

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

Tuesday 10 May 2016 – 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.

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Turn over ►

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 $4 \times s \times 3 \times t \times t$

.....
(2)

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

.....
(1)

(c) Simplify $q^4 \div q$

.....
(1)

$(2w)^4$ can be written in the form aw^n

(d) Find the value of a and the value of n

$a =$

$n =$

(2)

(Total for Question 1 is 6 marks)

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2 (a) Solve $3m + 2 = 17$

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

(b) Solve $2(n + 5) = 6$

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

(Total for Question 2 is 4 marks)



3 (a) Simplify $5c + 3d + 3d - c$

.....
(2)

(b) Expand $2u(t - u)$

.....
(2)

(c) Expand and simplify $4(m + 2) + 3(m - 1)$

.....
(2)

(Total for Question 3 is 6 marks)

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4 The first term of a sequence is 20
Other terms of this sequence are found by using the rule

“subtract 4 from the previous term”

(a) (i) Write down the second and third terms of this sequence.

.....

(ii) Work out the 26th term of this sequence.

.....
(3)

The n th term of a different sequence is given by the expression $5n + 7$

(b) Find the first 2 terms of this sequence.

.....
(2)

Here are the first six terms of a different arithmetic sequence.

5 8 11 14 17 20

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

.....
(2)

(Total for Question 4 is 7 marks)



5 (a) Factorise $12c + 6$

.....
(2)

(b) Factorise $ab - 5b$

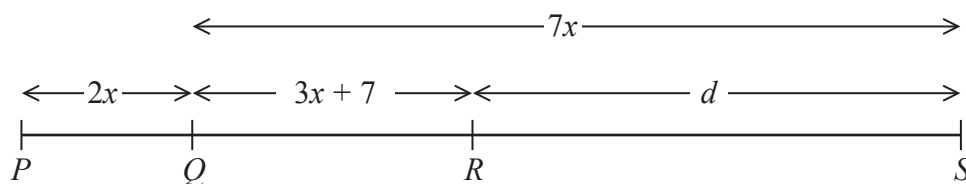
.....
(1)

(c) Factorise $d^2 - d$

.....
(1)

(Total for Question 5 is 4 marks)

6 The diagram shows some information about the distances, in km, between 4 villages P , Q , R and S on a straight road.



(a) Find an expression, in terms of x , for the total distance, in km, between P and R .
Give your answer in its simplest form.

.....
(2)

The distance between R and S is d km.

(b) Find an expression for d in terms of x .
Give your answer in its simplest form.

.....
(2)

(Total for Question 6 is 4 marks)



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7 (a) Solve $\frac{1}{3}u - 2 = 4$

$u = \dots\dots\dots$
(2)

