

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

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  $4e + 3f - 2e + f + f$

.....  
(1)

(b) Simplify  $3 \times d \times 2c \times 5 \times d \times d$

.....  
(2)

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

.....  
(1)

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

.....  
(2)

(e) Simplify  $8w^3 \div 2w$

.....  
(2)

(Total for Question 1 is 8 marks)

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- 2 Place a tick in the appropriate column of the table to show whether each of the following is an equation or an expression or a formula.

	Equation	Expression	Formula
$4(xy + 3y)$			
$A = \pi r^2$			
$x^2 + 3x = 7$			
$5ab$			

(Total for Question 2 is 3 marks)

- 3 Simon wants to change  $n$  kilometres into miles.

He uses this rule

Divide the number of kilometres by 8 then multiply by 5

Write an expression, in terms of  $n$ , for the number of miles in  $n$  kilometres.

(Total for Question 3 is 1 mark)



$$4 \quad C = \frac{2d}{7}$$

(a) (i) Work out the value of  $C$  when  $d = 14$

.....  
(2)

(ii) Work out the value of  $d$  when  $C = 10$

.....  
(2)

$$g = 4(h + f) + 7$$

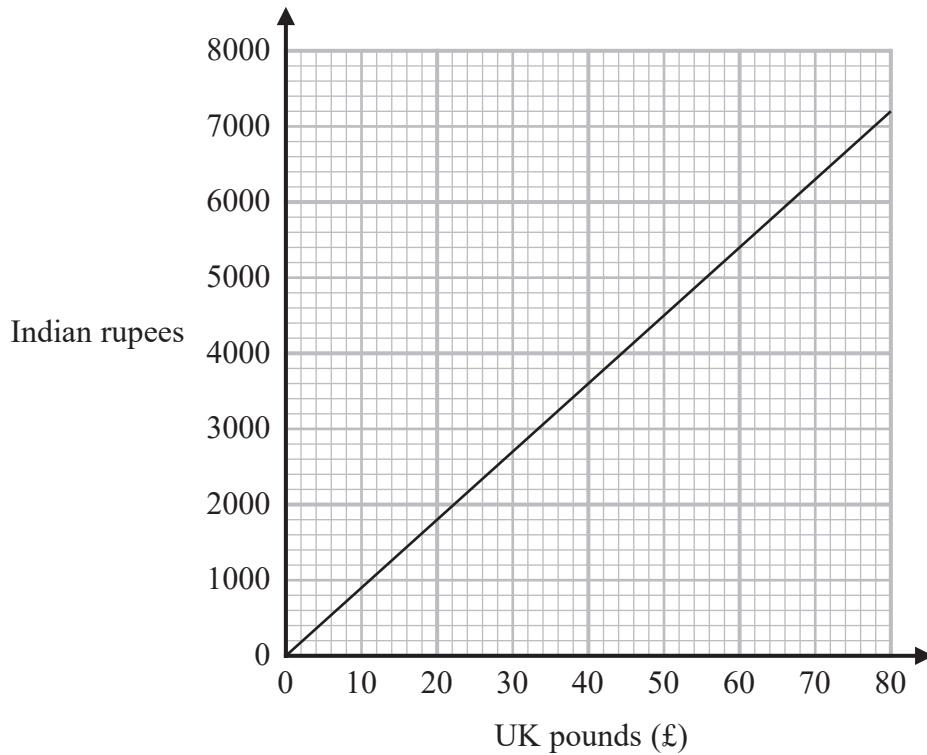
(b) Make  $h$  the subject of the formula.

.....  
(3)

(Total for Question 4 is 7 marks)



5 This graph can be used to change between UK pounds (£) and Indian rupees.



(a) Change £150 into rupees.

..... rupees  
(3)

(b) Work out the gradient of the line.

.....  
(2)

(c) What does the gradient of this line represent?

