

Write your name here

Surname

Other names

**Pearson
Edexcel Award**

Centre Number

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Candidate Number

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**Algebra
Level 2
Calculator NOT allowed**

Monday 11 May 2015– Morning
Time: 1 hour 30 minutes

Paper Reference

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 ►

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PEARSON

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

1 (a) Simplify $m + m + m + m^2$

.....
(1)

(b) Simplify $3 \times c \times 5 \times c \times 2 \times c$

.....
(2)

(c) Simplify $n^5 \times n^2$

.....
(1)

(d) Simplify $\frac{t^6}{t^4}$

.....
(1)

(e) Simplify $(4w)^2 \div 2w$

.....
(2)

(Total for Question 1 is 7 marks)



2 (a) Simplify $6x + 4 - 2x + 3$

.....
(2)

(b) Expand $6(1 - y)$

.....
(1)

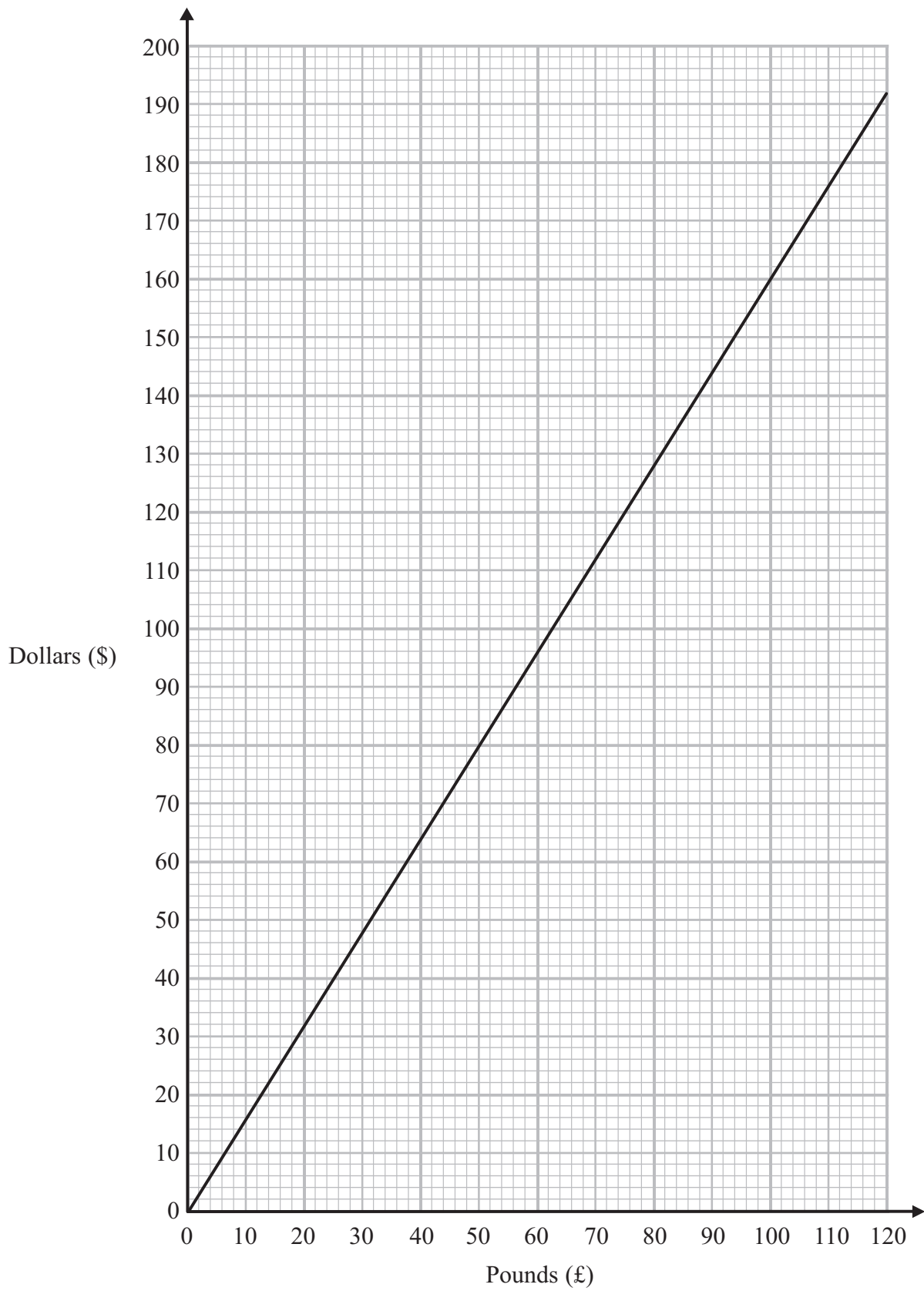
(c) Expand and simplify $3x(y + 2) + x(y - 4)$

