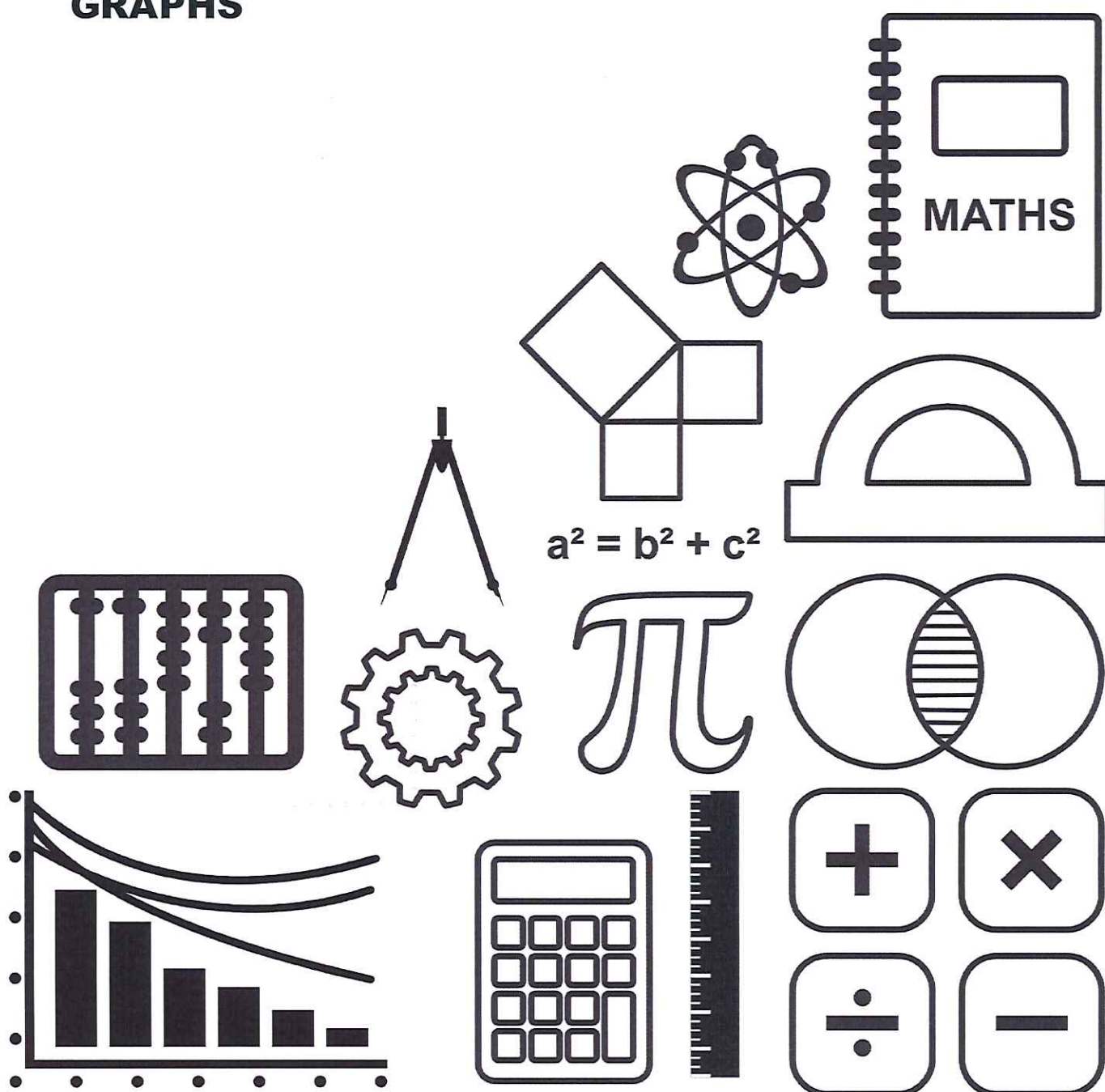


SOLUTIONS

GCSE TOPIC BOOKLET GRAPHS



1.

