



ACHIEVE ACADEMY

GCSE Maths — Higher Tier

Simultaneous Equations · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☐ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Simultaneous Equations

Total marks available: 130

● Simultaneous Equations

Q1

[4 marks]

Solve the simultaneous equations

$$y - 4x = -5$$

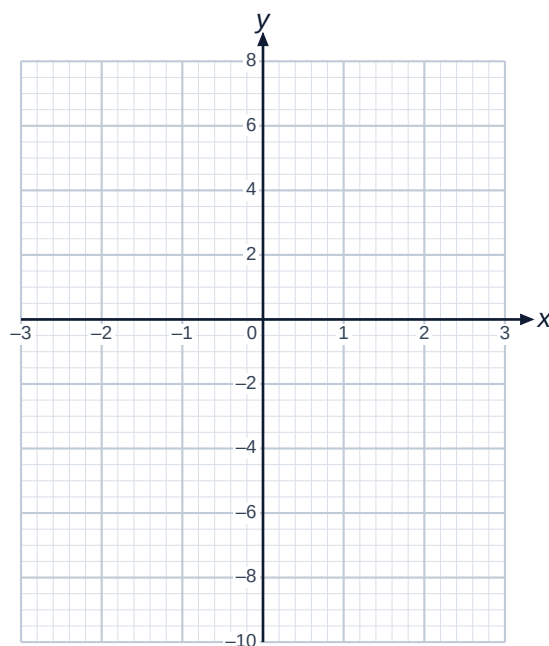
$$4x + 3y = 81$$

Q2

[6 marks]

- (a) Complete the tables of values for $y = 3x - 1$ and $x + y = 3$.
 (b) On the grid, draw the graphs of $y = 3x - 1$ and $x + y = 3$ for values of x from -3 to 3 .
 (c) Use your graphs to solve the simultaneous equations $y = 3x - 1$ and $x + y = 3$.

x	-3	-2	-1	0	1	2	3
$y = 3x - 1$	-10	-7	-4		2	5	
$x + y = 3$	6	5		3		1	0

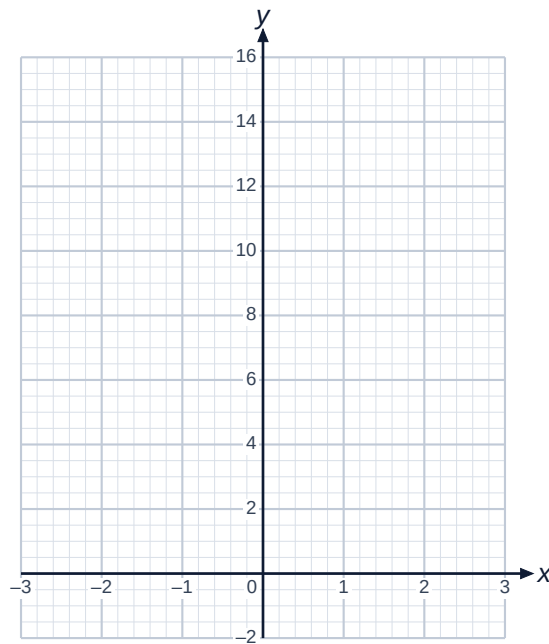


Q3

[6 marks]

- (a) Complete the tables of values for $y = -2x + 6$ and $3x + y = 7$.
 (b) On the grid, draw the graphs of $y = -2x + 6$ and $3x + y = 7$ for values of x from -3 to 3 .
 (c) Use your graphs to solve the simultaneous equations $y = -2x + 6$ and $3x + y = 7$.

x	-3	-2	-1	0	1	2	3
$y = -2x + 6$		10	8		4	2	0
$3x + y = 7$		13	10	7		1	-2



Q4

[4 marks]

Solve the simultaneous equations

$$b - 3a = 8$$

$$2a + 3b = 13$$

Q5

[4 marks]

Solve the simultaneous equations

$$y - 4x = 8$$

$$2x + 3y = 24$$

Q6

[4 marks]