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

(Total for Question 5 is 6 marks)

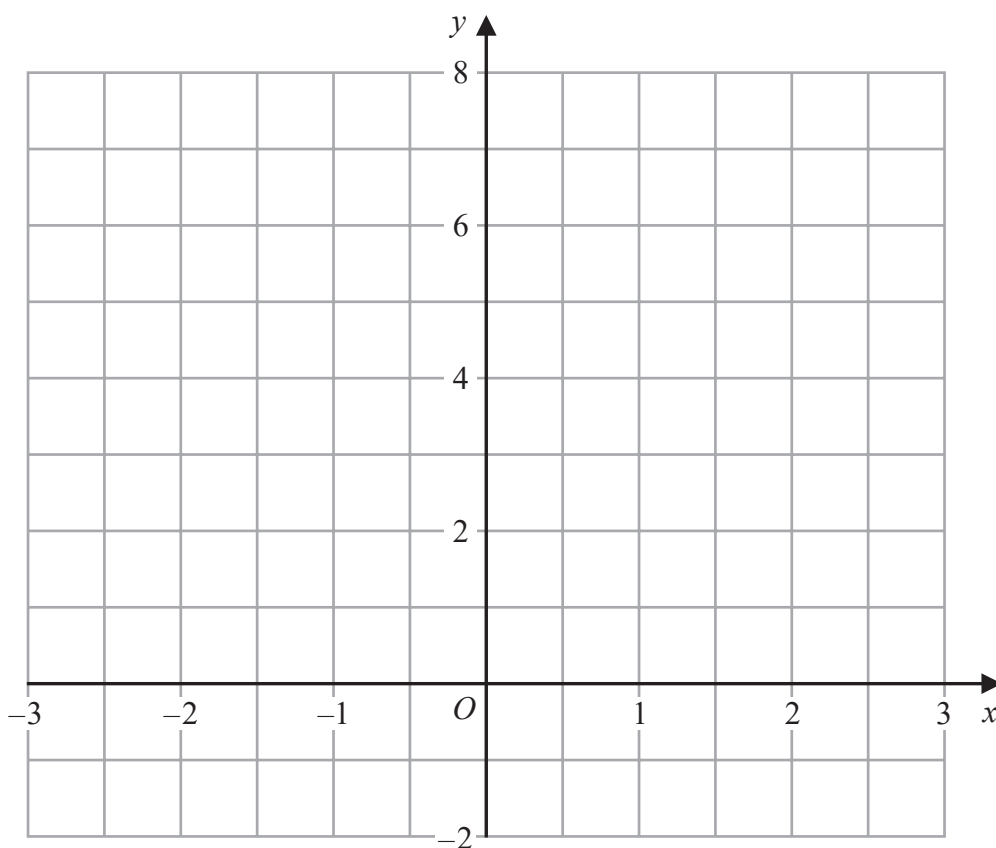


6 (a) Complete the table of values for  $y = 4 - x$

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

(2)

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



(2)

(Total for Question 6 is 4 marks)



7 (a) Solve  $x - 4 = 8$

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

(b) Solve  $3y + 2 = 11$

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

(c) Solve  $5m - 11 = m + 3$

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

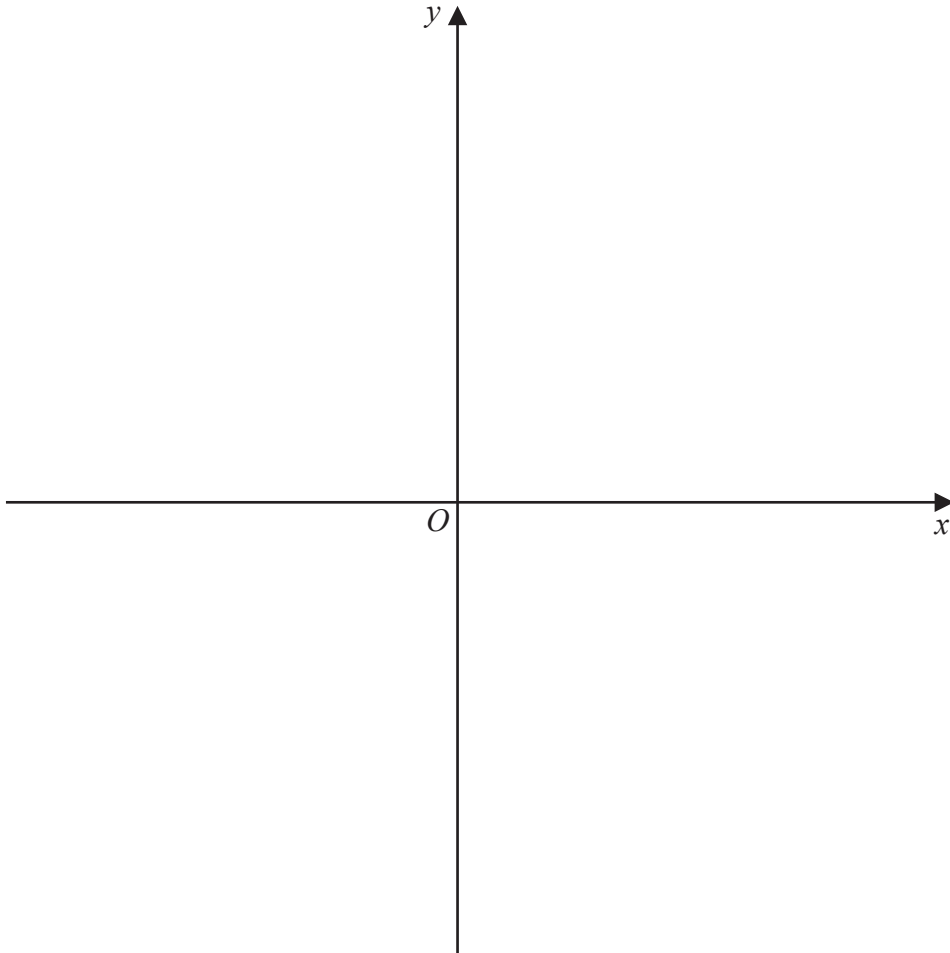
(d) Solve  $\frac{2(9n + 3)}{5} = 3(n - 2)$