(a) Use the grid below to draw graphs to represent each of the following equations.

(i) $y = \frac{1}{2}x + 6$

(ii) $x + y = 8$

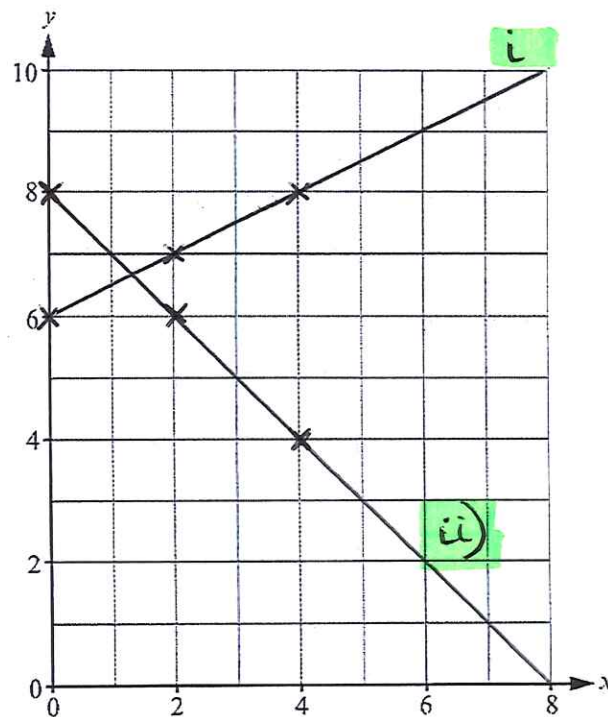
i)

x	0	2	4
y	6	7	8

ii)

x	0	2	4
y	8	6	4

Label your lines (i) and (ii) as appropriate.



[4]

(b) Using your answer to (a), are the lines $y = \frac{1}{2}x + 6$ and $x + y = 8$ perpendicular to each other?
Give a reason for your answer.

No. If they were perpendicular they would cut each other at 90° and they don't.

[1]

2.

Points are plotted on a grid.
The rule $(a, 3a)$ is used to find all the points.

- (a) Does the point with coordinates $(-5, -2)$ fit the rule?
You must give a reason for your answer.

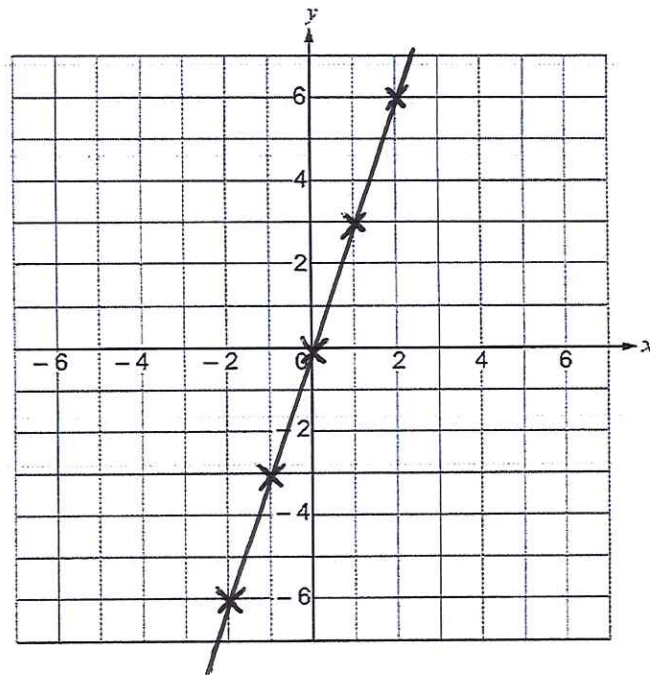
[1]

No because the rule says the y is $3 \times$ the x
and $3 \times -5 = -15$, but we have $(-5, -2)$
not $(-5, -15)$

- (b) Plot five possible points with coordinates that fit the rule $(a, 3a)$ on the grid.

