



# GCSE Foundation

*Algebra*

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64 minutes

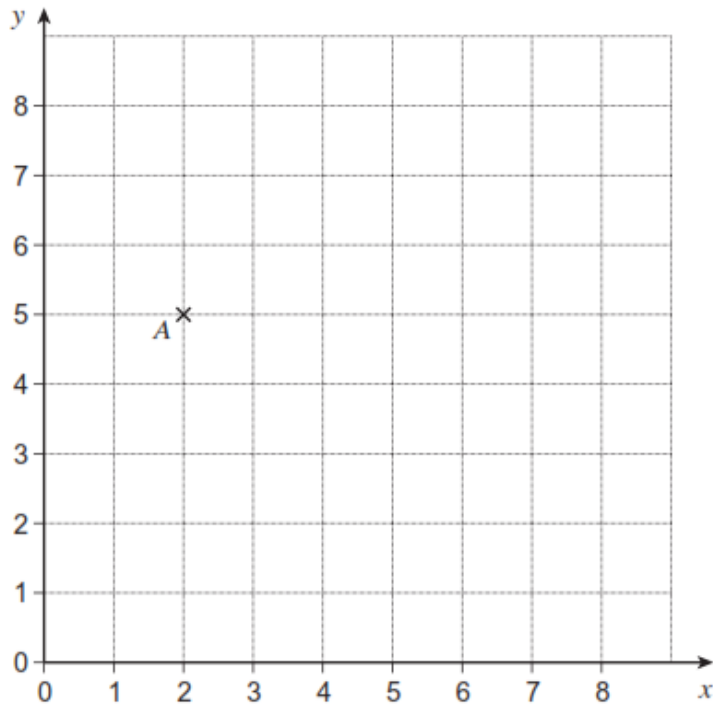


59 marks

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*Graphs*

**Q1.** Point  $A$  is shown on the grid.



(a) Write down the coordinates of  $A$ .

Answer (..... , .....)

(1)

(b) Plot point  $B$  (8,1) on the grid.

(1)

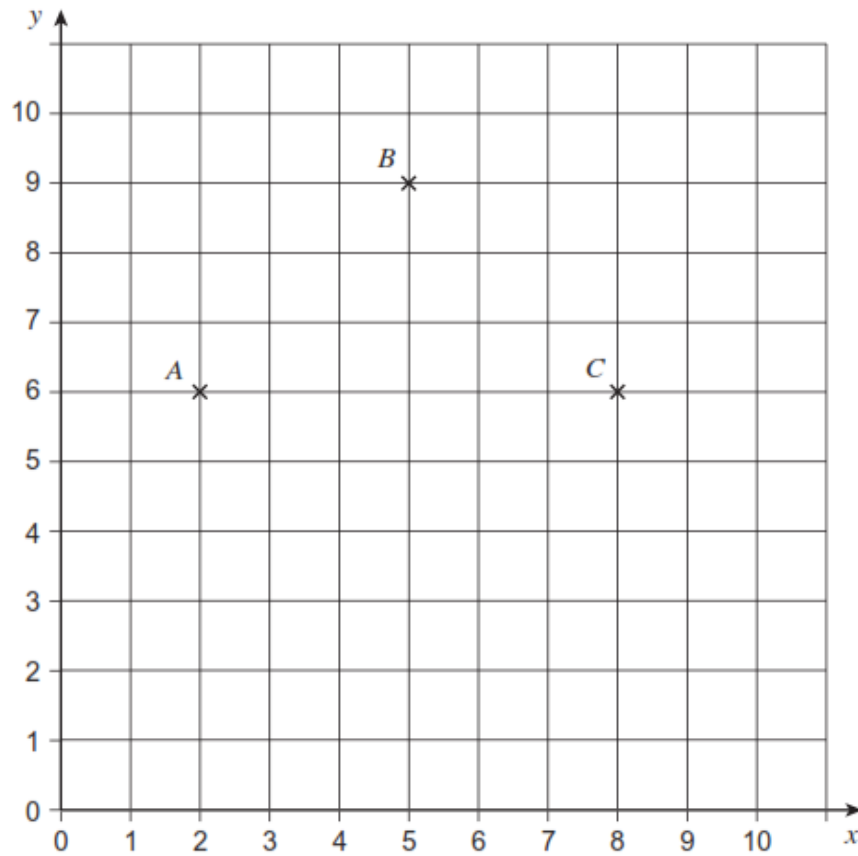
(c) Work out the coordinates of the midpoint of  $AB$ .

