

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

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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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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 $p^2 \times p^5$

.....
(1)

(b) Simplify $w^7 \div w^4$

.....
(1)

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

.....
(1)

(d) Expand and simplify $n(n - 3) + 2n(5 + n)$

.....
(3)

(Total for Question 1 is 6 marks)

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2 (a) Solve $5d + 4 = 34$

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

(b) Solve $\frac{2p}{3} = 5$

$p = \dots\dots\dots$
(2)

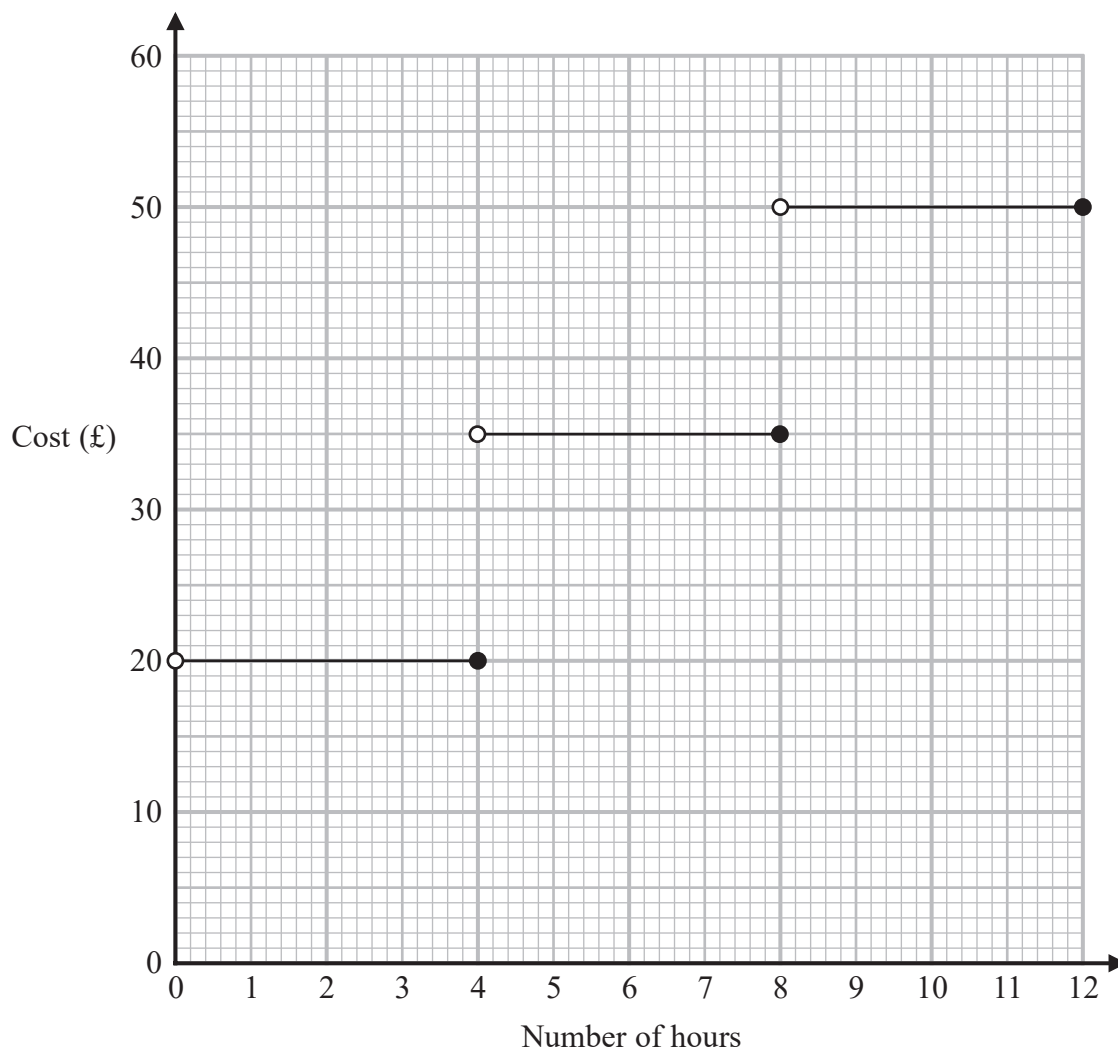
(c) Solve $3w - 6 = 4w + 2$

$w = \dots\dots\dots$
(2)

(Total for Question 2 is 6 marks)



- 3 The graph can be used to find the cost of hiring a village hall for a number of hours.



- (a) Use the graph to find the cost of hiring the village hall for 5 hours.

£.....
(1)

Ben hired the village hall for n hours.
It cost him £50

- (b) Complete the inequality for n .