[2]

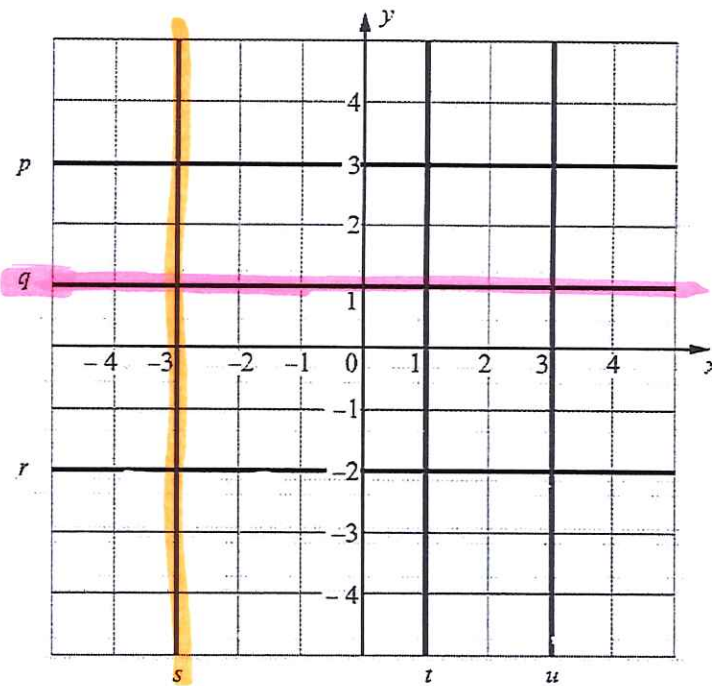
$(0, 0)$ $(-1, -3)$
 $(1, 3)$ $(-2, -6)$
 $(2, 6)$



(No need to
join them
up. It doesn't
ask you to)

3.

As part of her homework, Nia was asked to identify straight lines drawn on the coordinate grid shown below.



(a) Which of the lines p , q , r , s , t or u shown on the grid represent the following equations?

$y = 1$ is line **q**

$x = -3$ is line **s**

[2]

(b) Nia was also asked to draw the line $y = 2x - 1$.

double x then -1

(i) Complete the table below for this line.

