Write your name here

Surname	Other names

Pearson
Edexcel Award

Centre Number	Candidate Number

Algebra
Level 2
Calculator NOT allowed

Monday 8 May 2017 – Morning	Paper Reference
Time: 1 hour 30 minutes	**AAL20/01**

You must have: Ruler graduated in centimetres and millimetres, pen, HB pencil, eraser.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this 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.

Turn over ▶

Pearson

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.

1 (a) Simplify $5 \times m^2 \times 5 \times t^3$

....

(2)

(b) Simplify $g^5 \times g \times g$

....

(1)

(c) Simplify $(p^4)^2$

....

(1)

(d) Simplify $\dfrac{20r^2u}{2r}$

....

(2)

(Total for Question 1 is 6 marks)

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2 (a) Solve $4p + 7 = 27$

$p =$ ....
(2)

(b) Solve $2.5t - 3 = 7$

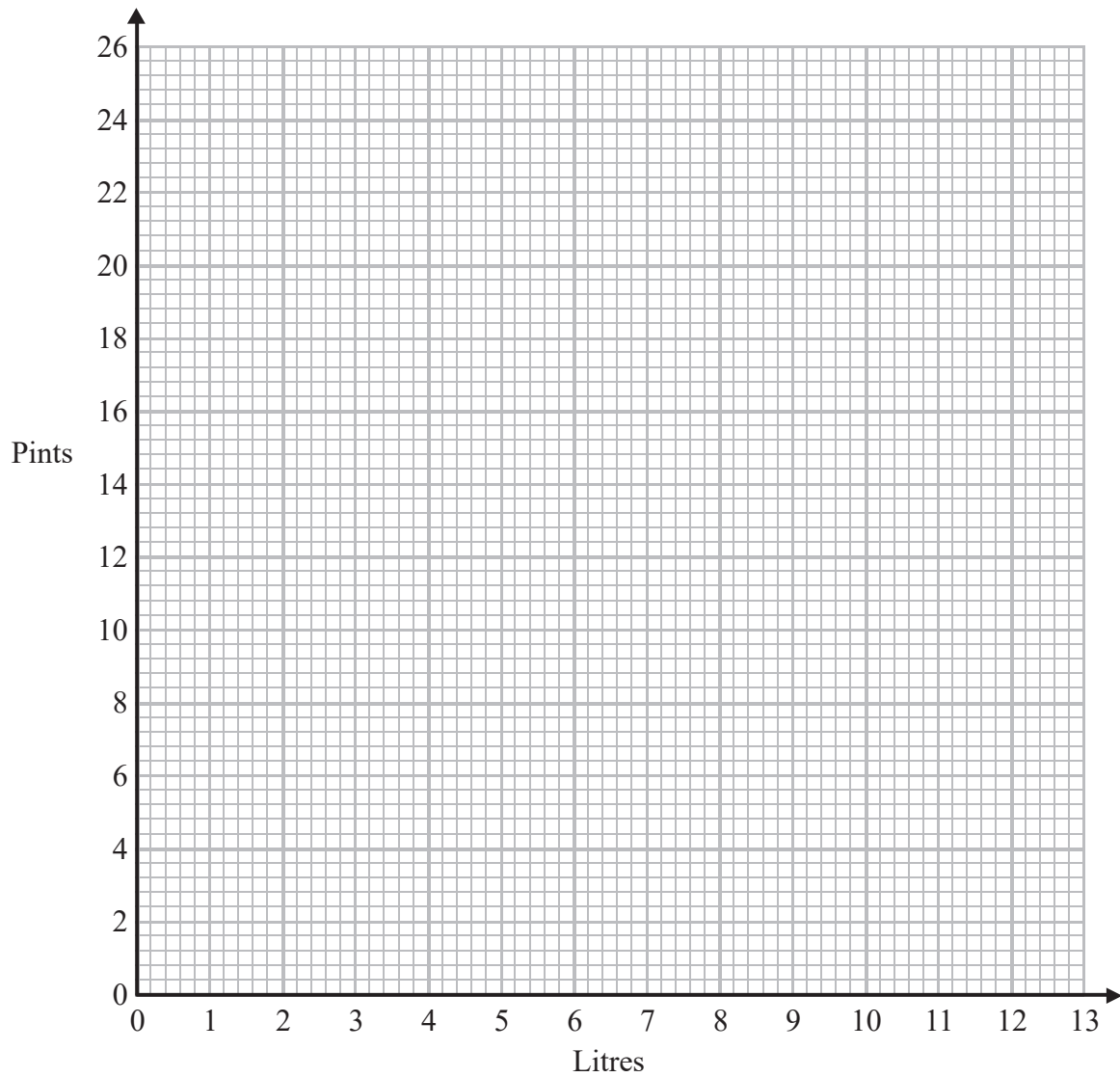$t =$ ....
(2)

