

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

Thursday 11 January 2024

Morning (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 $4x + 3y - 3x - 3y$

.....
(1)

(b) Simplify $5 \times p \times 3p \times p$

.....
(2)

(c) Simplify $u^4 \times u$

.....
(1)

(d) Simplify $\frac{g^8}{g^3}$

.....
(1)

(e) Simplify $(2t^3)^4$

.....
(2)

(Total for Question 1 is 7 marks)

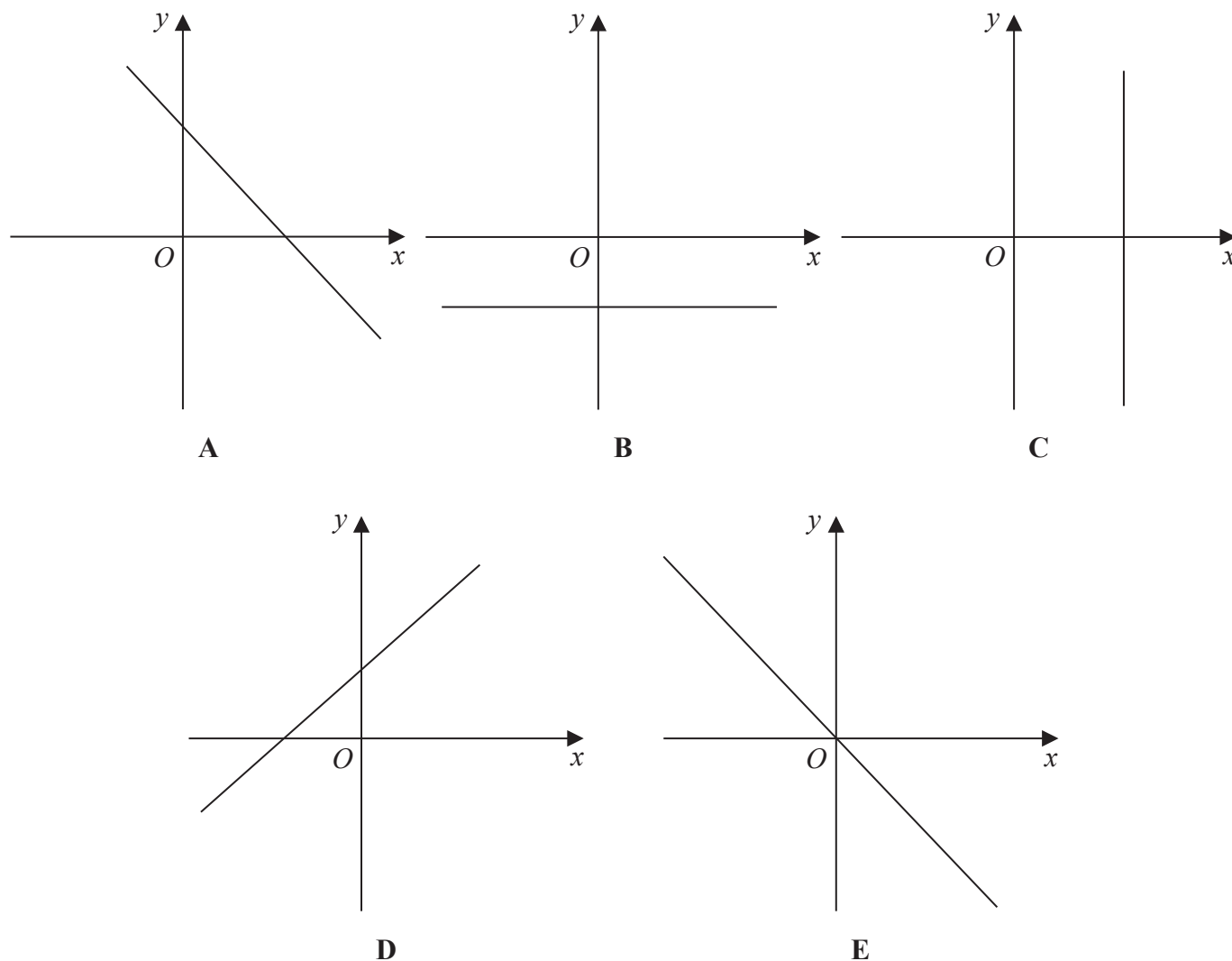
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2 Here are five sketch graphs of straight lines.



