

Pearson Edexcel Award

Paper Reference AAL20/01

Algebra

Level 2

Calculator NOT allowed

Monday 8 May 2017 – Morning

Time: 1 hour 30 minutes

plus your additional time allowance

You must have:

Ruler graduated in centimetres and millimetres, pen,
HB pencil, eraser.

See the **Instructions, Information and Advice** on the
next page.

Surname					
Other names					
Centre Number					
Candidate Number					

X48374A

Instructions

- Use **BLACK** ink or ball-point pen.
- **FILL IN THE BOXES** on the front page with your name, centre number and candidate number.
- Answer **ALL** questions.
- Answer the questions in the spaces provided – there may be more space than you need.
- **CALCULATORS ARE NOT ALLOWED.**



Information

- The total mark for this paper is 80.
- The marks for **EACH** question are shown in brackets – use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

(There are four blank pages at the end of this exam paper in case more working out space is required.)

(Turn over)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

You must NOT use a calculator.

(Questions begin on next page.)

1 (a) Simplify

$$5 \times m^2 \times 5 \times t^3$$

(2 marks)

(Question continues on next page)

(Turn over)

(b) Simplify

$$g^5 \times g \times g$$

(1 mark)

(Question continues on next page)

(Turn over)

(c) Simplify

$$(p^4)^2$$

(1 mark)

(Question continues on next page)

(Turn over)

(d) Simplify

$$\frac{20r^2u}{2r}$$

(2 marks)

(Total for Question 1 is 6 marks)

(Turn over)

2 (a) Solve

$$4p + 7 = 27$$

$$p =$$

(2 marks)

(Question continues on next page)

(Turn over)

(b) Solve

$$2.5t - 3 = 7$$

$t =$

(2 marks)

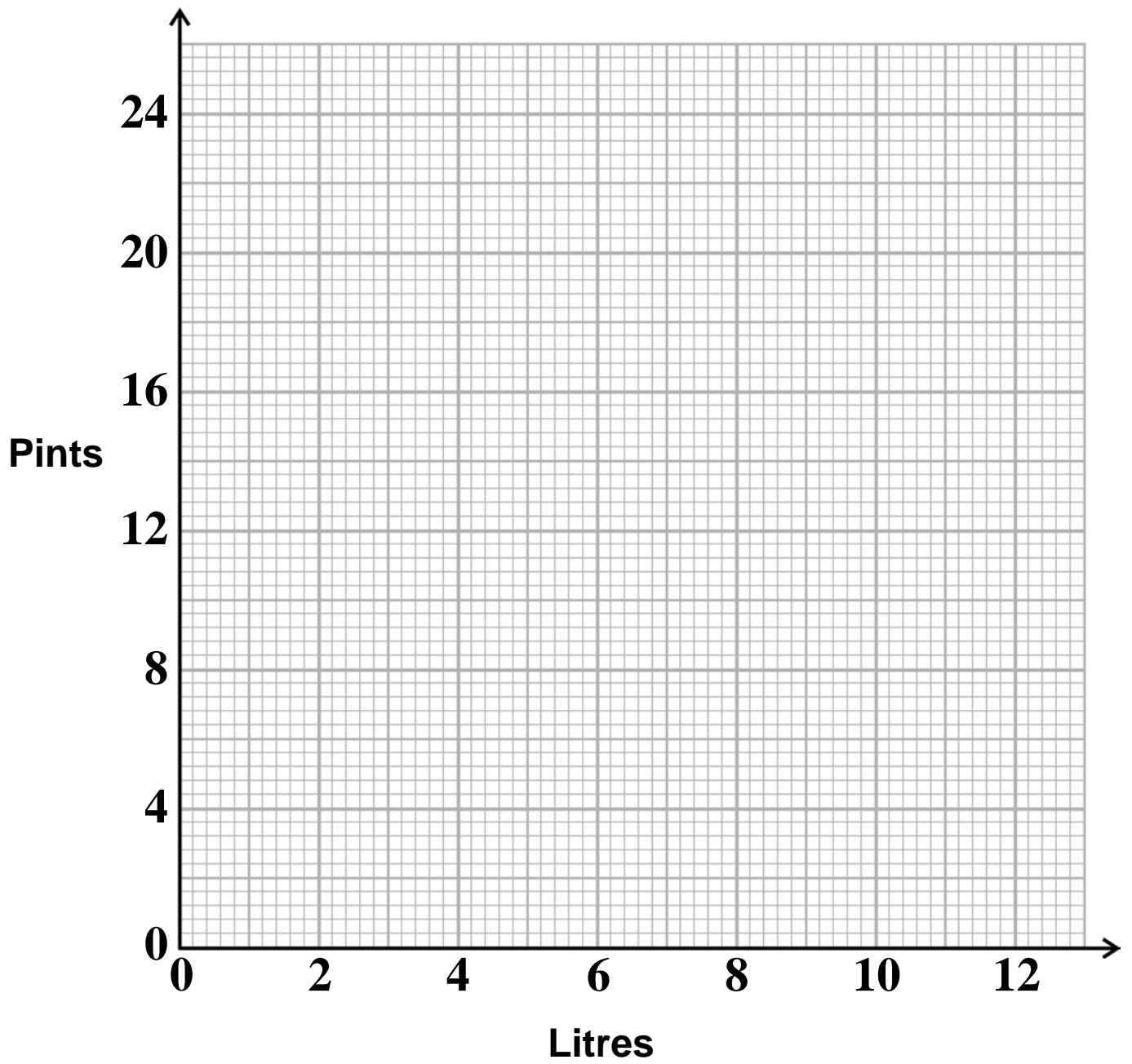
(Total for Question 2 is 4 marks)