.....
(2)

(Total for Question 2 is 5 marks)



3 This conversion graph can be used to change between UK pounds (£) and USA dollars (\$).



Lorna went to the USA for a holiday.
She changed £100 into dollars.

(a) How many dollars did she get?

\$.....
(1)

At the end of her holiday, Lorna changed \$56 into pounds.
The exchange rate was the same.

(b) How many pounds did she get?

£.....
(1)

(Total for Question 3 is 2 marks)

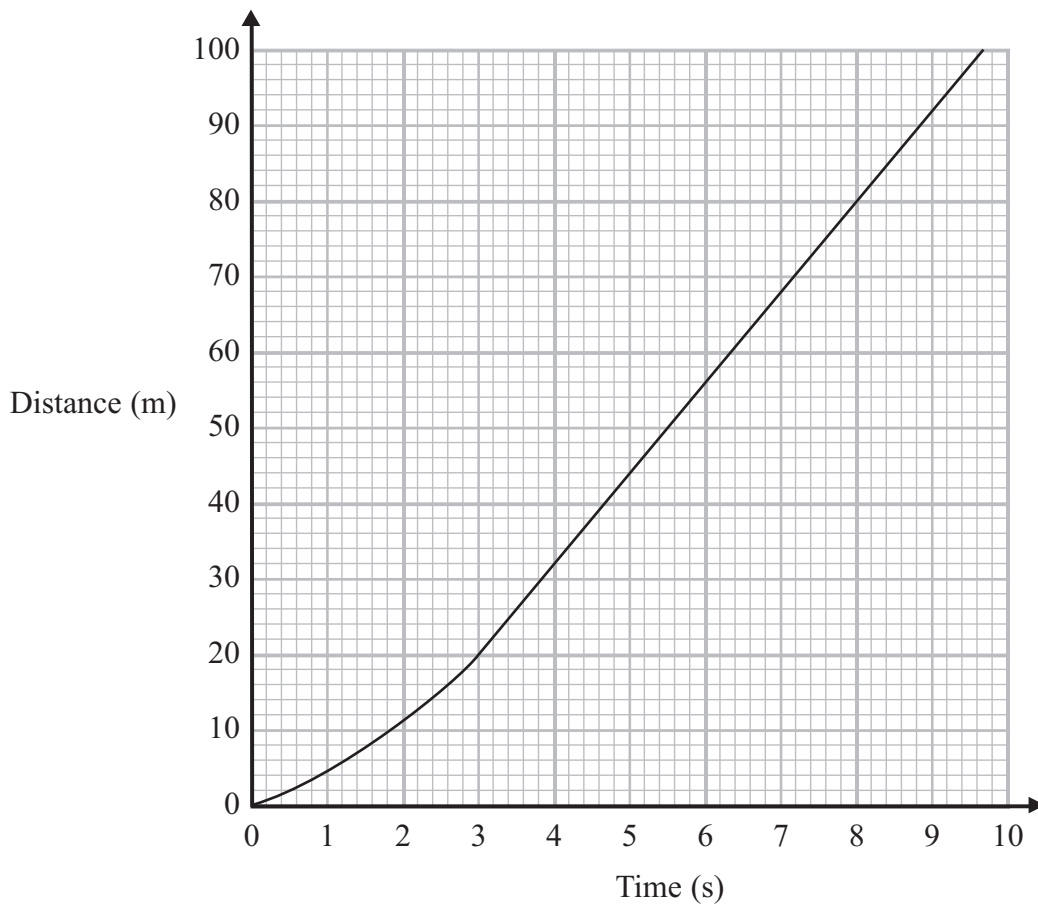
4 Place a tick in the appropriate column of the table to show whether each of the following is an equation or is an expression or is a formula.

