

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

Thursday 9 January 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

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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 Eggs are sold in cartons and trays.

Each carton contains 6 eggs.

Each tray contains 24 eggs.

Angie bought c cartons of eggs and t trays of eggs.

Write down an expression, in terms of c and t , for the total number of eggs Angie bought.

.....

(Total for Question 1 is 2 marks)

2 (a) Simplify $2x + 6y + 3 + 4x - y + 4$

.....

(2)

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

.....

(2)

(c) Expand $2p(1 + 5p)$

.....

(2)

(d) Simplify $(x^4)^2$

.....

(1)

(e) Simplify $a^2 \times a^3$

.....

(1)

(Total for Question 2 is 8 marks)



3 $w = cv^2$

$c = 4$

$v = 3$

(a) Work out the value of w .

.....
(2)

$w = cv^2$

$w = 25$

$v = 10$

(b) Work out the value of c .

.....
(3)

(Total for Question 3 is 5 marks)

4 $t = 5u^2 - 14$

Given that $u > 0$, make u the subject of the formula.

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



5 Sketch the graph of $y = x^2 - 9$

(Total for Question 5 is 3 marks)



7 (a) Solve $2x + 4 = 19 - 3x$

.....
(2)

(b) Solve $3(2y + 3) = 21$

.....
(3)

(c) Solve $\frac{w}{5} + 7 = -4$

.....
(2)

(Total for Question 7 is 7 marks)

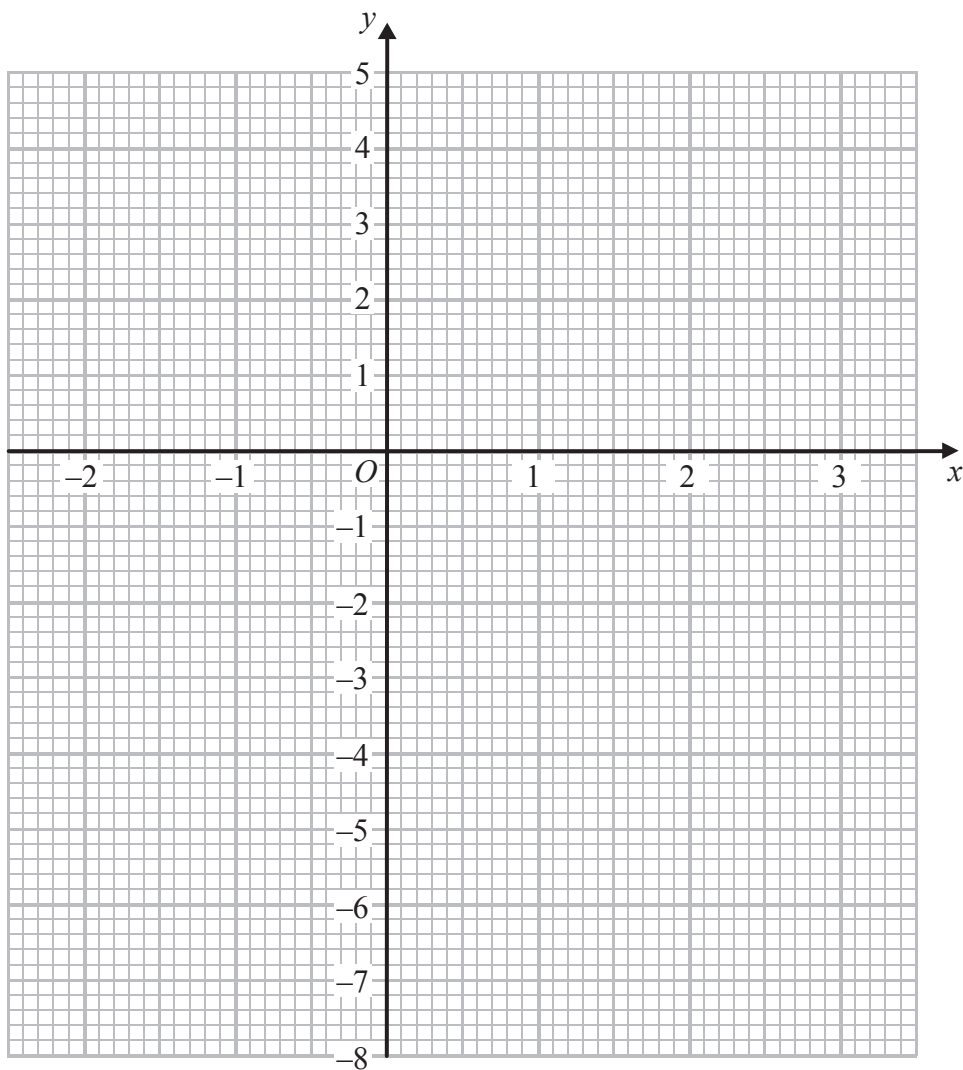


8 (a) Complete the table of values for $y = 2x - 3$

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

(2)