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

Equation	Graph
$y = -2$	
$y = -x$	
$x = 4$	
$y = x + 3$	
$x + y = 1$	

Match the letter of the graph to its equation.

(Total for Question 2 is 3 marks)

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3 (a) Factorise $h - h^2$

.....
(1)

(b) Factorise $8pt^2 + 10p^2t$

.....
(2)

(Total for Question 3 is 3 marks)



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4 (a) Solve $3k + 2 = 20$

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

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

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

(c) Solve $4(y - 2) = -16$

$y = \dots\dots\dots$
(3)

(Total for Question 4 is 7 marks)



- 5 The first term of a sequence is 50
Other terms of the sequence are found by using the rule

“subtract 3 from the previous term”

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

.....
(2)

Here are the first four terms of an arithmetic sequence.

10 16 22 28

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

.....
(2)

(Total for Question 5 is 4 marks)



6 (a) Expand $2(7q + 5)$

.....
(2)

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

.....
(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.

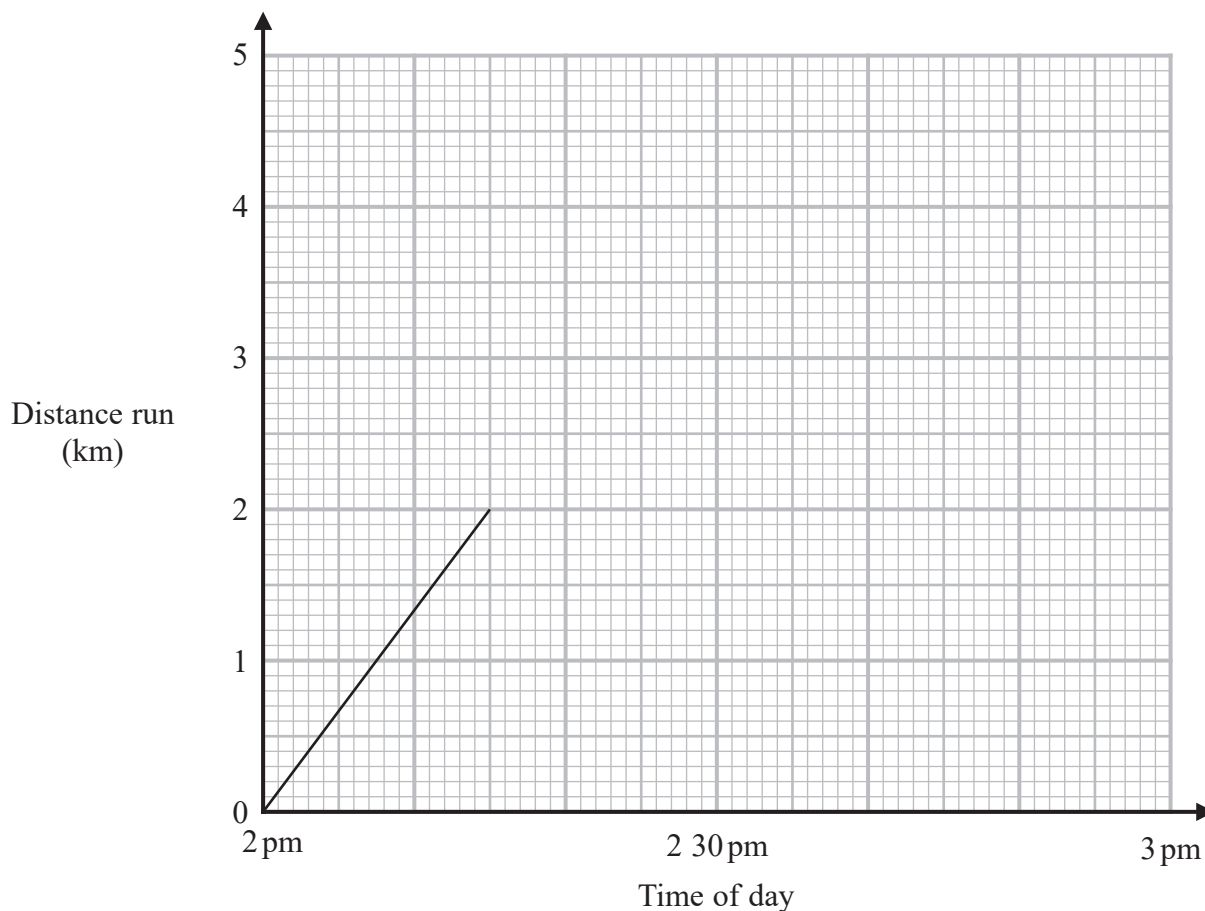
	Equation	Expression	Formula
$c^2 + 6$			
$p^2 = 2p$			
Speed = $\frac{\text{distance}}{\text{time}}$			
$r = 2d$			

