Centre Number					Candidate Number				

Surname	
Other Names	
Candidate Signature	

AQA

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.

Formulae Sheet: Foundation Tier
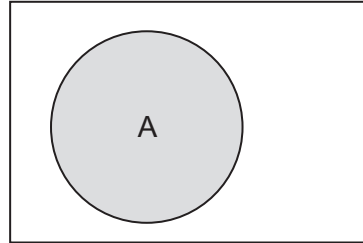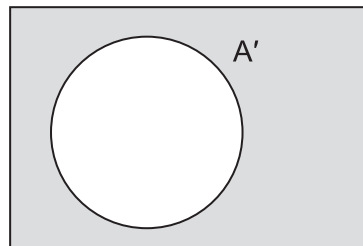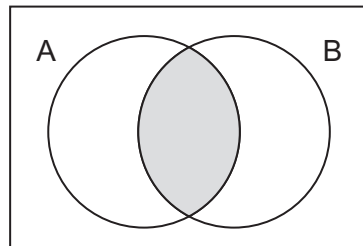
Set notation

A

A'

$A \cap B$

$A \cup B$
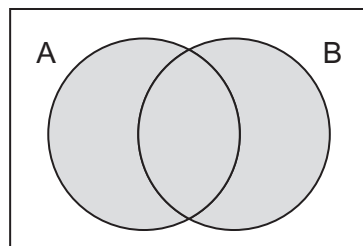
Answer **all** questions in the spaces provided.

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.

....

....

....

Answer .... hours .... minutes   *(3 marks)*

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

J1 — 5 miles — J2 — 3 miles — J3 — 4 miles — J4 — J5 — J6
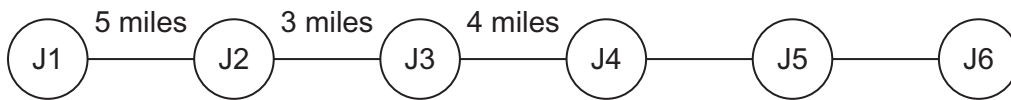
2 (a) How far is it from J1 to J3?

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?

....

....

....

Answer .... miles   *(3 marks)*

3   Here is a grid with point *A* marked on it.
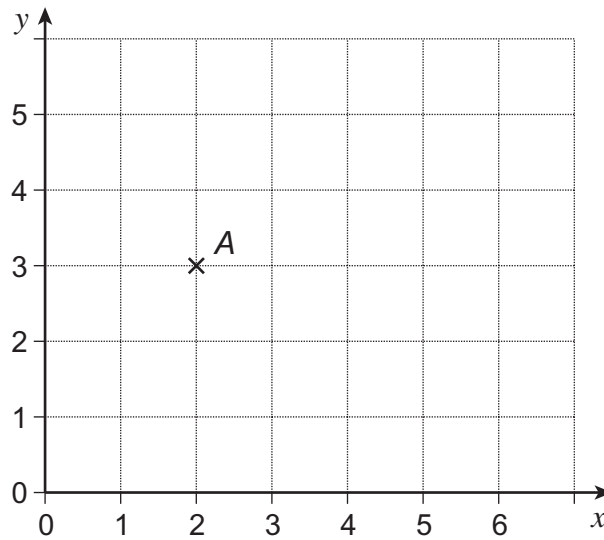
3 (a)   Write down the coordinates of point *A*.

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 $\dfrac{3}{5}$ of 145

....

....

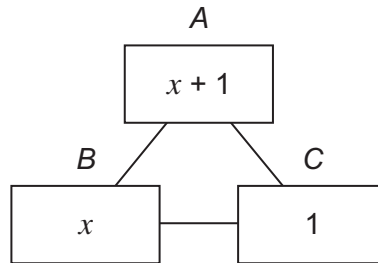Answer .... *(2 marks)*

13

Turn over ▶

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,

$$A$$

$$\boxed{x + 1}$$

$$B \qquad\qquad C$$

$$\boxed{x} \quad\text{—}\quad \boxed{1}$$

Complete the diagrams using this rule.