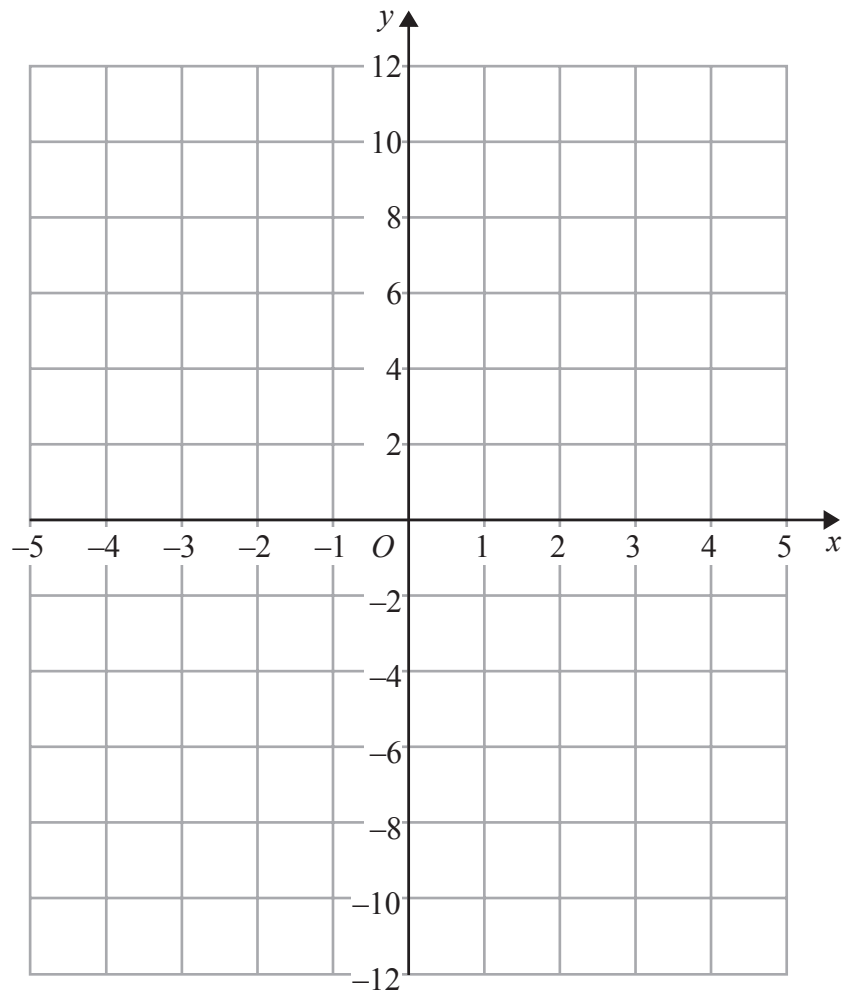
(b) Solve $5t - 8 = 3t + 1$

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

(Total for Question 7 is 4 marks)



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



(3)

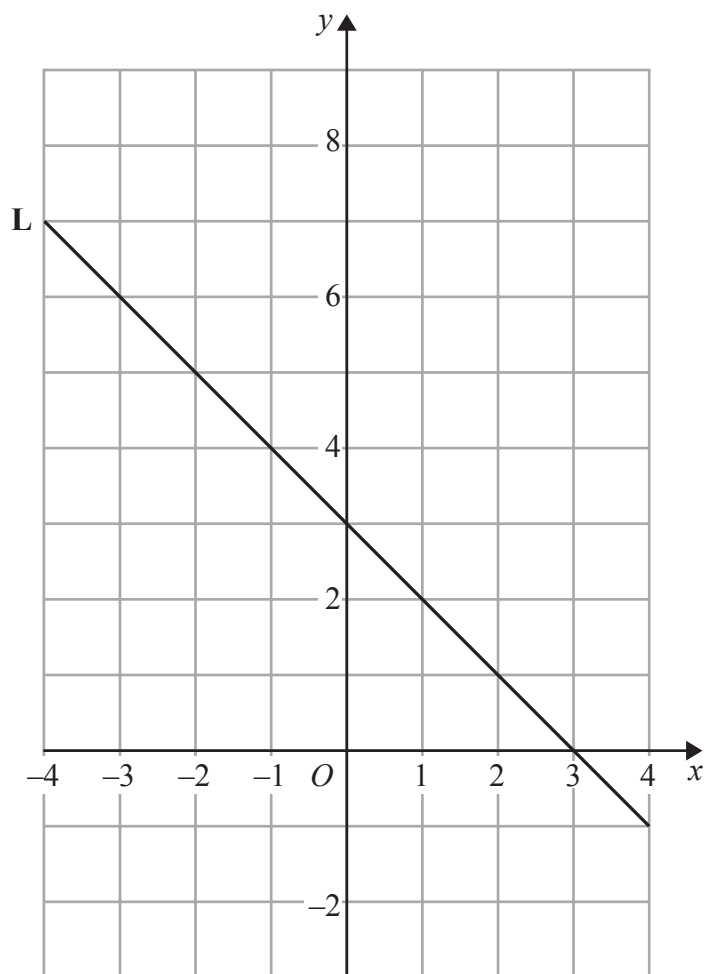
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Here is a straight line **L** drawn on a grid.



(b) (i) Find the gradient of **L**.

