

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Pearson
Edexcel Award

Centre Number

Candidate Number

Thursday 9 January 2020

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

Turn over ►

P63044A

©2020 Pearson Education Ltd.

1/1/1




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 $3 \times e \times e \times 2 \times f$

.....
(2)

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

.....
(1)

(c) Simplify $n^7 \div n^2$

.....
(1)

(d) Simplify $(2r^3)^5$

.....
(2)

(Total for Question 1 is 6 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

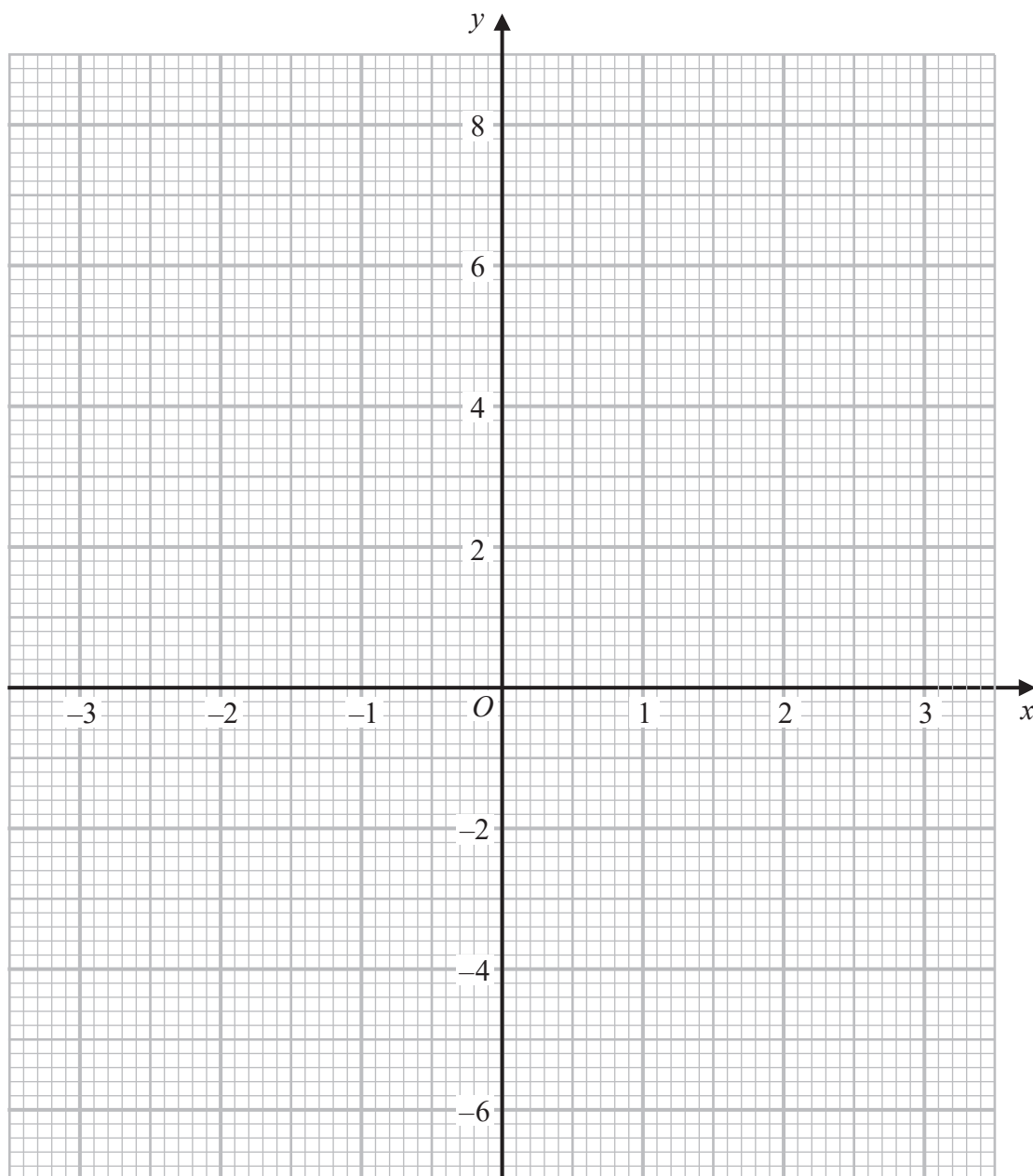
DO NOT WRITE IN THIS AREA

2 (a) Complete the table of values for $y = 1 - 2x$

x	-3	-2	-1	0	1	2	3
y	7				-1		

(2)

