

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 12 May 2014 – 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 $c^3 \times c^4$

.....
(1)

(b) Simplify $d^5 \div d^2$

.....
(1)

(c) Simplify $(g^2)^3$

.....
(1)

(d) Simplify $4p^3 \times 5p^2q^2$

.....
(2)

(Total for Question 1 is 5 marks)



2 (a) Factorise $ab - ac$

.....
(1)

(b) Factorise $6d - 3$

.....
(1)

(c) Factorise $10f^2 + 25f$

.....
(2)

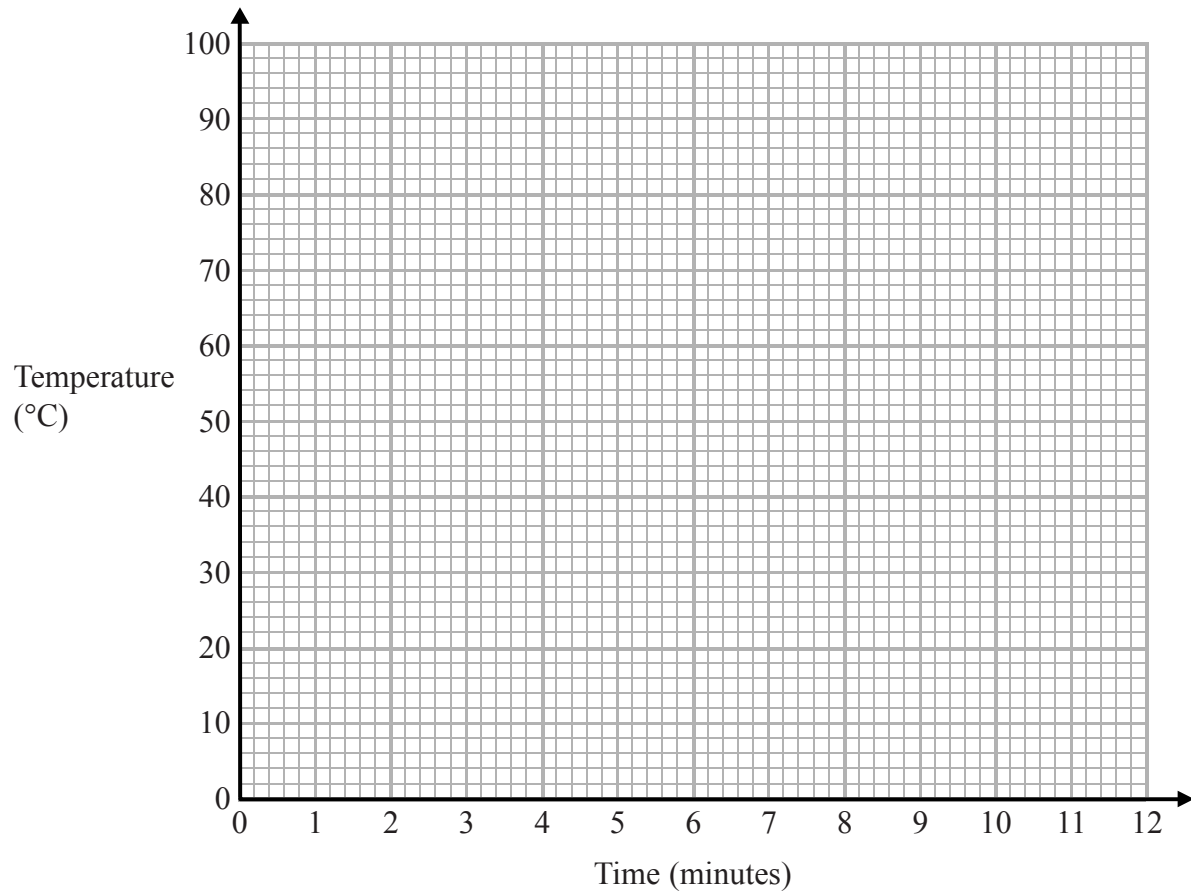
(Total for Question 2 is 4 marks)



3 The liquid in a container cools from 100 °C.

The table gives information about the time, in minutes, the liquid has been cooling and its temperature in °C.

Time (minutes)	0	2	4	6	8	10	12
Temperature (°C)	100	80	67	57	50	44	40



(a) On the grid, draw a graph to show the relationship between temperature and time.