Solve the simultaneous equations

$$3x + 5y = -4$$

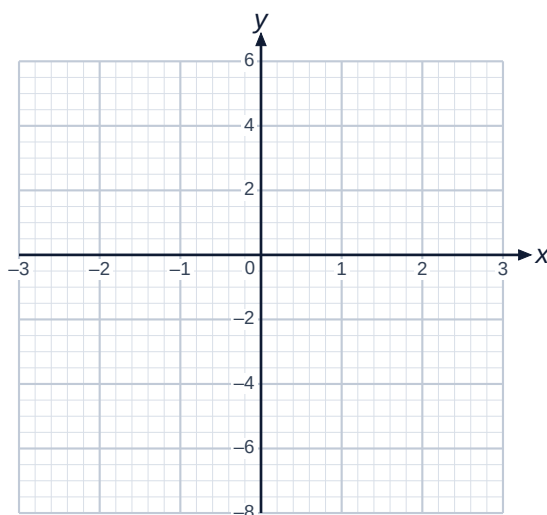
$$5x + 3y = -12$$

Q7

[6 marks]

- (a) Complete the tables of values for $y = 2x - 1$ and $x + y = -1$.
 (b) On the grid, draw the graphs of $y = 2x - 1$ and $x + y = -1$ for values of x from -3 to 3 .
 (c) Use your graphs to solve the simultaneous equations $y = 2x - 1$ and $x + y = -1$.

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

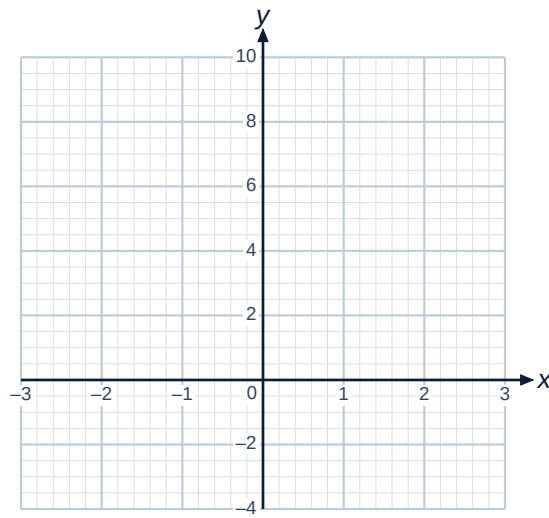


Q8

[6 marks]

- (a) Complete the tables of values for $y = x$ and $x + y = 6$.
 (b) On the grid, draw the graphs of $y = x$ and $x + y = 6$ for values of x from -3 to 3 .
 (c) Use your graphs to solve the simultaneous equations $y = x$ and $x + y = 6$.

x	-3	-2	-1	0	1	2	3
$y = x$		-2	-1	0		2	3
$x + y = 6$	9			6	5	4	3



Q9

[4 marks]

Solve the simultaneous equations

$$4p - 2q = -38$$

$$5p - 5q = -65$$

Q10

[4 marks]

Solve the simultaneous equations

$$2p - 2q = 2$$

$$5p - 2q = -16$$

Q11

[5 marks]

