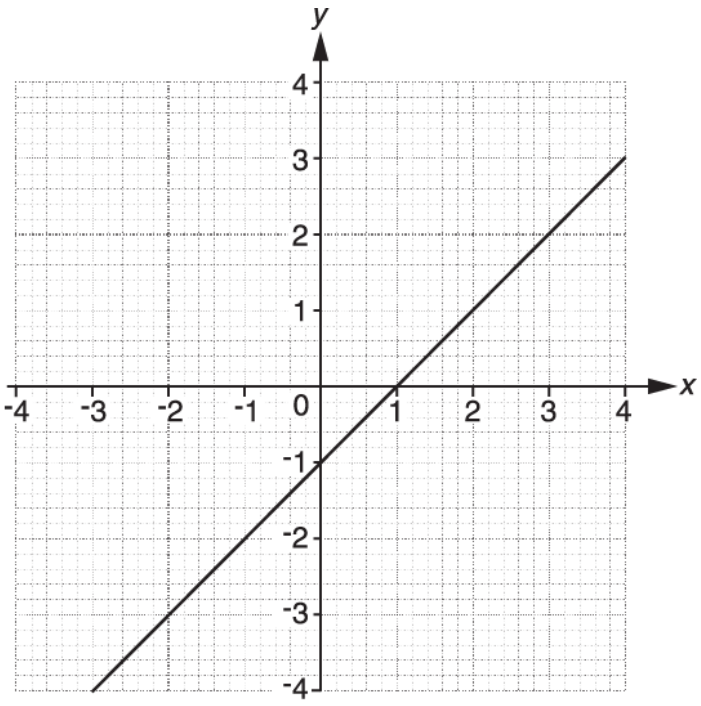
1. The line $y = x - 1$ is drawn on this grid.



(i) Write down gradient of the line.

(i)_____ **[1]**

(ii) The line $y = x - 1$ passes through the point $(a, 29)$.

Find the value of a.

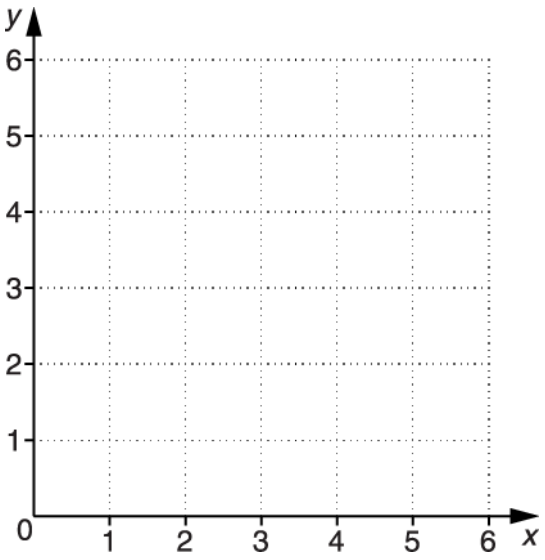
(ii)_____ **[1]**

2(a). Complete the table for $2x + 3y = 12$.

x	0	4.5	
y			0

[2]

(b). Draw the graph of $2x + 3y = 12$ for $0 \leq x \leq 6$.



[2]

(c). Use your graph to find the gradient of the line $2x + 3y = 12$.