(2)

(b) Find an estimate of the temperature of the liquid at time 5 minutes.

.....°C
(1)



(c) How long did it take for the temperature of the liquid to fall from 70 °C to 48 °C?

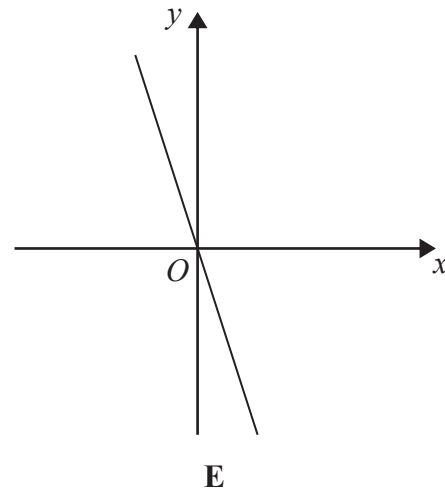
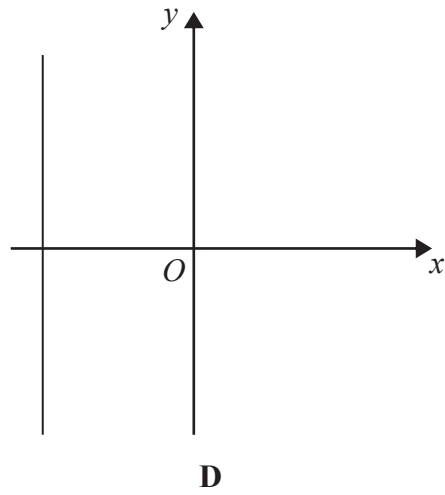
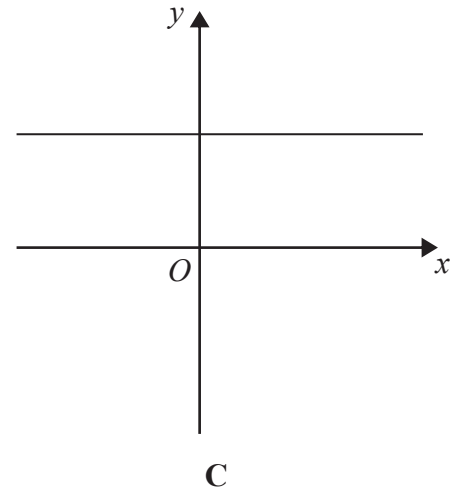
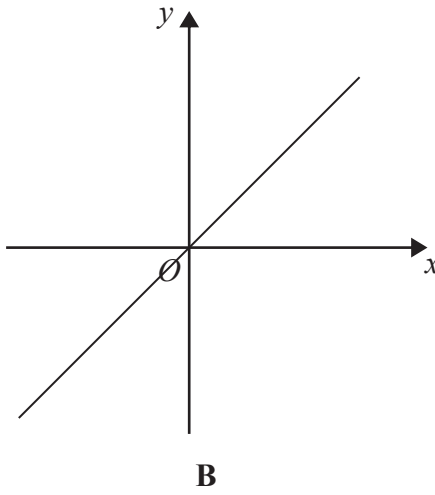
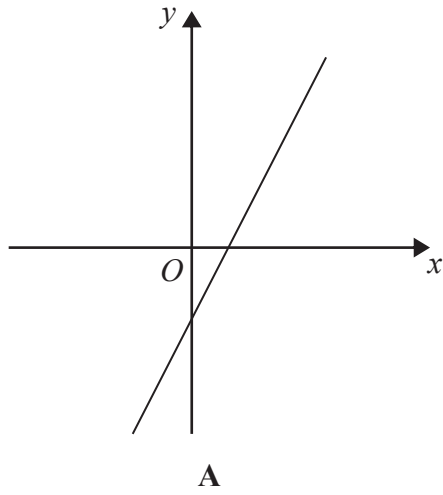
.....minutes

(2)

(Total for Question 3 is 5 marks)



4 Here are five sketch graphs.



The equations of these graphs are given in the table.

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

Match the letter of the graph to its equation.