(Total for Question 7 is 3 marks)



8 Louise ran from her home to a friend's house. She left home at 2 pm.

Here is the travel graph for part of her journey.



At 2.15 pm Louise stopped for a rest.

(a) Work out Louise's speed as she ran from her home to where she stopped for a rest.

..... km/h
(2)



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Louise stopped for 5 minutes.

(b) Show this on the travel graph.

(1)

She then ran at a steady speed of 6 km/h for 15 minutes.

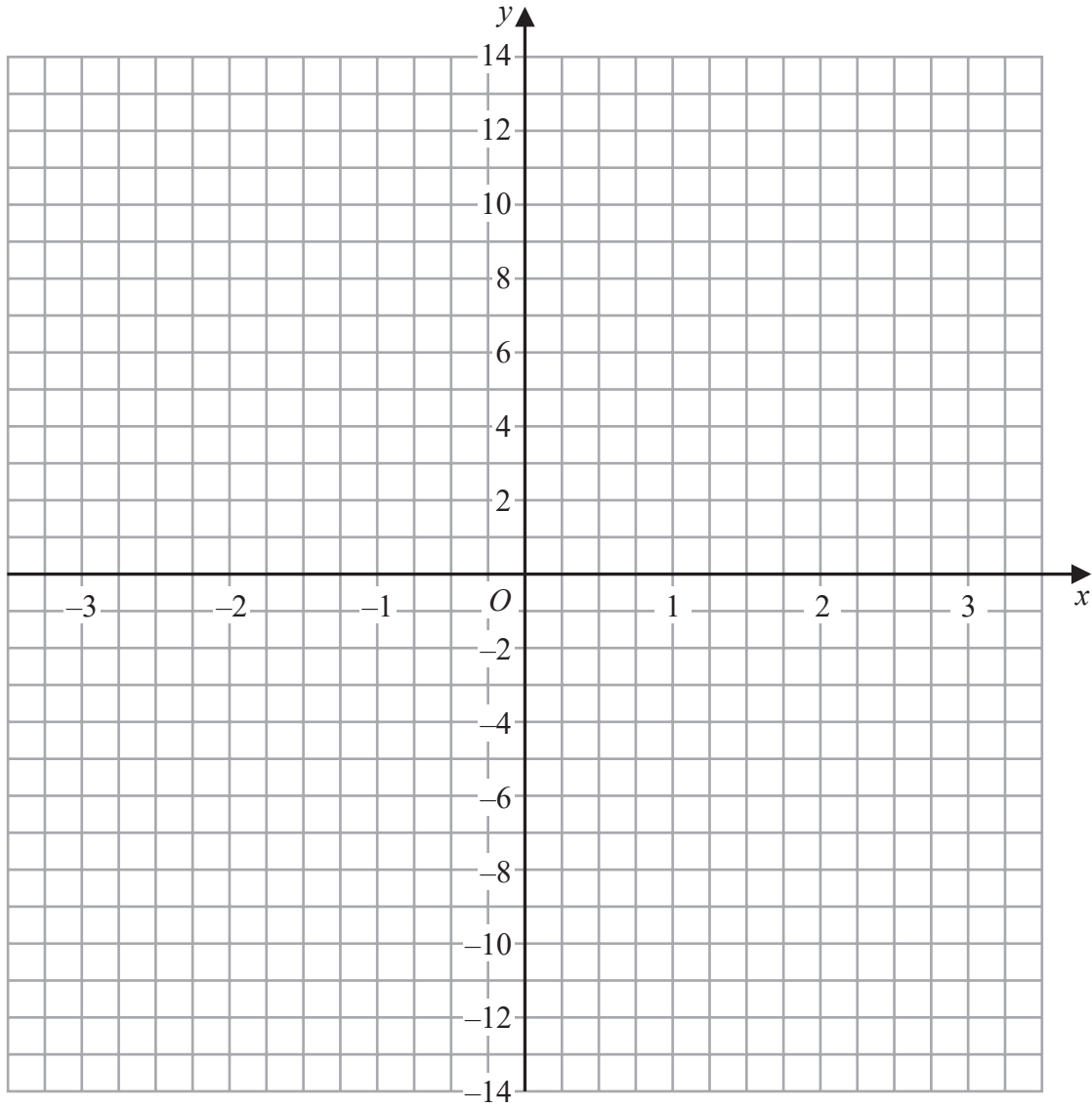
(c) Show this on the travel graph.