.....
 $< n \leq$
.....
(1)

(Total for Question 3 is 2 marks)



4 The first two terms of a sequence are

64 36

Other terms of the sequence are found by using the rule

“divide the previous term by 2 and add 4”

(a) (i) Work out the third term of this sequence.

.....
(1)

(ii) Work out the fifth term of this sequence.

.....
(2)

Here are the first five terms of an arithmetic sequence.

7 13 19 25 31

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

.....
(2)

(Total for Question 4 is 5 marks)



5 (a) Simplify $x + 2y + 3x - 5y$

.....
(2)

(b) Simplify $m^4 - 4m^3(m - 1)$

.....
(2)

(Total for Question 5 is 4 marks)

6 Place a tick in the table to show which one of the following is an expression.

	Expression
$x - 3 = 5$	
$m = 2n^2$	
$\sqrt{a + 4}$	

(Total for Question 6 is 1 mark)



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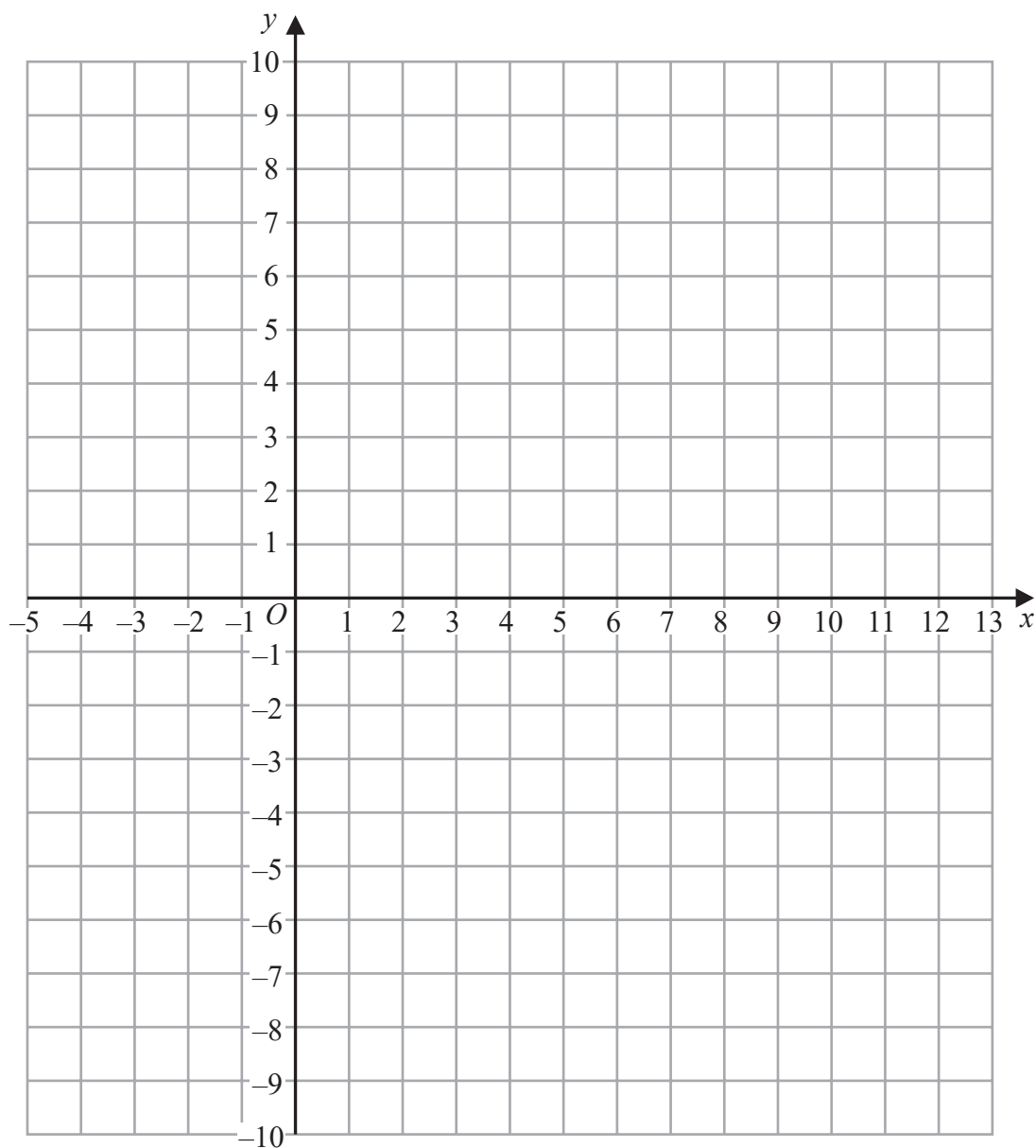
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7 (a) Complete the table of values for $y = \frac{1}{2}x - 5$

x	-4	0	4	8	12
y					

(2)