Solve the simultaneous equations

$$y = x + 4$$

$$y = x^2 + 3x + 1$$

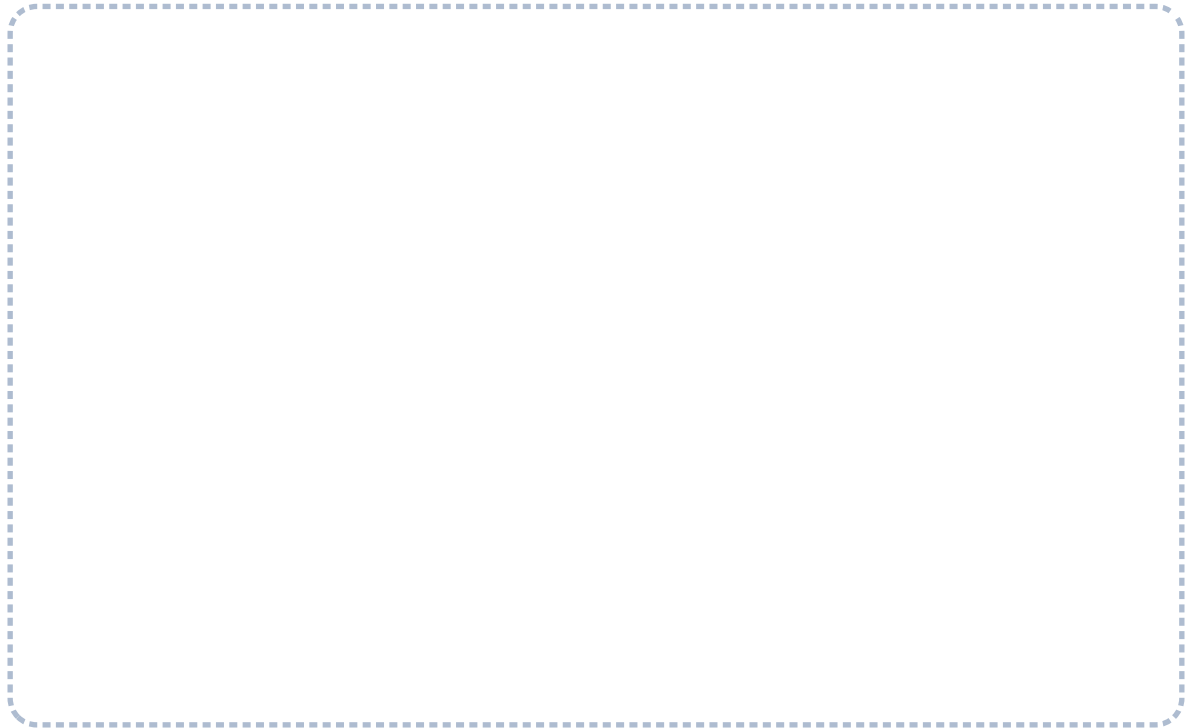
Q12

[5 marks]

Solve the simultaneous equations

$$y = x - 2$$

$$y = x^2 - 8x + 18$$



Q13

[5 marks]

Solve the simultaneous equations

$$y = 2x + 4$$

$$y = x^2 + 7x + 10$$

Q14

[5 marks]

Solve the simultaneous equations

$$y = 3x - 3$$

$$y = x^2 + 2x - 23$$

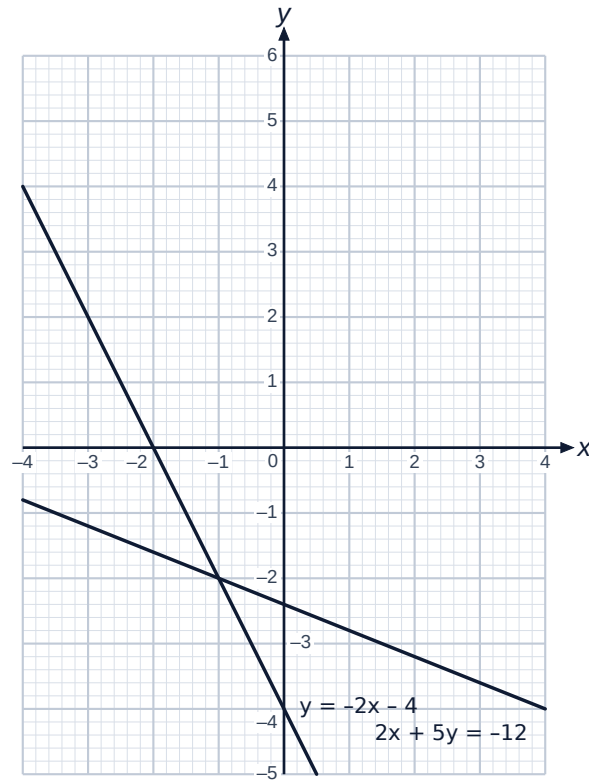
Q15

[2 marks]

The lines $y = -2x - 4$ and $2x + 5y = -12$ are drawn on the grid.
Use the graph to solve the simultaneous equations