	Equation	Expression	Formula
$x^2 - 2x = 24$			
$3ab + 6bc$			
$I = \frac{PRT}{100}$			
$s = 5\sqrt{t - 2}$			

(Total for Question 4 is 3 marks)



5 Here is the distance-time graph for a sprinter in a race.



The sprinter ran 100 metres.

(a) How long did it take him?

.....s
(1)



From 3 seconds, the graph is a straight line.

(b) Work out the gradient of the straight line.

.....
(2)

(c) What does the gradient of this straight line represent?

.....
(1)

(Total for Question 5 is 4 marks)



6 (a) Solve $2d + 1 = 8$

$d = \dots\dots\dots$
(2)

(b) Solve $\frac{m + 4}{3} = 1$

$m = \dots\dots\dots$
(2)

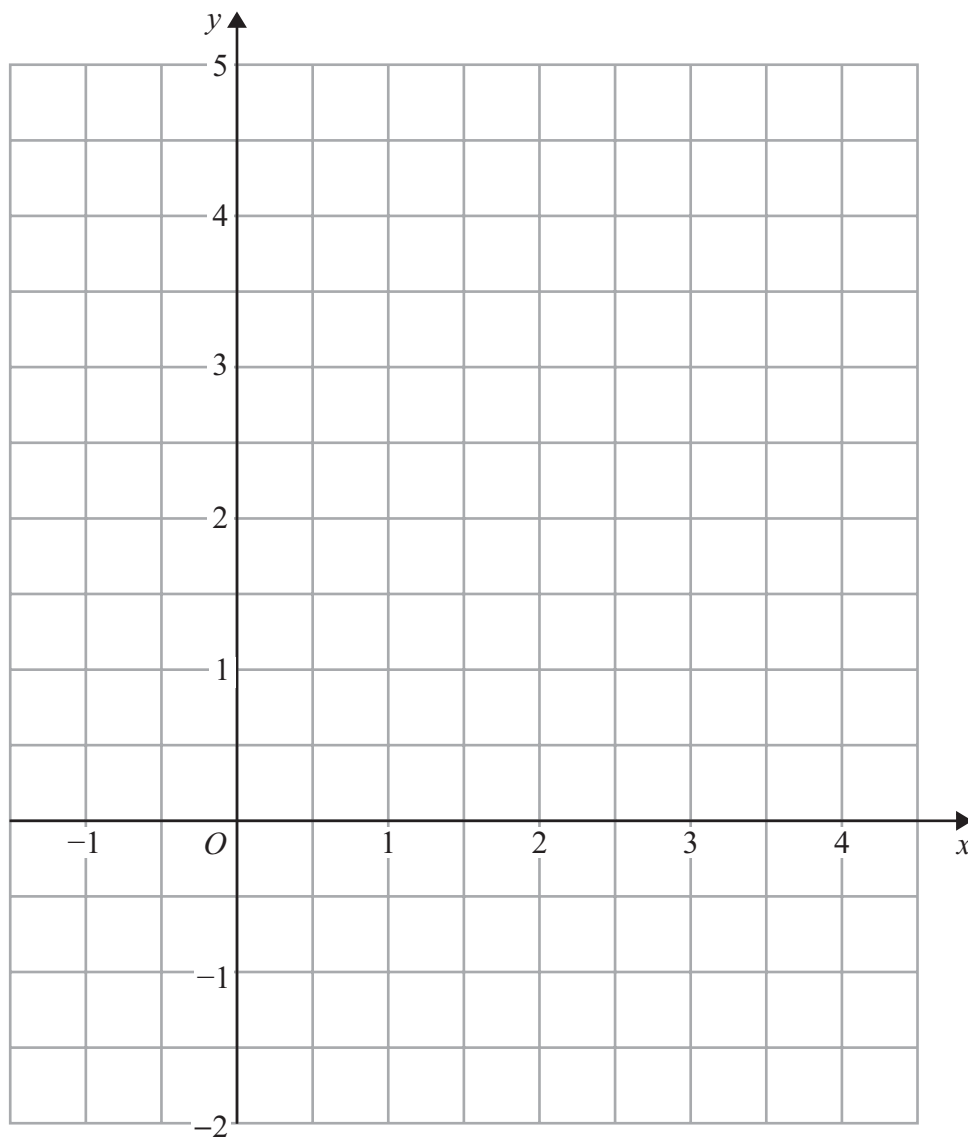
(c) Solve $5(n - 4) = 2n + 7$

$n = \dots\dots\dots$
(3)