$$n = \dots\dots\dots (3)$$

(Total for Question 7 is 8 marks)



8 (a) Using the axes below, sketch the graph of  $y = x^2 + 3$



(2)

(b) For  $y = x^2 + 3$ , describe what happens to the value of  $y$  as the value of  $x$  becomes very large.

(1)

(Total for Question 8 is 3 marks)

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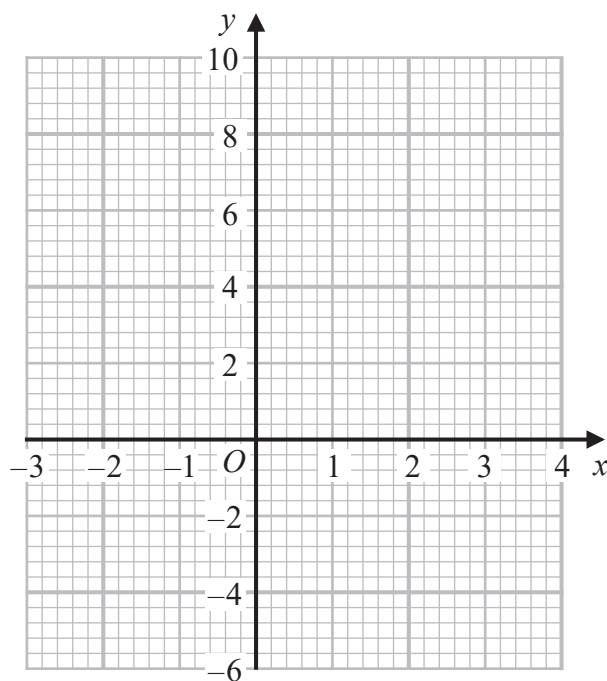


- 9 (a) Complete the table of values for  $y = x^2 - 3x - 2$

$x$	-2	-1	0	1	2	3
$y$						

(2)

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



(2)

- (c) Use your graph to find an estimate for one of the solutions of  $x^2 - 3x - 2 = 6$

(2)

(Total for Question 9 is 6 marks)



10 (a) Expand  $7(p - 3)$

.....  
(1)

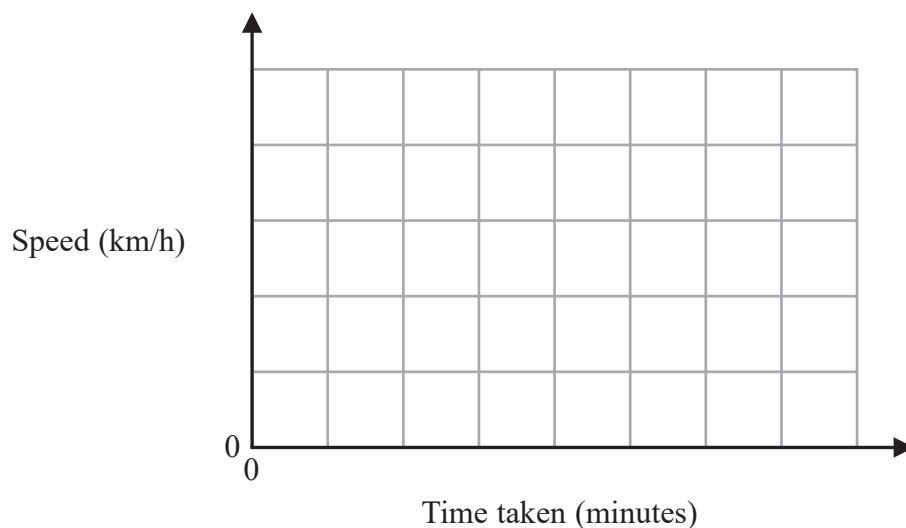
(b) Expand and simplify  $2x(x - y) + y(x - 2)$