$$y = -2x - 4$$

$$2x + 5y = -12$$



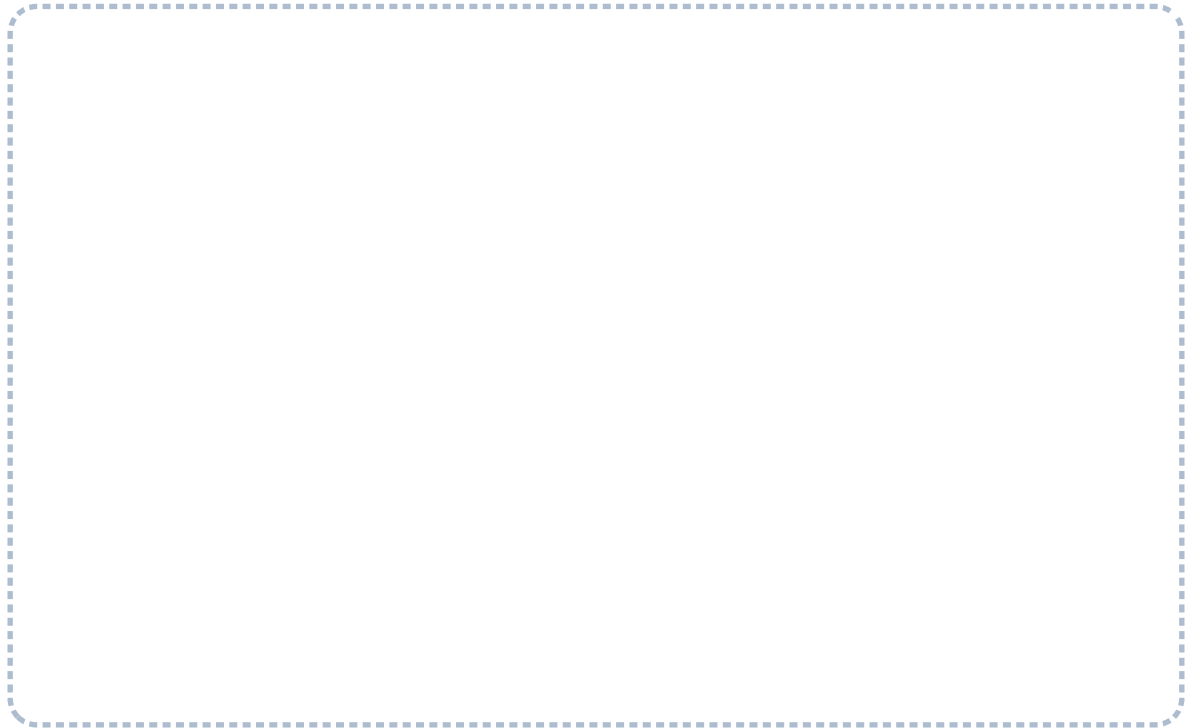
Q16

[5 marks]

Solve the simultaneous equations

$$y = x + 4$$

$$y = x^2 - 3x - 8$$



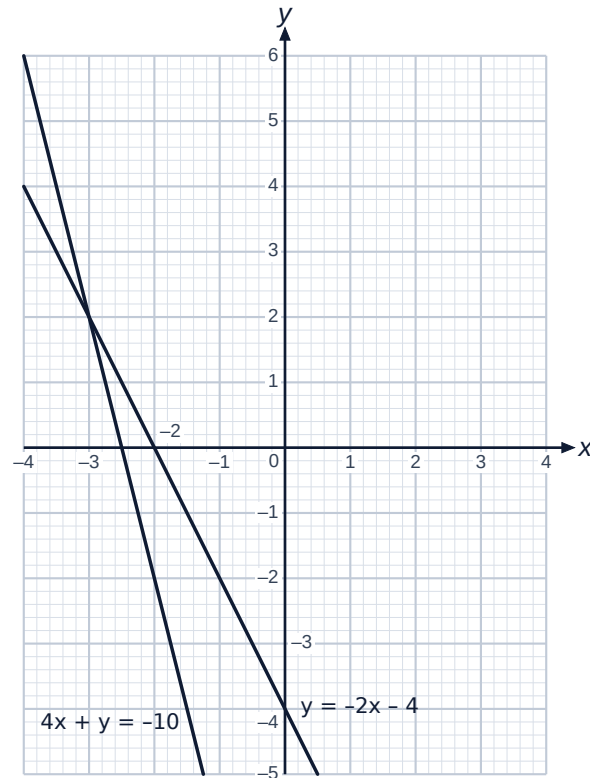
Q17

[2 marks]

The lines $y = -2x - 4$ and $4x + y = -10$ are drawn on the grid.
Use the graph to solve the simultaneous equations

$$y = -2x - 4$$

$$4x + y = -10$$



Q18

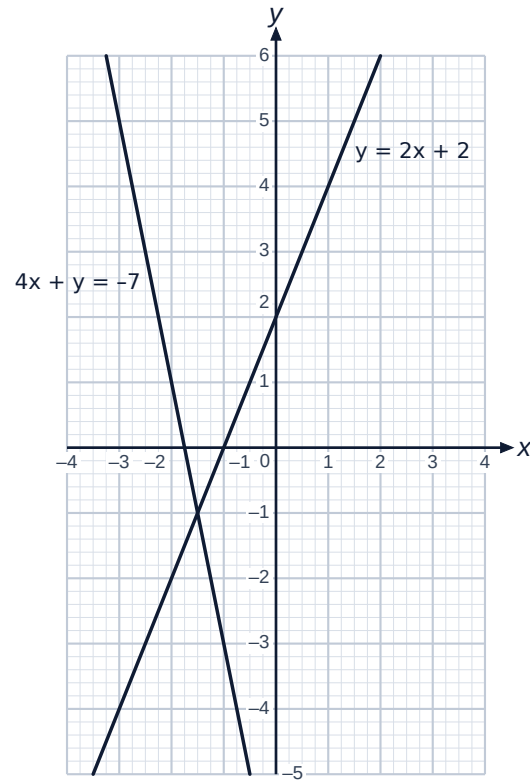
[2 marks]

The lines $y = 2x + 2$ and $4x + y = -7$ are drawn on the grid.