(b) On the grid, draw the graph of $y = \frac{1}{2}x - 5$ for values of x from -4 to 12



(2)

(Total for Question 7 is 4 marks)



8 (a) Factorise $4p - 6e$

.....
(1)

(b) Factorise $12f^2 - 9f$

.....
(2)

(c) Factorise $10a^2x + 25a^2x^2$

.....
(2)

(Total for Question 8 is 5 marks)

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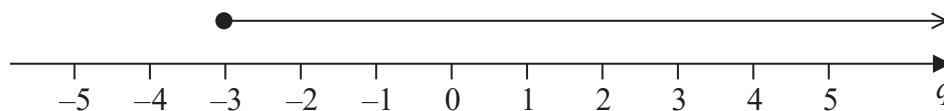
9 $-3 < g \leq 2$

g is an integer.

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

.....
(2)

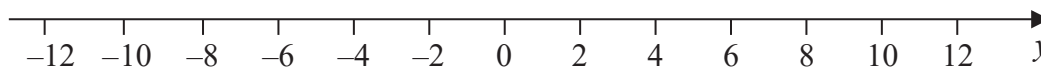
(b) Here is an inequality in q shown on a number line.



Write down the inequality.

.....
(1)

(c) On the number line below, show the inequality $-8 < y < 0$



(2)

(d) Solve the inequality $7 - 2x \leq 0$

.....
(2)

(Total for Question 9 is 7 marks)



10 Emma works for t hours on each of 5 days every week.

- (a) Write down an expression, in terms of t , for the total number of hours Emma works every week.

.....
(1)

Last week Emma also worked 3 hours overtime.

- (b) Write down an expression, in terms of t , for the **total** number of hours Emma worked last week.

.....
(1)

Each week Josh works for m hours on each day from Monday to Wednesday and for p hours each day on Thursday and Friday.

He does not work any overtime.

Each week Josh works for a total of T hours.

- (c) Write down a formula for T in terms of m and p .

.....
(3)

(Total for Question 10 is 5 marks)

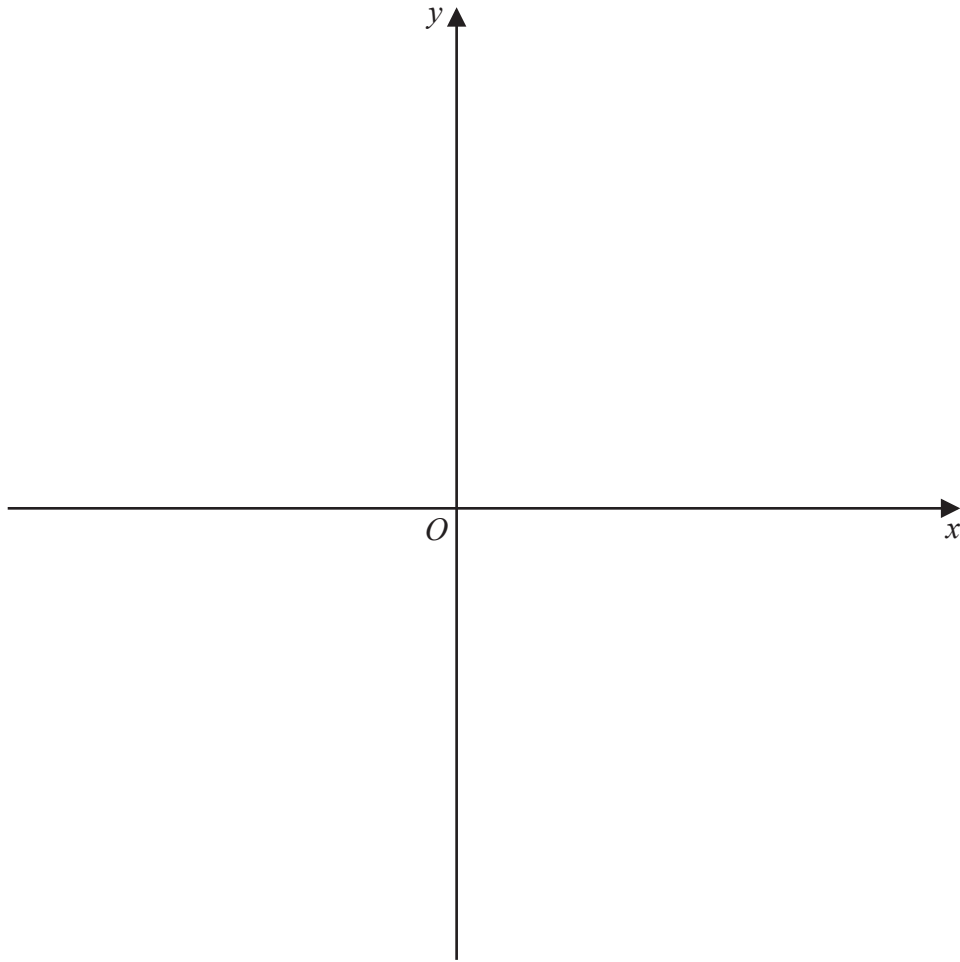


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11 Sketch the graph of $y = \frac{1}{4}x^2$



