

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	
TOTAL	



General Certificate of Secondary Education
Foundation Tier
January 2011

Methods in Mathematics (Linked Pair Pilot)

93651F/A

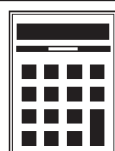
Unit 1 Algebra and Probability Section A

F

Tuesday 11 January 2011 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 space 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 14 and 15 of Section B. 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 booklet.
- You are expected to use a calculator where appropriate.

Advice

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



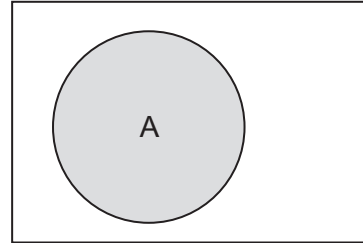
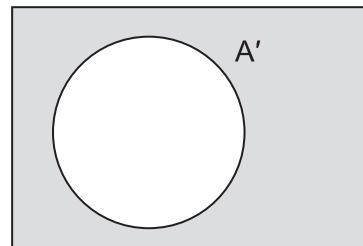
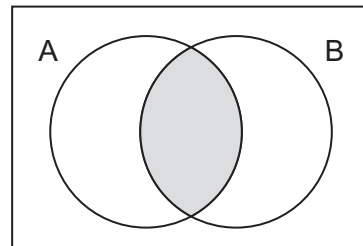
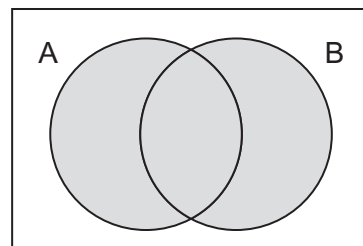
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Formulae Sheet: Foundation Tier

Set notation

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

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

- 1** Each lesson at a school is 45 minutes long.
There are seven lessons in a school day.
- What is the total lesson time in a school day?
Give your answer in hours and minutes.

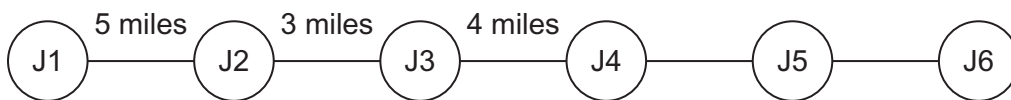
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Answer hours minutes (3 marks)

- 2** The diagram shows the distance, in miles, between some motorway junctions.
Junction 1 is called J1.



- 2 (a)** How far is it from J1 to J3?

Answer miles (1 mark)

- 2 (b)** From J1 to J6 is 25 miles.
From J4 to J5 is one mile more than from J5 to J6.
- How far is it from J4 to J5?

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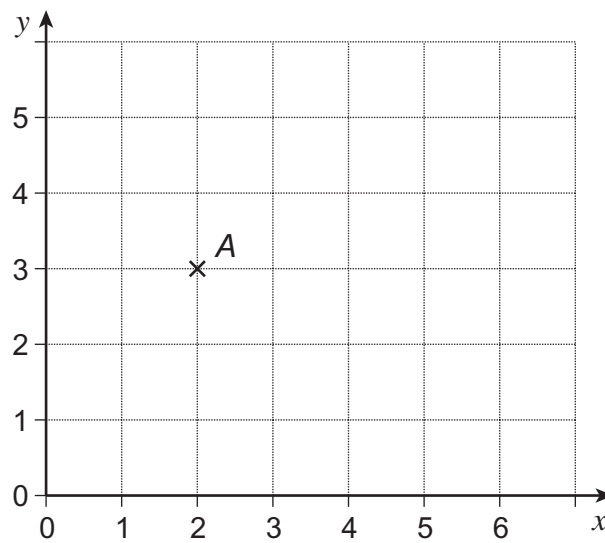
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Answer miles (3 marks)



- 3** Here is a grid with point *A* marked on it.



- 3 (a)** Write down the coordinates of point *A*.

Answer (.....,) (1 mark)

- 3 (b)** Use a word from this list to complete the sentence.

negative

zero

one

positive

The *x*-coordinate of every point on the *y*-axis is

(1 mark)

- 3 (c)** Mark the point (5,1) with a cross on the grid.
Label this point *B*.

(1 mark)

- 3 (d)** Work out the coordinates of the point that is halfway between *A* and *B*.

.....

Answer (.....,) (2 marks)



- 4** Jade has seven coins.
Six coins are all the same value.
One coin has a different value.
In total she has £1.70

- 4 (a)** What coins does she have?

.....

.....

Answer (2 marks)

- 4 (b)** Jade wants to buy a pizza for £6.50
How much more money does she need?

.....

.....

