Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel Award

Time 1 hour 30 minutes

Paper reference **AAL20/01**

Algebra

Level 2
Calculator NOT allowed

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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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Q:1/1/1/1/

P 6 6 3 2 6 A 0 1 2 0

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 $2c + d - 2c + 3d$

.....

(1)

(b) Simplify $2 \times w \times w \times 4w$

.....

(2)

(c) Simplify $p^3 \times p^5$

.....

(1)

(d) Simplify $\dfrac{h^5}{h}$

.....

(1)

(e) Simplify $(5t^2)^3$

.....

(2)

(Total for Question 1 is 7 marks)

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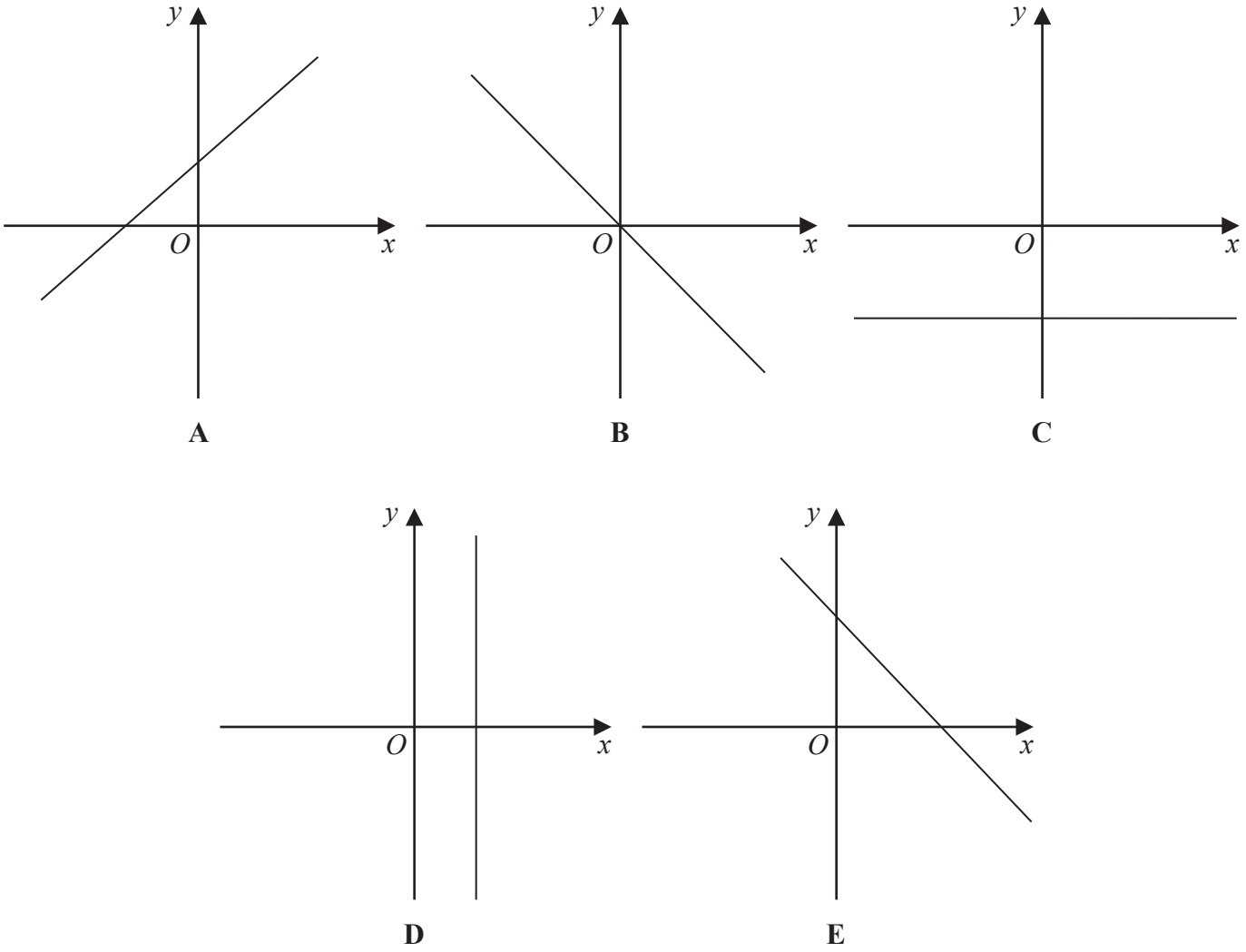
2 Here are five sketch graphs of straight lines.