(Total for Question 11 is 2 marks)



12 $m + 3n = 14$

(a) (i) Work out the value of m when $n = 3$

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

(ii) Work out the value of n when $m = -10$

$$n = \dots\dots\dots (2)$$

(b) Make n the subject of $m + 3n = 14$

$$\dots\dots\dots (2)$$



$$k = \sqrt{\frac{d}{2}}$$

(c) (i) Find the value of k when $d = 200$

$$k = \dots\dots\dots (2)$$

(ii) Find the value of d when $k = 3$

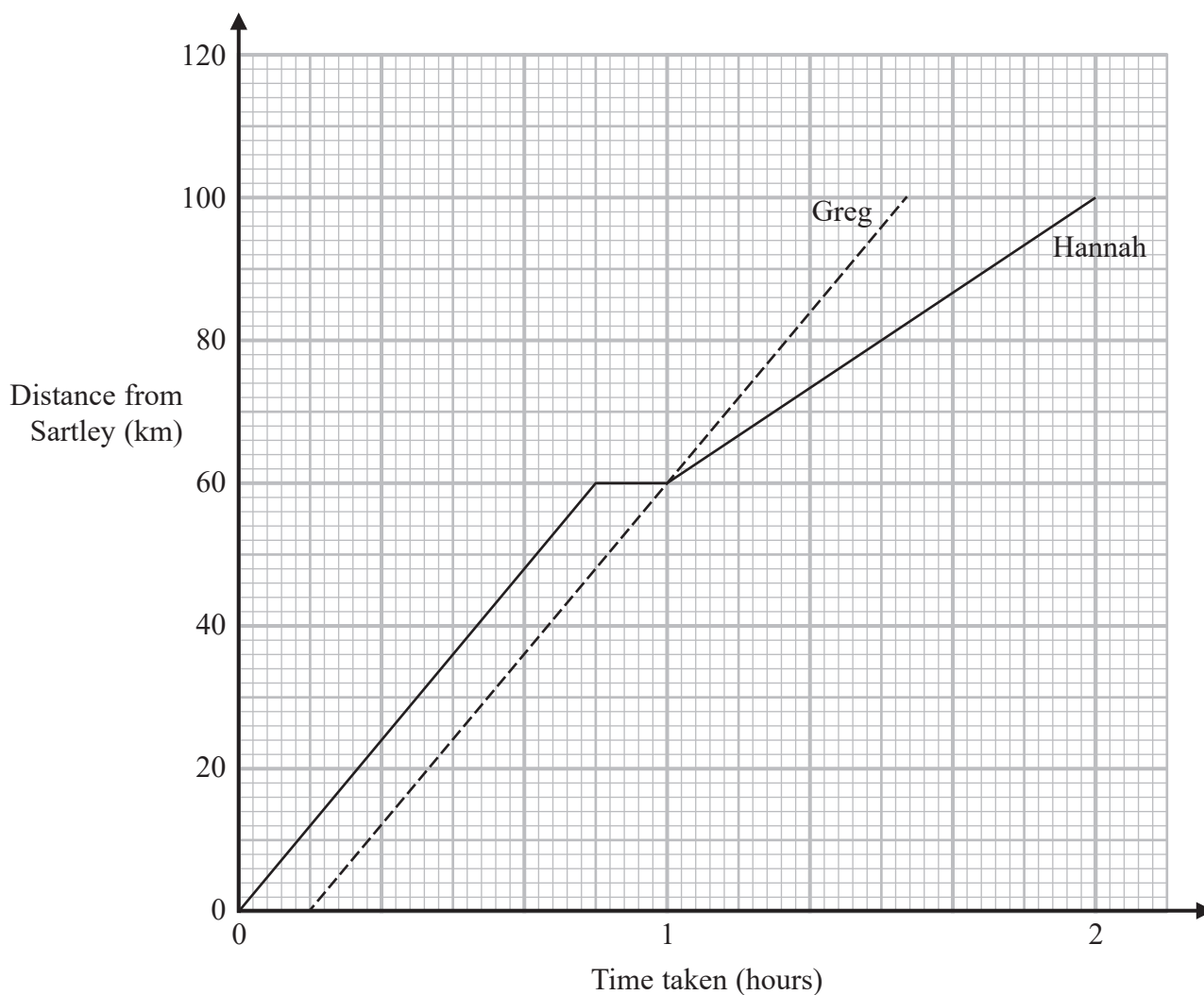
$$d = \dots\dots\dots (2)$$

(Total for Question 12 is 10 marks)



- 13 Hannah and Greg each drive from Sartley to Promham, a distance of 100 km. They drive along the same route.