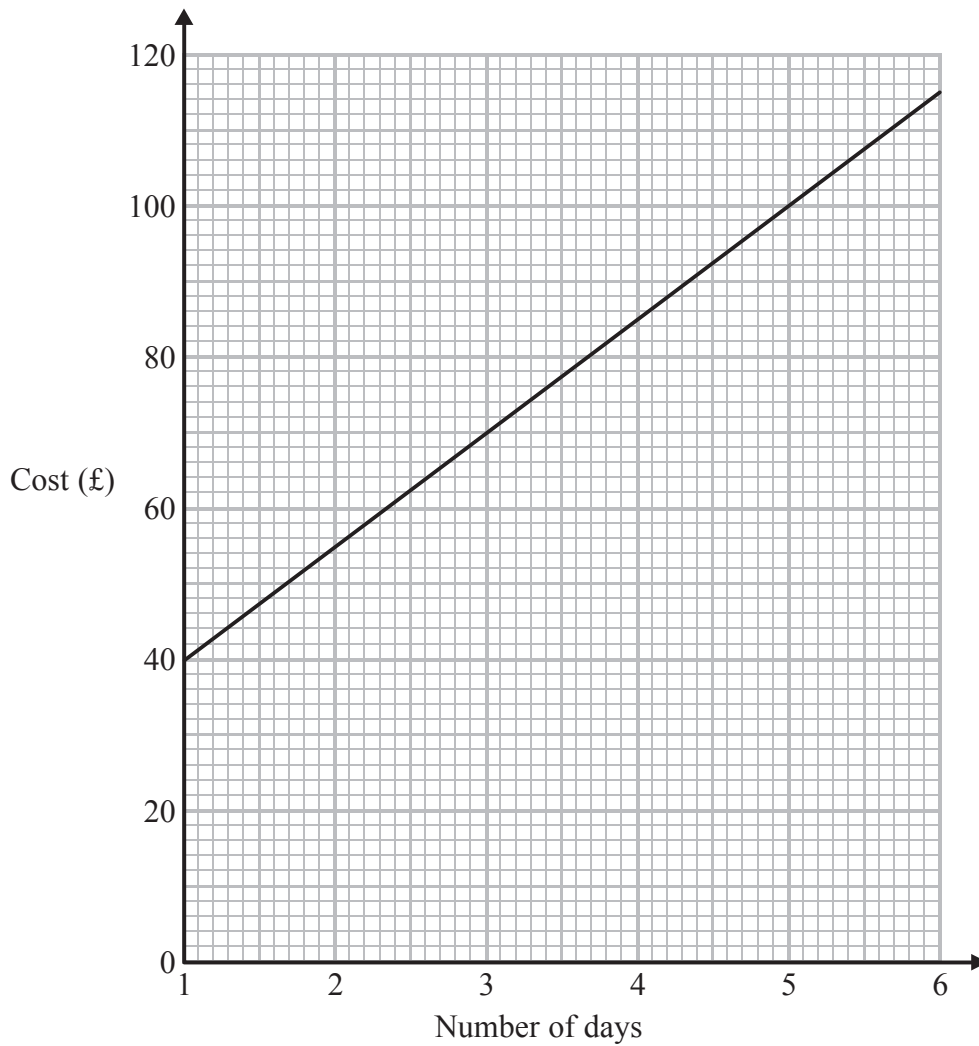
(ii) Find an equation for **L**.

.....
(4)

.....
(Total for Question 8 is 7 marks)



9 This graph can be used to find the cost, in pounds, of hiring a car from UK Cars.



(a) Write down the cost of hiring a car from UK Cars for 5 days.

£..... (1)

The cost of hiring a car from UK Cars is a fixed amount plus an additional amount for each day the car is hired.

(b) Work out the additional amount for each day.