The equation of each of these graphs is given in the table.

Equation	Graph
$x = 2$	
$y = x + 2$	
$y = -3$	
$y = -x$	
$x + y = 5$	

Match the letter of the graph to its equation.

(Total for Question 2 is 3 marks)

3 (a) Factorise $m^2 + m$

.....

(1)

(b) Factorise $6x^2y - 9xy^2$

.....

(2)

(Total for Question 3 is 3 marks)

4 (a) Solve $2w + 3 = 17$

$w =$ .....

(2)

(b) Solve $\frac{k}{3} - 1 = 5$

$k =$ .....

(2)

(c) Solve $5(x + 2) = -10$

$x =$ .....

(3)

(Total for Question 4 is 7 marks)

5 The first term of a sequence is 10
Other terms of the sequence are found by using the rule

"multiply the previous term by 3"

(a) Work out the next three terms of this sequence.

....

(2)

Here are the first four terms of an arithmetic sequence.

9 7 5 3

(b) Find an expression, in terms of n, for the nth term of this sequence.

.....

(2)

(Total for Question 5 is 4 marks)

6 (a) Expand $7(2p + 3)$

.....

(2)

(b) Expand $3q(5q - 2q^2)$

.....

(2)

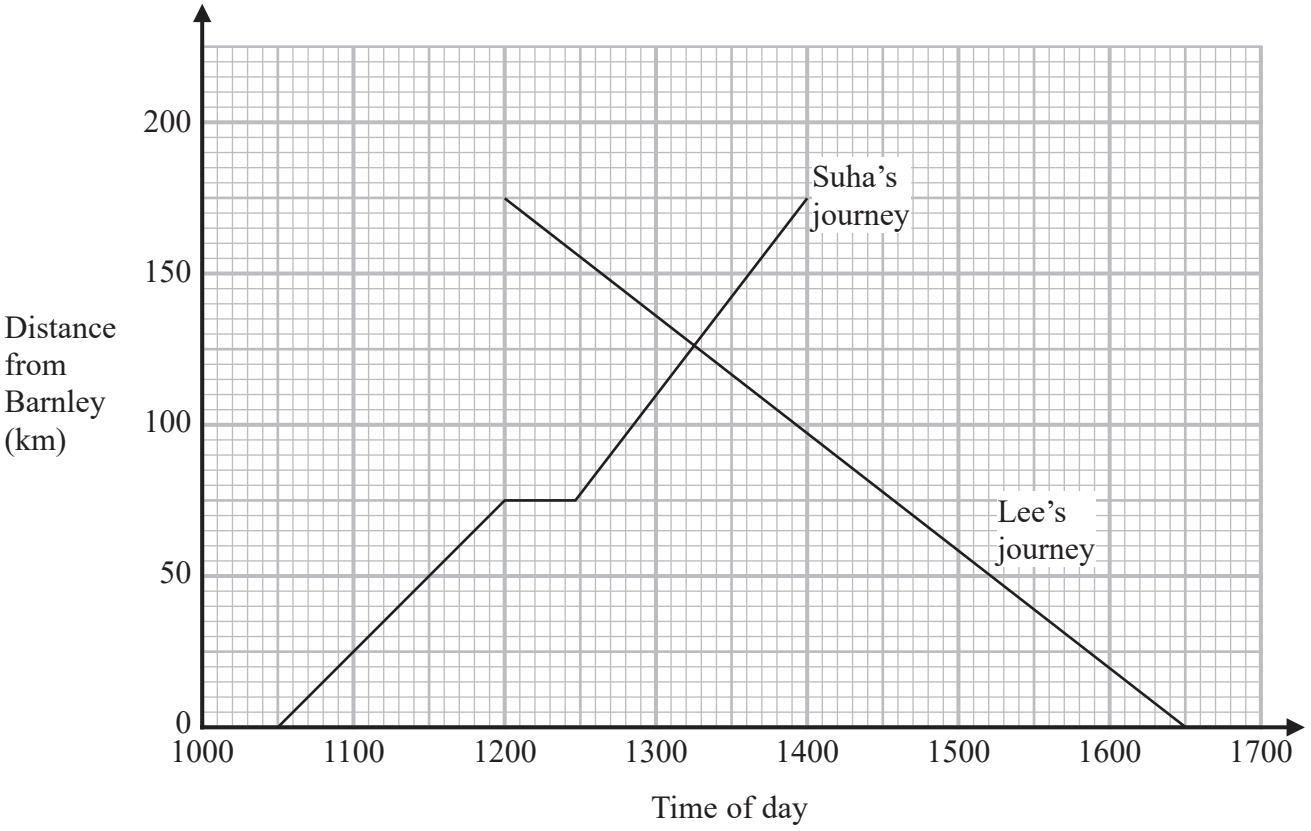
(Total for Question 6 is 4 marks)