Here are the distance-time graphs for Hannah and Greg.



Greg leaves Sartley t minutes after Hannah leaves Sartley.

- (a) Write down the value of t .

.....
(1)

Hannah and Greg are both m kilometres from Sartley at the same time.

- (b) Write down the value of m .

.....
(1)



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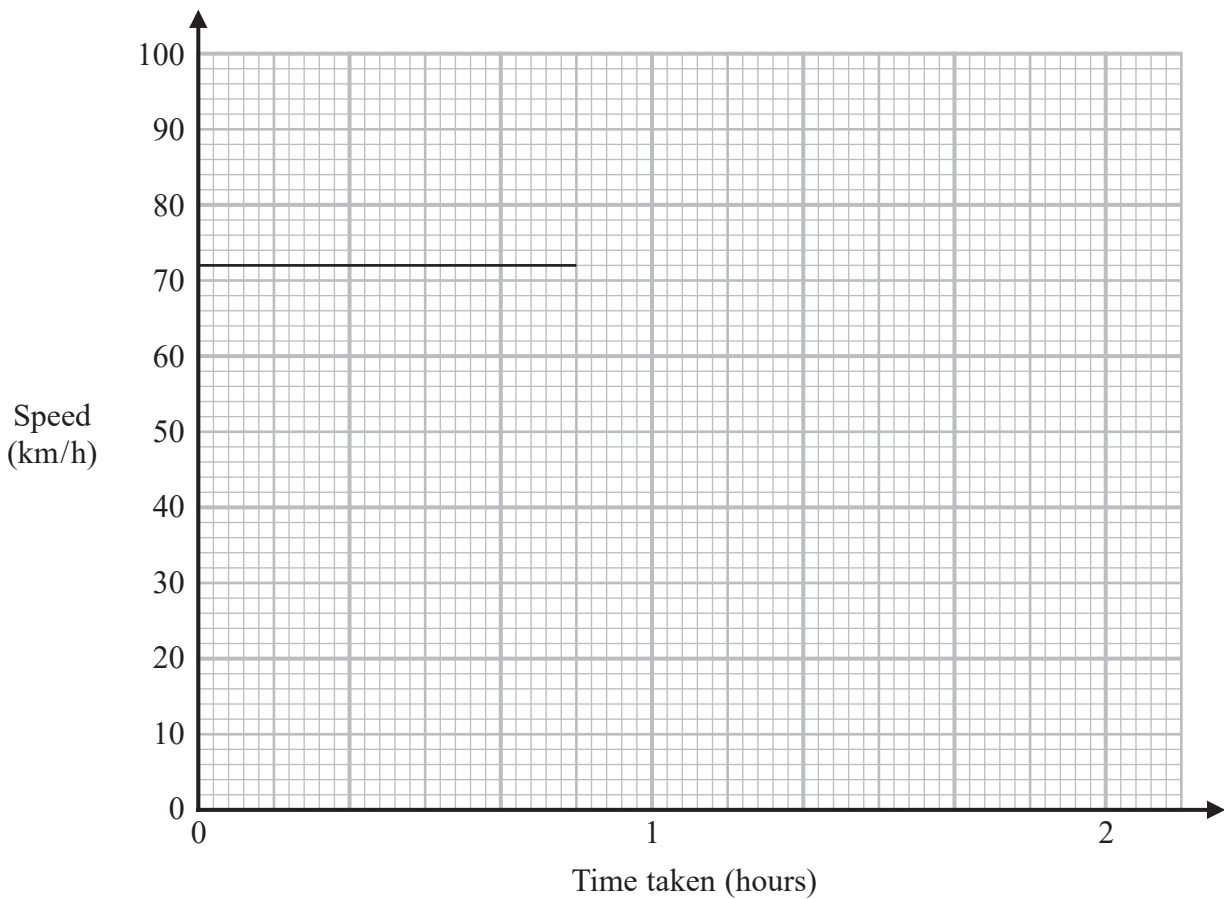
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Hannah stops at a shop on her way to Promham.

- (c) Work out Hannah's speed as she drives from the shop to Promham.
Give your answer in kilometres per hour.