Use the graph to solve the simultaneous equations

$$y = 2x + 2$$

$$4x + y = -7$$



Q19

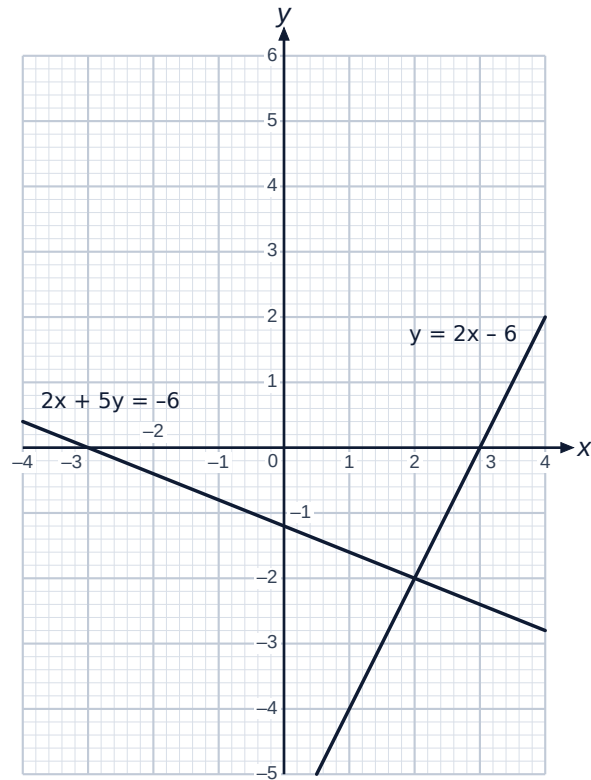
[2 marks]

The lines $y = 2x - 6$ and $2x + 5y = -6$ are drawn on the grid.

Use the graph to solve the simultaneous equations

$$y = 2x - 6$$

$$2x + 5y = -6$$



Q20

[5 marks]

Solve the simultaneous equations

$$y = -2x - 2$$

$$y = x^2 + 2x - 2$$

Q21

[5 marks]

Solve the simultaneous equations

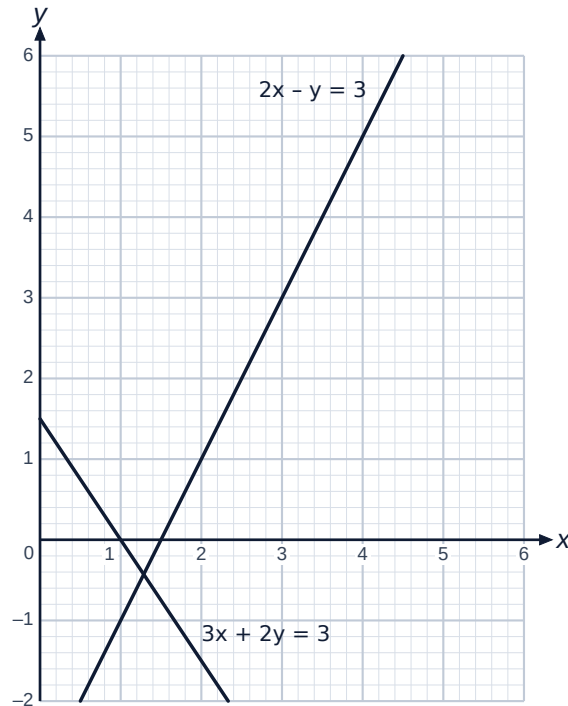
$$y = -x + 6$$

$$y = 2x^2 - 23x + 66$$

The graphs of $3x + 2y = 3$ and $2x - y = 3$ are drawn on the grid.

(a) Use the graph to find estimates for the solution of the simultaneous equations $3x + 2y = 3$ and $2x - y = 3$. Give your values to 1 decimal place.