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



(2)

(Total for Question 2 is 4 marks)



3 Chandler is buying tickets for a charity lunch.

The price of an adult ticket for the lunch is $\pounds x$

The price of a child ticket for the lunch is half the price of an adult ticket.

(a) Write down an expression in terms of x for the price, in pounds, of a child ticket.

.....
(1)

Chandler buys t adult tickets and 4 child tickets.

(b) Write down an expression in terms of t and x for the total price, in pounds, of the tickets that Chandler buys.

.....
(2)

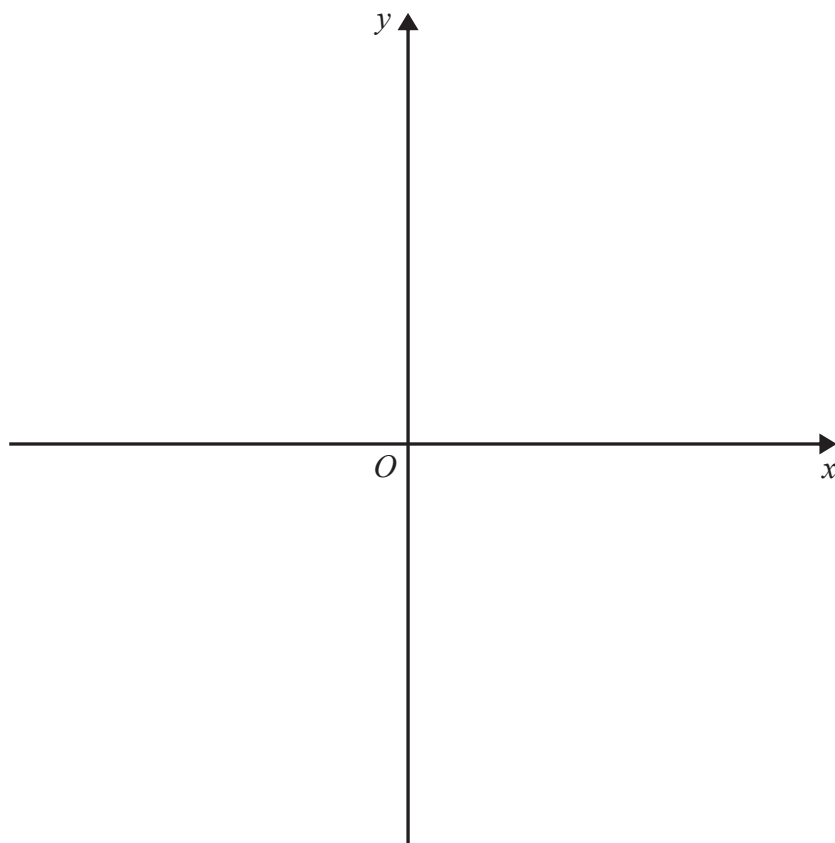
(Total for Question 3 is 3 marks)

4 Expand and simplify $5(x - 2) + 3(4 - x)$

.....
(Total for Question 4 is 2 marks)



5 Sketch the graph of $y = 2x^2 - 18$



(Total for Question 5 is 3 marks)



6 (a) Solve $3x - 12 = 0$

$x = \dots\dots\dots$
(1)

(b) Solve $5y + 7 = 2$

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

(c) Solve $4(2e - 5) = 3e$

$e = \dots\dots\dots$
(3)

(d) Solve $\frac{7f - 2}{5} = 4$

$f = \dots\dots\dots$
(3)

(Total for Question 6 is 9 marks)