(Total for Question 6 is 7 marks)



7 On the grid, draw the graph of $y = 3 - x$ for values of x from -1 to 4



(Total for Question 7 is 3 marks)



8 (a) Factorise $20 - 4e$

.....
(2)

(b) Factorise $abc + ab^2$

.....
(2)

(c) Factorise $14d^4 + 21d^3$

.....
(2)

(Total for Question 8 is 6 marks)

9 Mrs Watkins is n years old.
Mrs Watkins is three times as old as her daughter Lizzie.
Lizzie is 5 years younger than her brother Christopher.

Write down an expression, in terms of n , for Christopher's age.

.....
(Total for Question 9 is 2 marks)



10 Here are the first five terms of an arithmetic sequence.

40 35 30 25 20

(a) Write down the next two terms of this sequence.

.....
(1)

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

.....
(2)

The n th term of a different sequence is given by the expression $3n^2 - 1$

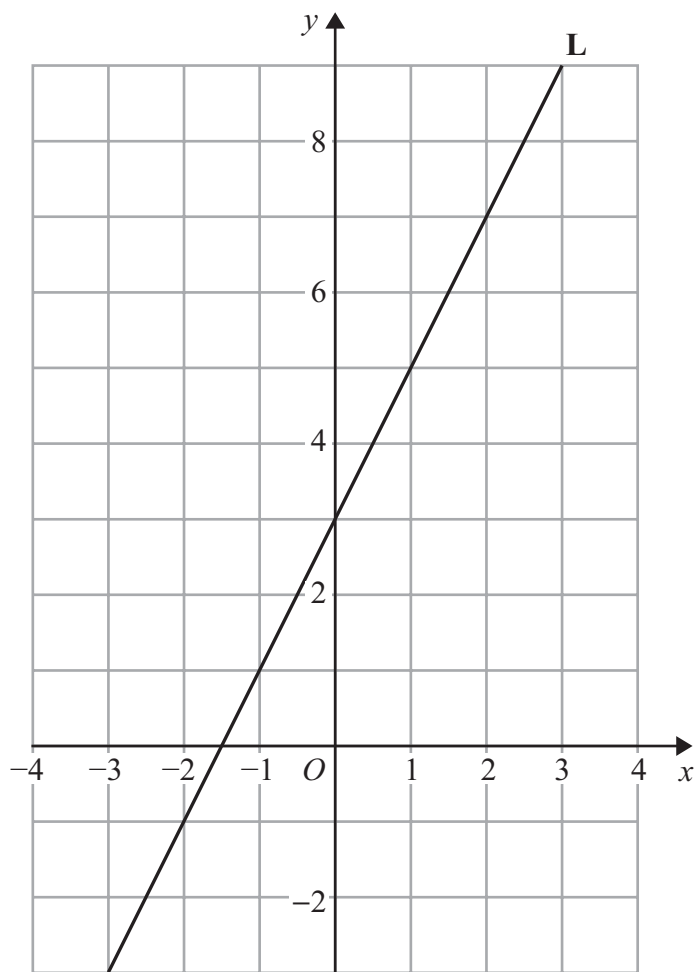
(c) Find the 5th term of this sequence.

.....
(2)

(Total for Question 10 is 5 marks)



11 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 11 is 4 marks)



12 $w = 3x - y$

(a) (i) Work out the value of w when $x = 8$ and $y = 5$

.....

(ii) Work out the value of w when $x = -2$ and $y = -1$

.....

(4)

(b) Make x the subject of the formula $w = 3x - y$

.....