£..... (2)

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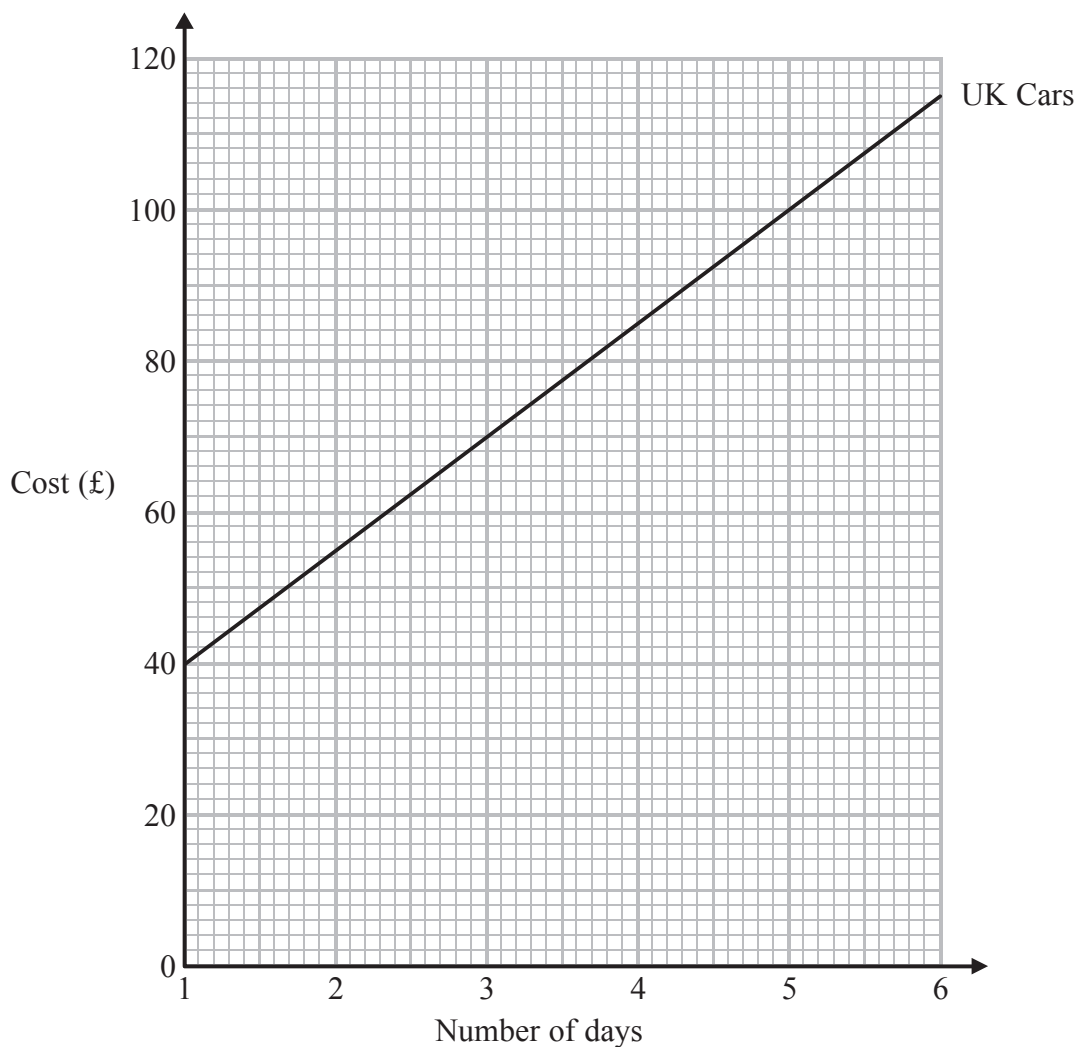


Cars can also be hired from World Cars.

The table shows information about the cost of hiring a car from World Cars.

Number of days	1	2	3	4	5
Cost (£)	30	50	70	90	110

(c) On the grid below, draw a graph to show this information.



(2)

Derek hires a car for n days from UK Cars.

Karen hires a car for n days from World Cars.

The cost to Derek of hiring a car is the same as the cost to Karen of hiring a car.