..... km/h
(1)

- (d) On the grid below, complete the speed-time graph for Hannah's journey from Sartley to Promham.

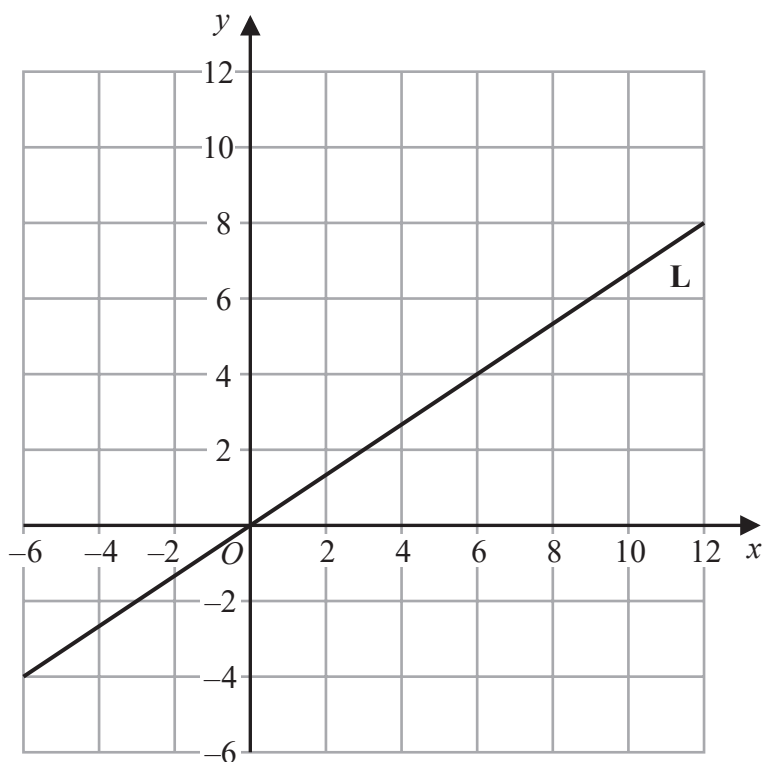


(2)

(Total for Question 13 is 5 marks)



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



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

.....
(2)

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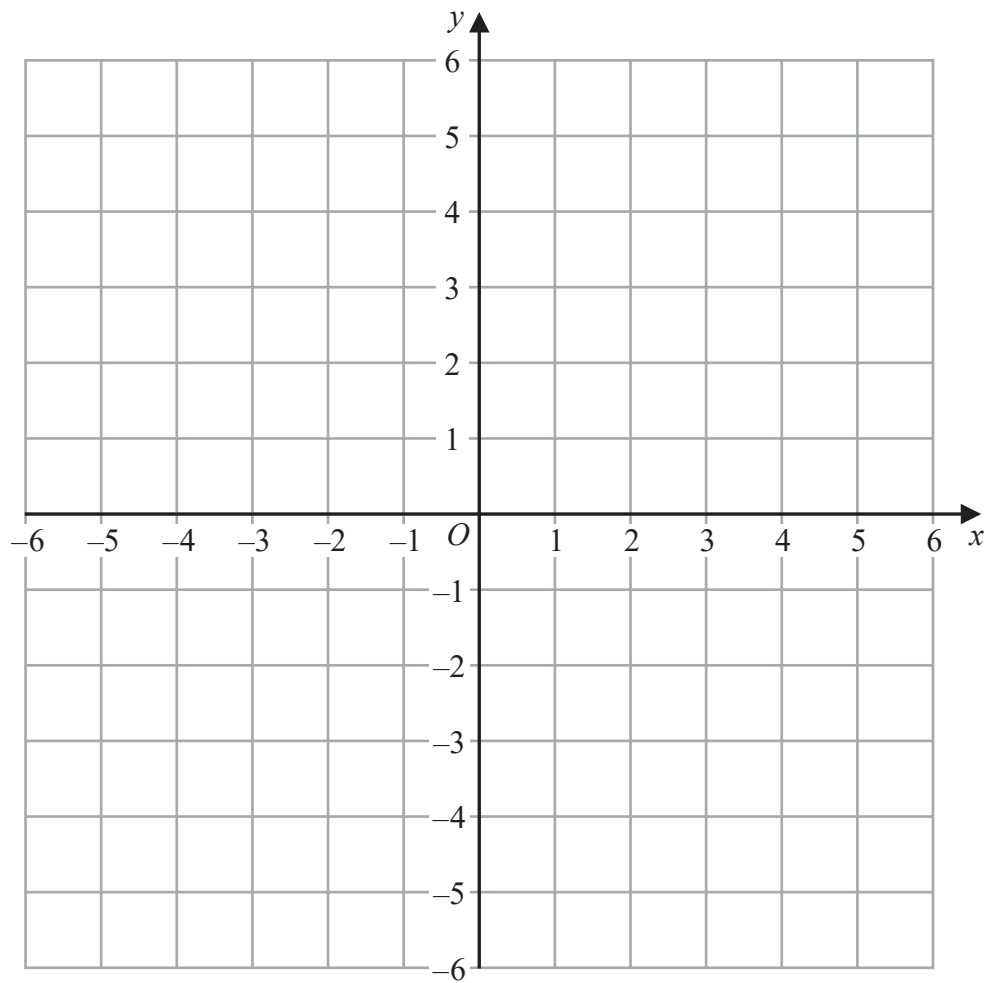
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- (b) (i) On the grid below, draw the line with equation $x = 3$
Label your line $x = 3$