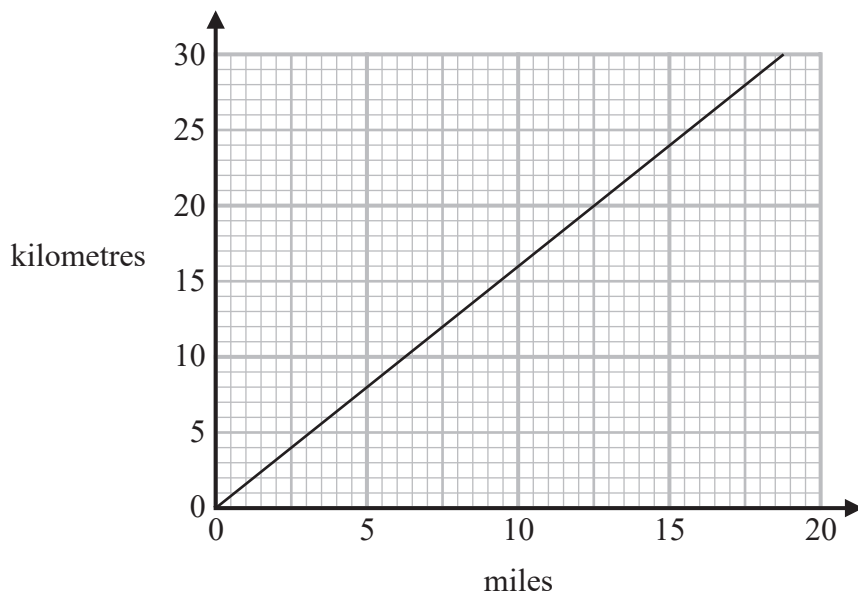


DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

7 Here is a conversion graph.



Using the graph,

(a) change 15 miles to kilometres,

..... km
(1)

(b) change 16 kilometres to miles,

..... miles
(1)

(c) change 75 miles to kilometres.

..... km
(2)

(d) Describe what the gradient of this graph represents.

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

(Total for Question 7 is 5 marks)



8 (a) Factorise $xy + 3x$

.....
(1)

(b) Factorise $8ef - 12e^2f$

.....
(2)

(c) Factorise $25a^4c^2 + 5a^2$

.....
(2)

(Total for Question 8 is 5 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



- 9 The first term of a sequence is 7
Other terms of this sequence are found by using this rule

“add 1 to the previous term and divide by 2”

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

.....
(2)

- The first term of a different sequence is 4
Other terms of this sequence are found by using this rule

“add 10 to the previous term”

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

.....
(2)

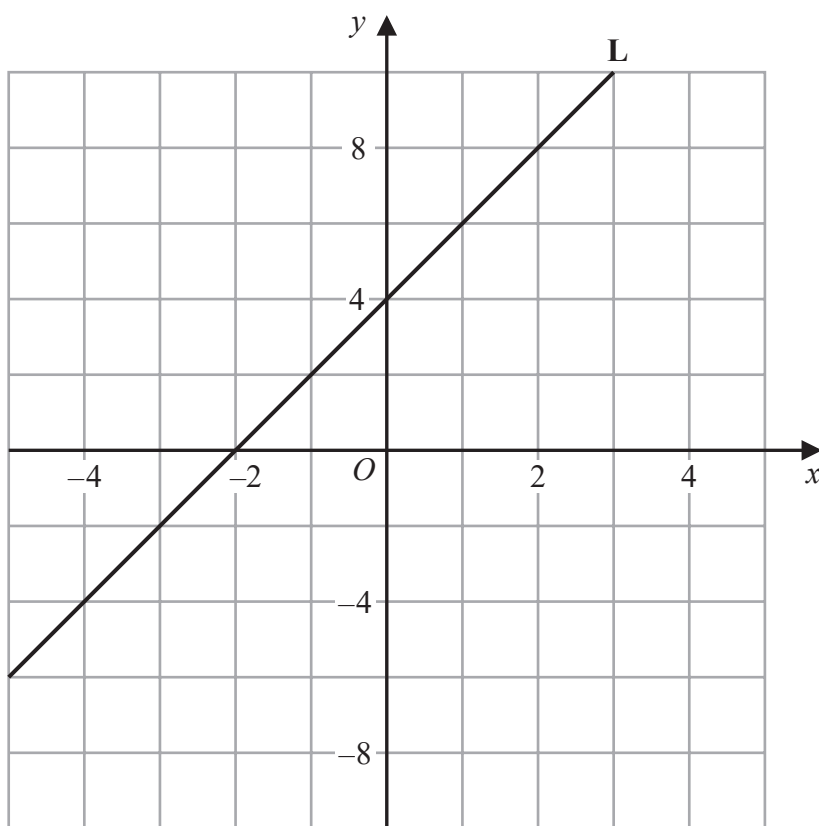
- (ii) Work out the 12th term of this sequence.

