

# E2.10 Constructing Graphs & Solving Equations Graphically

## Question Paper

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Level	Core
Topic	E2. Algebra and Graphs
Sub-Topic	E2.10 Constructing Graphs & Solving Equations Graphically
Booklet	Question Paper

**Time Allowed:** 67 minutes

**Score:** /56

**Percentage:** /100

**Grade Boundaries:**

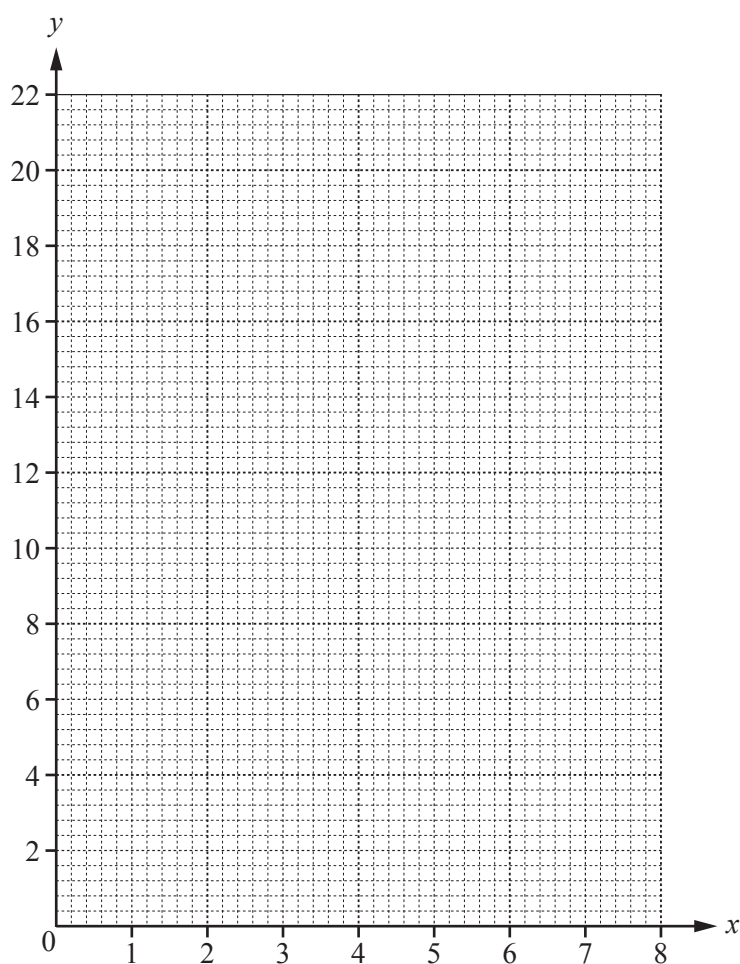
A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

- 1 (a) Complete the table of values for  $y = 8 + 7x - x^2$ .

$x$	0	1	2	3	4	5	6	7	8
$y$	8		18			18		8	

[3]

- (b) On the grid, draw the graph of  $y = 8 + 7x - x^2$  for  $0 \leq x \leq 8$ .



[4]

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(c) Write down the co-ordinates of the highest point of the curve.

(....., .....) [1]

(d) (i) On the grid, draw the line  $y = 16$ .

[1]

(ii) Use your line to solve the equation  $8 + 7x - x^2 = 16$ .