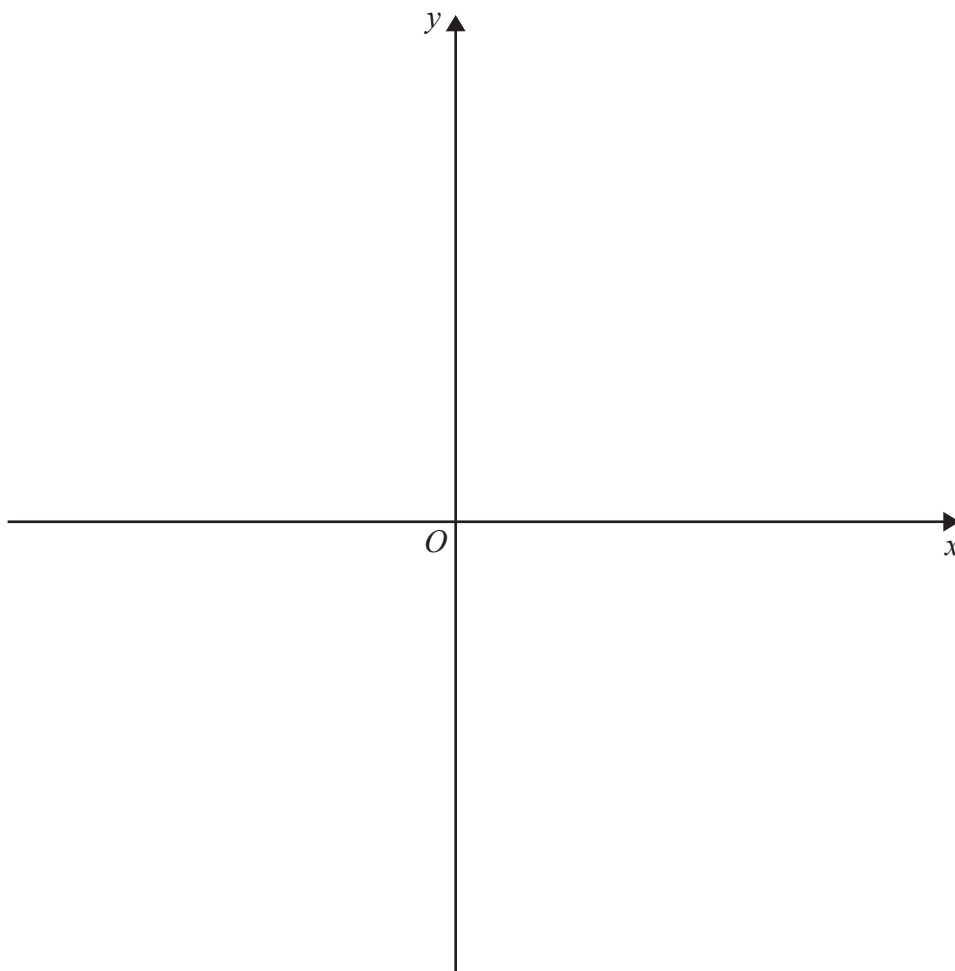
(d) Find the value of n .

(1)

(Total for Question 9 is 6 marks)



- 10 (a) (i) Using the axes below, sketch the graph of $y = x^2$
Label your graph **P**.



- (ii) Using the same axes, sketch the graph of $y = -x^2$
Label this graph **Q**.

(3)