(2)

(Total for Question 8 is 5 marks)



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



(Total for Question 9 is 3 marks)

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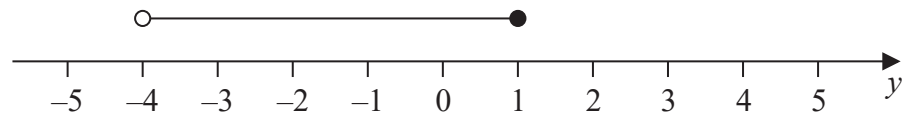
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10 $x > 2$
 x is an integer.

(a) Write down a possible value for x .

.....
(1)

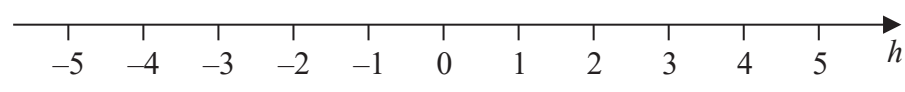
Here is an inequality in y shown on a number line.



(b) Write down the inequality.

.....
(2)

(c) On the number line below, show the inequality $h \leq 1$



(2)

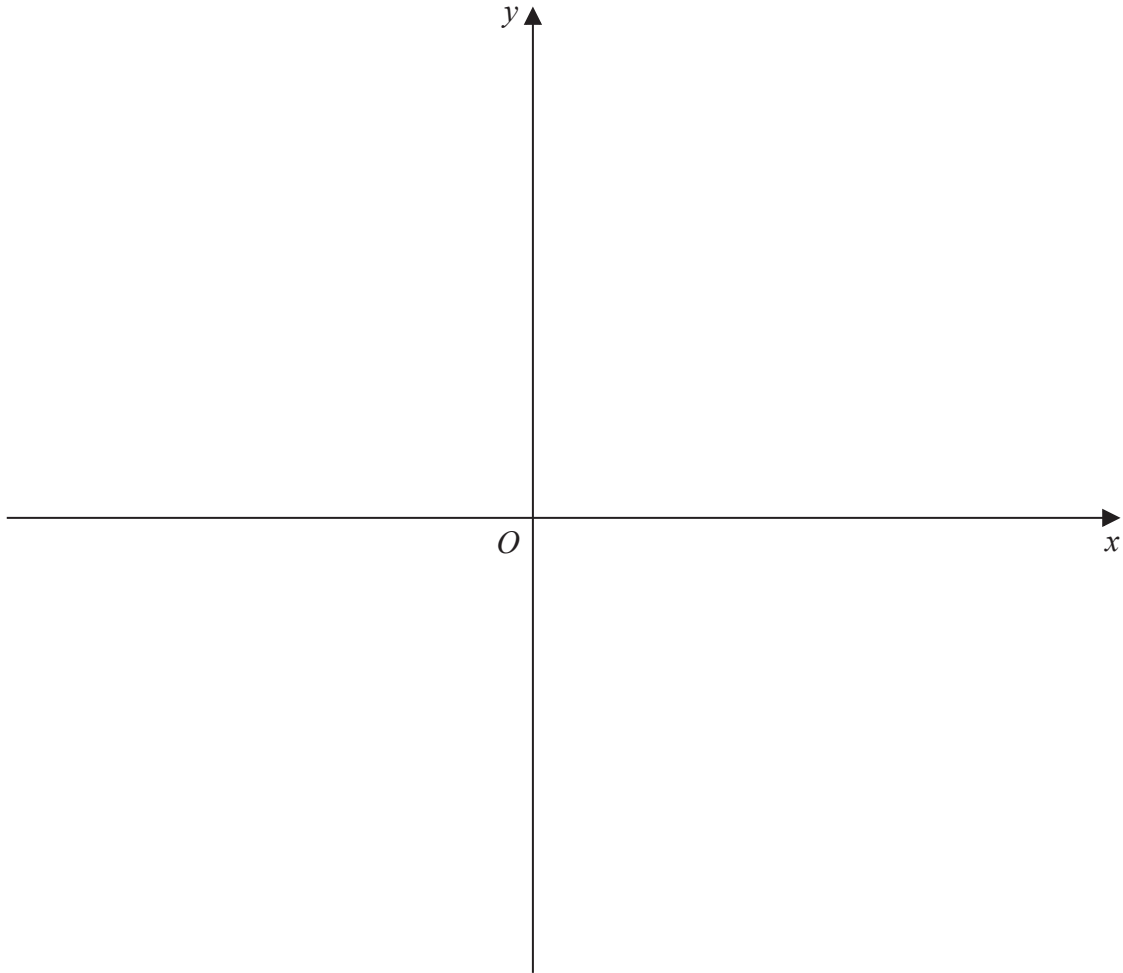
(d) Solve $t + 6 < 13 - t$

.....
(2)

(Total for Question 10 is 7 marks)



11 Using the axes below, sketch the graph of $y = 3x^2 + 1$



(Total for Question 11 is 3 marks)

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12 Simon has x counters.
Tilly has 4 times as many counters as Simon.
Usha has 3 counters less than Simon.

(a) Write down an expression, in terms of x , for the number of counters that Tilly has.

.....
(1)

(b) Write down an expression, in terms of x , for the total number of counters that Tilly and Usha have.
Give your answer in its simplest form.

.....
(2)

Tilly has more counters than Usha.