(Total for Question 4 is 3 marks)



5 (a) Solve $2(c - 1) = 3$

$c = \dots\dots\dots$
(2)

(b) Solve $8 + 3h = 2 + h$

$h = \dots\dots\dots$
(2)

(c) Solve $\frac{1}{2}y + 7 = 5$

$y = \dots\dots\dots$
(2)

(Total for Question 5 is 6 marks)

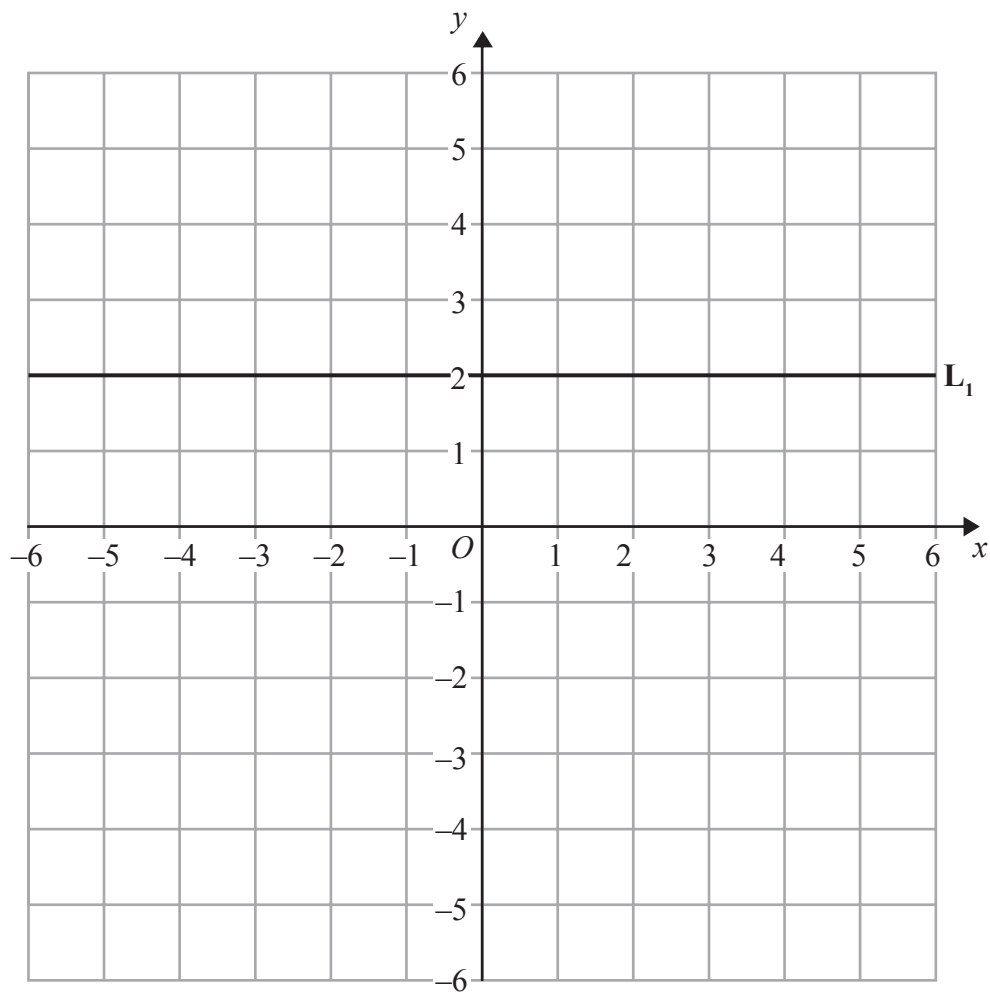


6 $y = -4x + 3$

Work out the value of y when $x = 2$

(Total for Question 6 is 2 marks)