(Total for Question 2 is 4 marks)

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, use the information in the table to draw a graph that can be used to change between litres and pints.

(2)

(b) Use your graph to change

  (i) 9 litres into pints,

....pints

  (ii) 12 pints into litres.

....litres

(2)

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

....

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

....

(3)

(Total for Question 3 is 7 marks)

4 On the grid, draw the graph of $y = 8 - 2x$ for values of x from $x = -2$ to $x = 3$
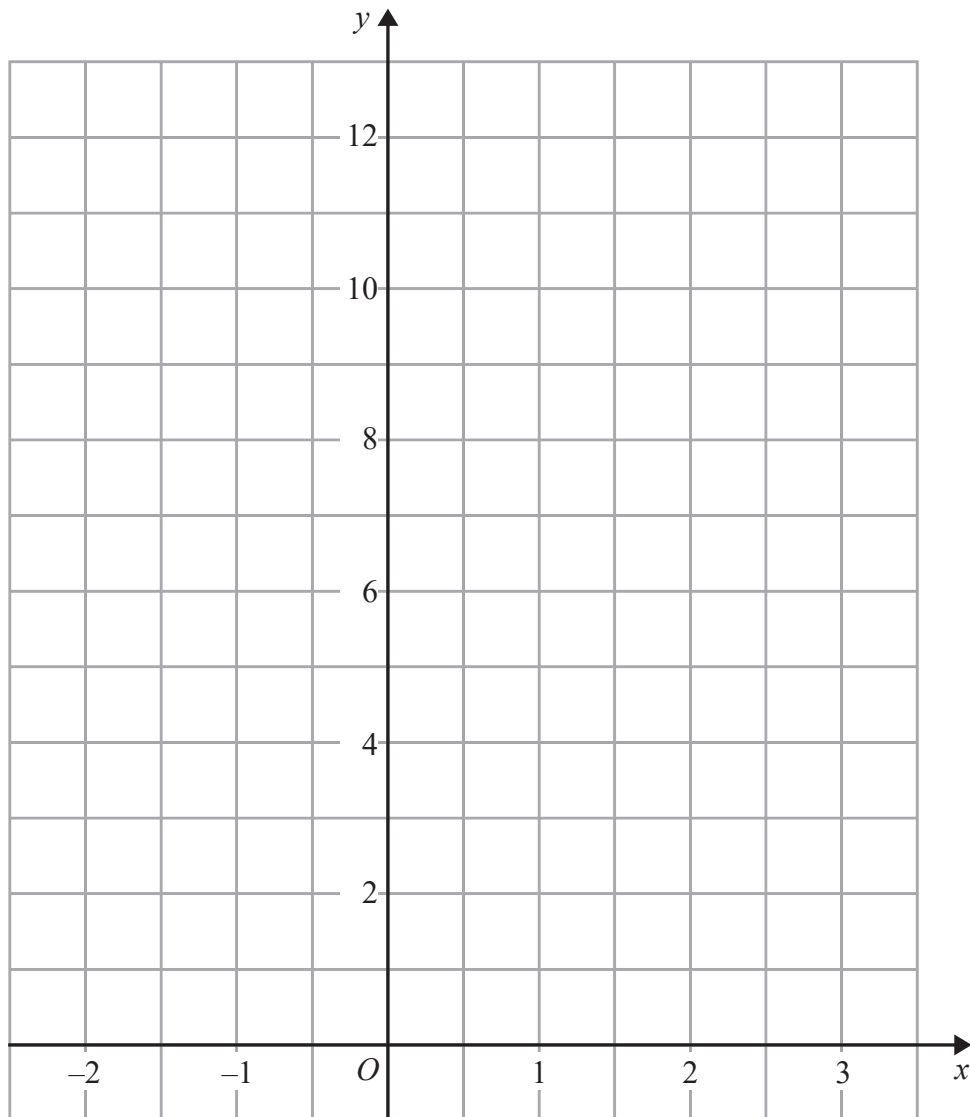
(Total for Question 4 is 3 marks)