7 Place a tick (✓) in the appropriate column of the table to show whether each of the following is an equation, an expression or a formula.

	Equation	**Expression**	**Formula**
$L = 4w$			
$p^2 = 2p - 4$			
Distance = speed × time			
$x^2 + x$			

(Total for Question 7 is 3 marks)

8 Here is a travel graph giving information about two journeys.



Suha drove from Barnley to Cromly as shown on the travel graph.

(a) Find the distance between Barnley and Cromly.

..... km

(1)

(b) Work out Suha's speed, in km/h, for the first $1\frac{1}{2}$ hours of her journey.

..... km/h

(2)

The travel graph shows that Lee left Cromly at 1200
Suha and Lee drove along the same road between Barnley and Cromly.

(c) At what time did Suha and Lee pass each other?

.....

(1)

Lee's car was parked in Cromly for 1 hour before he drove from Cromly to Barnley.

(d) Show this information on the travel graph.

(1)

(Total for Question 8 is 5 marks)

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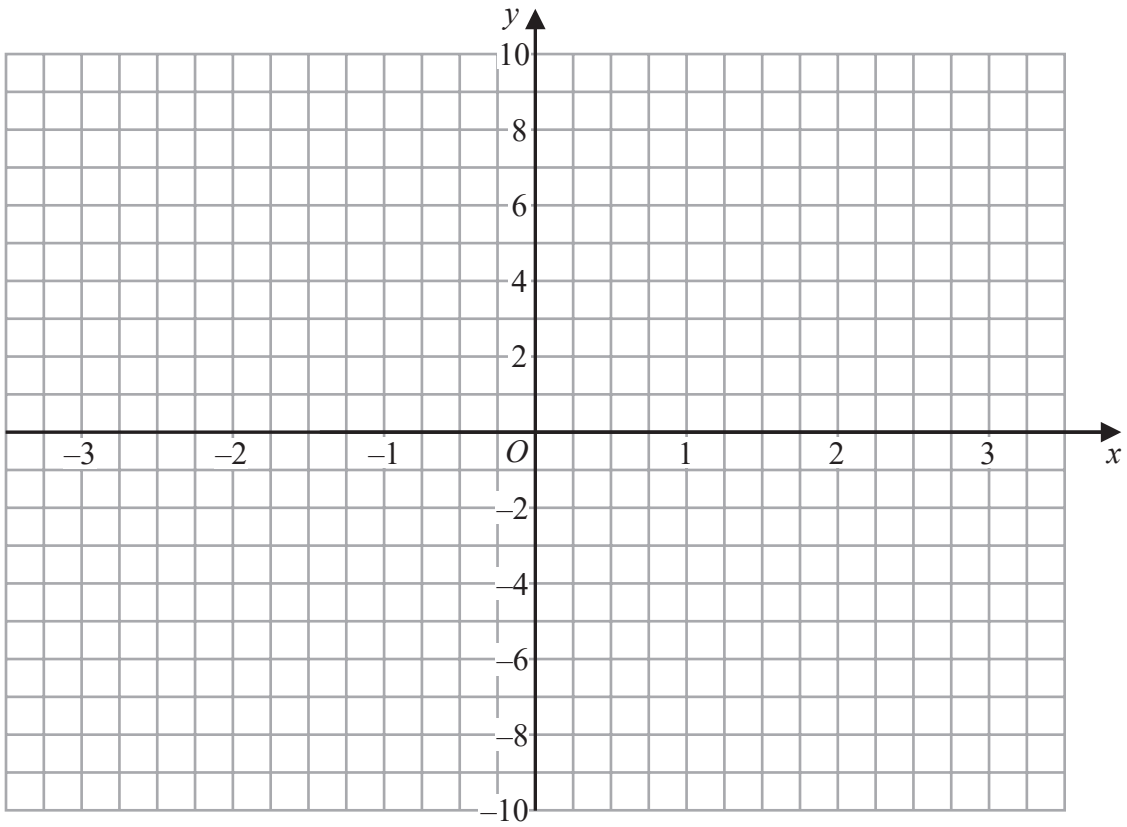
9 On the grid, draw the graph of $y = 2(x + 1)$ for values of x from –3 to 3



(Total for Question 9 is 3 marks)

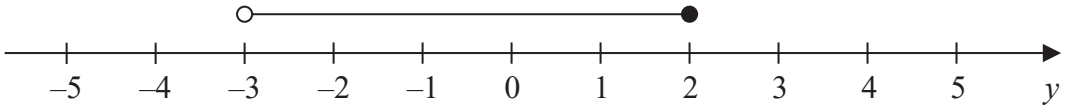
10 $x < -3$
x is an integer.

(a) Write down a possible value for x.

.....

(1)

Here is an inequality in y shown on a number line.

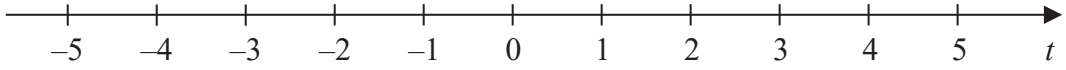


(b) Write down the inequality.

.....

(2)

(c) On the number line below, show the inequality $t \leqslant 0$



(2)