Answer (..... , .....)

(2)

(Total 4 marks)

**Q2.** Here is a centimetre-square grid with points  $A$ ,  $B$  and  $C$  plotted.



(a) Write down the coordinates of  $A$ .

Answer ( ..... , ..... )

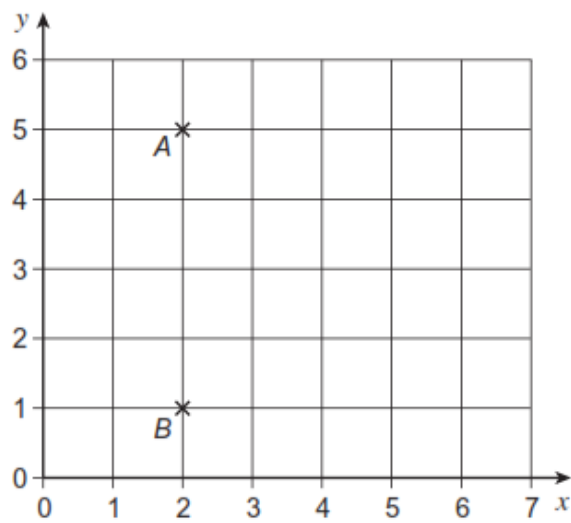
(1)

(b) Plot the point  $D$  so that  $ABCD$  is a square.

(1)

(Total 2 marks)

**Q3.** Points *A* and *B* are shown on the grid.



(a) Write down the coordinates of *A*.

Answer ( ..... , ..... ) (1)

(b) Plot point *C* (6, 1) on the grid. (1)

(c) *ABCD* is a square.  
Write down the coordinates of *D*.  
Answer ( ..... , ..... ) (1)

(d) Write down the coordinates of the centre of the square.  
Answer ( ..... , ..... ) (1)  
(Total 4 marks)

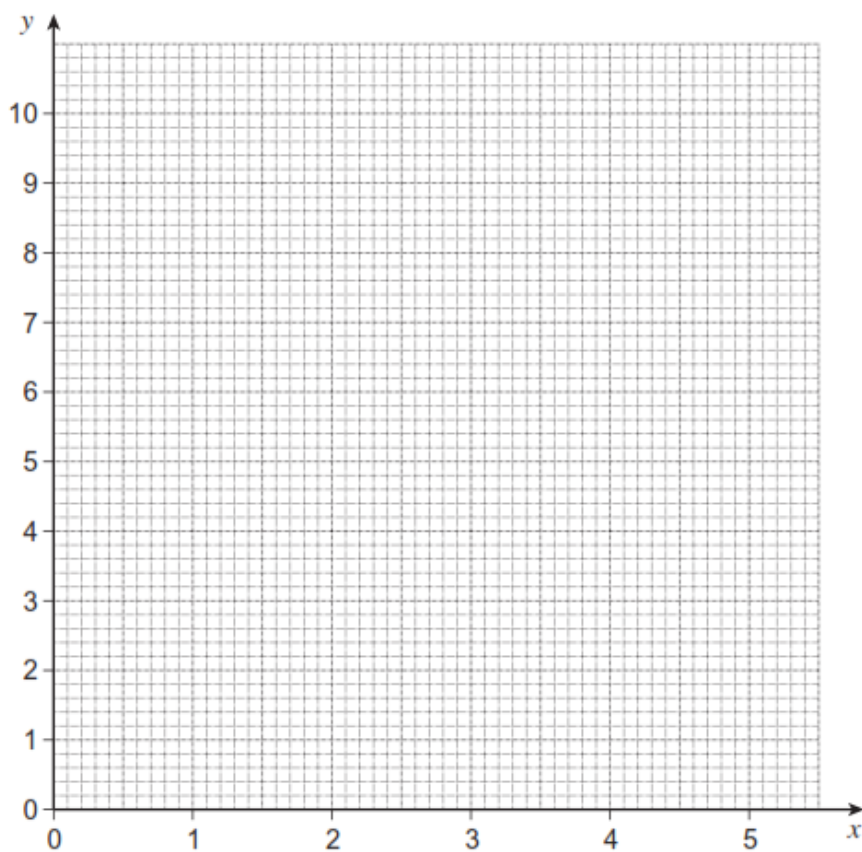
**Q4.** (a) Complete the table of values for  $2x + y = 10$