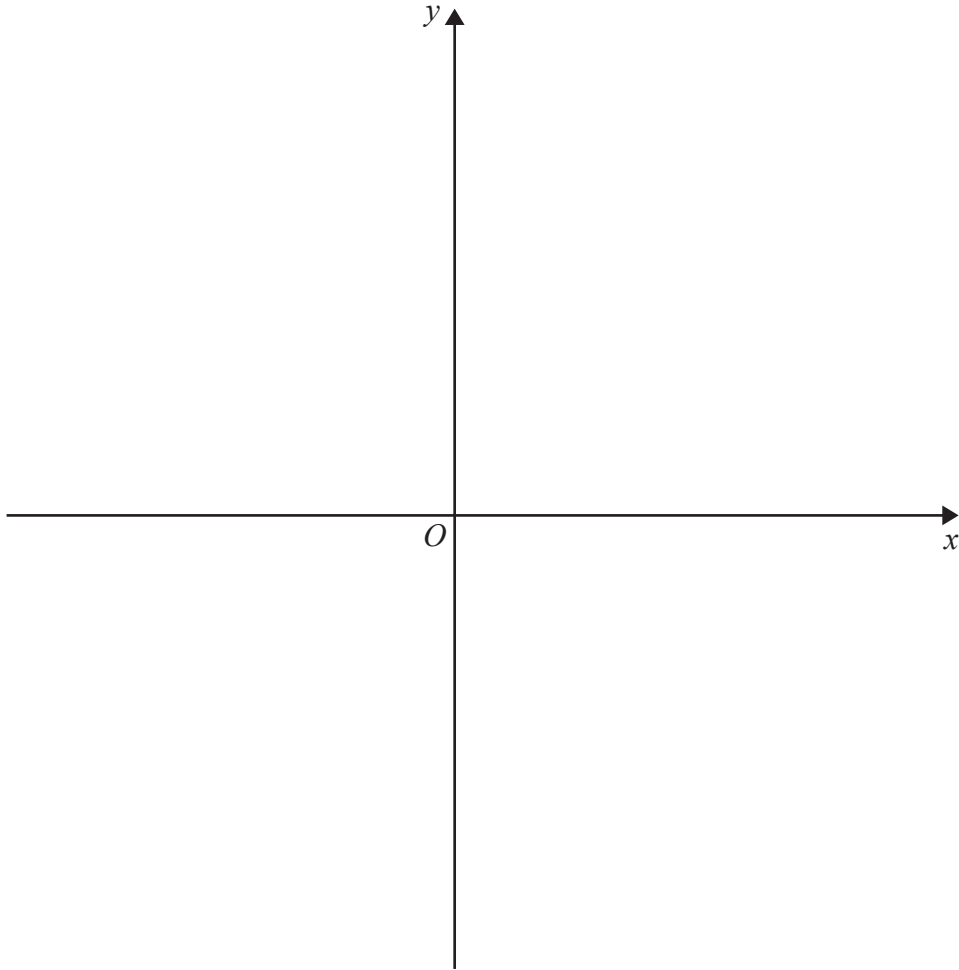
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(b) On the axes below, sketch the graph of $y = x^2 + 2$



(2)

(Total for Question 10 is 5 marks)