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

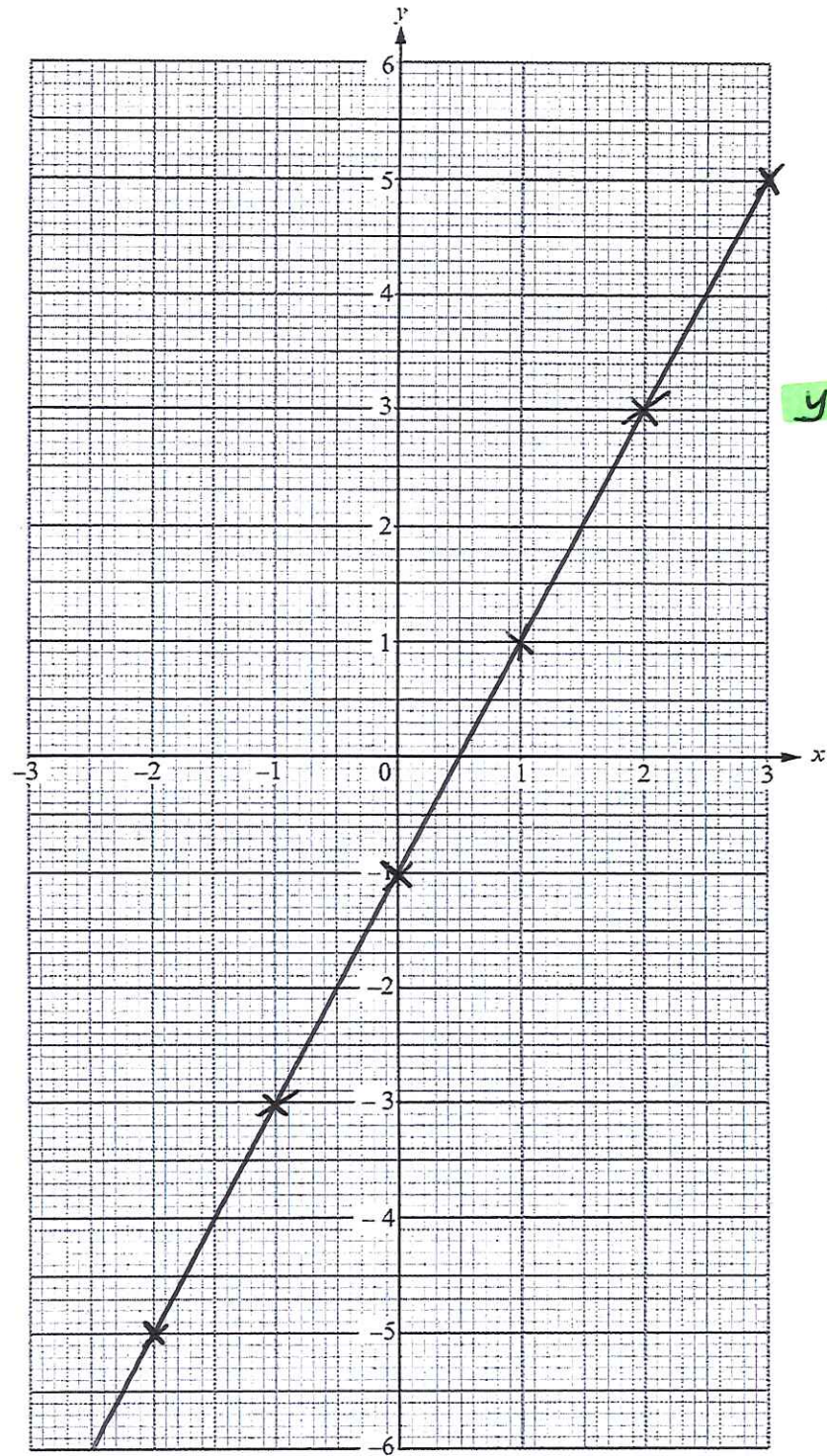
if $x = 2$, $y = 2 \times 2 - 1$, $y = 3$

if $x = -1$, $y = 2 \times -1 - 1$, $y = -3$

[2]

(ii) On the graph paper on the opposite page, draw the graph of $y = 2x - 1$.

[2]



$y = 2x - 1$

→ Multiply $x \times x$ then -4

The table shows some of the values of $y = x^2 - 4$ for values of x from -2 to 3 .

- (a) Complete the table by finding the value of y for $x = -1$.