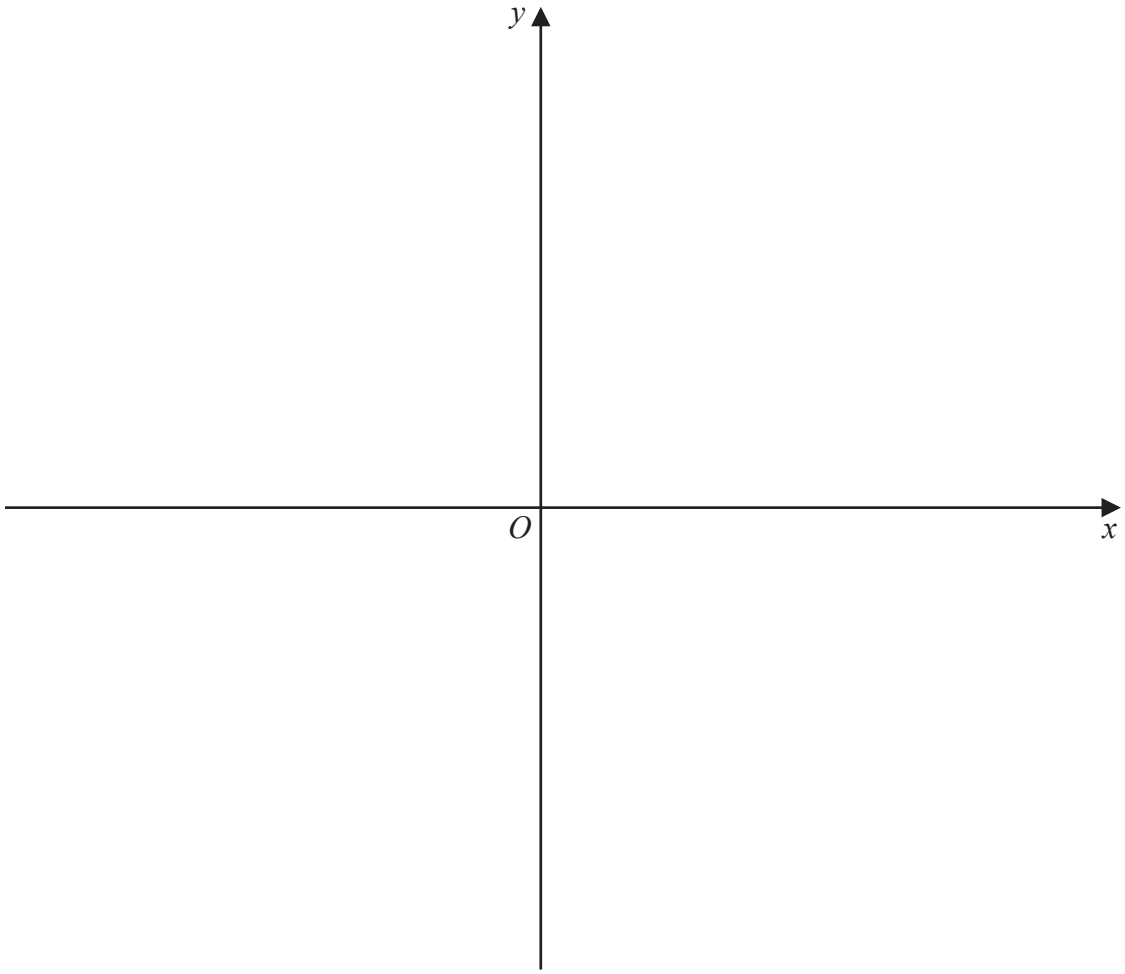
(d) Solve $2 + w < 5 - w$

.....

(2)

(Total for Question 10 is 7 marks)

11 Using the axes below, sketch the graph of $y = 2x^2 - 3$



(Total for Question 11 is 3 marks)

12 Adam has £x
Beryl has 3 times as much money as Adam.
Colin has £5 more than Adam.

(a) Write down an expression, in terms of x, for the amount of money Beryl has.

.....

(1)

(b) Write down an expression, in terms of x, for the total amount of money that Adam, Beryl and Colin have.
Give your answer in its simplest form.

.....

(2)

Beryl has more money than Colin.