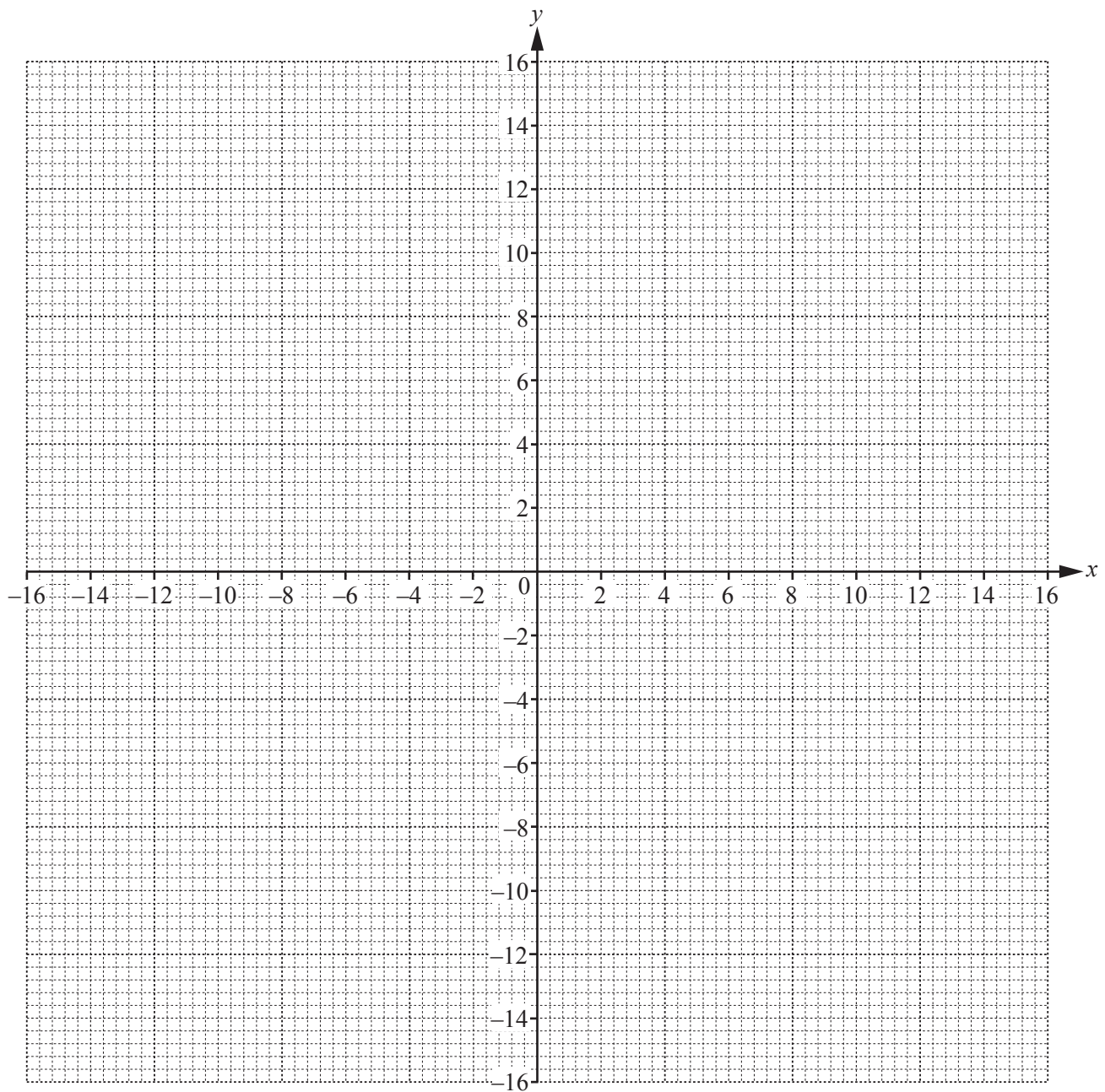
$x = \dots\dots\dots$  or  $x = \dots\dots\dots$  [2]

2 (a) (i) Complete the table of values for  $y = \frac{16}{x}$ ,  $x \neq 0$ .

$x$	-16	-8	-4	-2	-1	1	2	4	8	16
$y$	-1	-2		-8		16		4	2	

[2]

(ii) On the grid, draw the graph of  $y = \frac{16}{x}$  for  $-16 \leq x \leq -1$  and  $1 \leq x \leq 16$ .



[4]

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(b) Write down the order of rotational symmetry of your graph.

..... [1]

(c) One line of symmetry crosses the graph twice.

(i) Draw this line of symmetry on the grid. [1]

(ii) Write down the equation of this line of symmetry.

..... [1]

(d) By drawing a suitable line on the grid, solve the equation  $\frac{16}{x} = 7$ .