(1)

- (ii) On the same grid, draw the line with equation $y = x$
Label this line $y = x$



(1)

(Total for Question 14 is 4 marks)



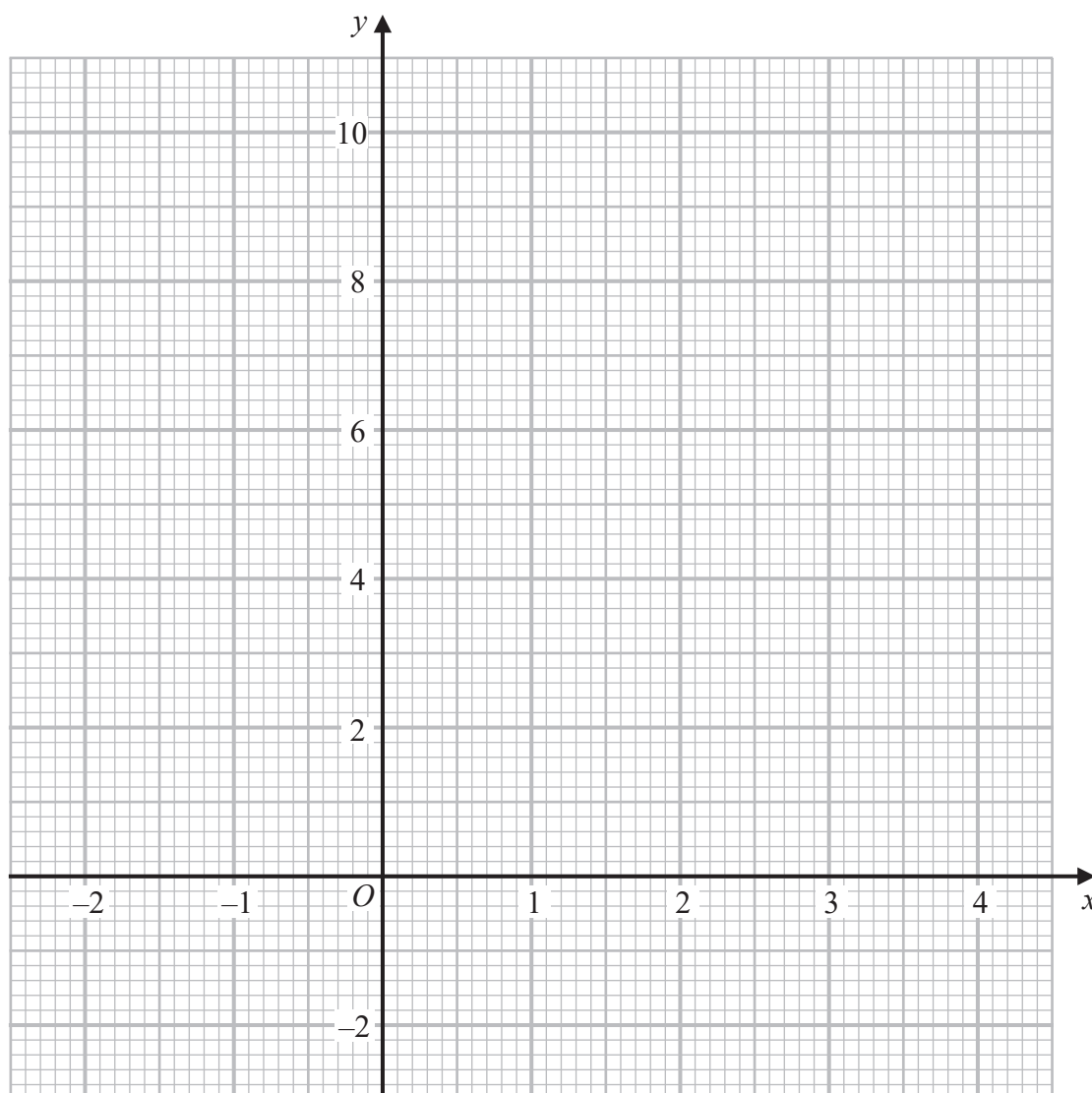
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15 (a) Complete the table of values for $y = x^2 - 2x$

x	-2	-1	0	1	2	3	4
y		3			0		8

(2)