.....  
(2)

(Total for Question 10 is 3 marks)

11 Charlotte drove for 40 kilometres at a constant speed of 80 kilometres per hour.

On the grid below, draw a speed-time graph for this journey.



(Total for Question 11 is 3 marks)



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12 (a) Factorise  $12 + 8k$

.....  
(2)

(b) Factorise  $3t^2 - 9t$

.....  
(2)

(c) Factorise  $xy^3 + x^2y^2$

.....  
(2)

(Total for Question 12 is 6 marks)



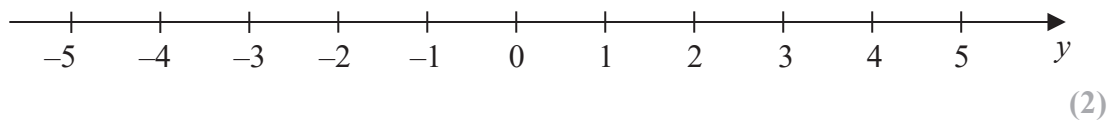
13  $x > 2$

$x$  is an integer.

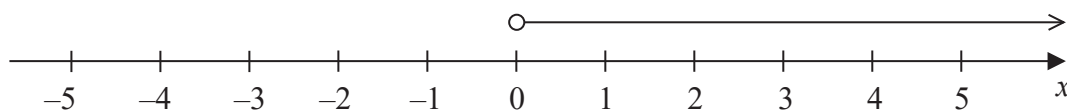
(a) Write down the least possible value of  $x$ .

.....  
(1)

(b) On the number line below, show the inequality  $-3 < y \leq 4$



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



(c) Write down the inequality.

.....  
(1)

(d) Solve the inequality  $\frac{4r}{3} + 2 > 8$

.....  
(3)

(Total for Question 13 is 7 marks)



14 Farah turns on a tap at her sink.

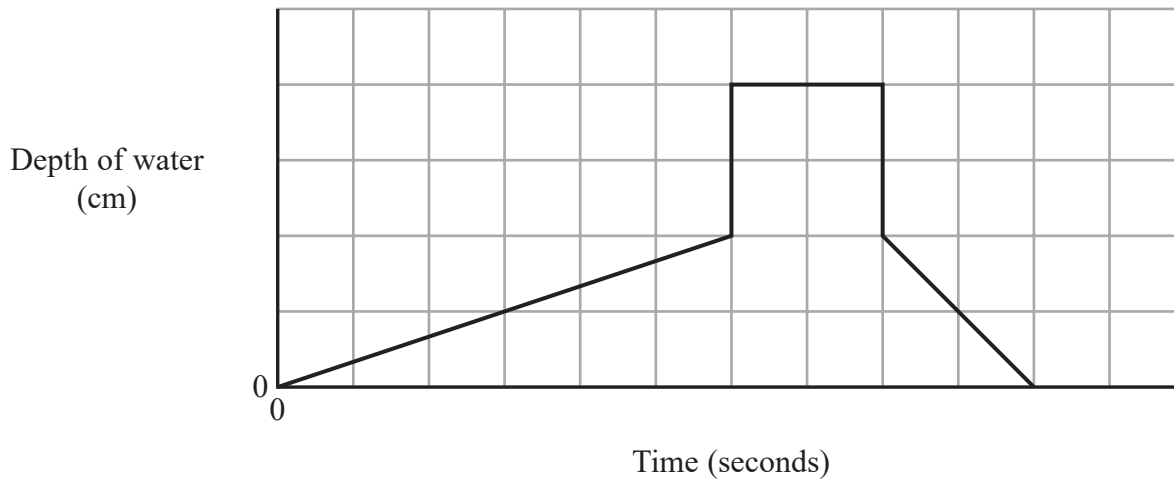
The sink fills for a time  $T$  seconds, at which time Farah turns off the tap.