<i>x</i>	0	1	2	3	4	5
<i>y</i>	10		6		2	

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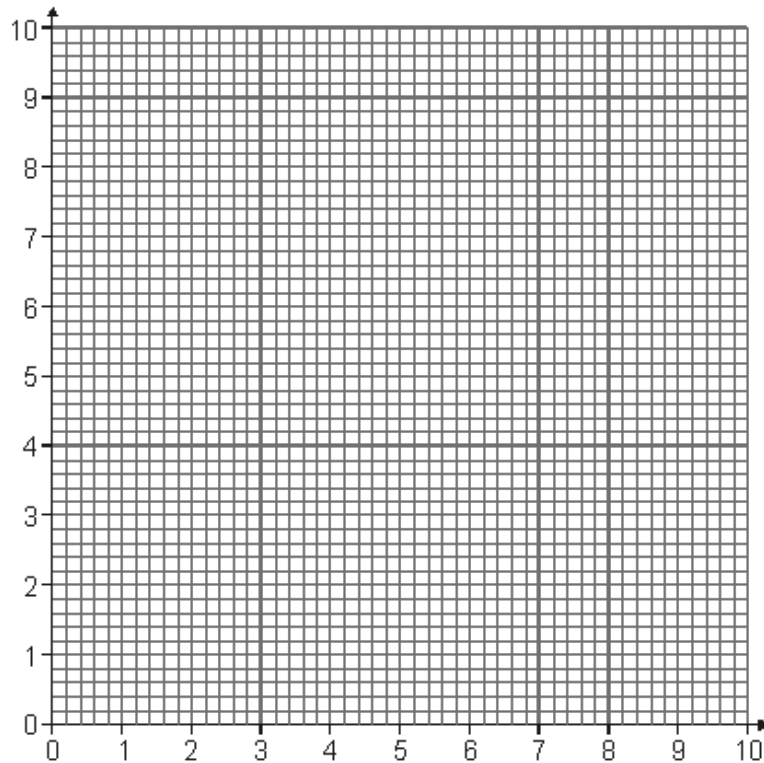
(2)

- (b) On the grid draw the graph of  $2x + y = 10$  for values of  $x$  from 0 to 5.



(2)  
(Total 4 marks)

**Q5.** (a) Here is a centimetre grid.



Plot four points  $A$ ,  $B$ ,  $C$  and  $D$  on the grid to make a rectangle  $ABCD$  of length 6 cm and width 4 cm.

(2)

(b) Tick whether each statement is always true, sometimes true or never true.

(i) Rectangles with an area of  $24 \text{ cm}^2$  have a length of 6 cm.

☐

Always true

☐

Sometimes true

☐

Never true

(1)

(ii) Rectangles with a perimeter of 20 cm have a length of 12 cm.

☐

Always true

☐

Sometimes true

☐

Never true

(1)

(iii) Rectangles with length 6 cm and width 4 cm have area  $24 \text{ cm}^2$  and perimeter 20 cm.

☐

Always true

☐

Sometimes true

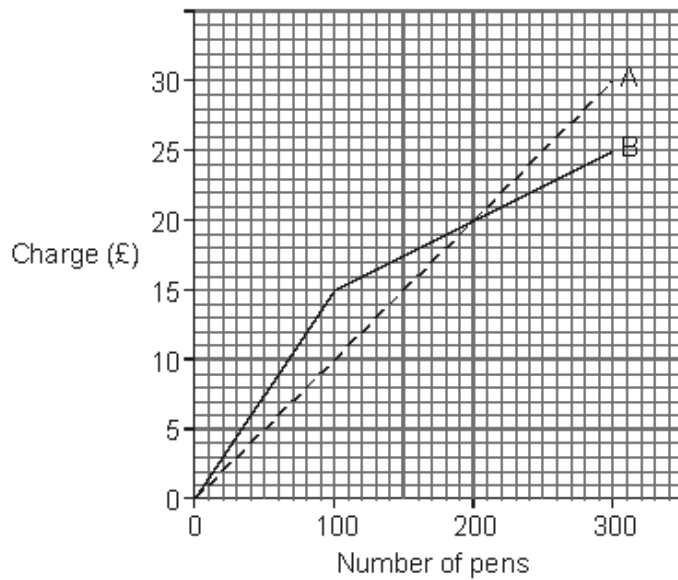
☐

Never true

(1)

(Total 5 marks)

- Q6.** Two companies A and B sell pens.  
The graph shows how much each company charges.