7 Here is a straight line L_1 drawn on a grid.

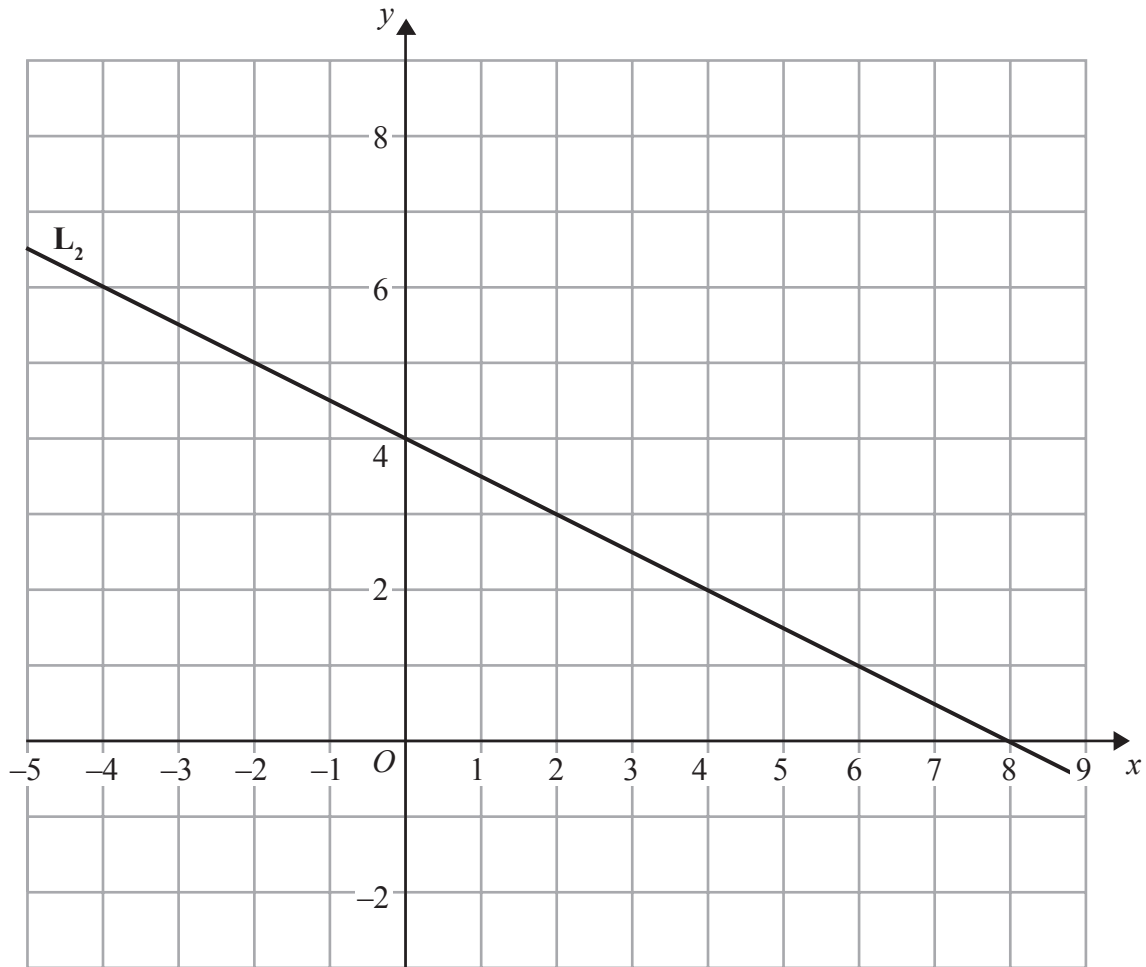


(a) Write down the gradient of line L_1

(1)



Here is a different straight line L_2 drawn on a grid.



(b) Find an equation of the straight line L_2

.....
(2)

(Total for Question 7 is 3 marks)



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

3 11 19 27 35

(a) (i) Write down the next term of this sequence.

.....

(ii) Work out the 21st term of this sequence.

.....

(iii) Write down an expression, in terms of n , for the n th term of this sequence.

.....

(4)

The first term of a different sequence is 3
Other terms of this sequence are found by using the rule

“subtract the previous term from 10”

(b) Write down the next four terms of this sequence.

.....

(2)

(Total for Question 8 is 6 marks)



9 (a) Simplify $5ab + 3bc - 2ab + bc$

.....
(2)

(b) Expand $3u(u + t)$

.....
(2)

(c) Expand and simplify $x(x + 4) + 2(x + 5)$

.....
(2)