(Turn over)

- 3 This table contains information that can be used to change between litres and pints.**

Litres	0	4	8	12
Pints	0	7	14	21

- (a) On the grid (on the next page), use the information in the table to draw a graph that can be used to change between litres and pints.
(2 marks)**



(b) Use your graph to change

(i) 9 litres into pints,

pints

(ii) 12 pints into litres.

litres

(2 marks)

(Question continues on next page)

(Turn over)

(c) (i) Work out the gradient of the graph.

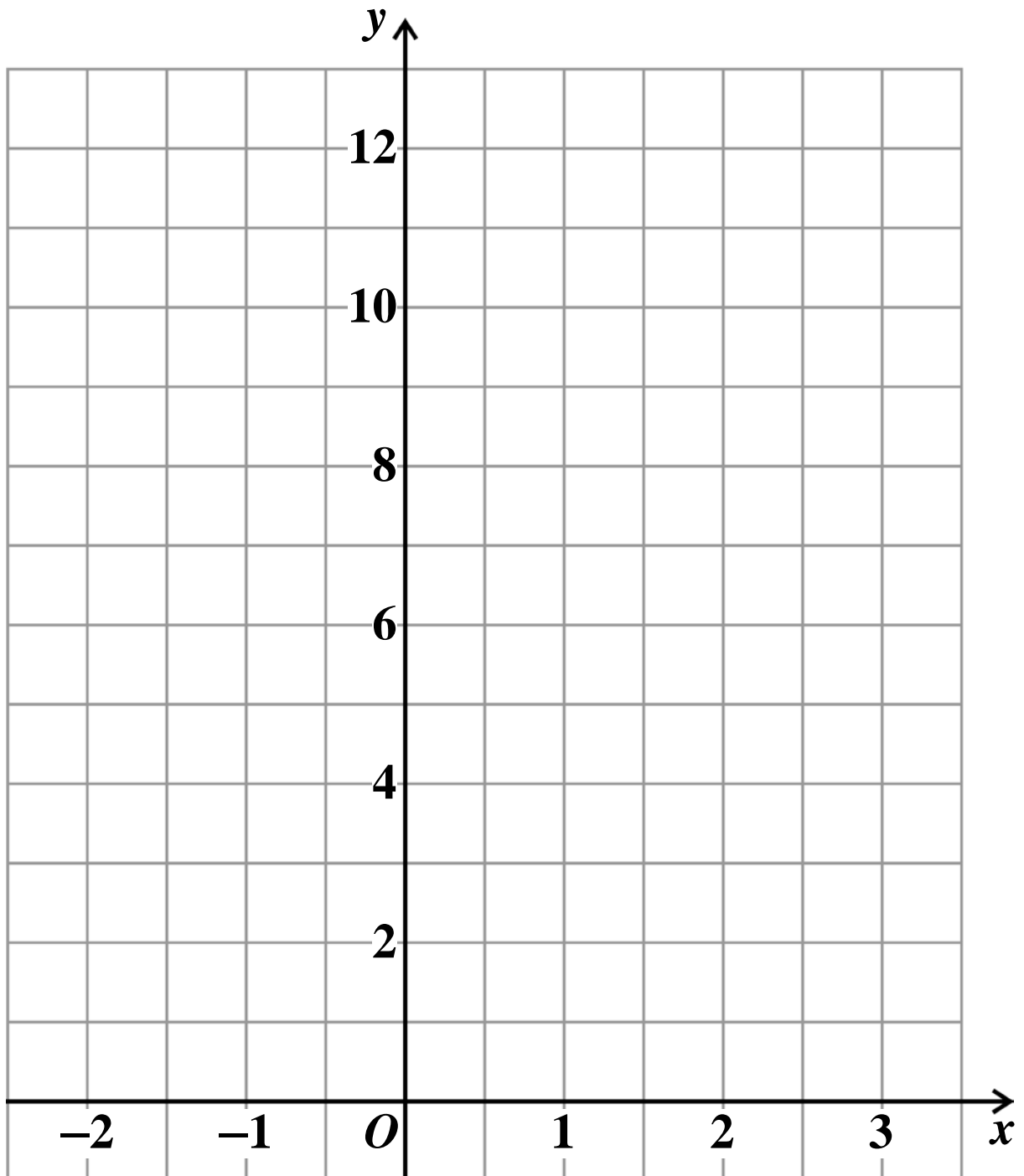
(ii) Explain what the gradient of the graph represents.

(3 marks)

(Total for Question 3 is 7 marks)

(Turn over)

- 4 On the grid, draw the graph of $y = 8 - 2x$
for values of x from $x = -2$ to $x = 3$



(Total for Question 4 is 3 marks)

(Turn over)

5 (a) Expand

$$3m(m - 2)$$

(2 marks)

(Question continues on next page)

(Turn over)

(b) Expand

$$n^2(n^4 - n^3)$$

(2 marks)

(Question continues on next page)

(Turn over)

(c) Expand and simplify

$$2(q + 7) + 3(q - 1)$$

(2 marks)

(Total for Question 5 is 6 marks)

(Turn over)

- 6 (a) The first term of a sequence is 5

Other terms of the sequence are worked out using the rule

“multiply the previous term by 10
and subtract 1”

Work out the third term of this sequence.

(2 marks)

(Question continues on next page)

(Turn over)

- (b) Here are the first six terms of an arithmetic sequence.

100 91 82 73 64 55

- (i) Write down the next term of this sequence.

-
- (ii) Find an expression, in terms of n , for the n th term of this sequence.

(3 marks)

(Question continues on next page)

(Turn over)

- (c) The n th term of a different sequence is given by the expression $8n^2$

Find the 5th term of this sequence.

(2 marks)

(Total for Question 6 is 7 marks)

(Turn over)

7 (a) Factorise

$$2m - 10$$

(1 mark)

(Question continues on next page)

(Turn over)

(b) Factorise

$$6n^2 + 3n$$

(2 marks)

(Question continues on next page)

(Turn over)

(c) Factorise

$$rt - r^2t$$

(2 marks)

(Total for Question 7 is 5 marks)

(Turn over)

- 8 Workers in a factory make two types of component.**
- Each type A component takes 5 minutes to make.**
- Each type B component takes 8 minutes to make.**
- Nick made x type A components**
and y type B components.
- (a) Write down an expression, in terms of x and y ,**
for the total time in minutes it took Nick to make
these components.