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

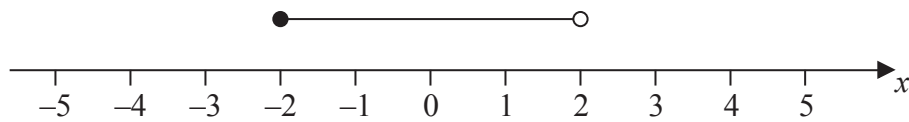


(2)

(Total for Question 8 is 4 marks)



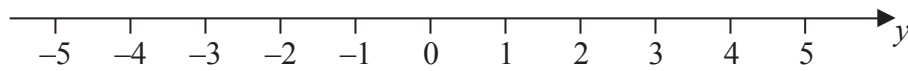
9 Here is an inequality, in x , shown on a number line.



(a) Write down the inequality.

.....
(2)

(b) On the number line below, show the inequality $-4 \leq y < 1$



(2)

(c) $-3 < t < 1$

t is an integer.

Write down all the possible values of t .

.....
(2)

(d) Solve the inequality $5p - 4 > 12$

.....
(3)

(Total for Question 9 is 9 marks)



10 (a) Factorise $4x + 18xy$

.....
(2)

(b) Factorise $ab^2 - a^2b$

.....
(2)

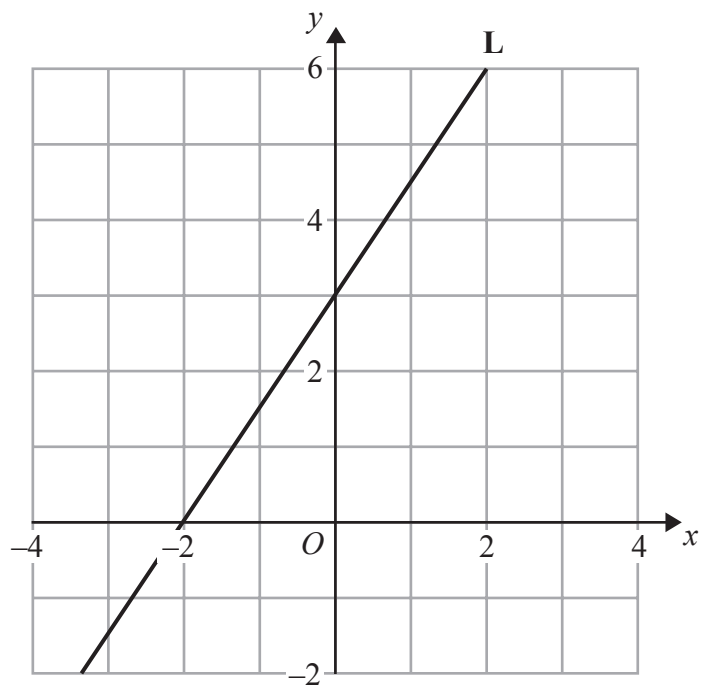
(c) Factorise $36p^2 + 18p^4$

.....
(2)

(Total for Question 10 is 6 marks)



11 The line **L** is drawn on the grid below.

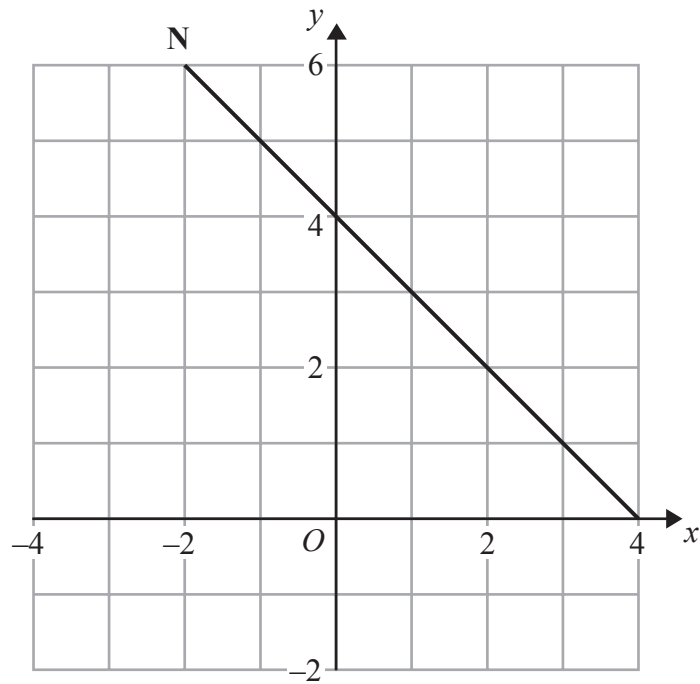


(a) Work out the gradient of the line **L**.