- (a) (i) How much does company B charge for 100 pens?

Answer £ .....

(1)

- (ii) Which company would you buy 100 pens from?

Give a reason for your answer.

.....  
.....  
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(2)

- (b) Two shops, The Pen Shop and News Box, buy some pens.

- (i) The Pen Shop spends £25 on pens.

How many more pens can they buy from company B than company A?

.....  
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.....  
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Answer .....

(2)

- (ii) Buying 200 pens from Company A or Company B costs the same amount.

News Box buys 200 pens.

They sell the pens for 25 pence each.

How many pens do they need to sell to cover the cost of buying the pens?

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Answer .....

(3)

(Total 8 marks)

- Q7.** A website shows ticket information for trains from London to Brighton.

Key  means that a ticket can be bought at the price shown.

Ticket	Depart	11:26	11:36	11:41	11:56	12:06
	Arrive	12:24	12:27	12:49	12:54	12:58
Advance £16.40						
Off-peak £19.00						
Anytime £28.50						

- (a) What is the cost of the cheapest ticket that can be bought for the 11:36 train?

Answer £ .....

(1)

- (b) How long does the journey take on the 11:36 train?

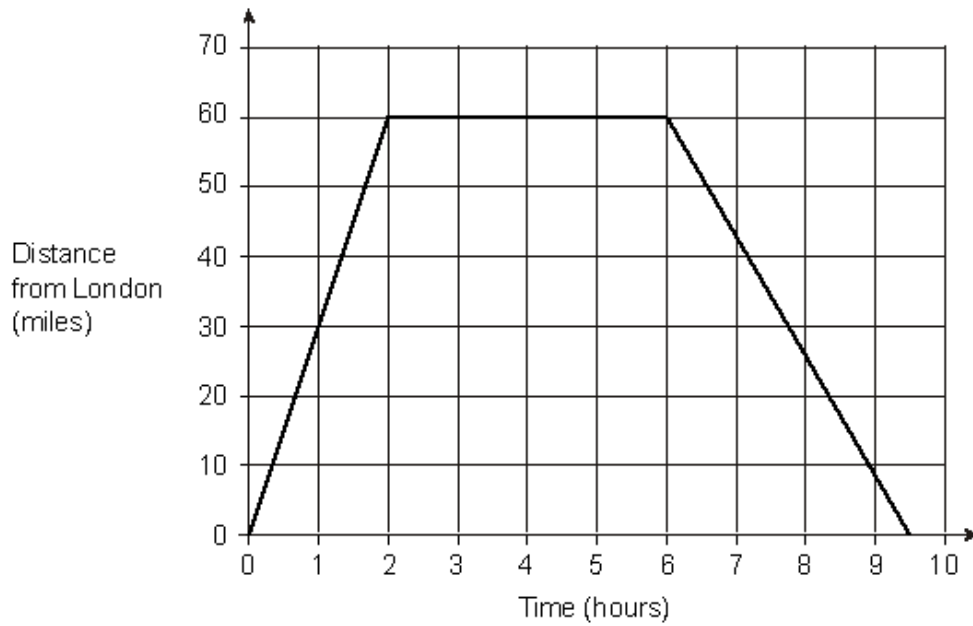
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Answer ..... minutes

(2)



(c) The graph shows a car journey from London to Brighton and back.



(i) How long does this journey to Brighton take?

Answer ..... hours

(1)

(ii) How long is the stay in Brighton?

Answer ..... hours

(1)

(iii) How many miles is the total journey from London to Brighton and back?

.....

Answer ..... miles

(1)

(d) Which journey is faster, London to Brighton or Brighton to London?  
Explain your answer.

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

(Total 7 marks)

**Q8.** (a) The basic monthly charge for a mobile phone contract is £35.

This includes:

Option 1: 300 free minutes of calls and 100 free texts

or

Option 2: 100 free minutes of calls and unlimited free texts.

All other calls are charged at 6p per minute.

Extra texts are charged at 10p each.

On average, each month, Matt makes 500 minutes of calls and sends 250 texts.

Which option should he choose?

You **must** show your working.