_____ minutes

(2 marks)

(Question continues on next page)

(Turn over)

Flinn made $2x$ type A components
and $3y$ type B components.

Rob made $4x$ type A components
and $2y$ type B components.

- (b) Write down an expression, in terms of x and y ,
for the total number of components that Flinn
and Rob made.

Give your answer in its simplest form.

_____ components

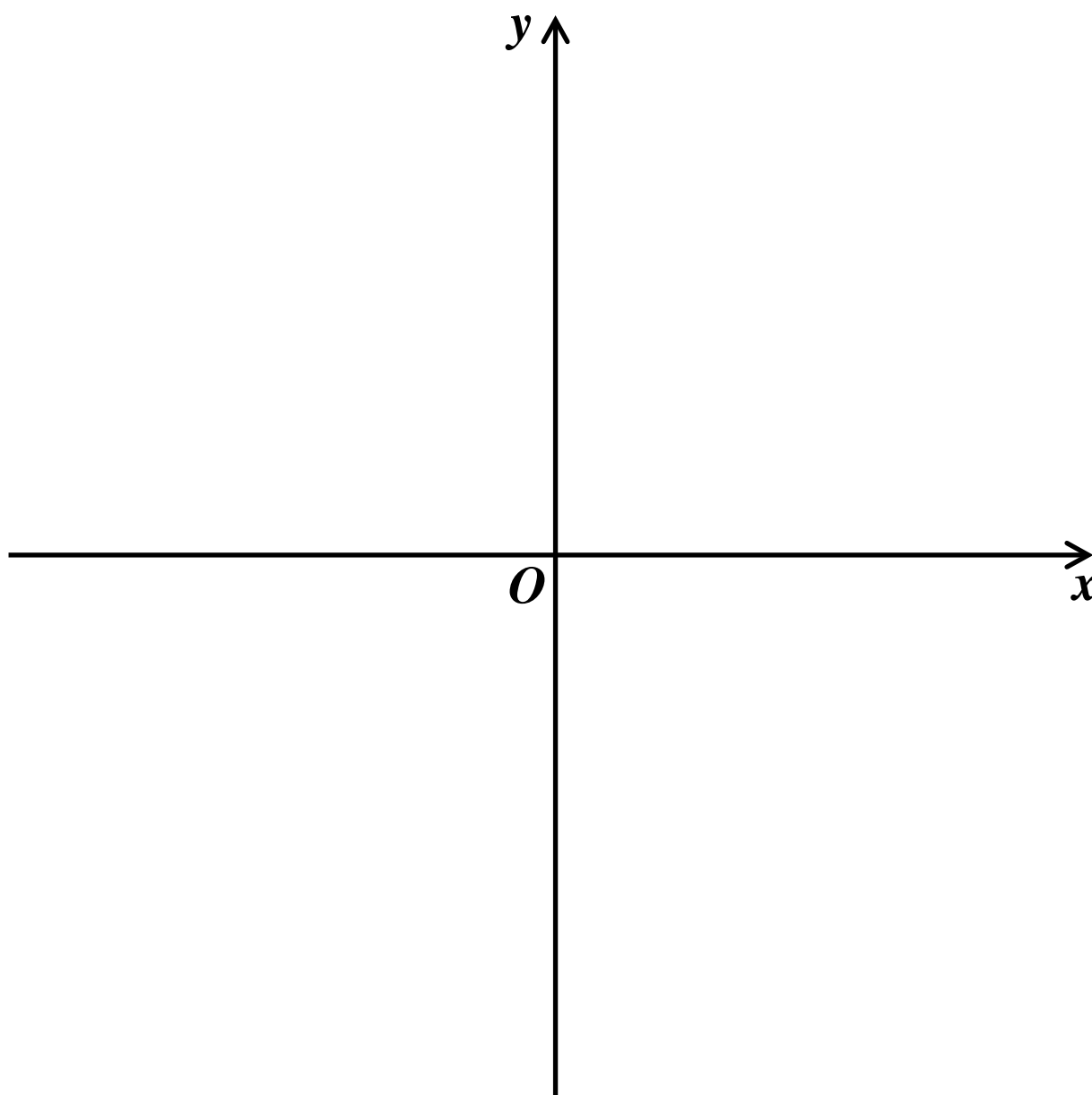
(2 marks)