.....
(2)



The line N is drawn on the grid below.



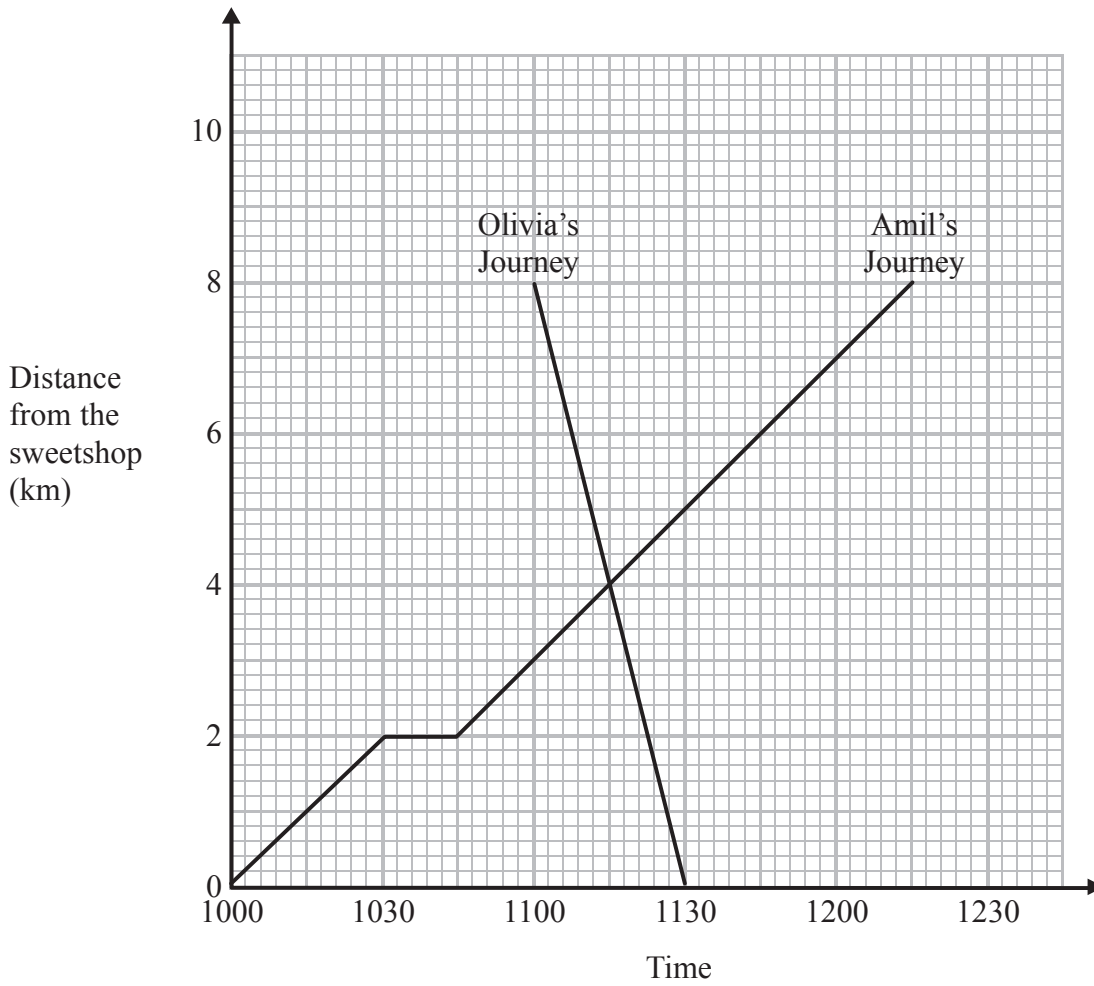
(b) Find an equation of the line N.

.....
(3)

(Total for Question 11 is 5 marks)



12 Here is a travel graph.



Amil walked from the sweetshop to the park.
Amil's journey is shown on the travel graph.

(a) Work out Amil's speed, in km/h, for the first 30 minutes of his journey.

..... km/h
(2)

Amil stopped on his journey to speak to a friend.

(b) How long did he stop for?

..... minutes
(1)



At 1100 Olivia started to cycle from the park to the sweetshop.
Olivia and Amil use the same route between the sweetshop and the park.

Olivia's journey is also shown on the travel graph.