Answer £ (2 marks)

- 5** Consecutive numbers are next to each other.
For example, 3, 4 or 36, 37, 38.

- 5 (a)** Find **two** consecutive numbers that add up to 21.

.....

Answer (1 mark)

- 5 (b)** Find **three** consecutive numbers that add up to 21.

.....

Answer (1 mark)

- 6** Work out $\frac{3}{5}$ of 145

.....

.....

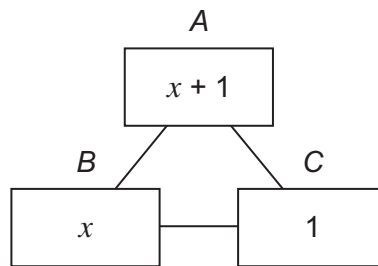
Answer (2 marks)



7 Here is the rule for completing the diagrams.

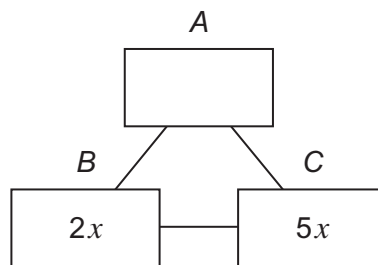
The expression in box *A* is the sum of the expressions in box *B* and box *C*.

For example,



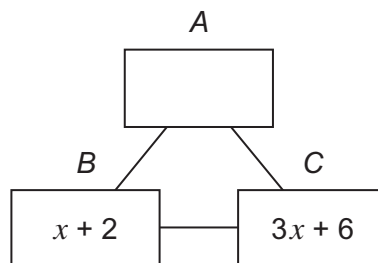
Complete the diagrams using this rule.

7 (a)



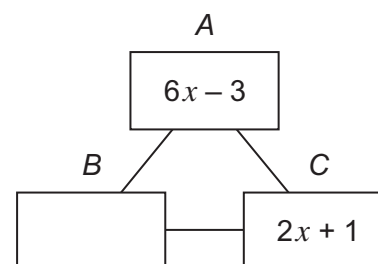
(1 mark)

7 (b)



(1 mark)

7 (c)



(2 marks)

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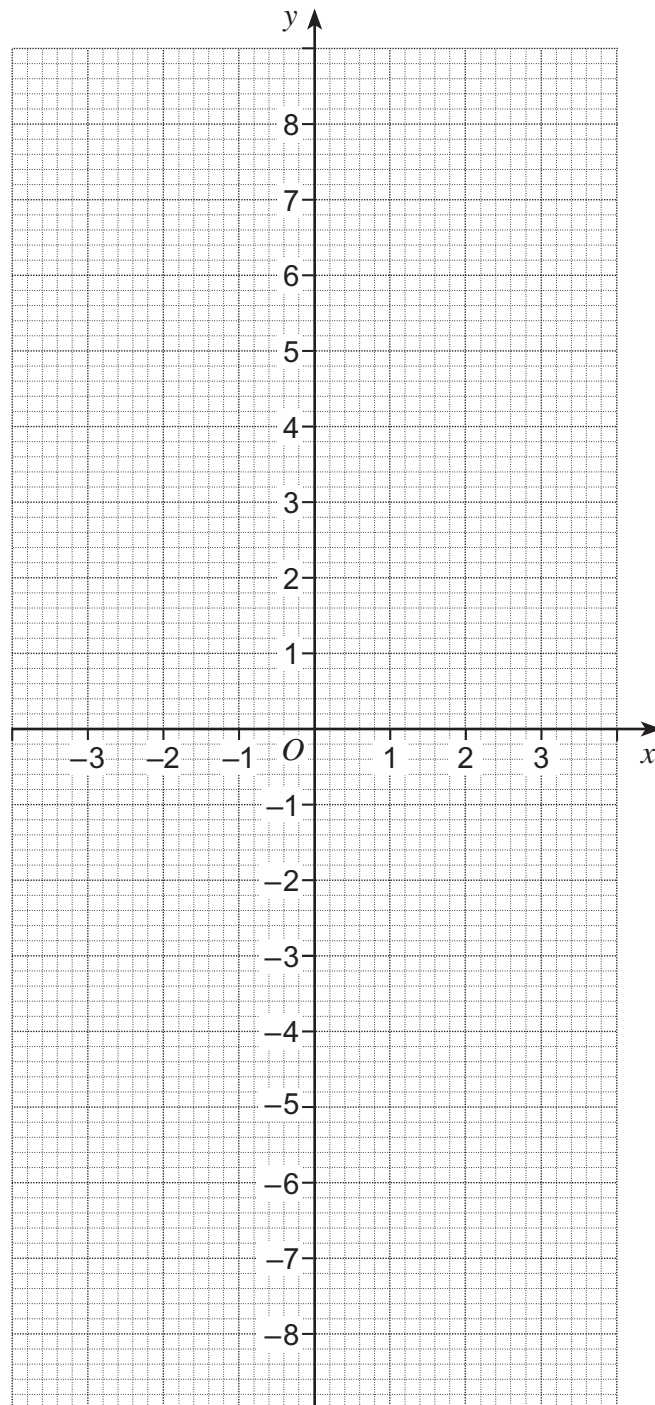