(Total for Question 8 is 4 marks)

(Turn over)

9 Sketch the graph of

$$y = 2x^2 - 5$$



(Total for Question 9 is 3 marks)

(Turn over)

10 (a) $m = 2s - 3t$

- (i) Work out the value of
 m when $s = 6$ and $t = 5$

(Question continues on next page)

(Turn over)

- (ii) Work out the value of
 s when $m = 20$ and $t = -4$

(Question continues on next page)

(Turn over)

(iii) Make t the subject of the formula

$$m = 2s - 3t$$

(6 marks)

(Question continues on next page)

(Turn over)

(b) $p = \frac{d^2}{4}$

(i) Find the value of p when $d = 10$

(Question continues on next page)

(Turn over)

(ii) Find a value of d so that $p = 16$

(3 marks)

(Total for Question 10 is 9 marks)

(Turn over)

11 $-4 < w \leq 4$

w is an integer.

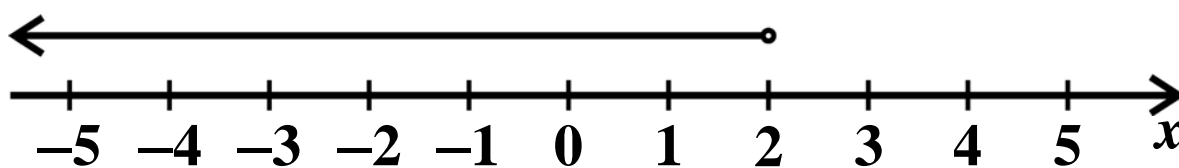
(a) Write down one possible negative value of w .

(1 mark)

(Question continues on next page)

(Turn over)

(b) Here is an inequality shown on a number line.



Write down this inequality.

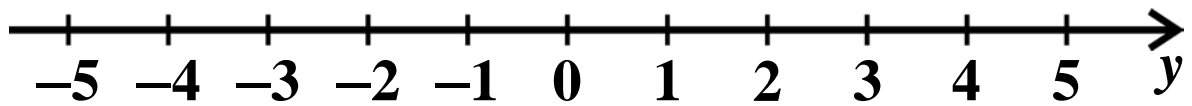
(2 marks)

(Question continues on next page)

(Turn over)

(c) On the number line below, show the inequality

$$-3 \leq y \leq 0$$



(2 marks)

(Question continues on next page)

(Turn over)

(d) Solve the inequality

$$4d + 9 > 5$$

(2 marks)

(Total for Question 11 is 7 marks)

(Turn over)

- 12 Abby walked 3 km from her home to her friend's house.**

Abby left home at 10 00

On the next page is part of the travel graph for Abby's journey from her home to her friend's house.

At 10 15 Abby stopped for 5 minutes to go into a shop.