(c) At what time did Olivia and Amil pass each other?

.....
(1)

Olivia was in the sweetshop for 30 minutes.
She then cycled back to the park at a steady speed.
Olivia arrived back at the park at the same time as Amil arrived at the park.

(d) Complete the travel graph for Olivia's journey.

(2)

(Total for Question 12 is 6 marks)

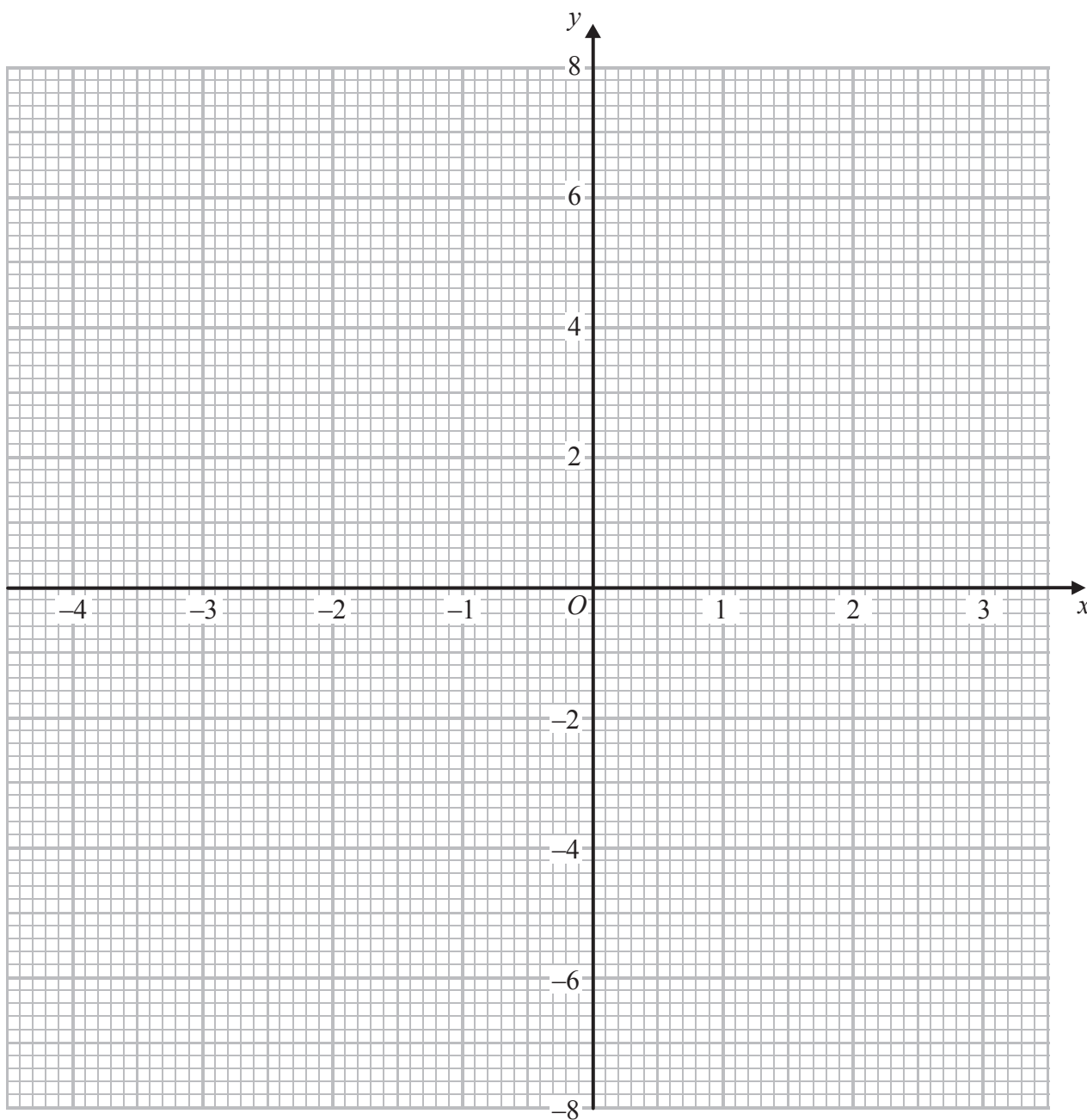


13 (a) Complete the table for the values for $y = x^2 + x - 6$

x	-4	-3	-2	-1	0	1	2	3
y	6		-4	-6			0	

(2)

(b) On the grid, draw the graph of $y = x^2 + x - 6$ for values of x from -4 to 3



(2)



(c) Write down the solutions of $x^2 + x - 6 = 0$

.....
(2)