_____ [2]

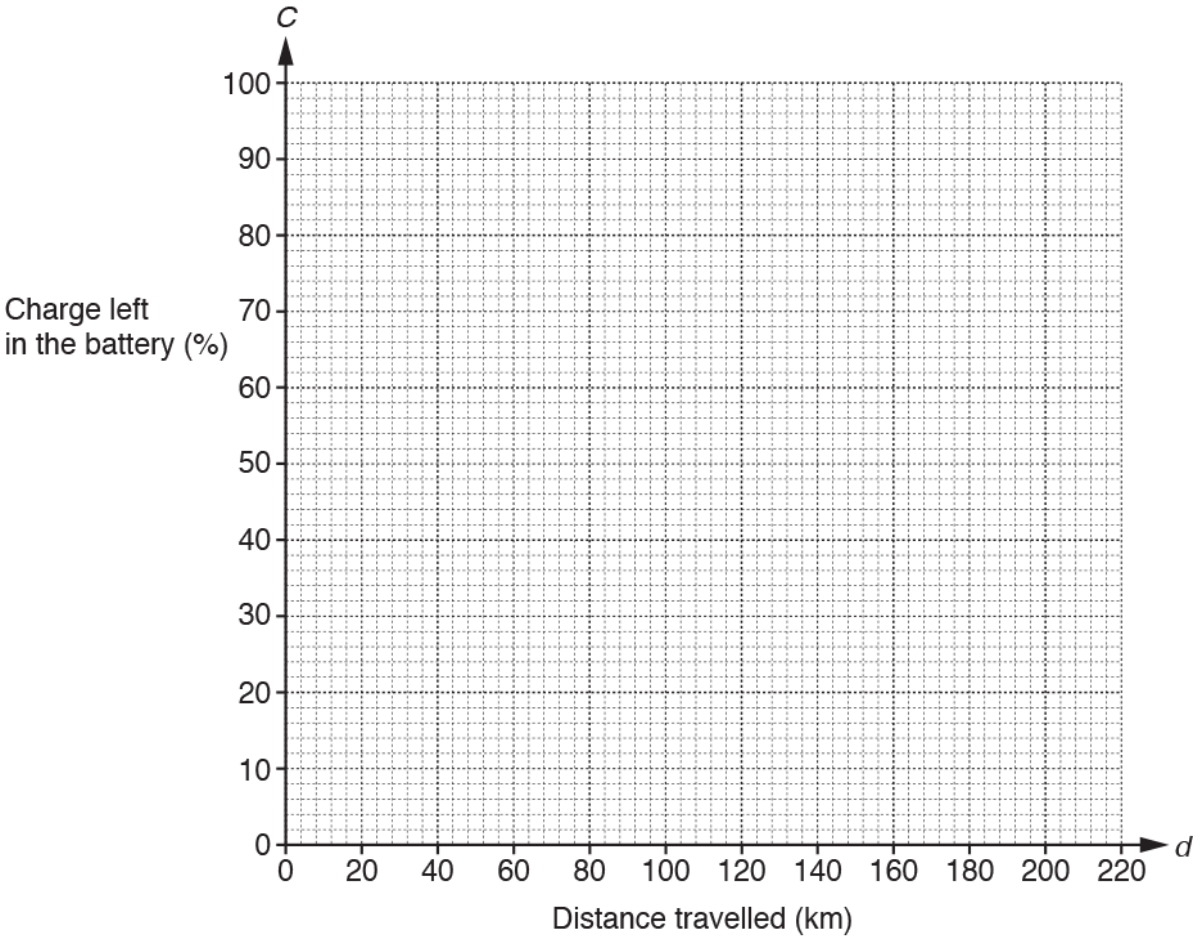
3(a). A company tests a new battery for an electric car.

The distance the car travels, d km, and the charge left in the battery, C %, are measured.

Some measurements are shown in the table.

Distance travelled, d km.	0	50	100	150
Charge left in the battery, C %.	100	75	50	25

Plot these values on the grid and use them to draw a straight line.



[2]

(b).

(i) Use your line to estimate the greatest distance the car will travel.

------------------------------ km **[1]**

(ii) What assumption is made when estimating the greatest distance?

-- **[1]**

(c). For your line in part **(a)**, find

(i) the gradient,

------------------------------ **[1]**

(ii) the C-axis intercept.

------------------------------ **[1]**

(d). Use your answers to part **(c)** to write down the equation of your graph.

Give your equation in the form C = ad + b.

C = ------------------------------ **[1]**

(e).

(i) Use your equation to find the value of C when $d = 210$.

---------- [2]

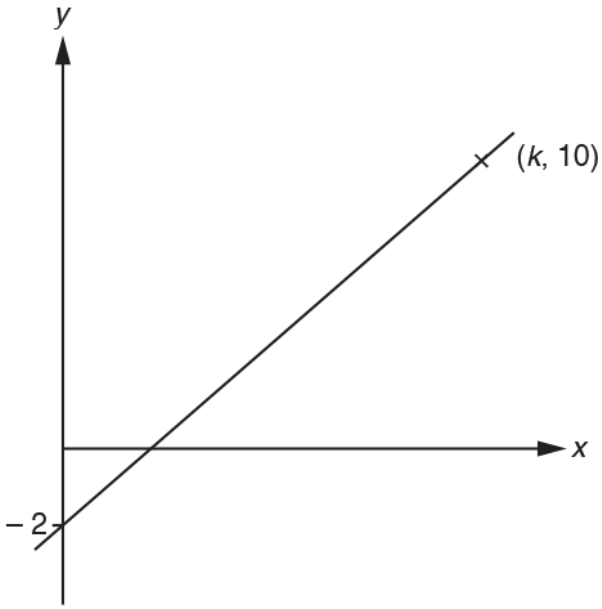
(ii) Comment on your answer.

---------- [1]

4(a). Find the coordinates of the point where $y - 2x = 1$ crosses the y-axis.

(---------- , ----------) [2]

(b). The diagram shows the graph of $y = 3x + c$, where c is a constant.