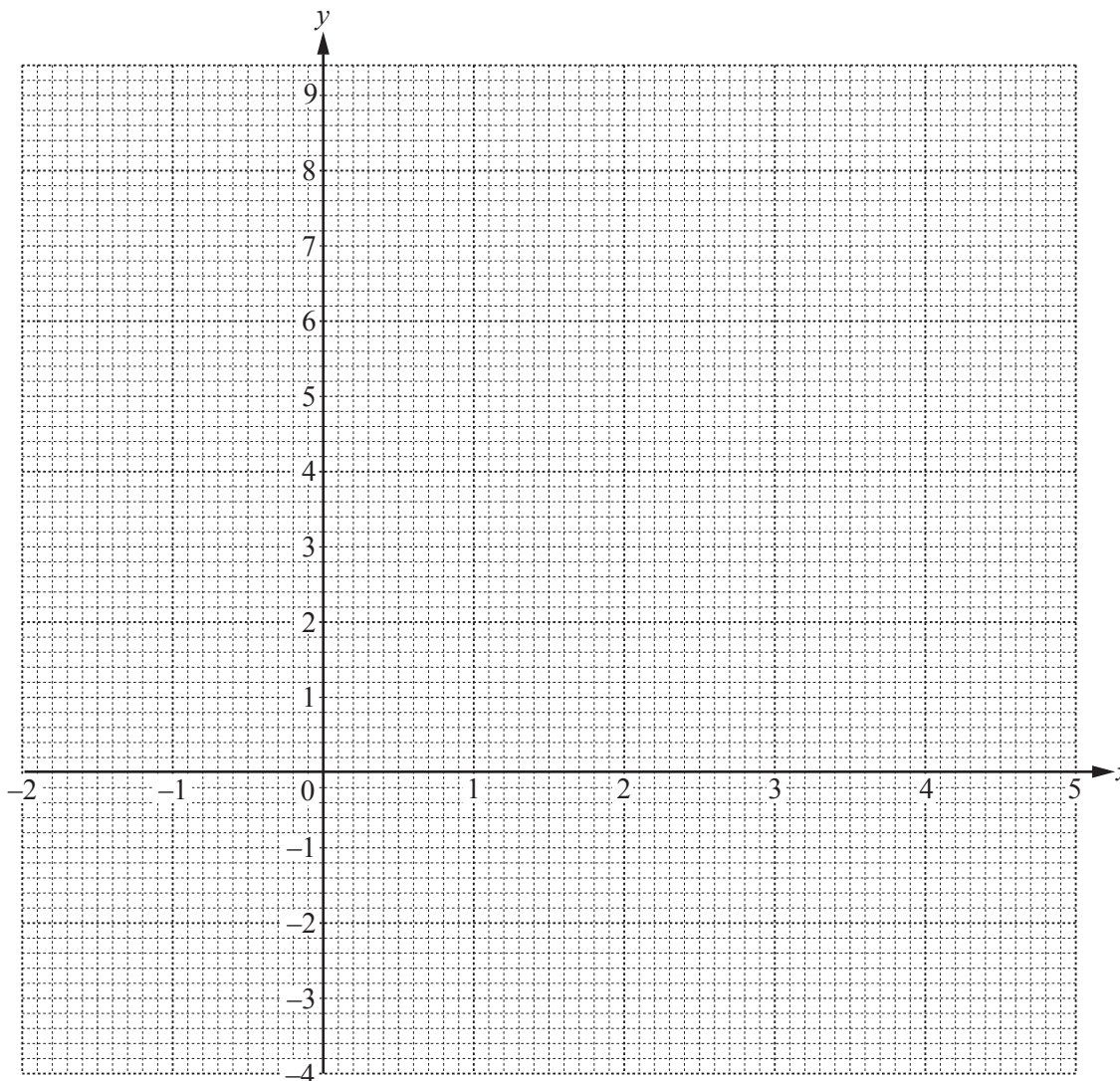
$x =$  ..... [2]

3 (a) Complete the table of values for  $y = x^2 - 3x - 1$ .

$x$	-2	-1	0	1	2	3	4	5
$y$	9		-1					

[3]

(b) On the grid, draw the graph of  $y = x^2 - 3x - 1$  for  $-2 \leq x \leq 5$ .



[4]

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(c) Write down the co-ordinates of the lowest point of the graph.