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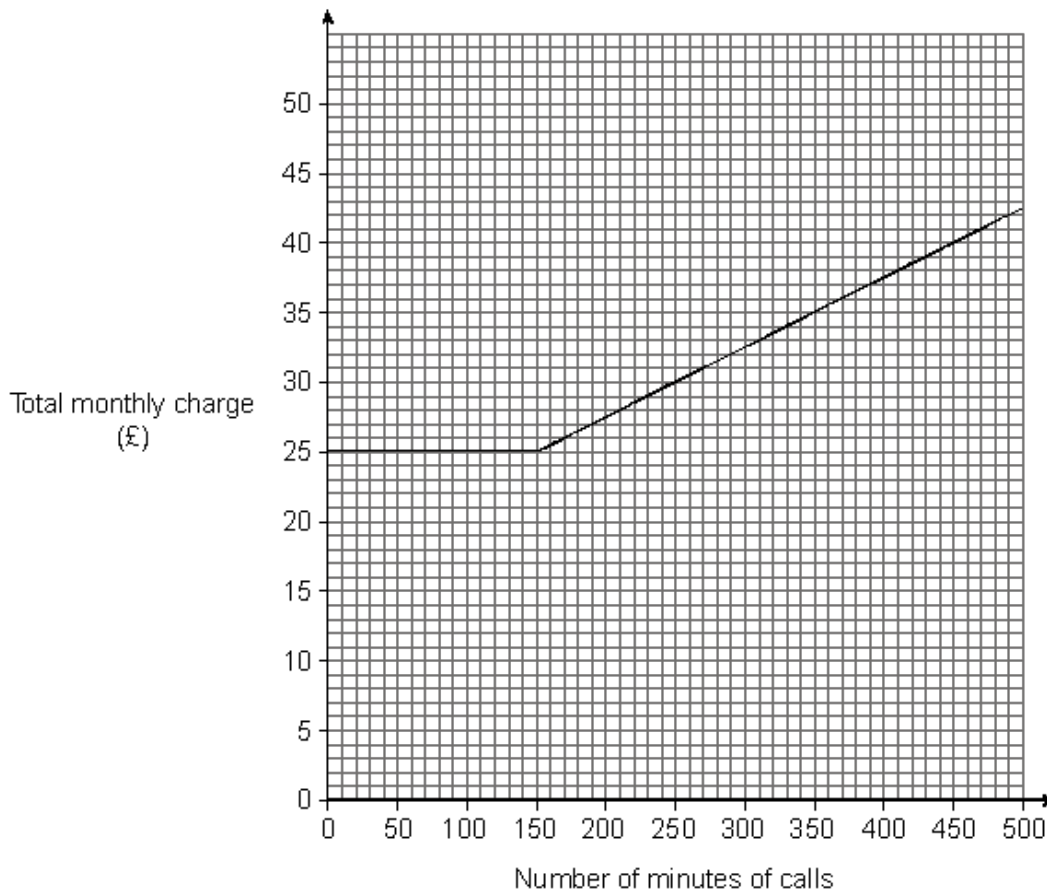
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Answer .....

(5)

- (b) Viki has a different mobile phone contract. She never sends texts. The graph shows how the total monthly charge is calculated for her mobile phone contract for up to 500 minutes of calls.



- (i) Write down the basic monthly charge and the number of free minutes of calls.

Answer Basic monthly charge £ .....

Number of free minutes of calls .....

(2)

- (ii) Work out the charge per minute for the other calls.