Find the value of k.

k = ---------- [3]

END OF QUESTION PAPER

Question			Answer/Indicative content	Marks	Part marks and guidance	
1		i	1	1	Examiner's Comments Very few candidates gave the answer as 1. Lists of coordinates and –1 were the common errors as well as restating the equation of the line.	
		ii	30	1	Examiner's Comments Very few gave the correct answer although 1 and 29 were common errors.	Allow 30, 29 as coordinates
			Total	2		
2	a		6 4 1	2	**B1** for one correct value Examiner's Comments Those who did not complete the table correctly scored 1 mark for getting one coordinate correct, often (y =) 4.	
	b		Correct ruled graph	2	**M1** for 2 of *their* points correctly plotted or for correct line any length Examiner's Comments Many struggled to follow through their values and plot them on the grid. Some who had worked out coordinates such as (0, 3) plotted the point at (3, 0). Only correct ruled graphs scored full marks.	Graph from 0 to 6 for **2**

Question			Answer/Indicative content	Marks	Part marks and guidance	
	c		–0.8 to –0.5	2FT	**M1** for use of $\frac{\Delta y}{\Delta x}$ soi or rearranging to $y = mx + c$ or 0.5 to 0.8 Or **SC1** for ⁻2 to ⁻1.25 <u>Examiner's Comments</u> The few who gained marks did so for indicating the use of $\frac{\text{Change in } y}{\text{Change in } x}$. In many cases, however, candidates did not recognise that the gradient was negative.	$\frac{-2}{3}, \frac{2}{-3}, \frac{-4}{6}, \frac{4}{-6}$ all score **2** If *their* line is incorrect and has negative gradient, allow **M1A1FT** for correct gradient of *their* line found (± 15%) or **M1** for the absolute value of its gradient. If *their* line has $m > 0$ then max **M1**
			Total	6		

Question			Answer/Indicative content	Marks	Part marks and guidance		
3	a		4 points plotted and a ruled line joining	2	**B1** for 3 points correctly plotted	Line at least between (0, 100) and (150, 25) Use overlay as guide. ½ square accuracy	
	b	i	198 to 202	1	Do not FT their line		
		ii	Battery usage remains the same or Battery can be used right to 0% or Trend or pattern continues	1	Accept For every 50 km it uses 25%		
	c	i	$-\frac{1}{2}$ oe or –[0].5	1		Ignore units	
		ii	100	1	Accept 0, 100		
	d		$-\frac{1}{2}d + 100$	1	**FT** *their* **(c)(i)***d* + *their* **(c)(ii)**	Accept any letter for *d* (except *c*)	
	e	i	–5	2	**FT** *their* **(d)** if linear in *d*. **B1** for correct substitution of 210	$-\frac{1}{2} \times 210 + 100$ Accept any Expect letter for *d* (except *c*)	

Question			Answer/Indicative content	Marks	Part marks and guidance	
		ii	Impossible [as battery cannot have negative charge] oe	1	FT *their* (i) only if *their* equation gives negative outcome Examiner's Comments Many candidates gained both marks in part (a) although inaccurate plotting or drawing often led to the loss of one mark. Few candidates had a sharp pencil, although many did have a ruler. In part (b) many gained the mark for estimating the greatest distance travelled. A few gave the answer 150 from reading the last point plotted or gave an incorrect intersection with the horizontal axis. Few were able to state a valid assumption. The simple answer that the trend shown in the graph continues was rarely seen. Part (c)(i) was very rarely answered correctly but many gained the mark for part (ii). Candidates were generally unable to answer parts (d) and (e) and many gave no response. Part (d) was sometimes a calculation and, as an equation was often not seen in part (d), there was no valid work in part (e). The final comment was sometimes an explanation of how a previous calculation was carried out.	
			Total	10		

Question			Answer/Indicative content	Marks	Part marks and guidance		
4	a		(0, 1)	2	**B1** for (0, ..*g*..) $g \neq 1$ or **M1** for $y = 2x + 1$ or $y - 2 \times 0 = 1$		
	b		4	3	**B1** for c = –2 or **M1** for $y = 3k - 2$ $k \neq 0$ And **M1** for $10 = 3k - 2$	**B1** soi $3x - 2$ or 3 × number – 2 Allow *x* for *k*	
					Examiner's Comments This question was not attempted by many candidates, they clearly had no mechanisms to answer this type of question. Part (a) sometimes gained a mark for coordinates in the form (0, …). In part (b), an answer was sometimes written down with no working and sometimes an irrelevant calculation using 3, 10 and –2. Very few candidates identified the value of *c* as –2.		
			Total	5			