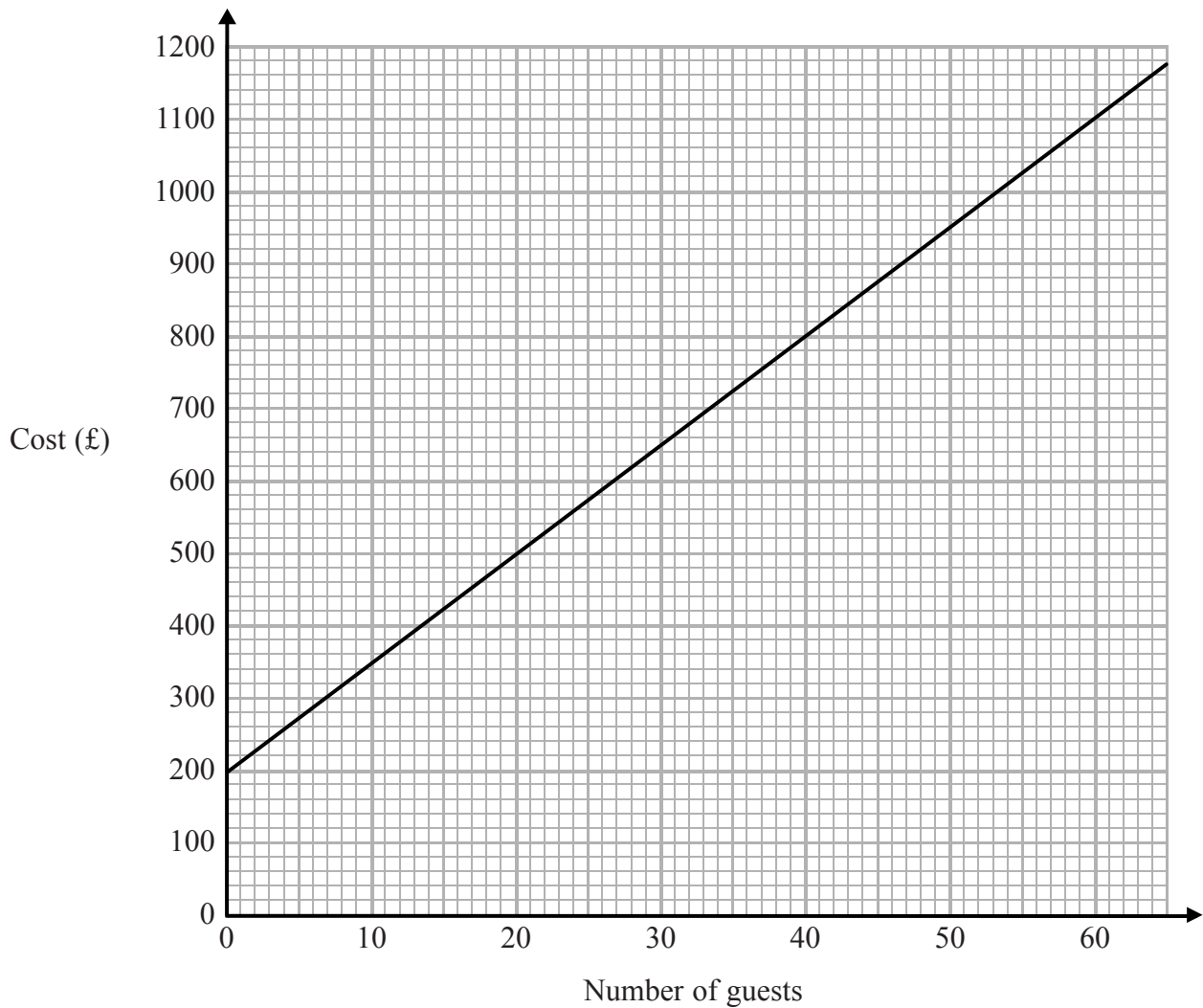
(d) Expand and simplify $10n^3 - 3n^2(n + 2)$

.....
(2)

(Total for Question 9 is 8 marks)



- 10 Kylie and Jason are organising a wedding reception. They are going to use the Lansley Hotel. They use this graph to work out the cost, in pounds (£), for different numbers of guests.



- (a) Use the graph to find the cost of using the Lansley Hotel for 40 guests.

.....
(1)

Kylie and Jason have £1100 to spend on the wedding reception.

- (b) Write down the maximum number of guests they can have.

.....
(1)



The cost of using the Lansley Hotel is

a fixed charge of $£h$

plus

a charge of $£g$ for each guest

(c) (i) Write down the value of h .

.....

(ii) Work out the value of g .

.....

(3)

(Total for Question 10 is 5 marks)



11 Harriet has

- x 5 pence coins
- y 10 pence coins
- w 20 pence coins

She has no other coins.

(a) Write down an expression for the total number of coins Harriet has.

.....
(1)

(b) (i) Write down an expression for the total amount of money, in pence, that Harriet has.