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

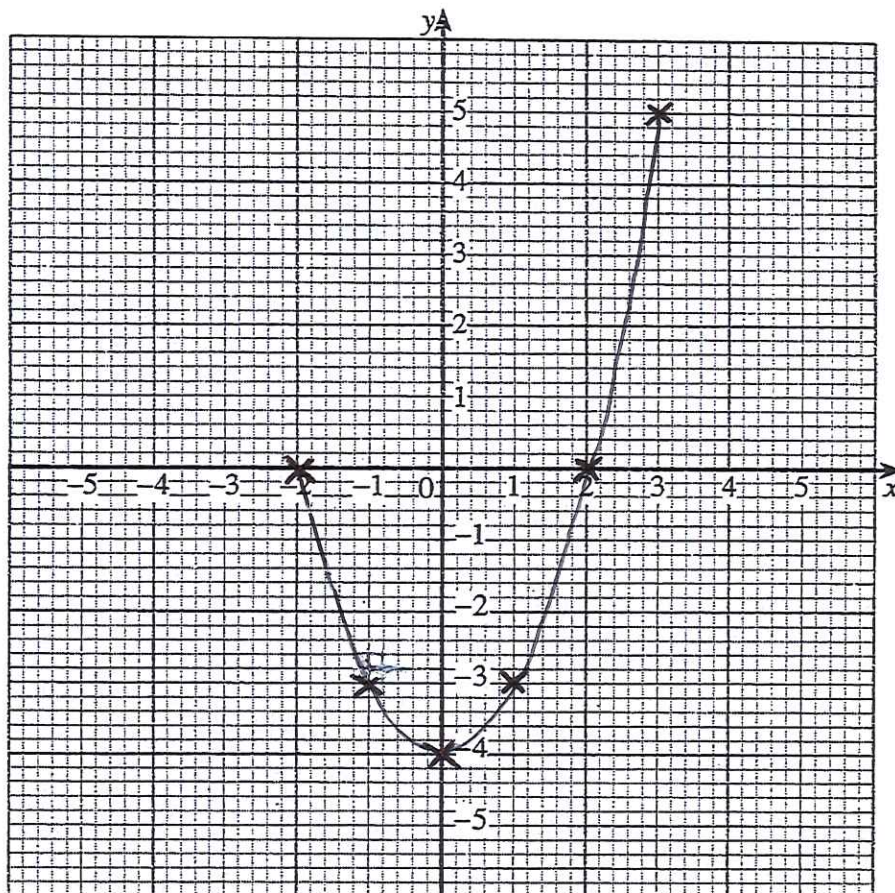
$$-1 \times -1 - 4$$

$$= 1 - 4 = -3$$

[1]

- (b) On the graph paper below, draw the graph of $y = x^2 - 4$ for values of x between -2 and 3 .

[2]



Smooth curve through the
centre of each point

5.

The table shows the value of $y = 2x - 1$ for $x = 2$.

double x , then subtract 1

x	0	2	4
y	-1	3	7

(i) Complete the table for y when $x = 0$ and $x = 4$.

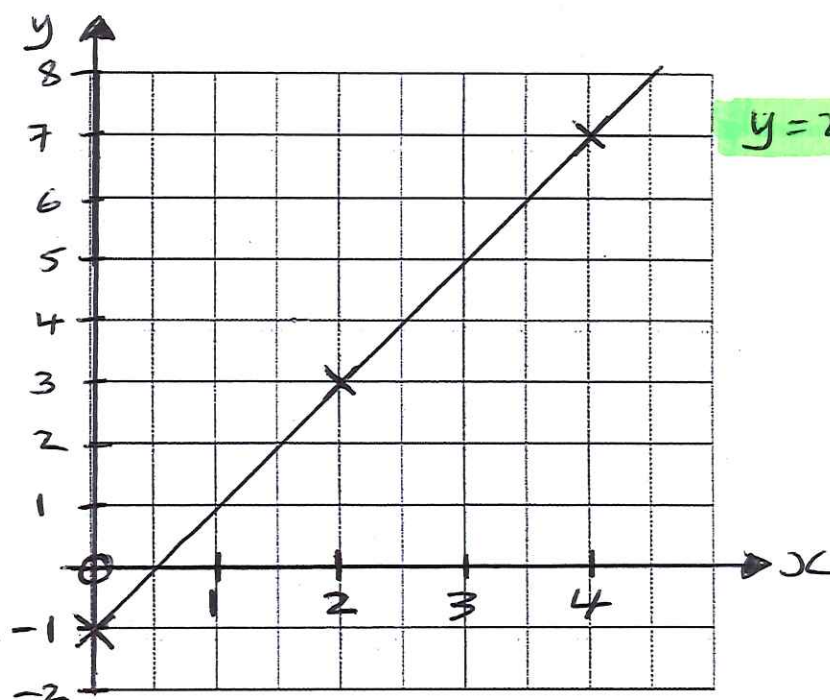
[1]

when $x = 0$, $2 \times 0 - 1 = -1$ $y = -1$

when $x = 4$, $2 \times 4 - 1 = 7$ $y = 7$

(ii) On the grid below, draw the graph of $y = 2x - 1$ for values of x from $x = 0$ to $x = 4$.

[3]



Careful here

you need fully labelled x and y axes, and the origin and a suitable scale or you will lose marks.