5 (a) Expand $3m(m-2)$

....
(2)

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

....
(2)

(c) Expand and simplify $2(q+7) + 3(q-1)$

....
(2)

(Total for Question 5 is 6 marks)

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)

(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 nth term of this sequence.

....

(3)

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

Find the 5th term of this sequence.

....

(2)

(Total for Question 6 is 7 marks)

7 (a) Factorise $2m - 10$

....
(1)

(b) Factorise $6n^2 + 3n$

....
(2)

(c) Factorise $rt - r^2t$

....
(2)

(Total for Question 7 is 5 marks)

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)

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)

(Total for Question 8 is 4 marks)

9 Sketch the graph of $y = 2x^2 - 5$

y

O

x
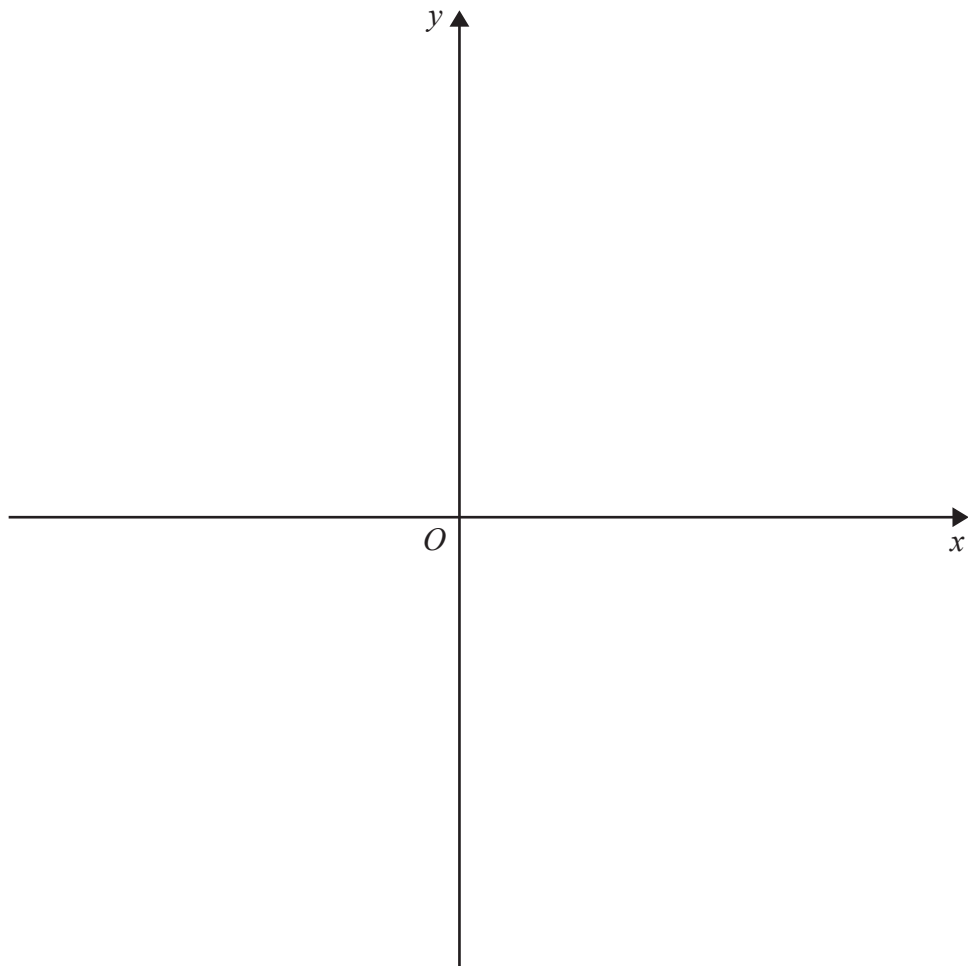
(Total for Question 9 is 3 marks)

Turn over ▶

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

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

    ....