(b) Explain why your answers to (a) are only estimates.



Q23

[5 marks]

Solve the simultaneous equations

$$y = 2x$$

$$y = 3x^2 + 2x - 75$$

Q24

[5 marks]

Solve the simultaneous equations

$$y = 2x + 1$$

$$y = 2x^2 - 12x + 25$$

Q25

[5 marks]

4 apples and 3 bananas cost a total of £1.25.

5 apples and 1 banana cost a total of £1.15.

Work out the cost of one apple and the cost of one banana.

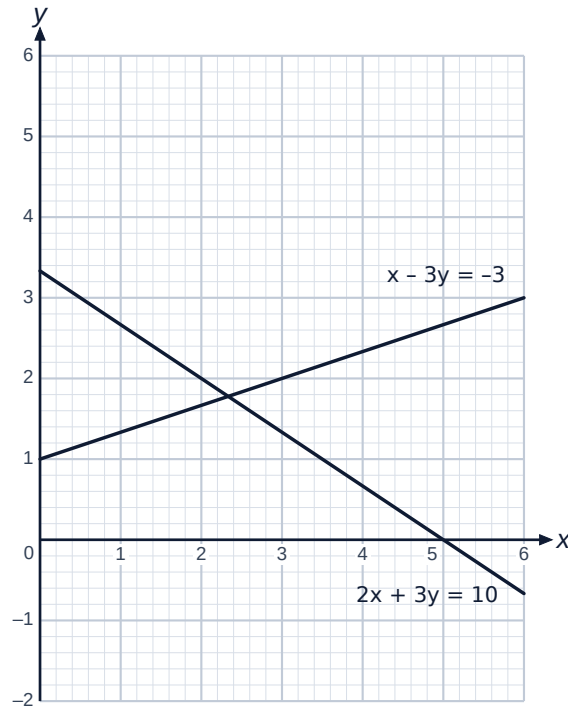
Q26

[3 marks]

The graphs of $2x + 3y = 10$ and $x - 3y = -3$ are drawn on the grid.

(a) Use the graph to find estimates for the solution of the simultaneous equations $2x + 3y = 10$ and $x - 3y = -3$. Give your values to 1 decimal place.

(b) Explain why your answers to (a) are only estimates.



Q27

[5 marks]

2 burgers and 3 drinks cost a total of £18.

5 burgers and 4 drinks cost a total of £38.

Work out the cost of one burger and the cost of one drink.

Q28

[5 marks]

Solve the simultaneous equations

$$y = -3x - 1$$

$$y = 3x^2 - 12x - 55$$

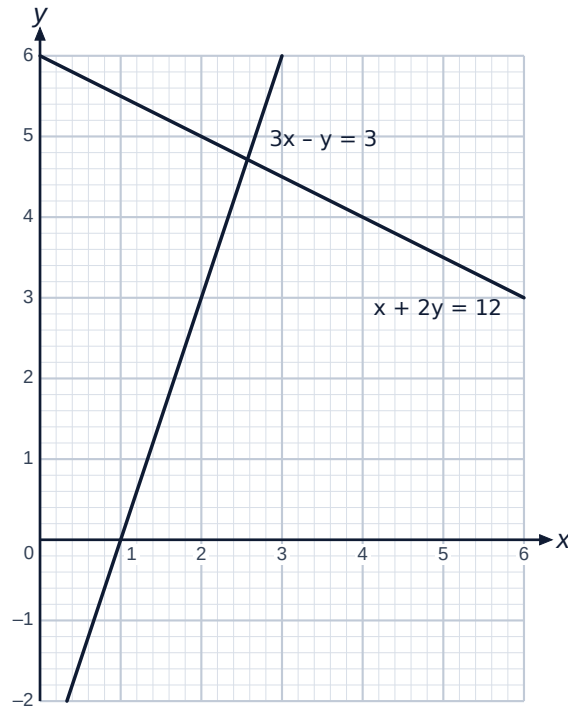
Q29

[3 marks]

The graphs of $x + 2y = 12$ and $3x - y = 3$ are drawn on the grid.

(a) Use the graph to find estimates for the solution of the simultaneous equations $x + 2y = 12$ and $3x - y = 3$. Give your values to 1 decimal place.

(b) Explain why your answers to (a) are only estimates.



Q30

[5 marks]

2 burgers and 1 drink cost a total of £15.

5 burgers and 2 drinks cost a total of £36.

Work out the cost of one burger and the cost of one drink.