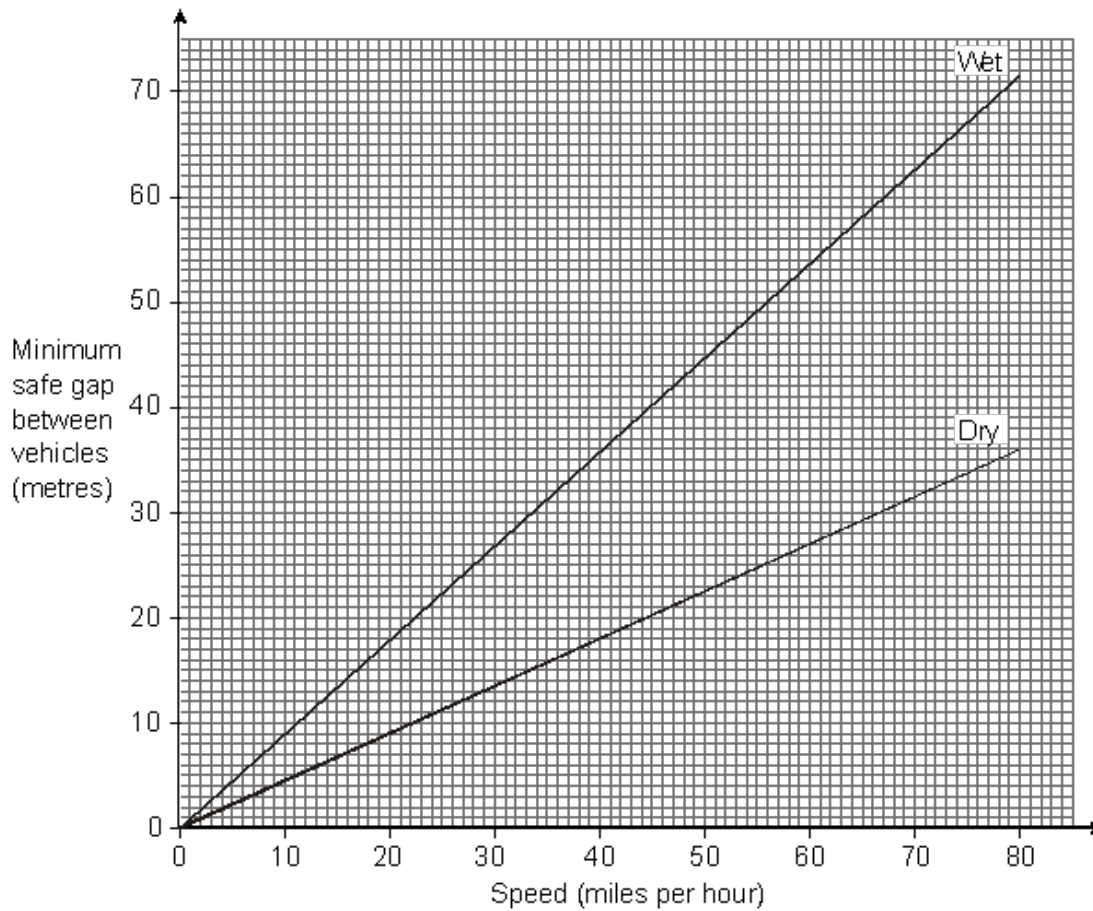
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Answer ..... pence

(3)

(Total 10 marks)

- Q9.** Motorists should drive with a safe gap between their vehicle and the vehicle in front. This graph shows the minimum safe gap between vehicles at different speeds. Different gaps are recommended for wet roads and dry roads.



- (a) The road is dry.  
A car is travelling at 30 miles per hour behind a lorry.  
What is the minimum safe gap between the car and the lorry?

.....  
.....

Answer ..... metres

(1)

- (b) Tim is driving at 60 miles per hour on a dry road.  
He is driving with the minimum safe gap between his car and the car in front.  
It starts to rain heavily and both cars slow down to 40 miles per hour.

Should Tim increase the gap between his car and the car in front to continue driving with the minimum safe gap?

You **must** show clearly how you obtain your answer.

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(3)  
(Total 4 marks)

- Q10.** (a) Complete the table of values for  $y = x^2 - 2$

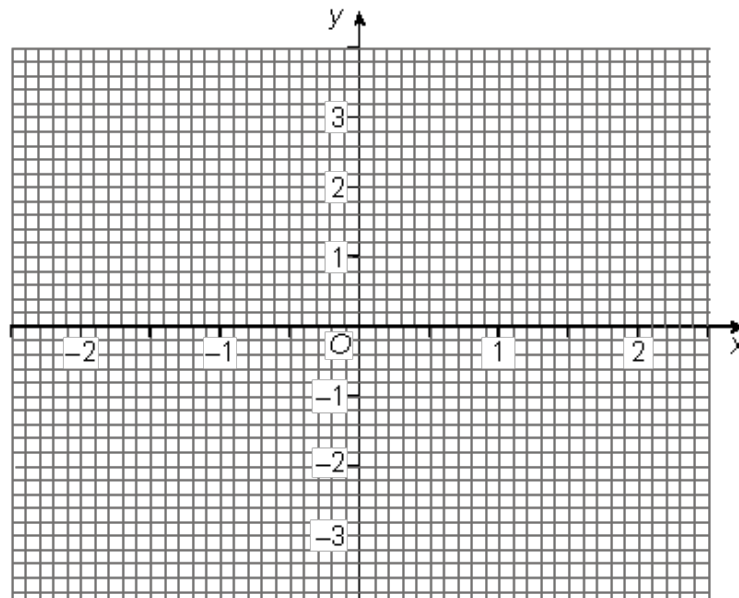
$x$	-2	-1	0	1	2
$y$	2		-2	-1	2

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(1)