7 (a)

$$A$$

$$\boxed{}$$

$$B \qquad\qquad C$$

$$\boxed{2x} \quad\text{—}\quad \boxed{5x}$$

(1 mark)

7 (b)

$$A$$

$$\boxed{}$$

$$B \qquad\qquad C$$

$$\boxed{x + 2} \quad\text{—}\quad \boxed{3x + 6}$$

(1 mark)

7 (c)

$$A$$

$$\boxed{6x - 3}$$

$$B \qquad\qquad C$$

$$\boxed{} \quad\text{—}\quad \boxed{2x + 1}$$
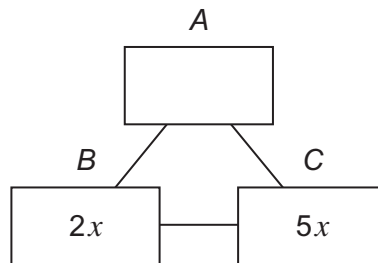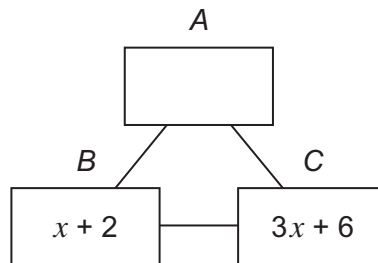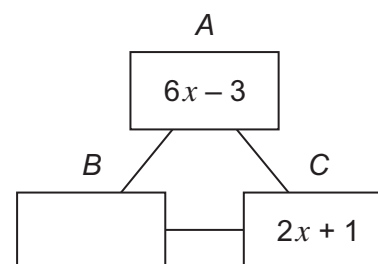
(2 marks)

....

....

....

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 ▶

07
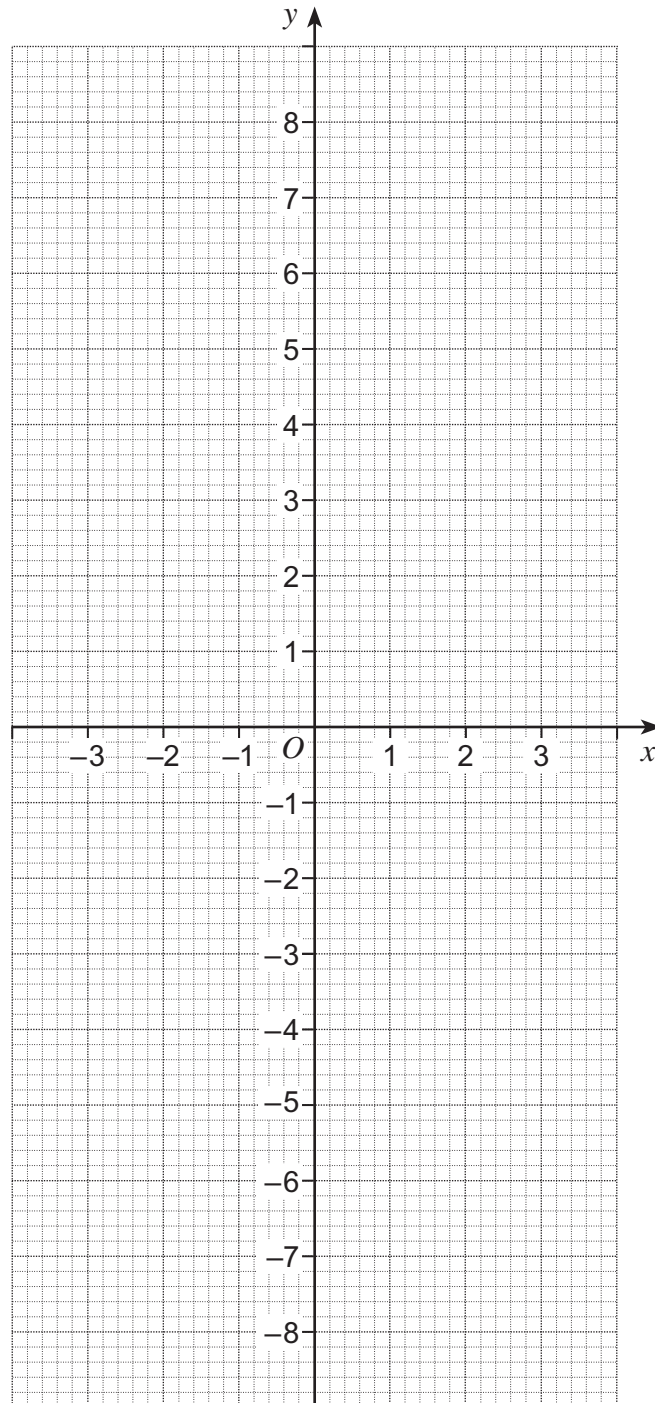
9 Increase £4680 by 23%.