.....
(2)

(Total for Question 9 is 6 marks)



10 Here is the straight line **L** drawn on a grid.



(a) Work out the gradient of the line **L**

.....
(2)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

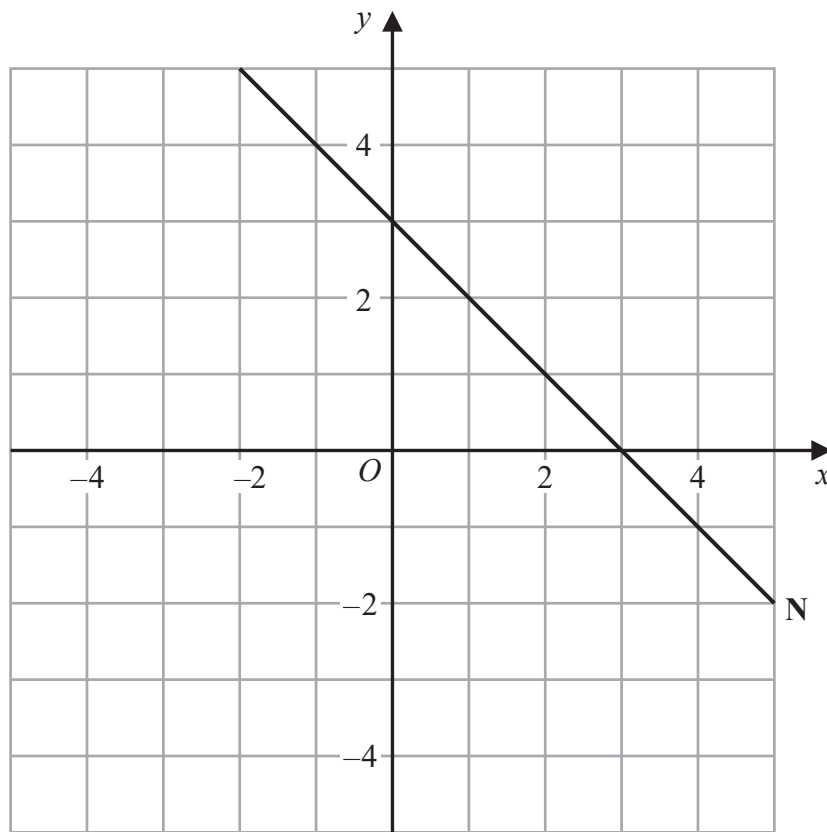


DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Here is the straight line N drawn on a grid.



(b) Find an equation of the line N

.....
(2)

(Total for Question 10 is 4 marks)



P 6 3 0 4 4 A 0 1 1 2 0

11 Here is a formula $A = \frac{1}{2}(t + b)h$

(a) Find the value of A when $t = 3$, $b = 5$ and $h = 10$

$$A = \dots\dots\dots (2)$$

(b) (i) Find the value of h when $A = 15$, $t = 2$ and $b = 4$

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

(ii) Find the value of t when $A = 9$, $b = 2$ and $h = 3$

$$t = \dots\dots\dots (2)$$

Here is a different formula $f = 8\sqrt{e} - 7$

(c) Make e the subject of the formula.

$$\dots\dots\dots (3)$$

(Total for Question 11 is 9 marks)