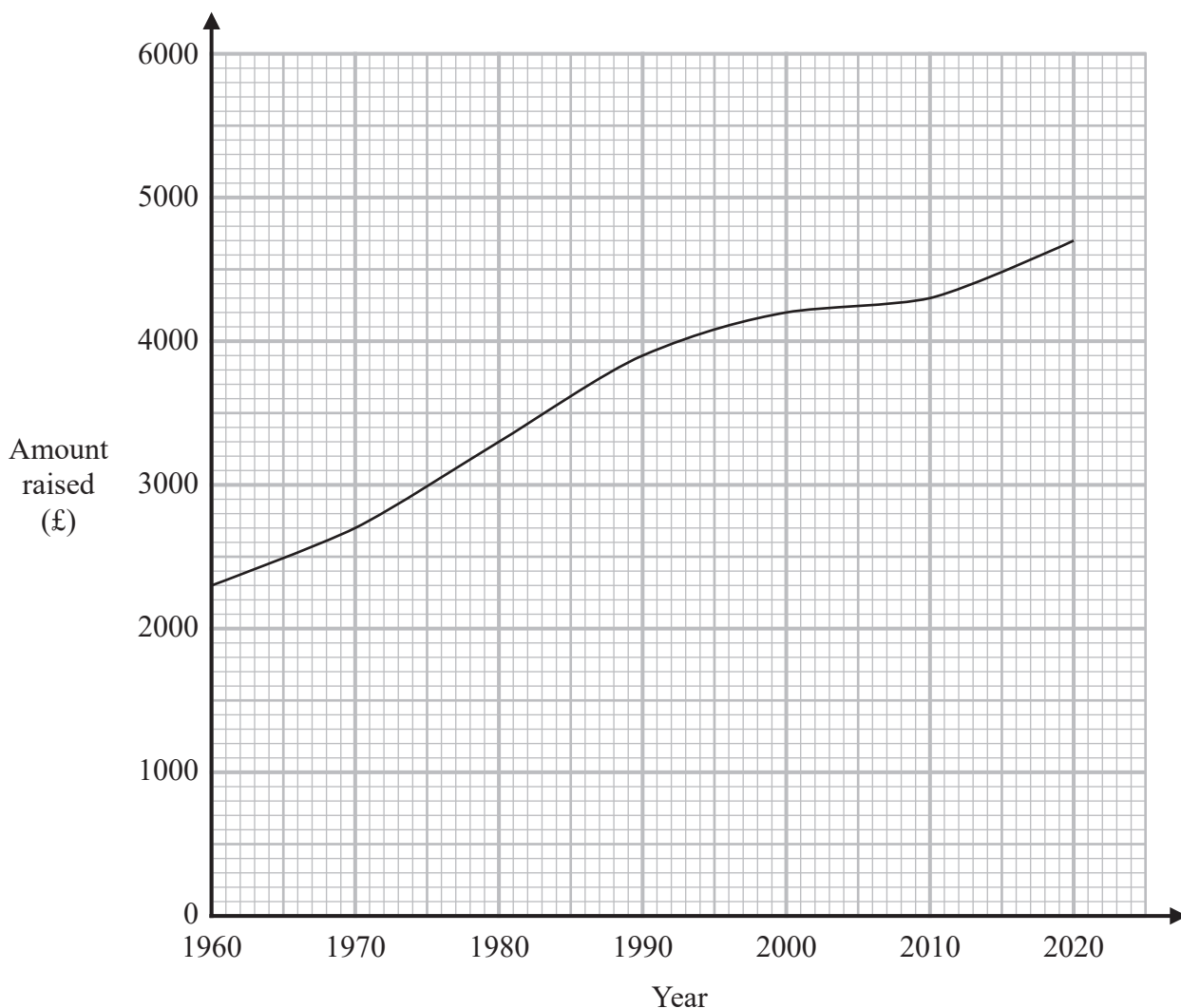
(c) Write down an expression, in terms of x , for how many more.
Give your answer in its simplest form.

.....
(2)

(Total for Question 12 is 5 marks)



13 This graph shows the amount of money raised each year by a charity between the year 1960 and the year 2020



(a) Find the amount of money raised by the charity in the year 2000

£ (1)

(b) Find the first year when the amount of money raised by the charity was more than £4000

..... (1)

(c) Work out the increase in the amount of money raised by the charity between the year 1960 and the year 2020