(2)

$$s = \frac{1}{2}(u + v)t$$

(c) Work out the value of v when $s = 45$, $t = 10$ and $u = 2.5$

$v =$

(3)

(Total for Question 12 is 9 marks)



13 The equation of a graph is $y = x^2 - 3$

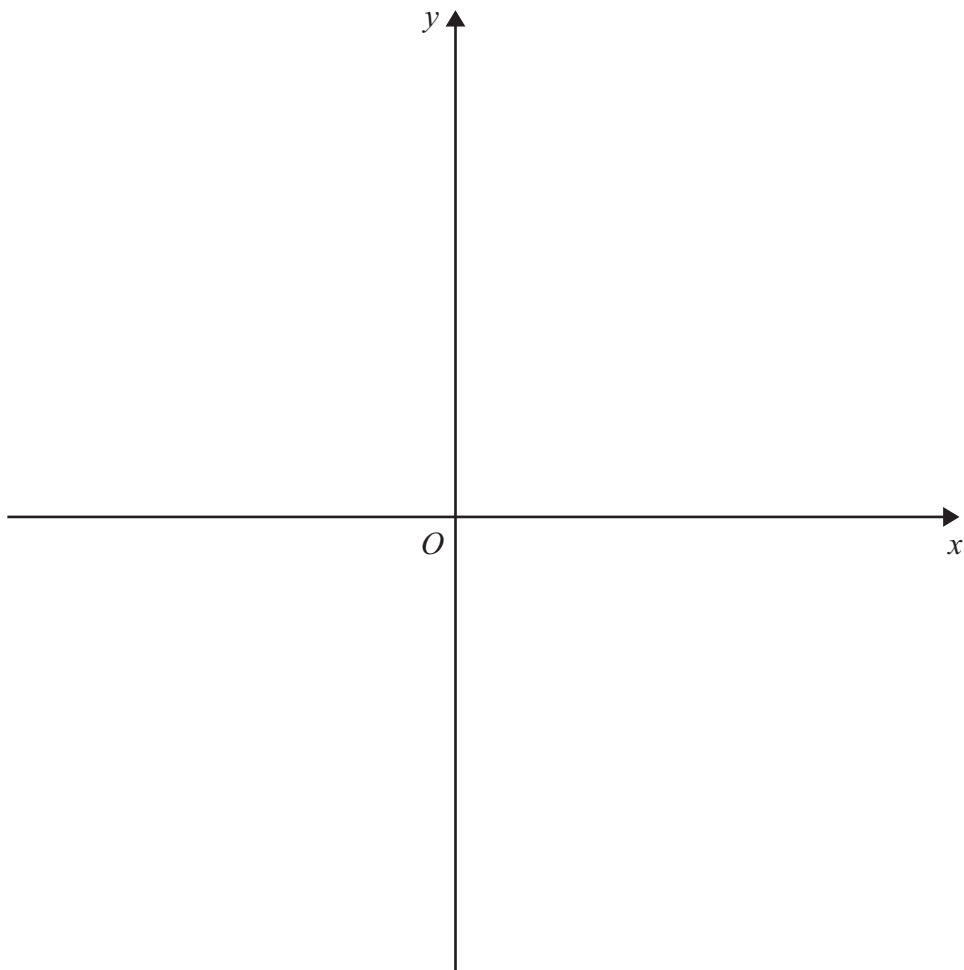
(a) Find the coordinates of the point of intersection of this graph with the y -axis.

.....
(1)

(b) For $y = x^2 - 3$ describe what happens to the value of y as the value of x becomes very large.

.....
.....
(1)

(c) On the axes below, sketch the graph of $y = x^2 - 3$



(2)

(Total for Question 13 is 4 marks)



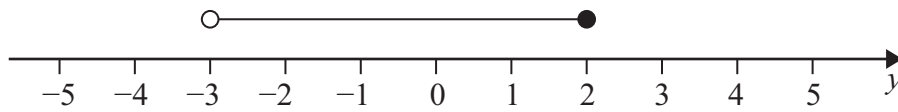
14 $-2 < n \leq 4$

n is an integer.

(a) Write down all the possible values of n .

.....
(2)

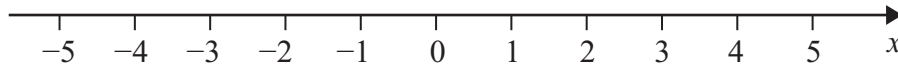
(b) Here is an inequality shown on a number line.



Write down this inequality.