.....
(3)

(ii) Write down an expression for the total amount of money, in pounds, that Harriet has.

.....
(3)
(Total for Question 11 is 4 marks)



12 (a) $N = \frac{p}{2} - 3$

$p = 16$

(i) Work out the value of N .

(ii) Make p the subject of the formula.

.....

$p =$
(4)

$M = 5\sqrt{q}$

$M = 20$

(b) Work out the value of q .

.....
(2)

(Total for Question 12 is 6 marks)



13 $y = (x - 2)^2$

(a) (i) Work out the value of y when $x = 0$

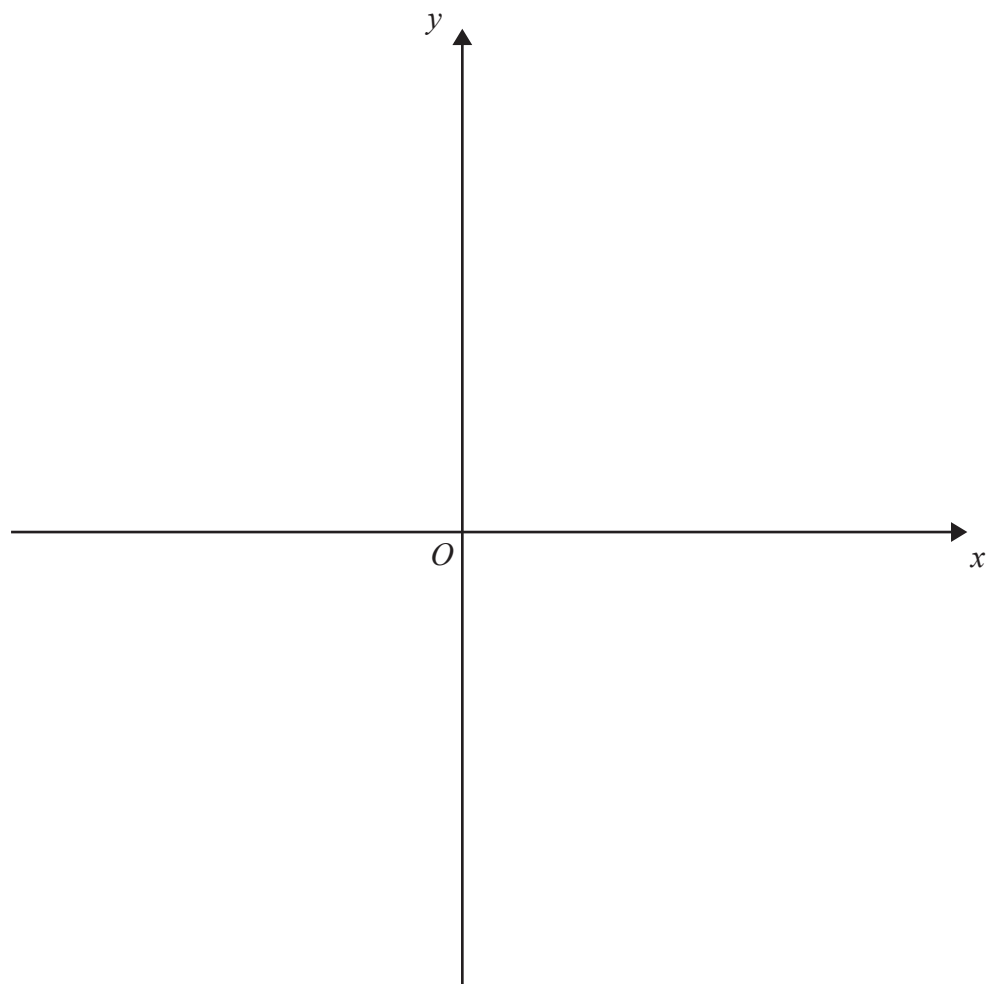
.....

(ii) Work out the value of x when $y = 0$

.....

(3)

(b) On the axes below, sketch the graph of $y = (x - 2)^2$
Show the coordinates of the points where the graph meets the axes.