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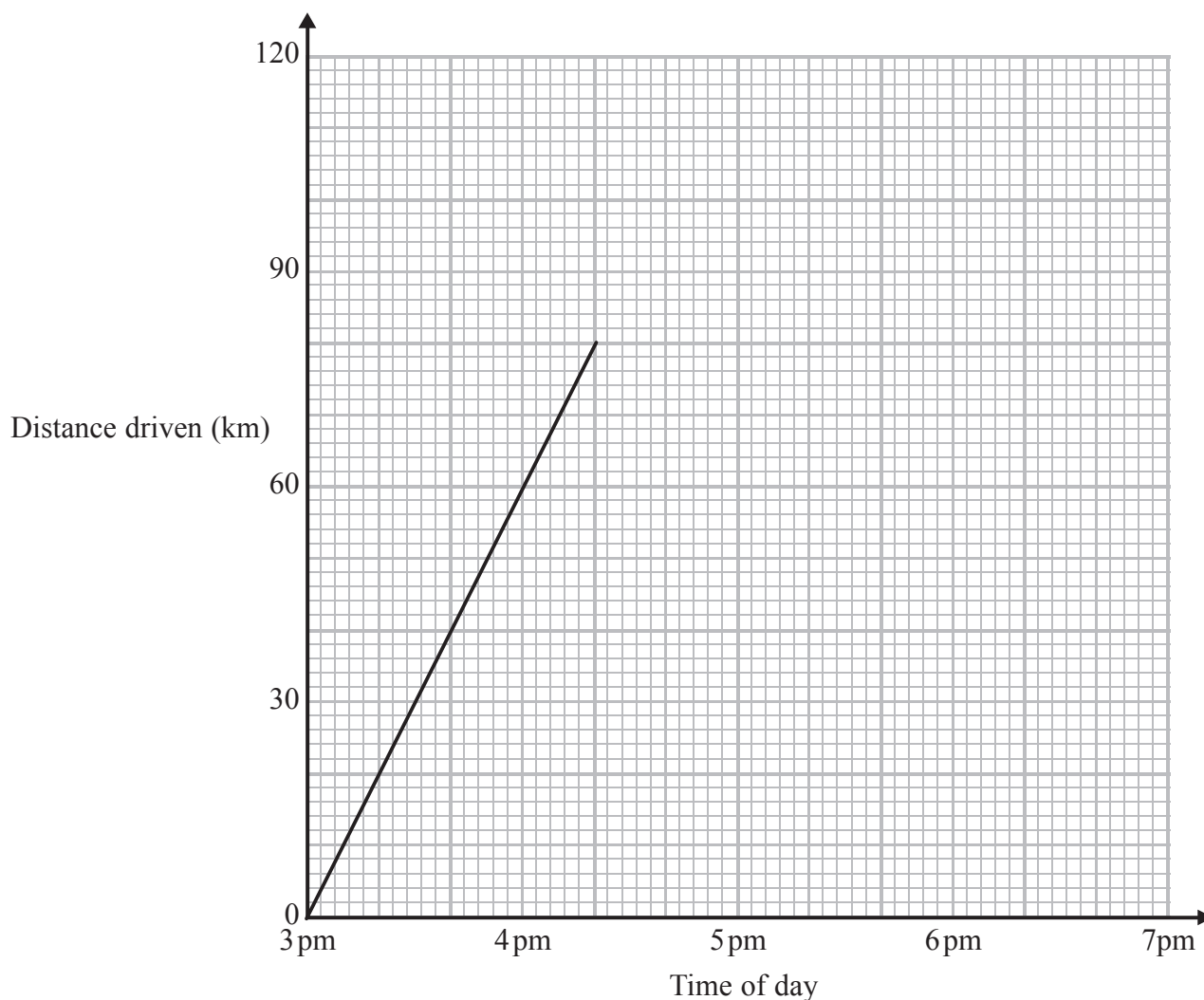
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11 Graham drove from home to a concert.
He left home at 3 pm.

Here is the travel graph for part of his journey.



At 4 20 pm Graham stopped to get some petrol.

(a) Work out Graham's speed as he drove from his home to where he stopped to get some petrol.

..... km/h
(2)



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Graham stopped for 20 minutes.

(b) Show this on the travel graph.

(1)

He then drove at a steady speed of 30 km/h for 40 minutes.

(c) Show this on the travel graph.

(2)

(Total for Question 11 is 5 marks)



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

12 (a) $t = \frac{3d}{4}$

(i) Work out the value of t when $d = 12$

.....

(ii) Work out the value of d when $t = 30$

.....

(iii) Make d the subject of the formula $t = \frac{3d}{4}$

.....

(6)

(b) $u = \sqrt{10 - w}$

(i) Find the value of u when $w = -6$

.....

(ii) Find the value of w when $u = 3$

.....

(3)

(Total for Question 12 is 9 marks)



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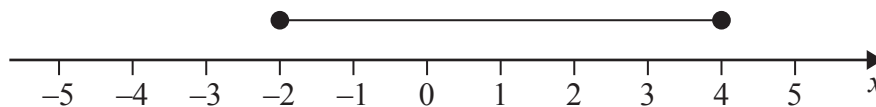
13 $-3 < p \leq 2$

p is an integer.

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

.....
(2)

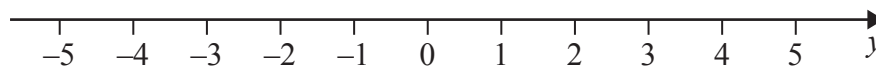
(b) Here is an inequality shown on a number line.



Write down this inequality.