.....
(2)

(c) On the number line below, show the inequality $-4 < x < 1$



(2)

(d) Solve the inequality $p + 5 \leq 0$

.....
(1)

(e) Solve the inequality $-4y > 12$

.....
(2)

(Total for Question 14 is 9 marks)



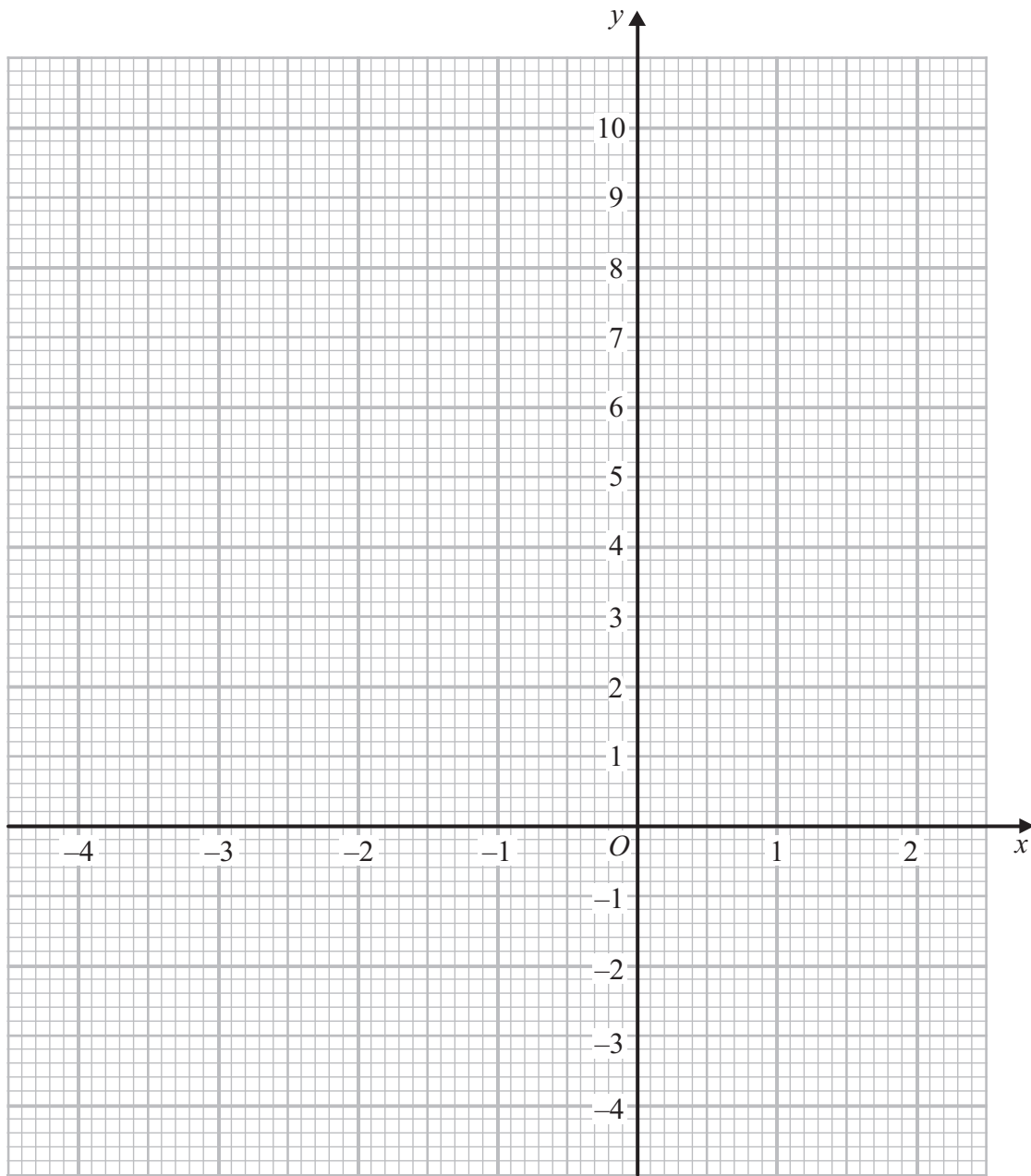
15 (a) Complete the table of values for $y = (x + 1)^2$

x	-4	-3	-2	-1	0	1	2
y	9				1	4	

(2)



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



(2)