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

    ....

    (iii) Make t the subject of the formula $m = 2s - 3t$

    ....

    (6)

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

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

    ....

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

    ....

    (3)

(Total for Question 10 is 9 marks)

11 $-4 < w \leqslant 4$

w is an integer.

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

....

(1)

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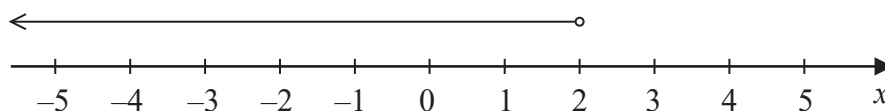
Write down this inequality.

....

(2)

(c) On the number line below, show the inequality $-3 \leqslant y \leqslant 0$
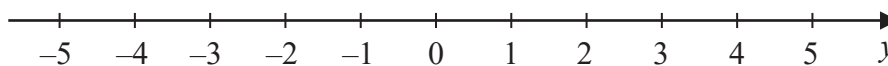
(2)

(d) Solve the inequality $4d + 9 > 5$

....

(2)

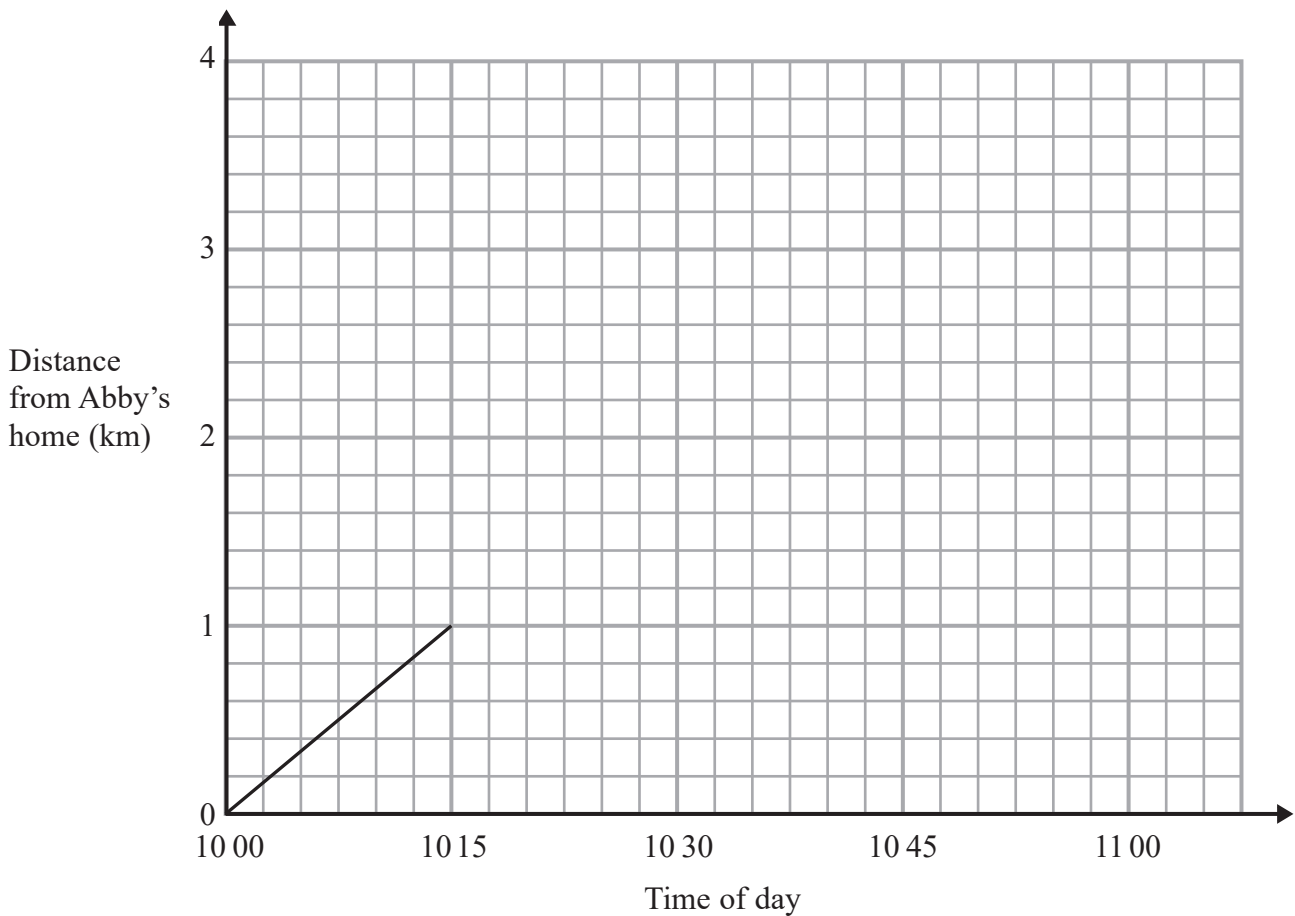**(Total for Question 11 is 7 marks)**

12 Abby walked 3 km from her home to her friend's house.
Abby left home at 10 00

Here 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 for Abby's journey to her friend's house.

(2)

(b) Work out Abby's speed for the first 15 minutes of her journey.
Give your answer in km/h.

....km/h

(2)

(Total for Question 12 is 4 marks)

13 (a) Solve $\dfrac{x+4}{2} = 5$

$x = $ ....
(2)

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

$y = $ ....
(3)

(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)

(b) On the grid, draw the graph of $y = x^2 - 6x + 10$ for values of x from -2 to 8
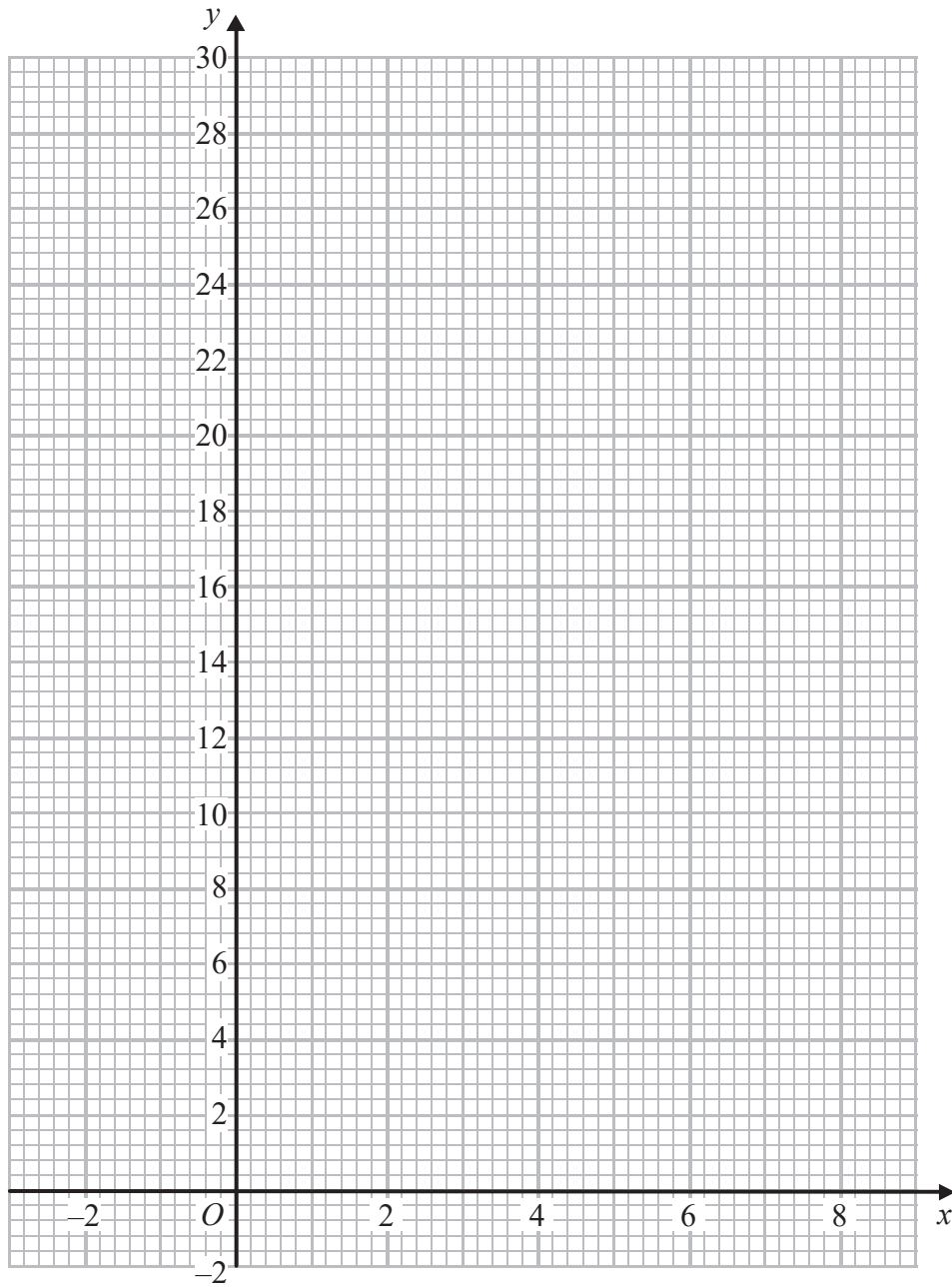
(2)