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

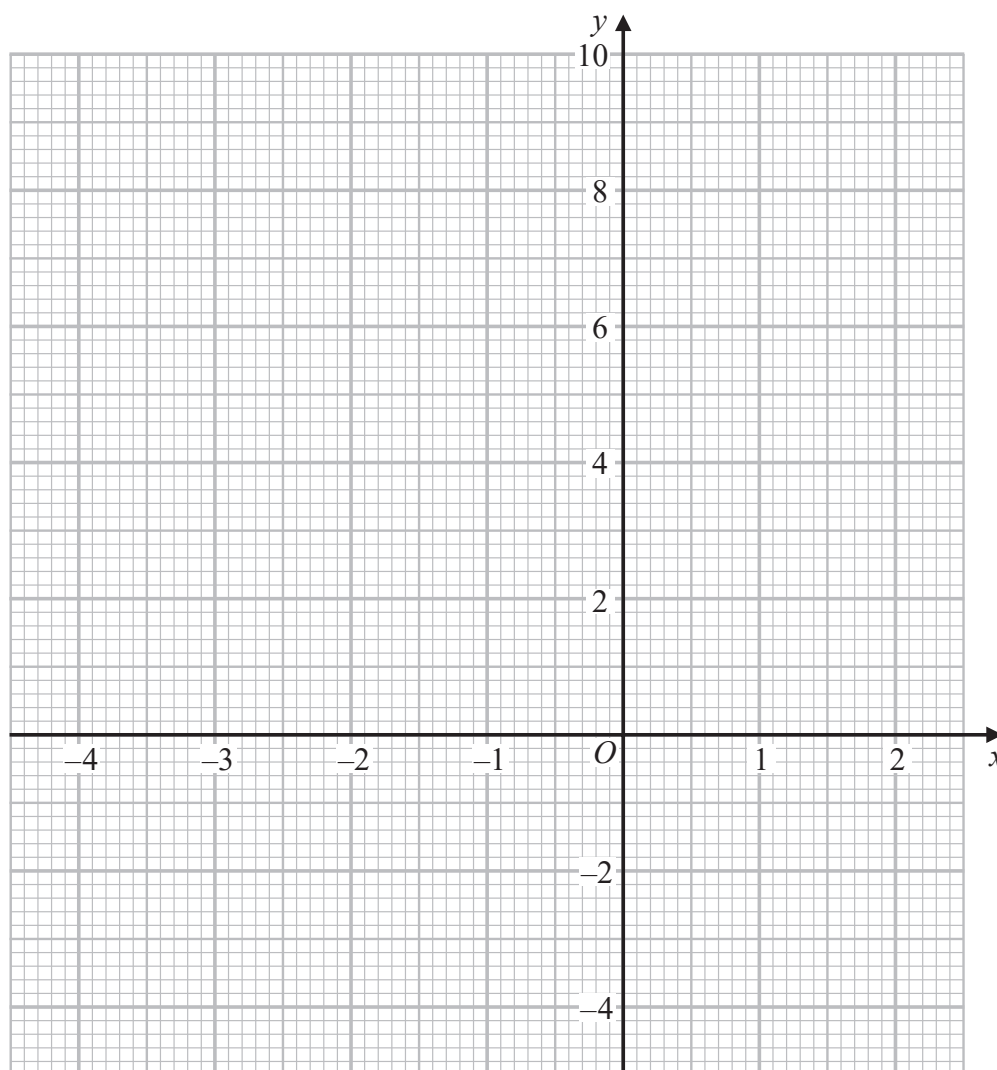
DO NOT WRITE IN THIS AREA

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

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

(2)

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



(2)

(c) Use your graph to find estimates for the solutions of $x^2 + 2x - 1 = 0$

.....