( ..... , ..... ) [1]

(d) (i) On the grid, draw the line of symmetry of the graph.

[1]

(ii) Write down the equation of the line of symmetry of the graph.

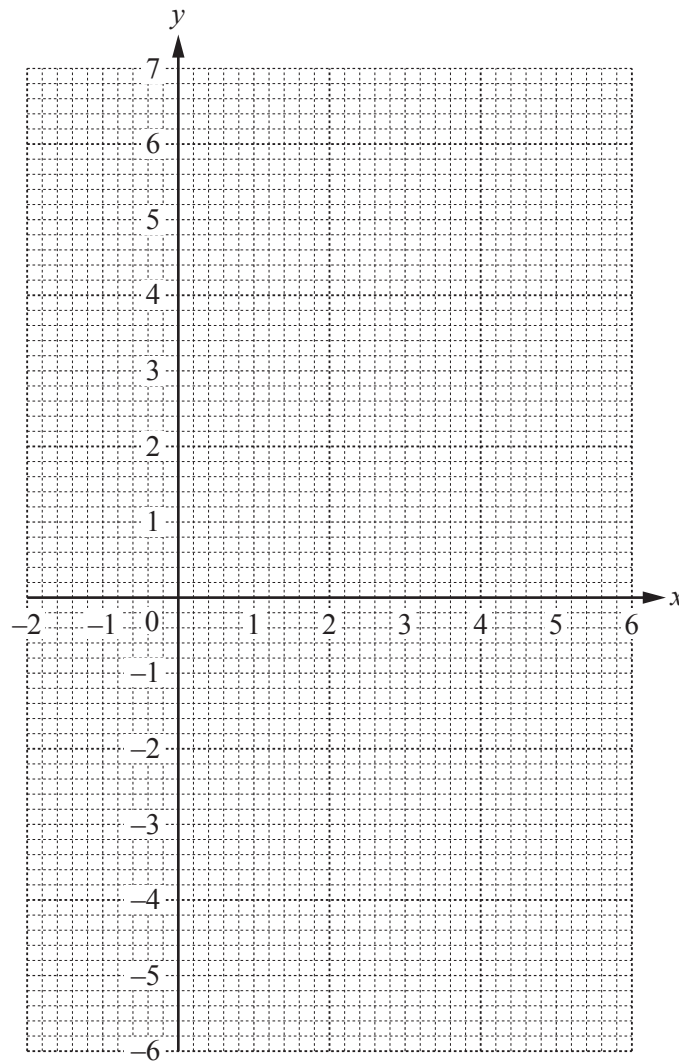
..... [1]

4 (a) (i) Complete the table of values for  $y = -x^2 + 5x$ .

$x$	-1	0	1	2	3	4	5	6
$y$	-6		4			4	0	

[2]

(ii) On the grid, draw the graph of  $y = -x^2 + 5x$  for  $-1 \leq x \leq 6$ .



[4]



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(b) Write down the co-ordinates of the highest point on the graph.

*Answer(b)* (....., .....) [1]

(c) Use your graph to solve the equation  $-x^2 + 5x = -3$ .

*Answer(c)*  $x = \dots\dots\dots$  or  $x = \dots\dots\dots$  [2]

(d) (i) On the grid, draw the line of symmetry for the graph. [1]

(ii) Write down the equation of the line of symmetry for the graph.