....

....

....

....

....

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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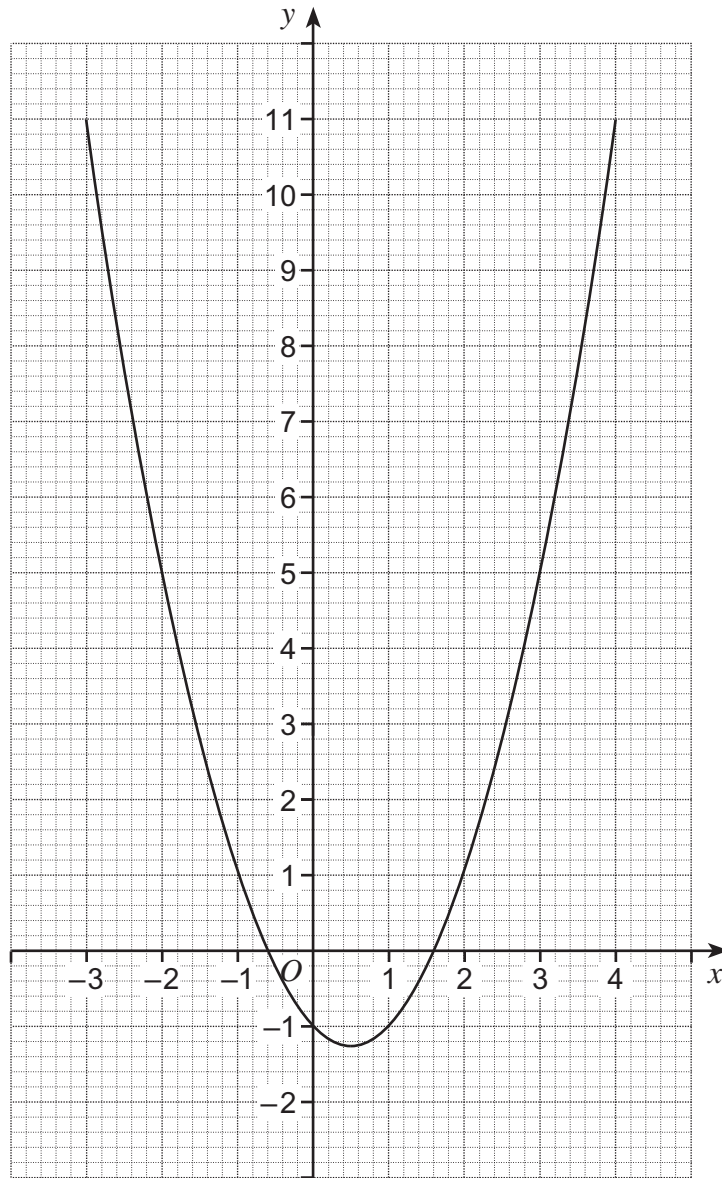
Answer   ....   *(2 marks)*

Turn over for the next question

10

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

3

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