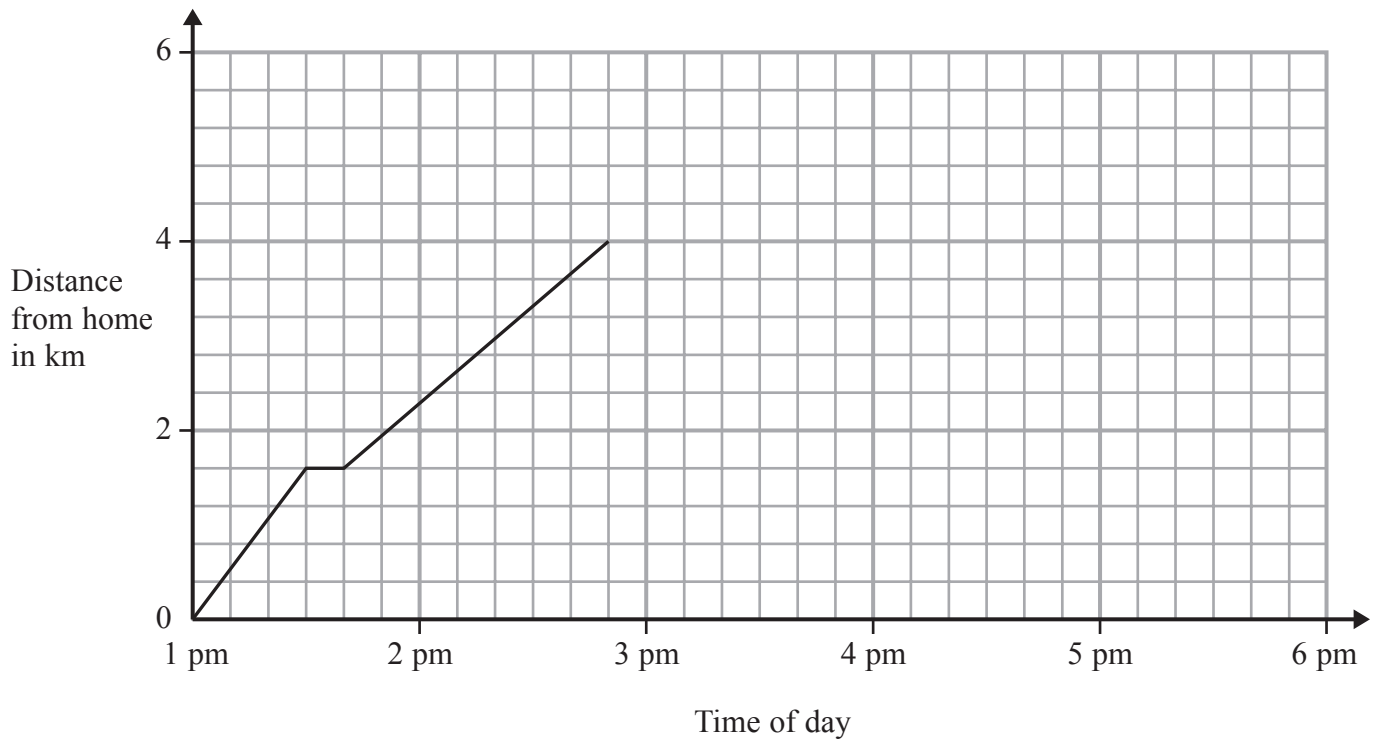


(3)

(Total for Question 13 is 6 marks)



- 14 Ellen went for a walk to her friend's house.
 She left home at 1 pm.
 The travel graph shows part of Ellen's journey.



At 1.30 pm Ellen stopped for a drink.

- (a) Work out Ellen's speed as she walked from her home to where she stopped for a drink.
 Give your answer in km/h.

..... km/h
 (2)

At 2.50 pm Ellen arrived at her friend's house.
 She stayed at her friend's house for 1 hour.
 She then walked home at a steady speed.
 It took her 1 hour 30 minutes to walk home.