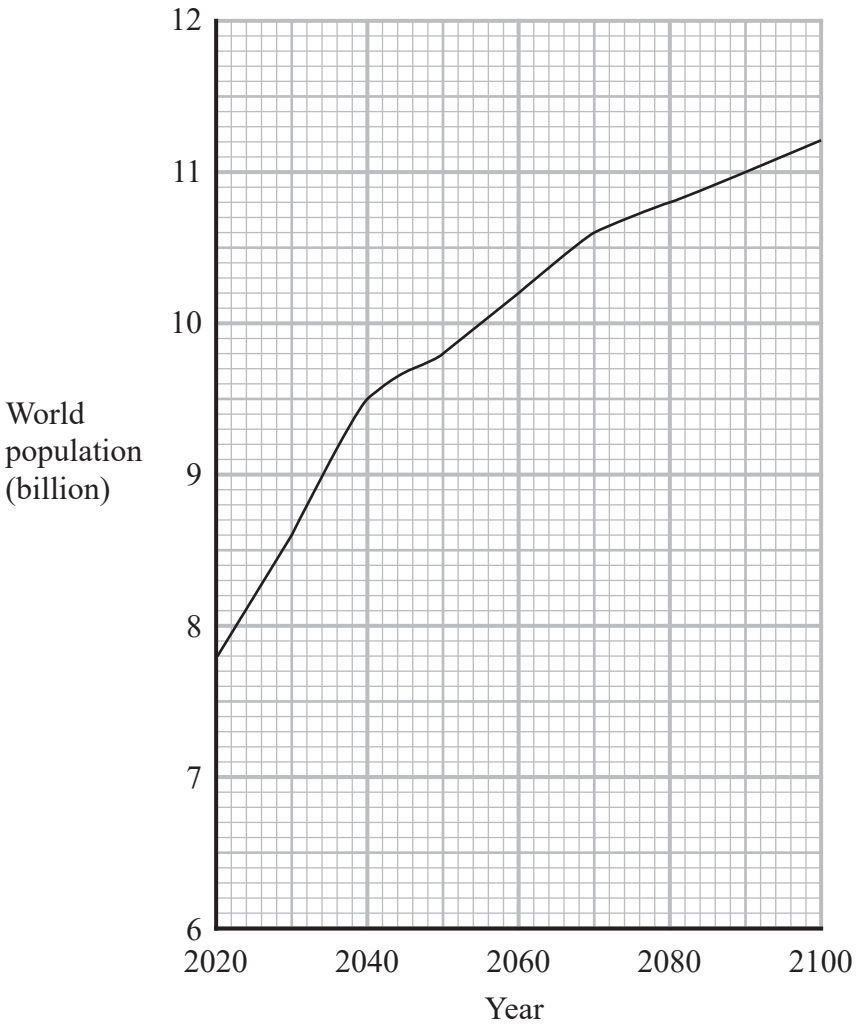
(c) Write down an expression, in terms of x, for how much more.
Give your answer in its simplest form.

.....

(2)

(Total for Question 12 is 5 marks)

13 This graph shows a prediction for the world's population between the year 2020 and the year 2100



(a) Find the prediction for the world's population for the year 2030

..... billion

(1)

(b) Find the year when the world's population is predicted to be 10 billion.

.....

(1)

(c) Work out the predicted increase in the world's population between the years 2020 and 2100

..... billion

(2)

(d) In which 20 year period is the world's population predicted to increase at the greatest rate?

.....

(1)

(Total for Question 13 is 5 marks)

14 $d = \frac{3v}{2} - 1$

(a) Work out the value of d when $v = 10$

.....

(2)

(b) Work out the value of v when $d = 5$

.....

(3)

(c) Make v the subject of the formula $d = \frac{3v}{2} - 1$

.....

(3)

