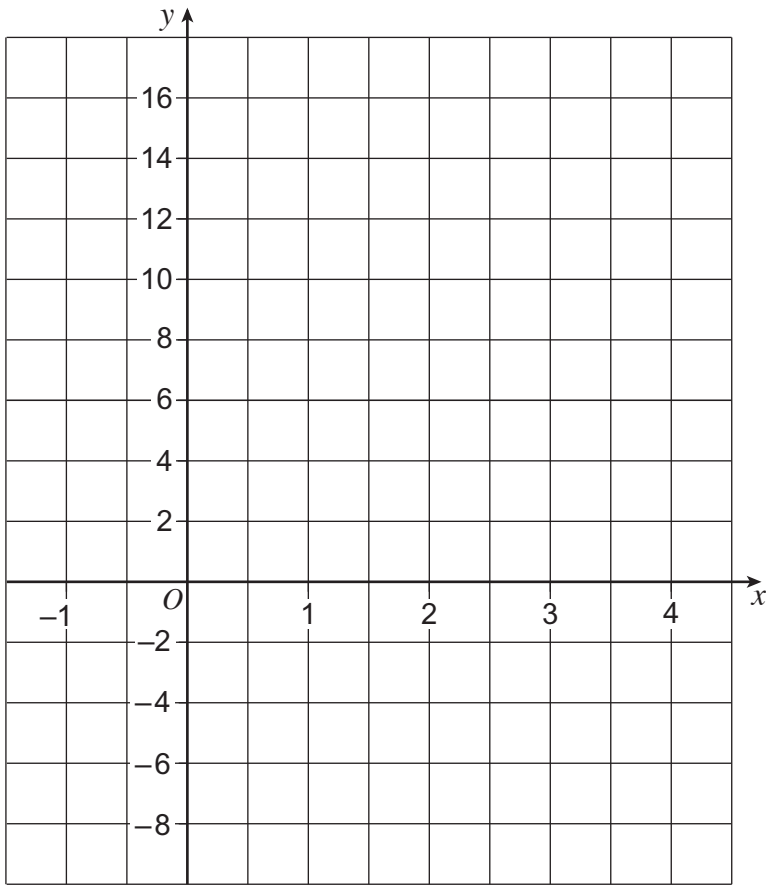
**21** Work out 60 as a percentage of 400

**[2 marks]**

Answer _____ %

**22** On the grid draw the graph of $y = 4x - 2$ for values of $x$ from –1 to 4

**[3 marks]**



**23** 300 is divided into two parts in the ratio 1 : 5

Work out the **larger** part.

**[2 marks]**

Answer _____

**24** Work out half of $3\frac{1}{8}$

Give your answer as a mixed number.

**[3 marks]**

Answer _____

**Turn over for the next question**

10

**25** 50 students were asked if they use Facebook (F) and Snapchat (S).

30 of the students use Snapchat.

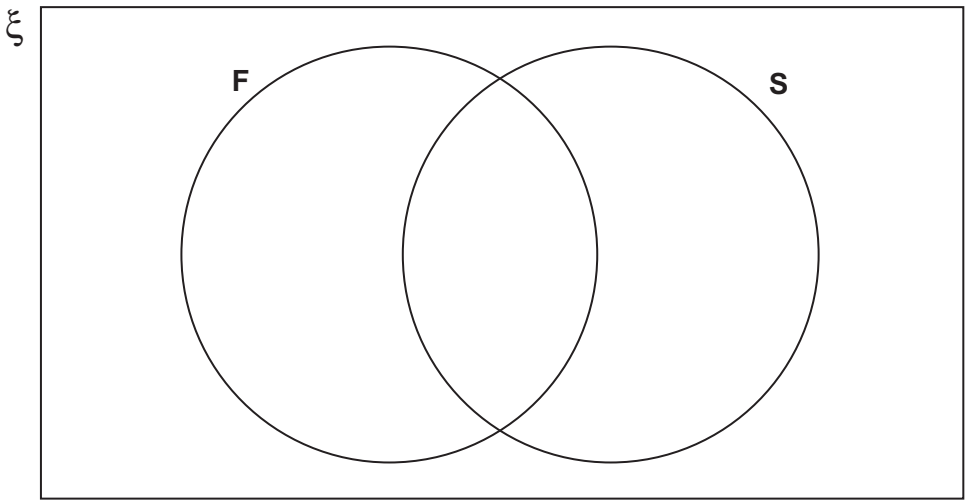
$\frac{4}{5}$ of the students who use Snapchat also use Facebook.

23 of the students use either Facebook or Snapchat, but not both.

One of the 50 students is chosen at random.

Work out the probability that the student does **not** use Facebook or Snapchat.
You may use the Venn diagram but do not have to.

**[4 marks]**




Answer _____

**26** Simplify $6x^3 \times 9x^5$

**[2 marks]**

Answer _____

**END OF QUESTIONS**

6

**There are no questions printed on this page**

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**ANSWER IN THE SPACES PROVIDED**