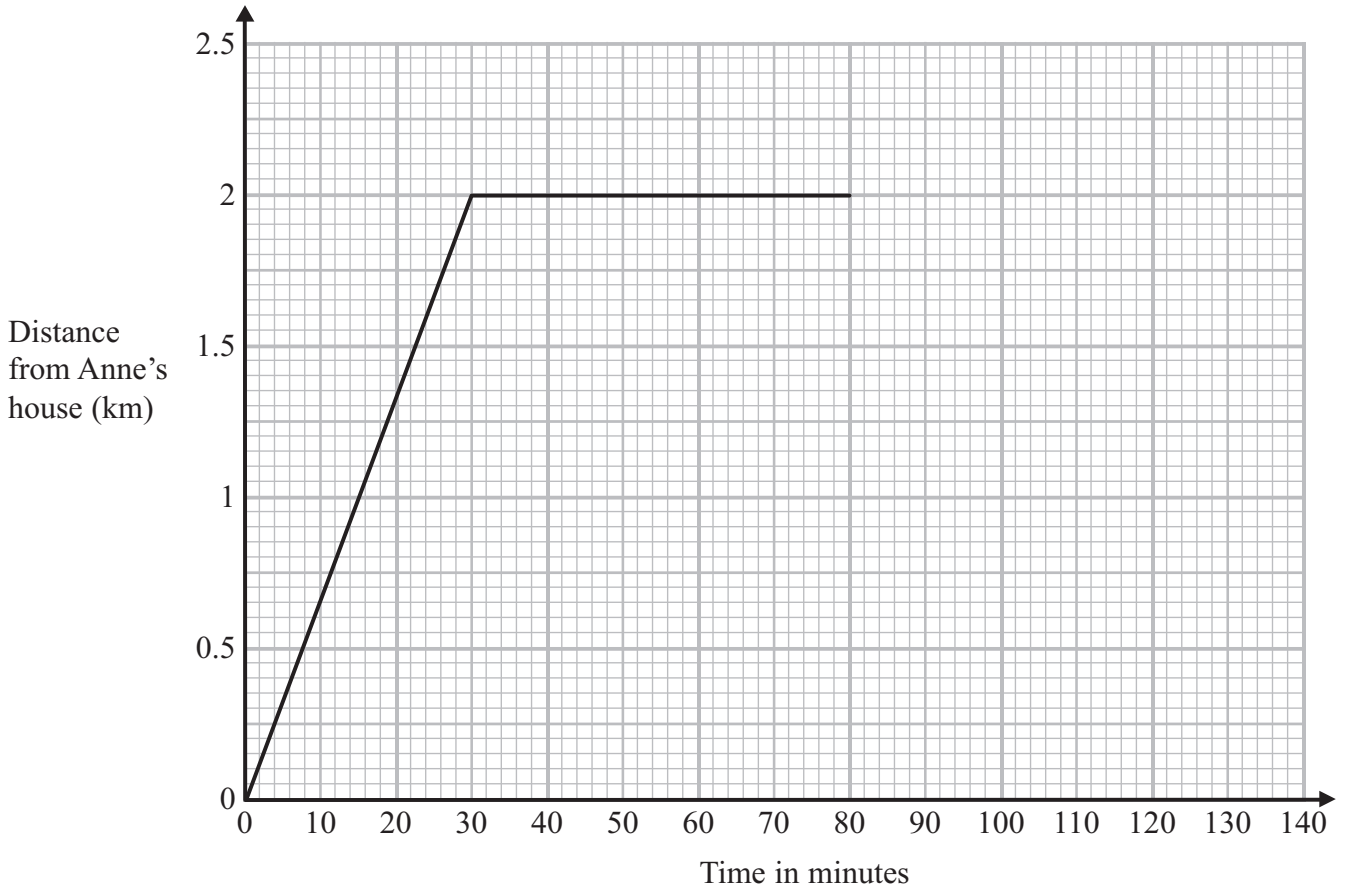
(c) Use your graph to find estimates for the solutions of $(x + 1)^2 = 7$

.....
(2)

(Total for Question 15 is 6 marks)



16 Here is part of a travel graph for Anne's journey from her house to a sports centre and back. It gives information about her journey to the sports centre and the time she was at the sports centre.



(a) Write down the distance, in km, from Anne's house to the sports centre.

..... km
(1)

(b) For how many minutes was Anne at the sports centre?

..... minutes
(1)

Anne travelled back to her house at a steady speed of 3 km/h.

(c) Complete the travel graph.

(2)

(Total for Question 16 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS



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