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



(2)



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

.....
(2)

(Total for Question 15 is 6 marks)

16 (a) Solve $\frac{x}{3} - 4 = 8$

$x =$
(2)

(b) Solve $6y = 2(2 - y)$

$y =$
(3)

(Total for Question 16 is 5 marks)

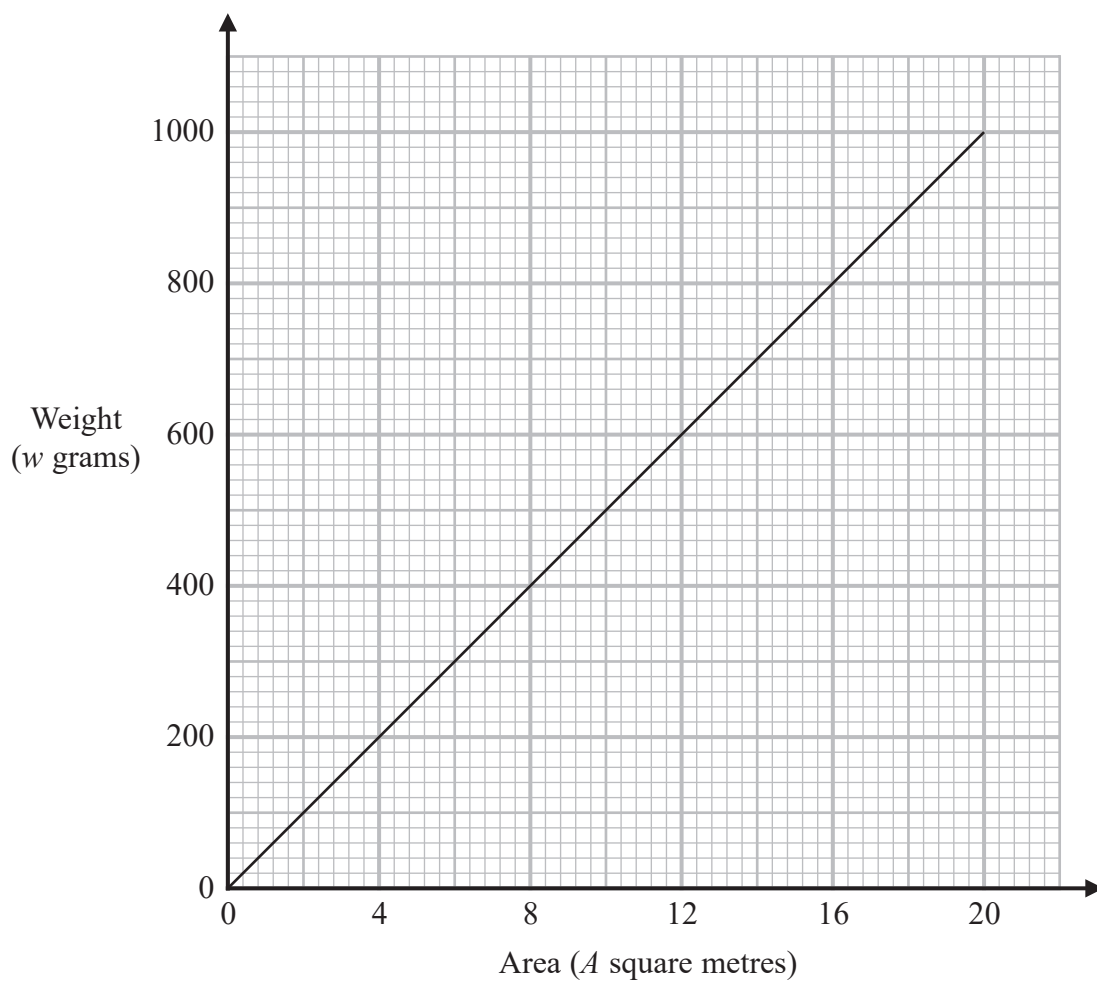
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- 17 This graph can be used to find the weight, w grams, of grass seed needed to make a lawn of area A square metres.



- (a) Work out the gradient of the line.

.....
(2)

- (b) Explain what the gradient of this line represents.

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

(Total for Question 17 is 3 marks)

(TOTAL FOR PAPER IS 80 MARKS)