8 (a) Complete the table of values for $y = 2x + 1$

x	-3	-2	-1	0	1	2	3
y	-5		-1	1	3	5	7

..... (1 mark)

8 (b) On the grid draw the graph of $y = 2x + 1$ for values of x from -3 to 3



(2 marks)

7

Turn over ►



- 9 Increase £4680 by 23%.

.....

.....

.....

.....

.....

Answer £ (3 marks)

- 10 The table shows the possible outcomes of an experiment.
Three of the probabilities are missing.

C is twice as likely as B.

D is three times as likely as B.

Complete the table.

Outcome	Probability
A	0.1
B	
C	
D	

.....

.....

.....

(3 marks)



- 11 (a)** Divide £517 in the ratio 7 : 4

.....

.....

.....

Answer £ and £ (2 marks)

- 11 (b)** $P : Q = 5 : 12$

Work out the value of P when $Q = 228$

.....

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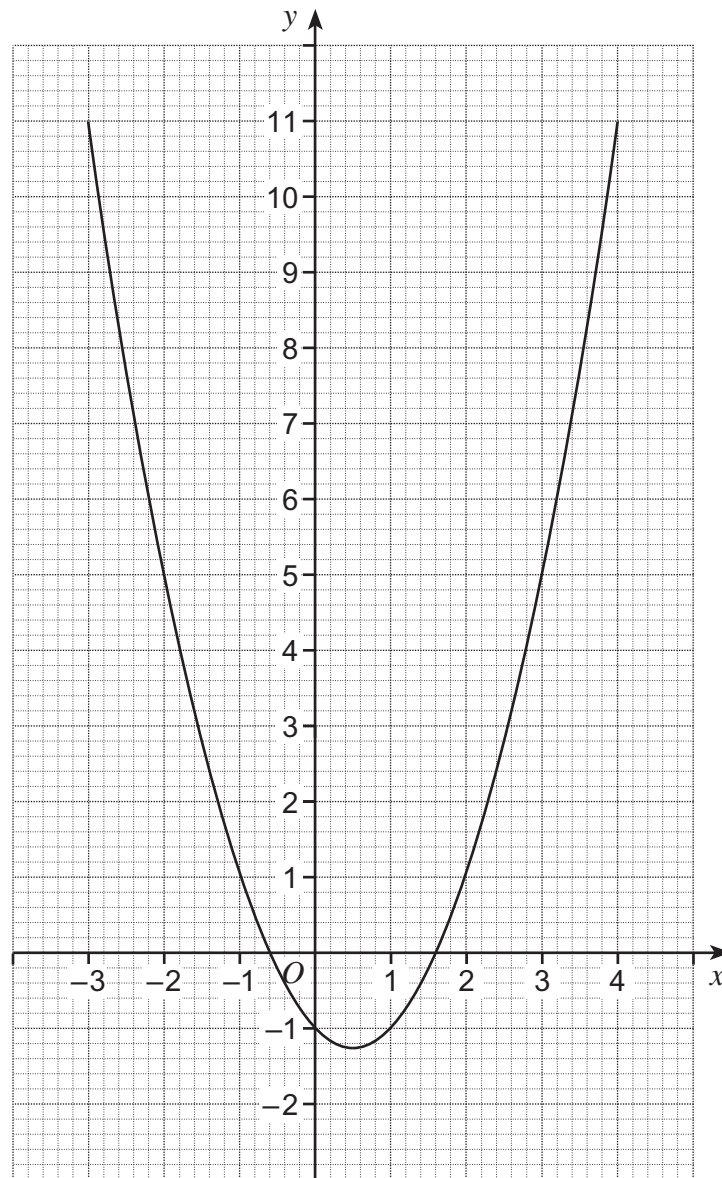
Answer (2 marks)

Turn over for the next question



12

The graph of $y = x^2 - x - 1$ is shown for values of x from -3 to 4 .



12 (a) Use the graph to find the approximate solutions to the equation $x^2 - x - 1 = 0$

Answer (2 marks)

12 (b) Write down one value of x when y is negative.

Answer (1 mark)

END OF SECTION A



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