Farah then puts a bowl into the sink.

Later she removes the bowl from the sink so that no water is lost from the sink.

The sink is then emptied.

The graph shows information about the depth of the water in the sink.



(a) Write  $T$  in its correct place on the time axis.

(1)

The time taken to empty the sink is  $U$  seconds so that  $T = kU$

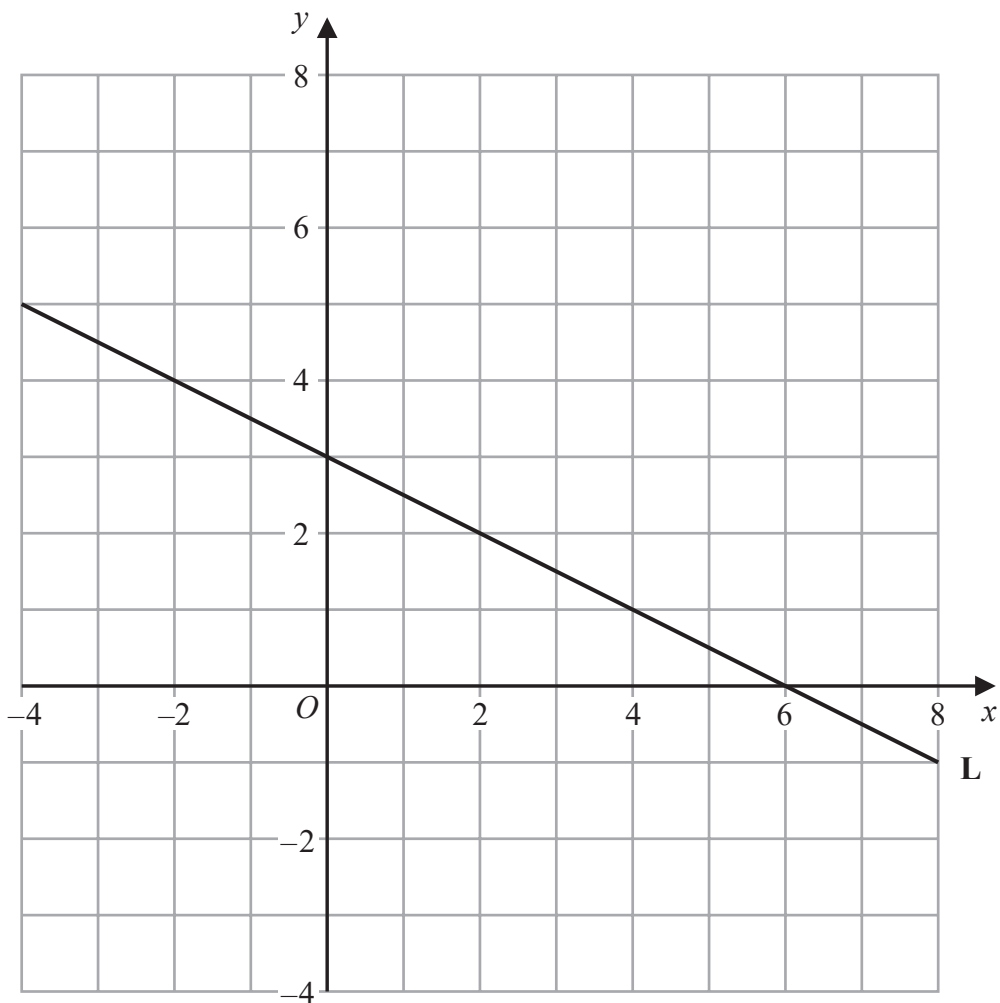
(b) Find the value of  $k$ .

(1)

(Total for Question 14 is 2 marks)



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



Find an equation for **L**

(Total for Question 15 is 2 marks)

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16 The  $n$ th term of an arithmetic sequence is given by the expression  $3n - 2$

(a) Work out the 7th term of this sequence.

.....  
(2)

The  $m$ th term of this sequence is 97

(b) Work out the value of  $m$ .