(2)

(Total for Question 12 is 6 marks)



13 (a) Expand $5(x + y)$

.....
(1)

(b) Expand $2d(3d - 4)$

.....
(2)

(Total for Question 13 is 3 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

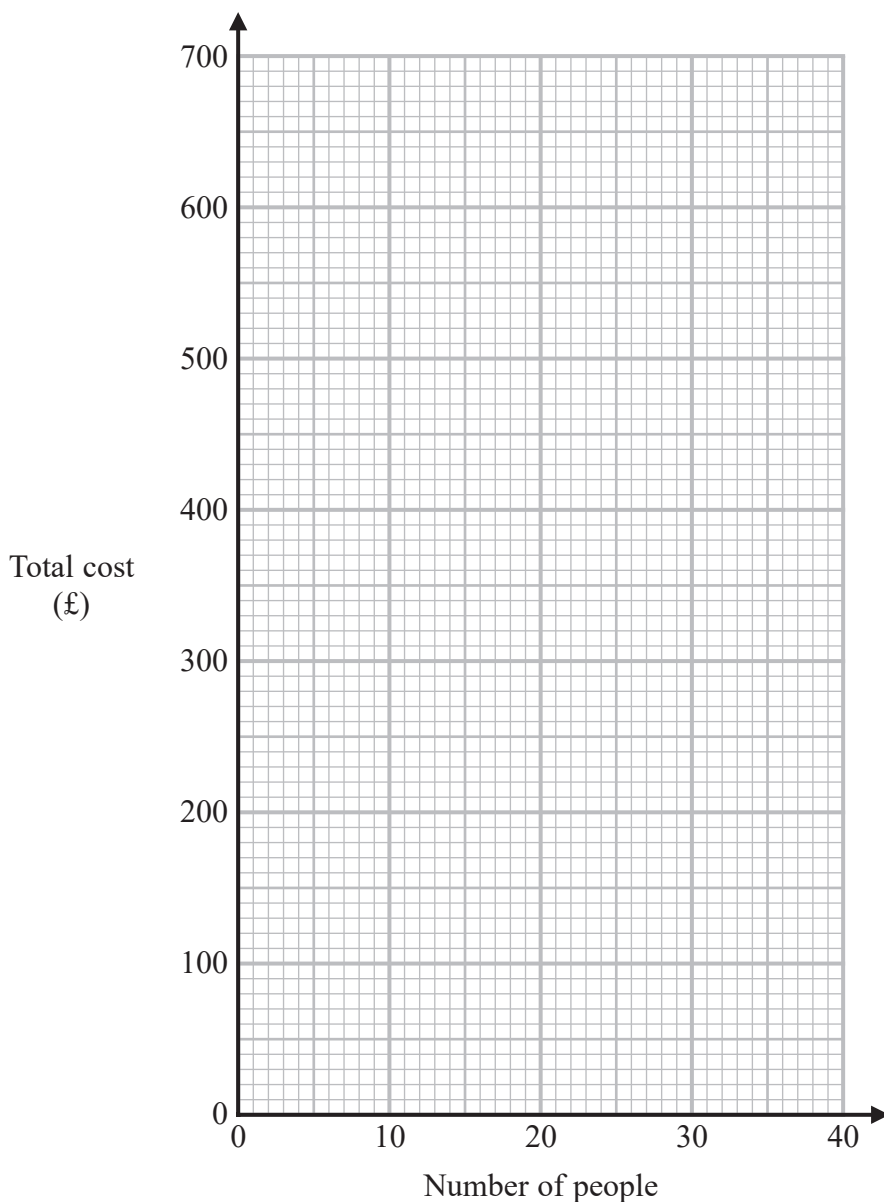
DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

14 Jessica is organising a birthday party at a golf club.
She has to pay £120 for the hire of the room and £12.50 for each person attending the party.

(a) On the grid, draw a graph that can be used to find the total cost, in pounds (£), of the party for any number of people from 0 to 40



(2)

Jessica decides that the total cost of the party should not be more than £470

(b) Find the greatest number of people that can attend the party.

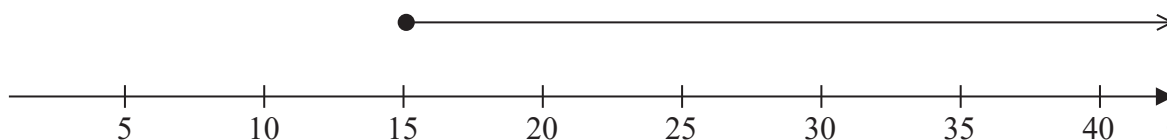
.....
(2)

(Total for Question 14 is 4 marks)



P 6 3 0 4 4 A 0 1 5 2 0

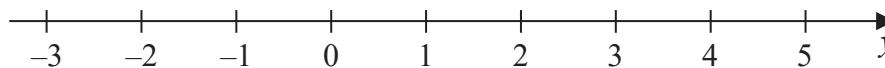
15 Here is an inequality in t shown on a number line.