- (b) Complete the travel graph.
 (2)

(Total for Question 14 is 4 marks)

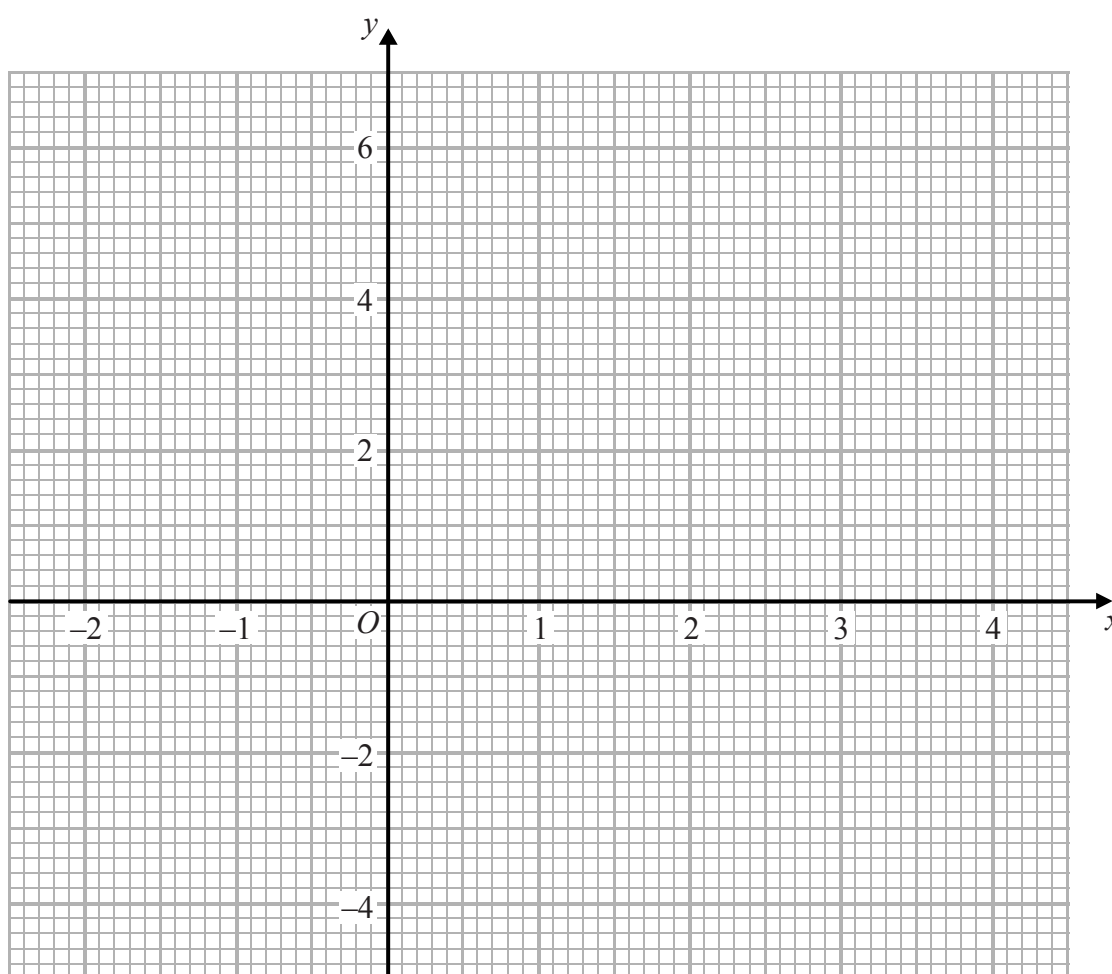


15 (a) Complete the table of values for $y = x^2 - 2x - 3$

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

(2)

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



(2)

(c) Use your graph to find estimates for the solutions of $x^2 - 2x - 3 = 4$

(2)

(Total for Question 15 is 6 marks)



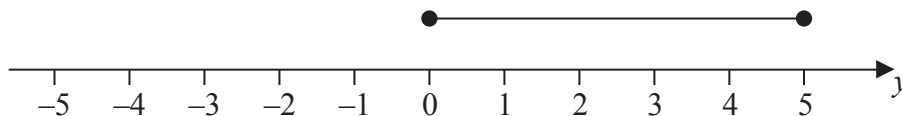
16 $x < 2$

x is an integer.

(a) Write down a possible value of x .

.....
(1)

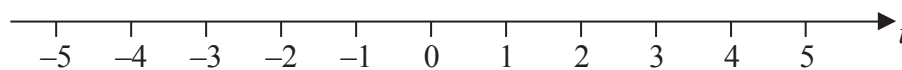
(b) Here is an inequality, in y , shown on a number line.



Write down the inequality.

.....
(2)

(c) On the number line below, show the inequality $t > -1$



(1)

(d) Solve $\frac{5n}{3} - 1 \leq 4$

.....
(3)

(Total for Question 16 is 7 marks)

TOTAL FOR PAPER IS 80 MARKS





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