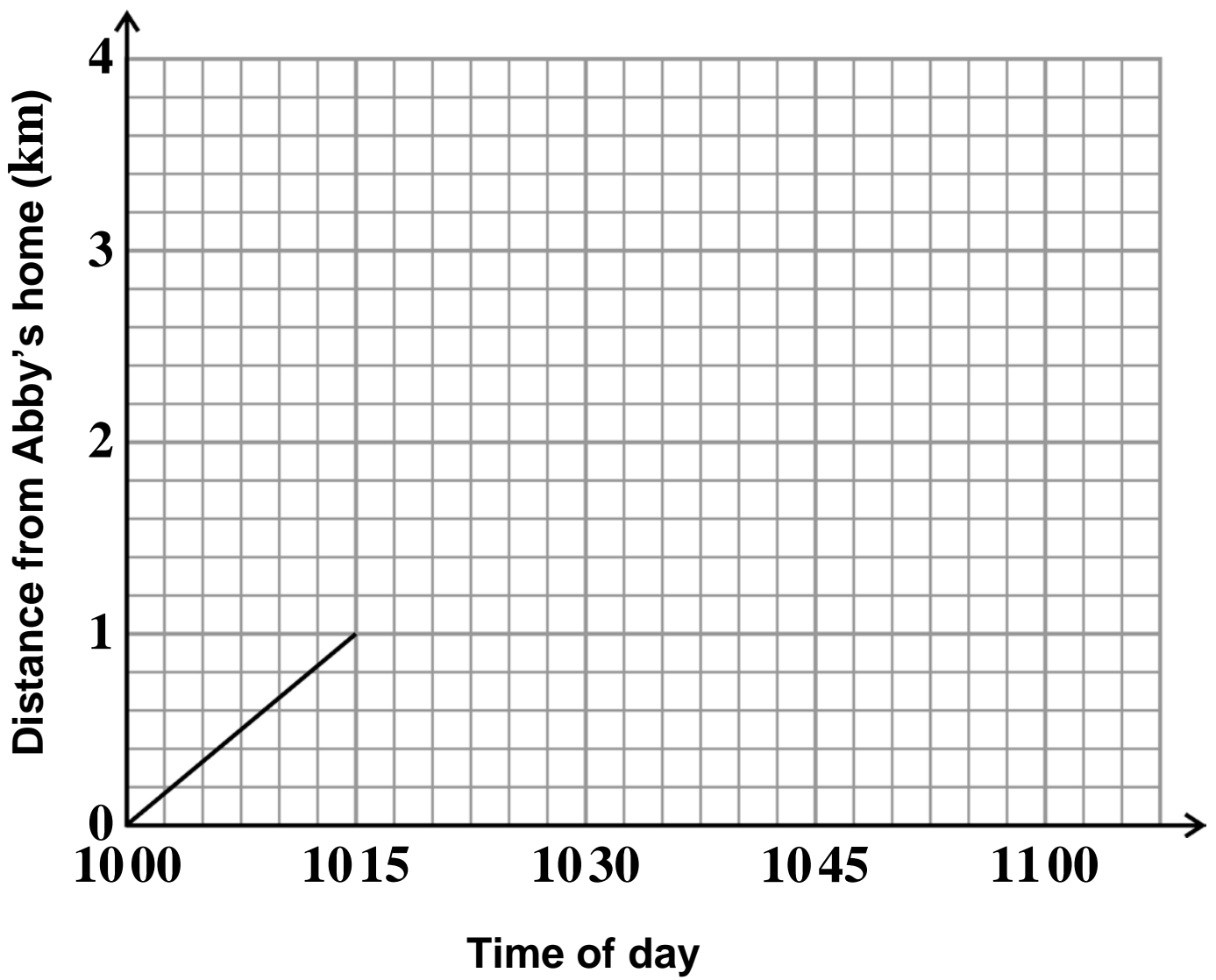
Abby then walked at a steady speed to her friend's house.

She arrived at her friend's house at 11 00

- (a) Use this information to complete the travel graph (on the next page) for Abby's journey to her friend's house. (2 marks)**

(Question continues on page 38)

(Turn over)



(Question continues on next page)

(Turn over)

- (b) Work out Abby's speed for the first 15 minutes of her journey.

Give your answer in km/h.

km/h

(2 marks)

(Total for Question 12 is 4 marks)

(Turn over)

13 (a) Solve

$$\frac{x + 4}{2} = 5$$

$x =$

(2 marks)

(Question continues on next page)

(Turn over)

(b) Solve

$$2(y - 3) = 4y$$

$y =$

(3 marks)

(Total for Question 13 is 5 marks)

(Turn over)

14 (a) Complete the table of values for

$$y = x^2 - 6x + 10$$

x	-2	0	2	4	6	8
y			2			26

(2 marks)