.....  
(2)

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

12      16      20      24

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

.....  
(2)

(Total for Question 16 is 6 marks)

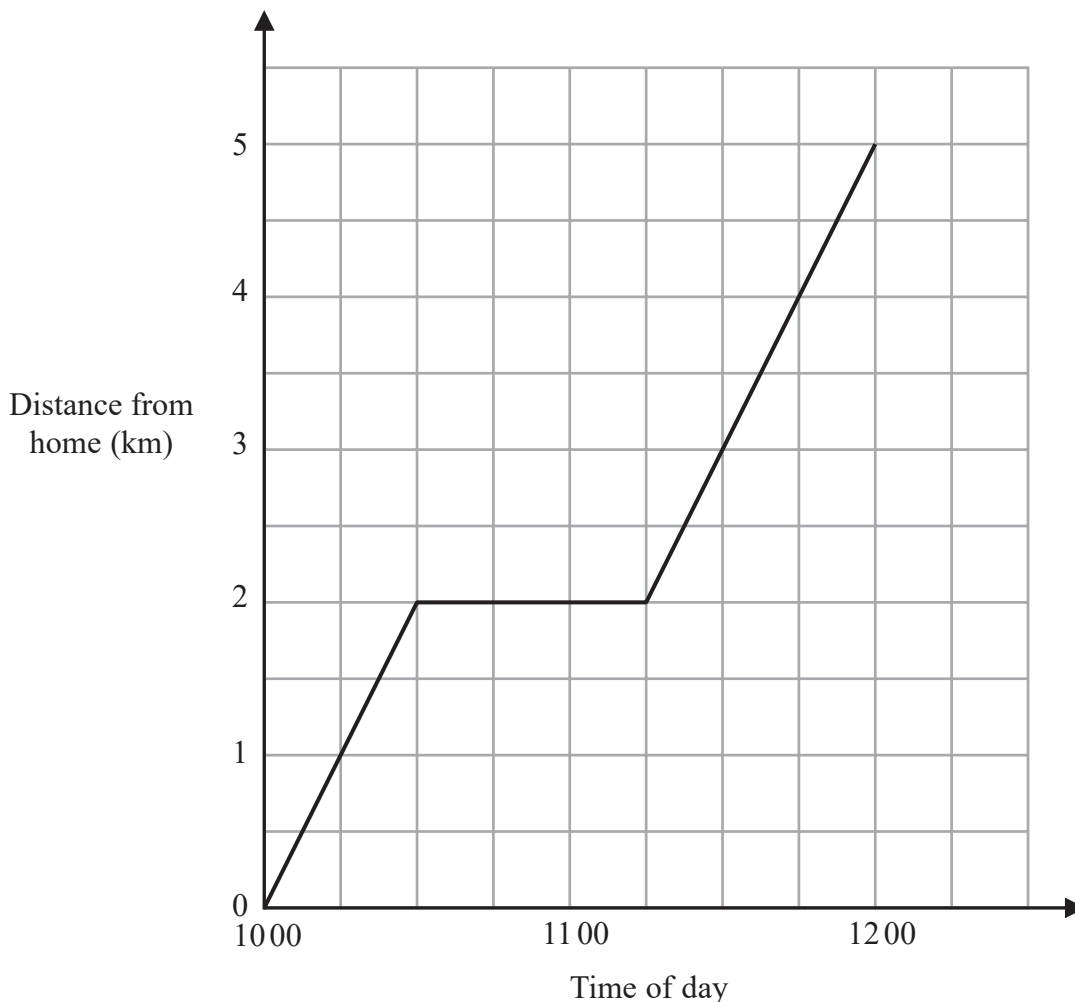


17 Saira and Fred live 5 km from a leisure centre.

Saira left home at 10 00 to walk to the leisure centre.

On the way to the leisure centre she stopped to talk to a friend.

The distance-time graph for her journey to the leisure centre is shown on the grid.



(a) For how many minutes did Saira stop to talk to her friend?

..... minutes  
(1)

(b) Work out the speed at which Saira walked.

..... km/h  
(2)





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Fred also left home at 1000 to go to the leisure centre.  
He jogged to the leisure centre at a constant speed of 10 km/h.  
When Fred got to the leisure centre, he waited until Saira arrived.

(c) On the grid, draw the distance-time graph for this information.

(2)

(Total for Question 17 is 5 marks)

**TOTAL FOR PAPER IS 80 MARKS**



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