£ (2)



- (d) In which 10 year period did the amount of money raised by the charity increase at the lowest rate?

.....
(1)

(Total for Question 13 is 5 marks)

14 $f = \frac{5g}{4} - 2$

- (a) Work out the value of f when $g = 20$

.....
(2)

- (b) Work out the value of g when $f = 0$

.....
(3)

- (c) Make g the subject of the formula $f = \frac{5g}{4} - 2$

.....
(3)

(Total for Question 14 is 8 marks)

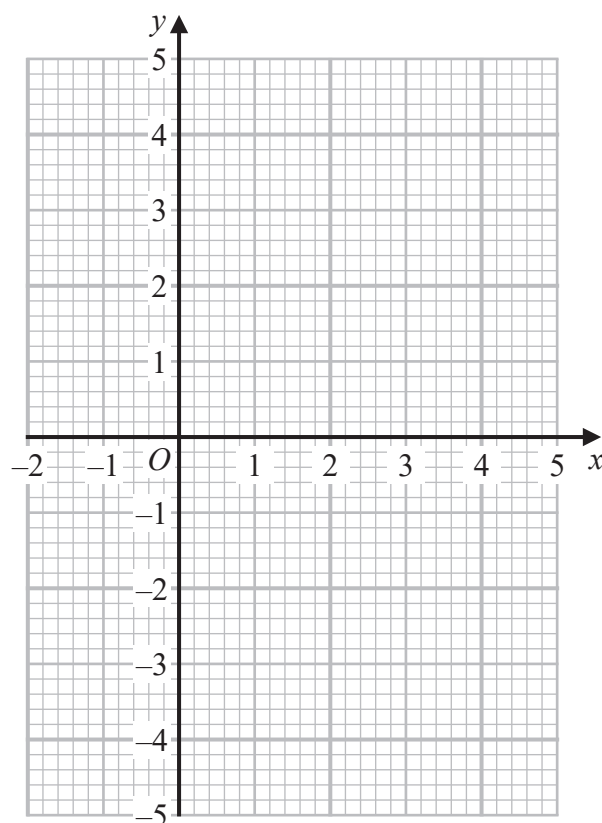


15 (a) Complete the table of values for $y = x^2 - 3x$

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

(2)