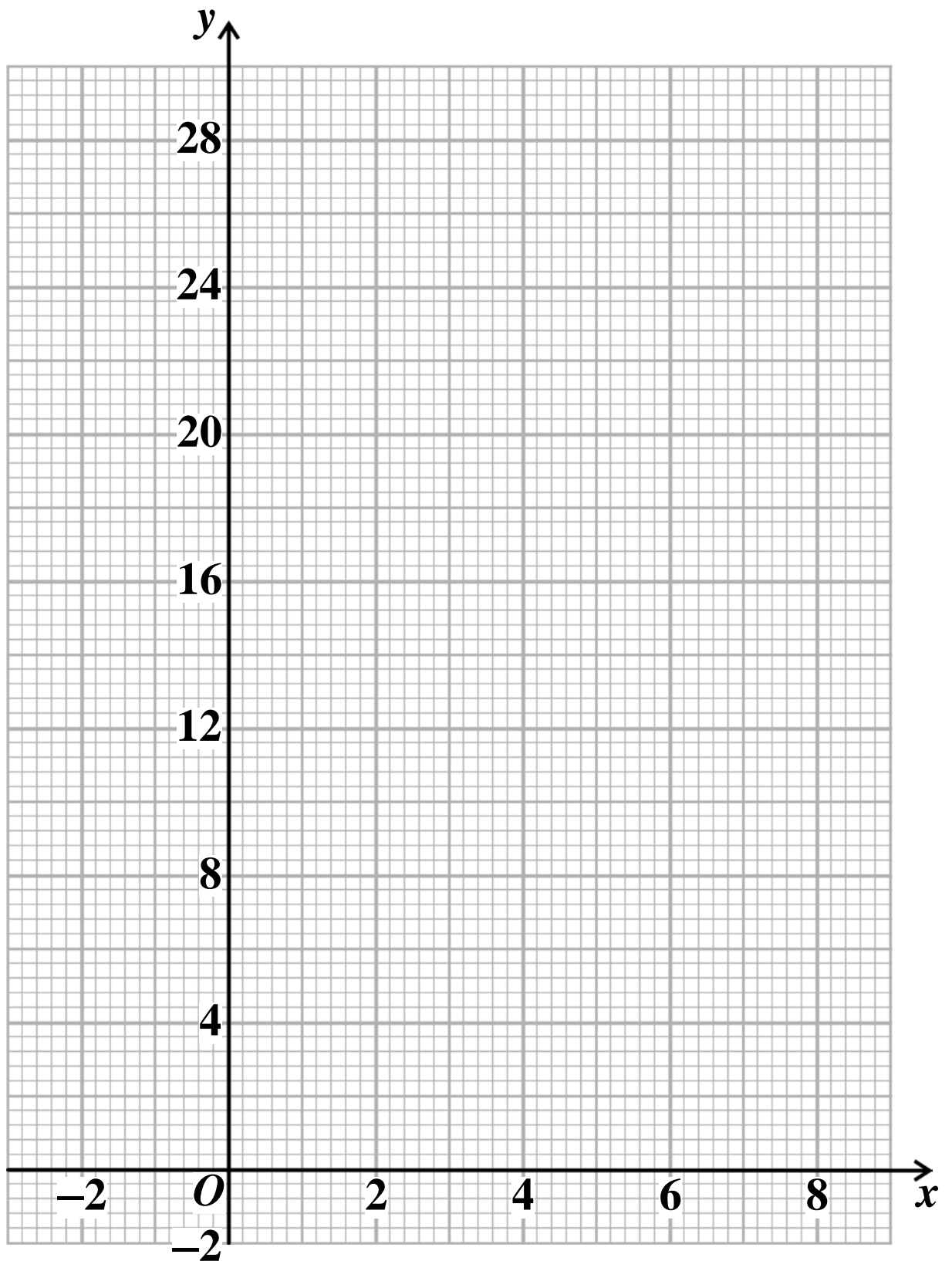
(b) On the grid, on the next page, draw the graph of

$$y = x^2 - 6x + 10$$

for values of x from -2 to 8

(2 marks)

(Turn over)



(Question continues on next page)

(Turn over)