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



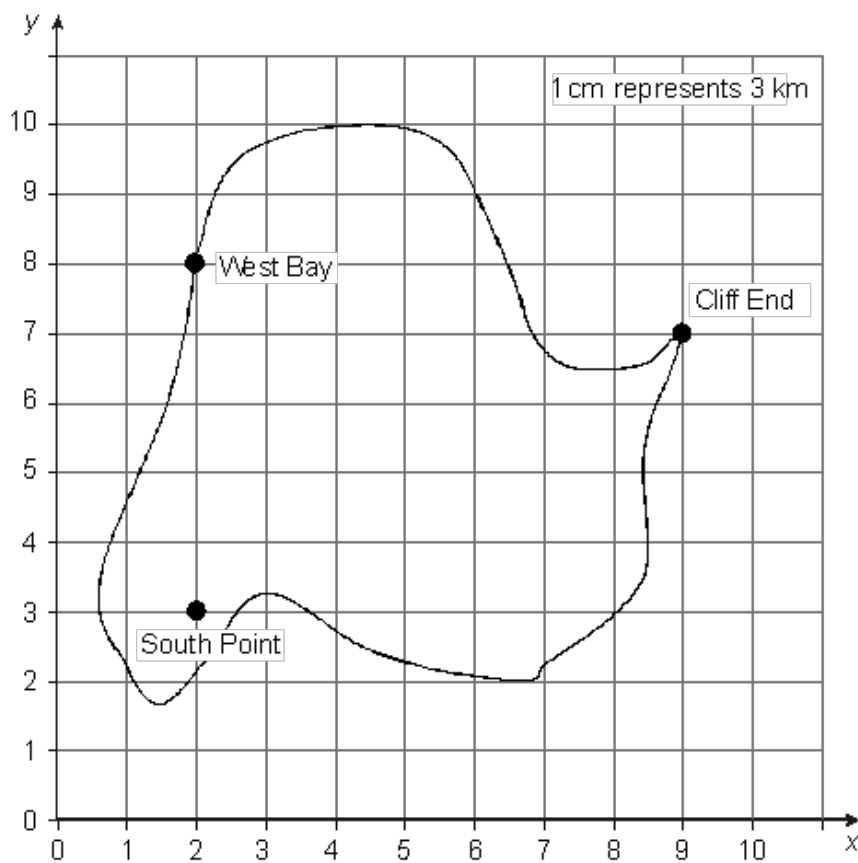
(2)

- (c) Explain how the graph can be used to estimate the solutions of  $x^2 - 2 = 0$

.....  
 .....

(1)  
 (Total 4 marks)

- Q11.** A map is drawn on a centimetre grid.  
 1 cm represents 3 km.



- (a) Write down the coordinates of South Point.

Answer ( ..... , ..... )

(1)

(b) Write down the coordinates of West Bay.

Answer ( ..... , ..... )

(1)

(c) Work out the actual distance between South Point and West Bay.

.....

Answer ..... km

(2)

(Total 4 marks)

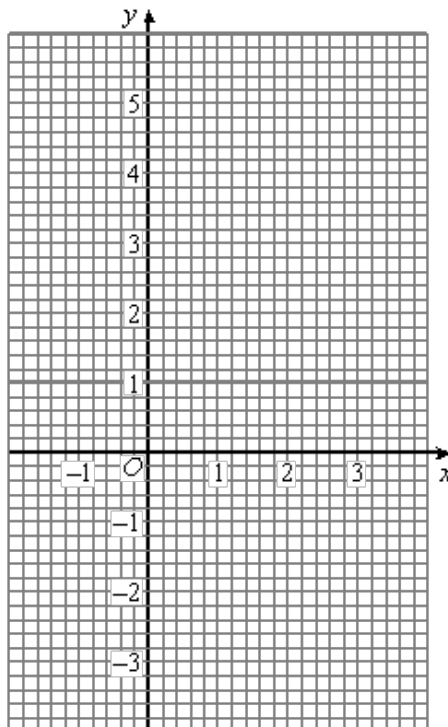
**Q12.** (a) Complete this table of values for  $y = 2x - 1$

$x$	-1	0	1	2	3
$y$	-3		1		5

.....

(1)

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



(2)

(Total 3 marks)