.....
(2)

(c) On the number line below, show the inequality $y > 2$



(1)

(d) Solve the inequality $n - 1 \leq 4$

.....
(1)

(e) Solve the inequality $-m \geq 7$

.....
(1)

(Total for Question 13 is 7 marks)

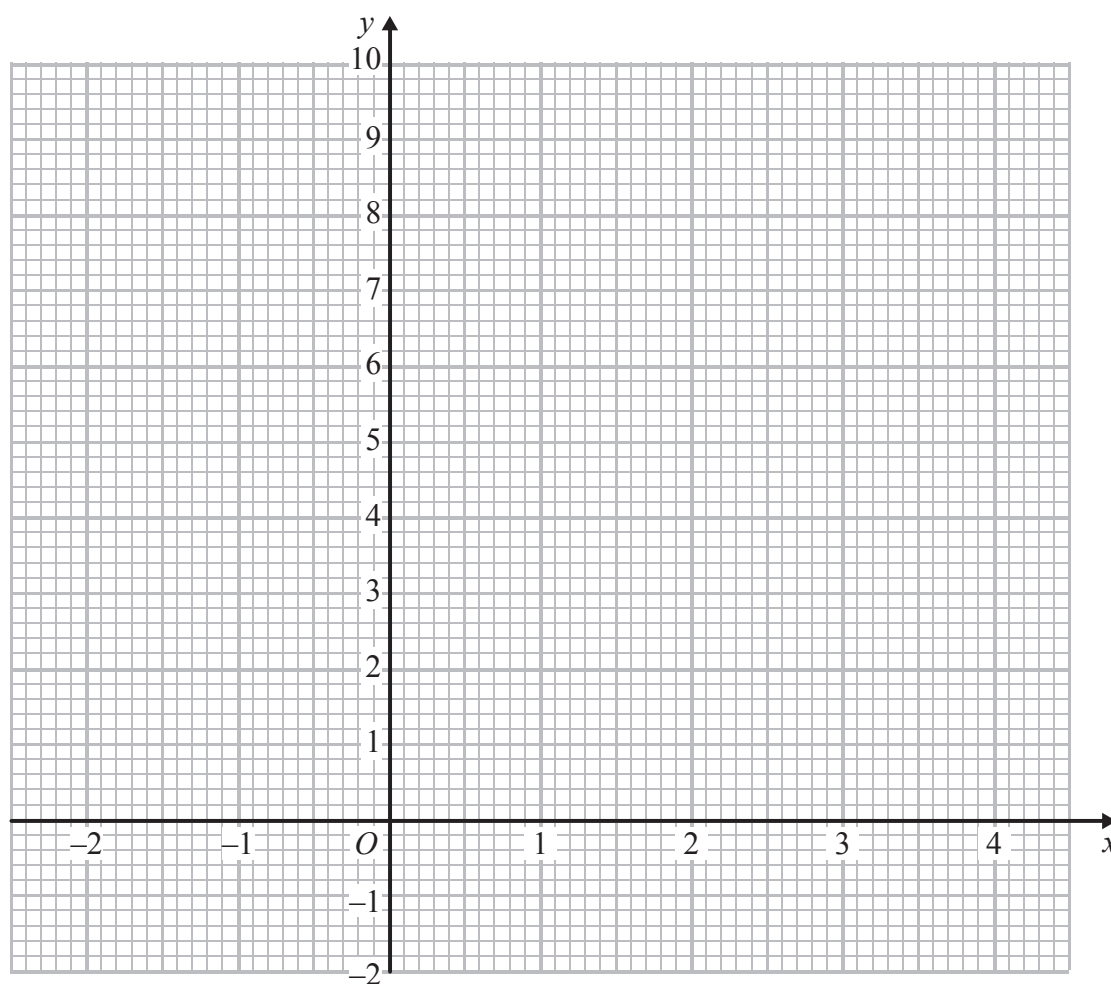


14 (a) Complete the table of values for $y = x(x - 2)$

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

(2)

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



(2)



(c) Use your graph to find estimates for the solutions of $x(x - 2) = 5$

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.....
(2)

(Total for Question 14 is 6 marks)

TOTAL FOR PAPER IS 80 MARKS



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