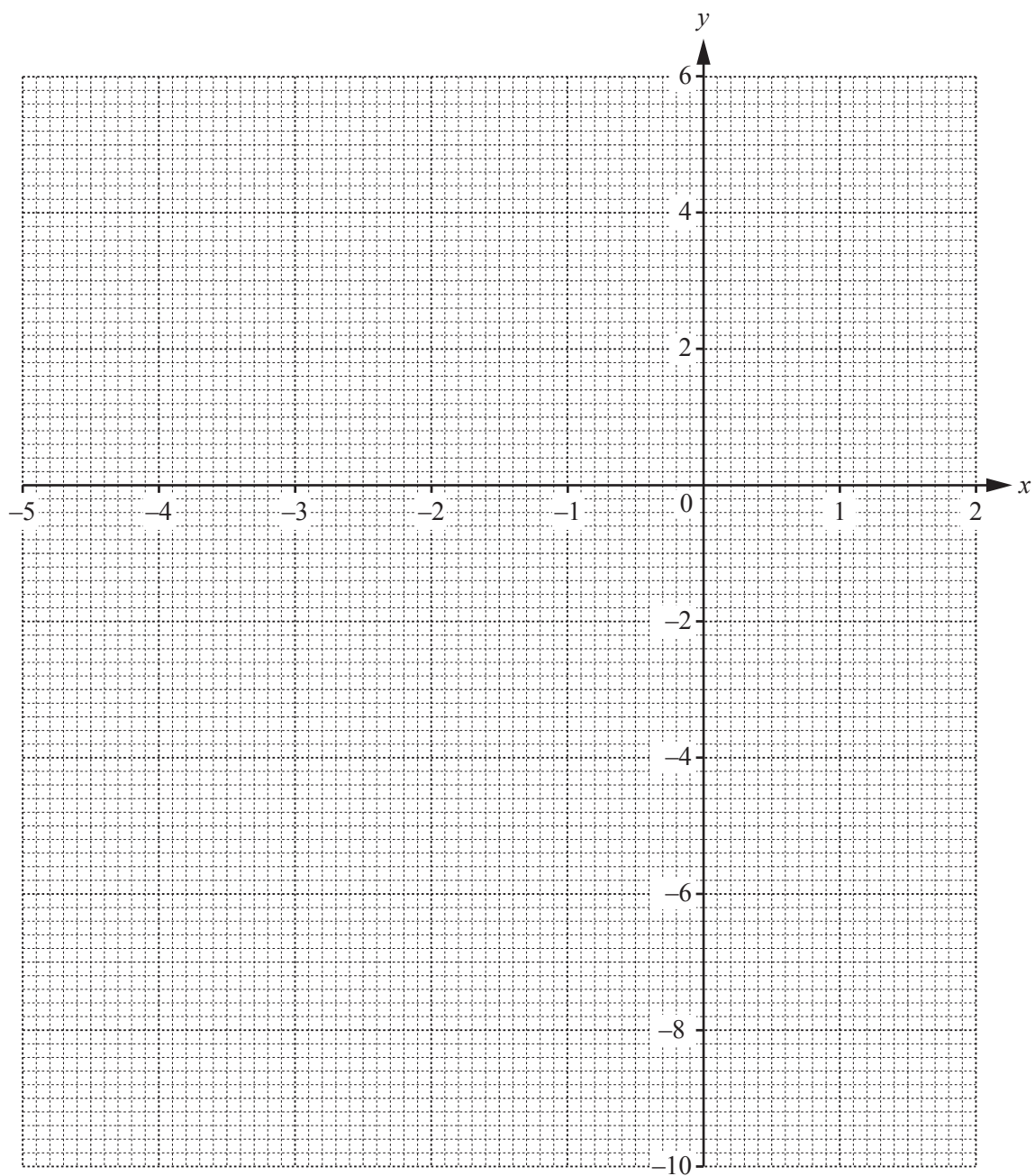
*Answer(d)(ii)* ..... [1]

(iii) The curve passes through the points  $(-10, -150)$  and  $(k, -150)$ .

Use the symmetry of the curve to find the value of  $k$ .

*Answer(d)(iii)*  $k = \dots\dots\dots$  [1]

5



(a) On the grid,

(i) draw the line  $y = 3$ , [1]

(ii) draw the line that is perpendicular to the line  $y = 3$  that passes through the point  $(1, -4)$ . [2]

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

$x$	-5	-4	-3	-2	-1	0	1	2
$y$		-2	2			2	-2	

[2]

(c) On the grid, draw the graph of  $y = 2 - 3x - x^2$  for  $-5 \leq x \leq 2$ .

[4]

(d) Write down the co-ordinates of the highest point of the graph of  $y = 2 - 3x - x^2$ .

( ..... , ..... ) [1]

(e) Use your graphs to solve the equation  $2 - 3x - x^2 = 3$ .

$x = \dots\dots\dots$  or  $x = \dots\dots\dots$  [2]