- (c) Use your graph to find estimates for the solutions of

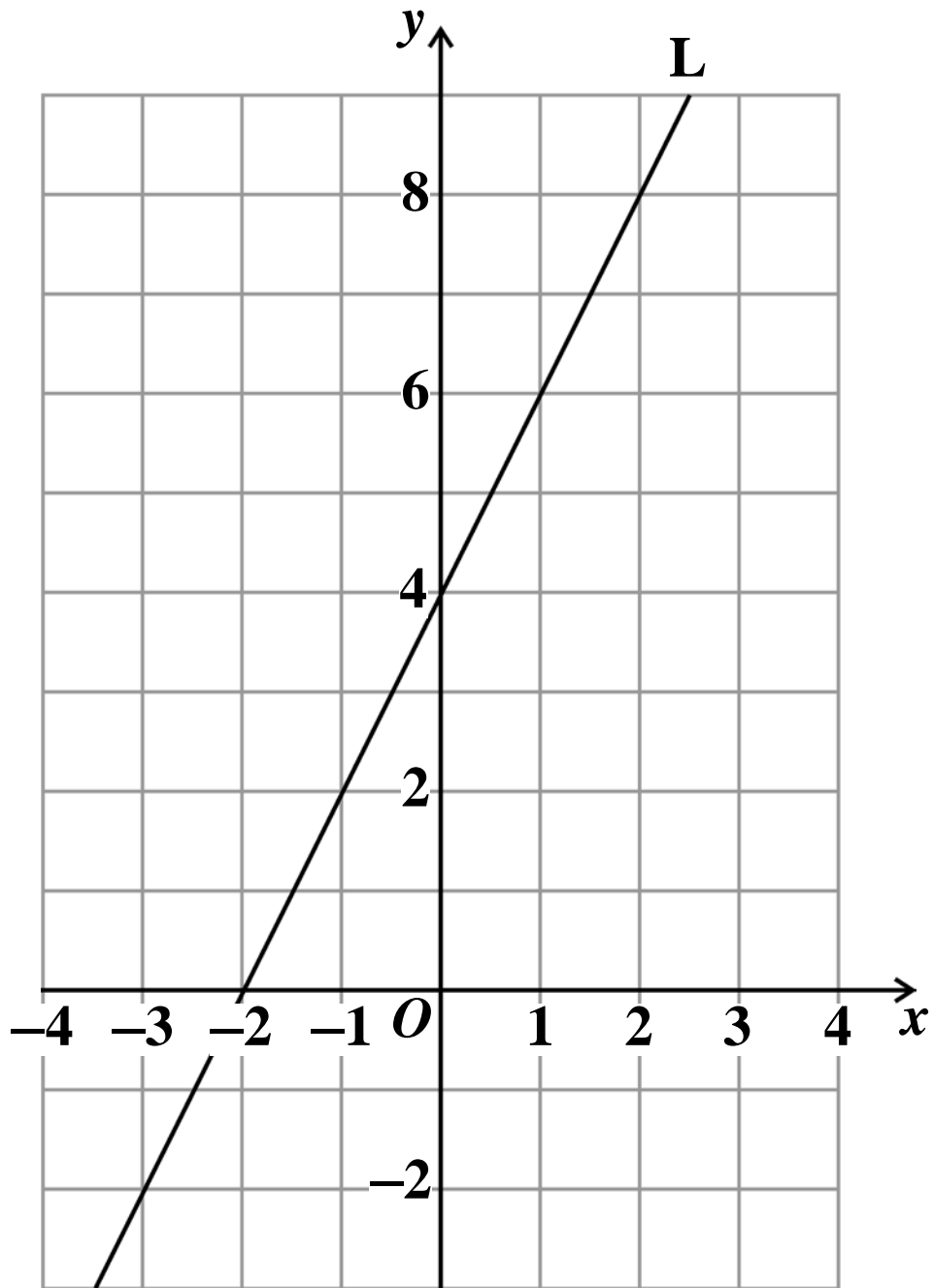
$$x^2 - 6x + 10 = 14$$

(2 marks)

(Total for Question 14 is 6 marks)

(Turn over)

15 Here is a straight line **L** drawn on a grid.



(Continues on next page)

(Turn over)

- (i) Find the gradient of L .

(Question continues on next page)

(Turn over)

(ii) Find an equation for L .

(Total for Question 15 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS