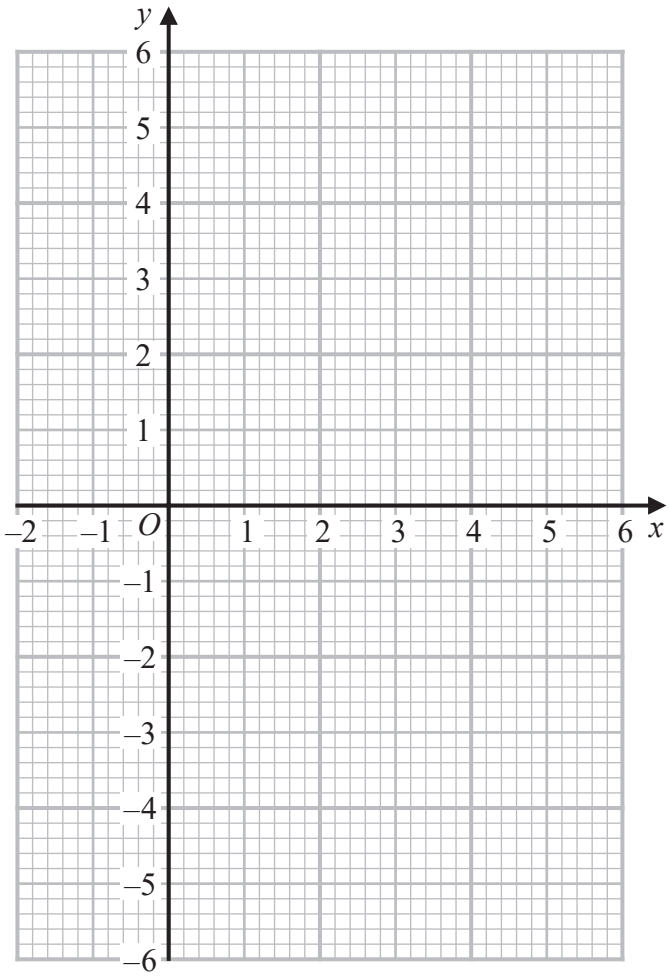
(Total for Question 14 is 8 marks)

15 (a) Complete the table of values for $y = 4x - x^2$

x	–1	0	1	2	3	4	5
y			3	4			

(2)

(b) On the grid, draw the graph of $y = 4x - x^2$ for values of x from –1 to 5



(2)

(c) Use your graph to find estimates for the solutions of $4x - x^2 = 2$

.....

(2)

(Total for Question 15 is 6 marks)

16 Solve $\frac{12x + 3}{5} = 2x$

$x =$ .....

(Total for Question 16 is 3 marks)

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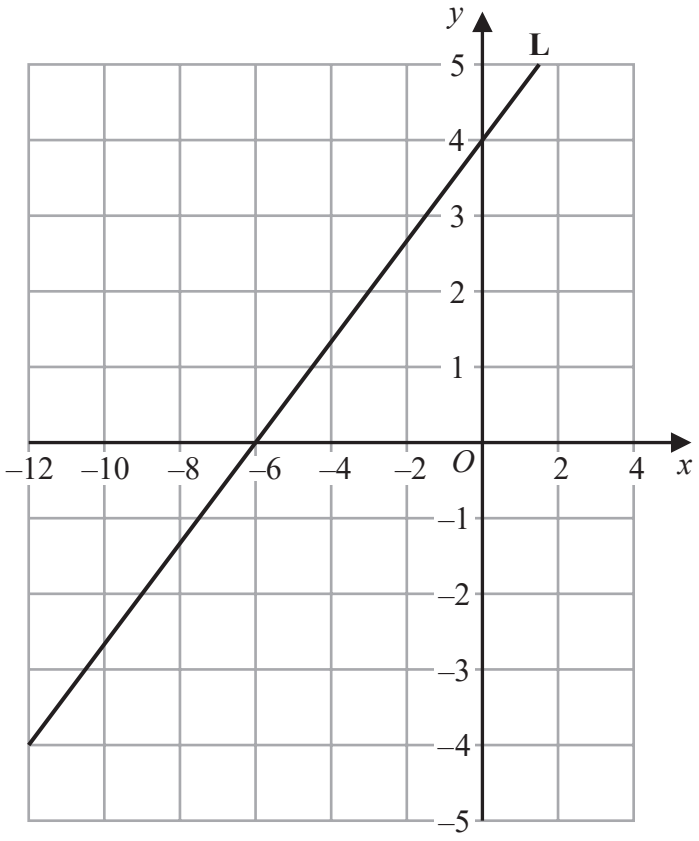
17 Here is a straight line **L** drawn on a grid.



(a) Find the gradient of **L**

.....

(2)

(b) Find an equation for **L**

.....

(2)

(Total for Question 17 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS

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