(b) On the grid, draw the graph of $y = x^2 - 3x$ for values of x from -1 to 4



(2)

(c) Use your graph to find estimates for the solutions of $x^2 - 3x = 3$

(2)

(Total for Question 15 is 6 marks)



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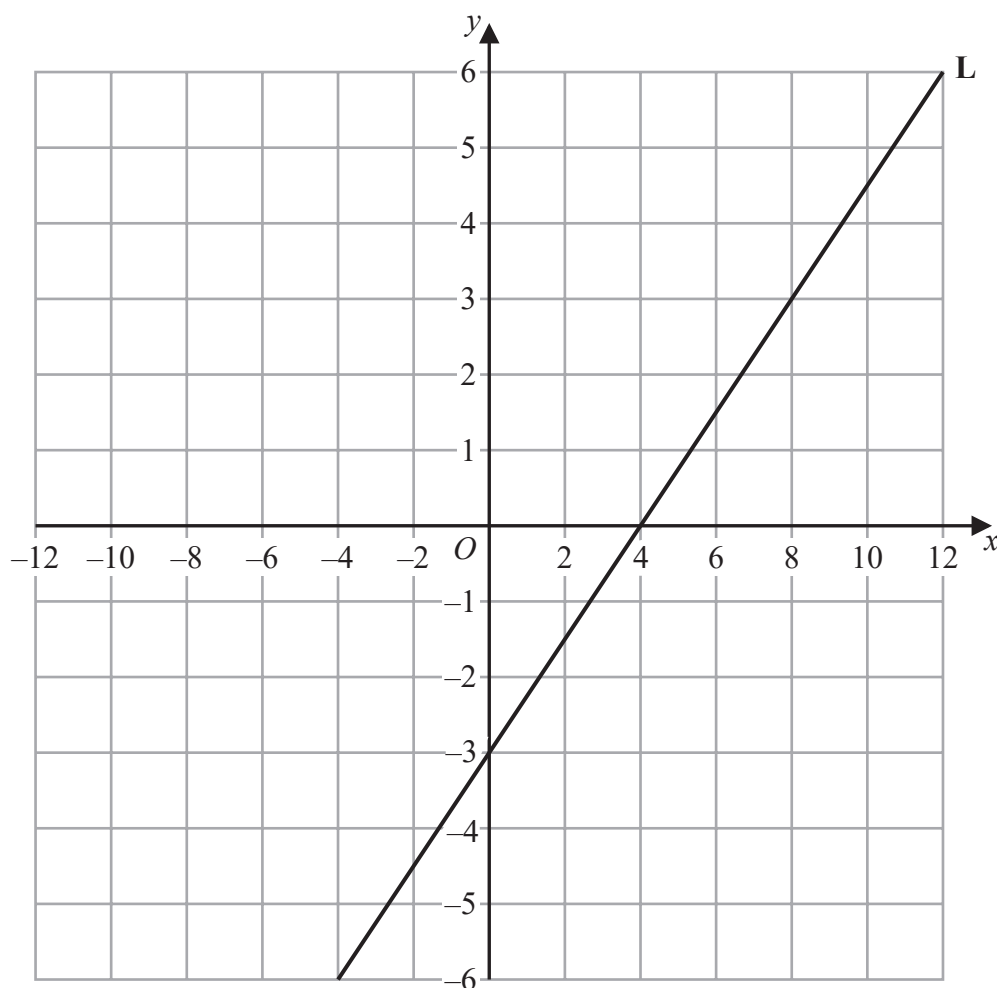
16 Solve $\frac{9x - 15}{2} = 6x$

$x = \dots\dots\dots$

(Total for Question 16 is 3 marks)



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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