(a) Write down the inequality.

.....
(1)

(b) On the number line below, show the inequality $-1 \leq y < 3$



(2)

(c) Solve the inequality $3f + 75 < 195$

.....
(2)

(Total for Question 15 is 5 marks)



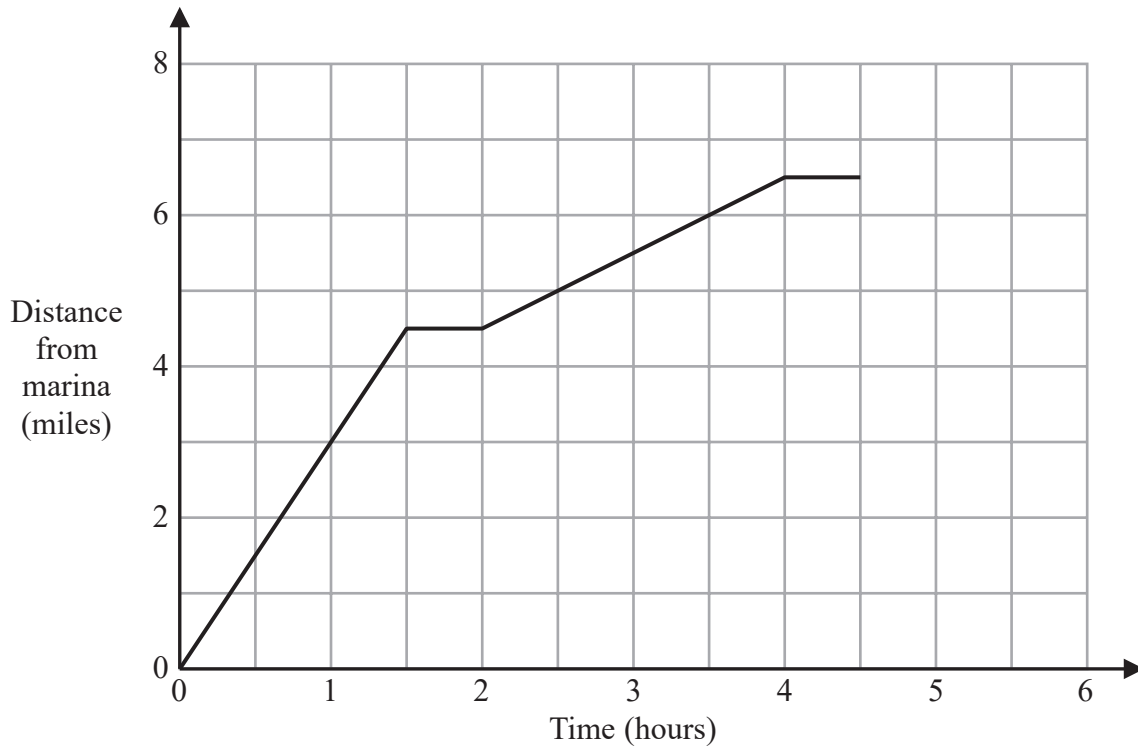
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

16 Julie travelled on a canal boat from a marina.

The distance-time graph for the first 4.5 hours of her journey is shown on the grid below.



(a) Work out the speed of the boat for the first 1.5 hours of the journey.

..... mph
(2)

(b) For how many minutes, in total, was the boat **not** moving in the first 4.5 hours of the journey?

..... minutes
(2)

4.5 hours after the boat left the marina, the boat turned around and began to travel back towards the marina.

The boat travelled at a steady speed of 4 mph for 1 hour.

(c) Show this information on the grid.

(2)

(Total for Question 16 is 6 marks)

TOTAL FOR PAPER IS 80 MARKS



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

BLANK PAGE



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

BLANK PAGE



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

BLANK PAGE