(c) Use your graph to find estimates for the solutions of $x^2 - 6x + 10 = 14$

....

(2)

(Total for Question 14 is 6 marks)

15 Here is a straight line **L** drawn on a grid.
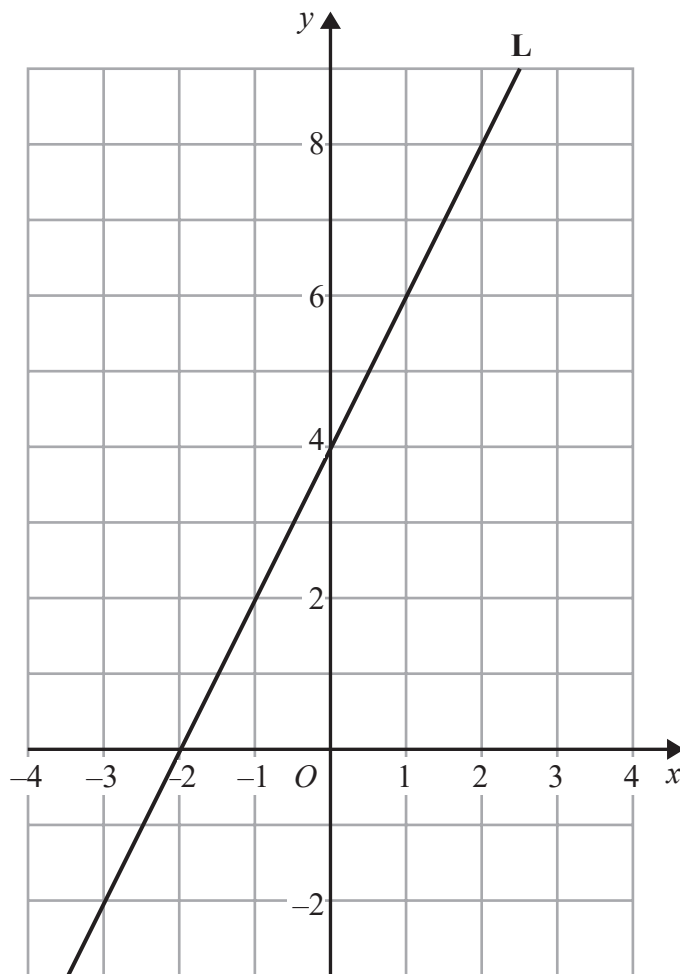
(i) Find the gradient of **L**.

....

(ii) Find an equation for **L**.

....

(Total for Question 15 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS

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P 4 8 3 7 4 A 0 1 9 2 0

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