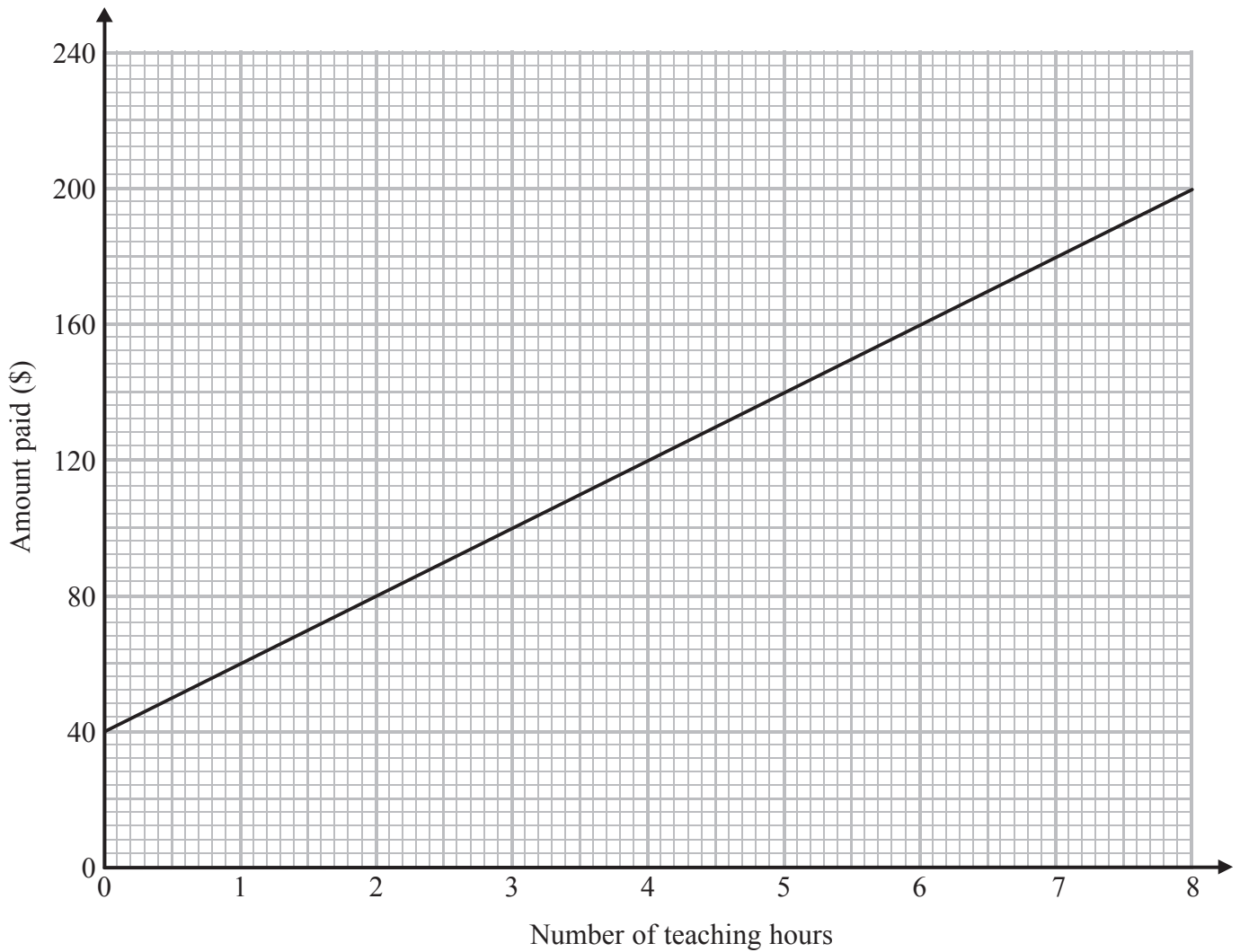
(d) Use your graph to find estimates for the solutions of $x^2 + x = 10$

.....
(2)

(Total for Question 13 is 8 marks)



14 Normont ski resort pays ski instructors a fixed amount plus an additional amount for each hour of teaching.



This graph can be used to work out how much a ski instructor is paid for each day they work.

On Monday, a ski instructor teaches for 2 hours.

(a) Write down the amount Normont pays the ski instructor.

\$
(1)

(b) Work out how much Normont pays a ski instructor for each hour of teaching.

\$
(2)



Fairfield ski resort pays ski instructors a fixed amount of \$60 a day and \$15 for each hour of teaching.

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

(3)

(Total for Question 14 is 6 marks)

TOTAL FOR PAPER IS 80 MARKS



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