



# ACHIEVE ACADEMY

## GCSE Maths — Foundation 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

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Total marks available: 113

## Simultaneous Equations

Q1

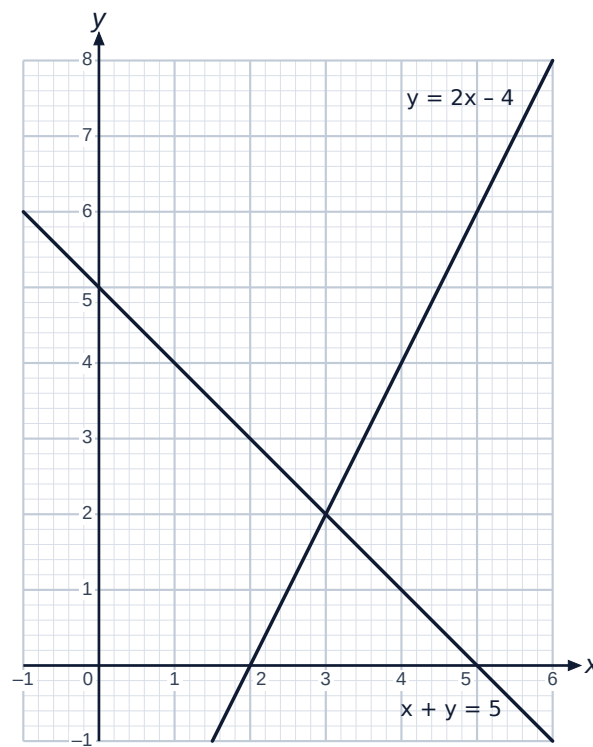
[2 marks]

The graphs of  $y = 2x - 4$  and  $x + y = 5$  are drawn on the grid.

Use the graph to solve the simultaneous equations

$$y = 2x - 4$$

$$x + y = 5$$



Q2

[3 marks]

$x = 4$  and  $y = 4$ .

(a) Work out the value of  $2x + 2y$ .

(b) Work out the value of  $3x - y$ .

(c) Are  $x = 4$ ,  $y = 4$  the solution of the simultaneous equations  $2x + 2y = 16$  and  $3x - y = 7$ ? Give a reason.

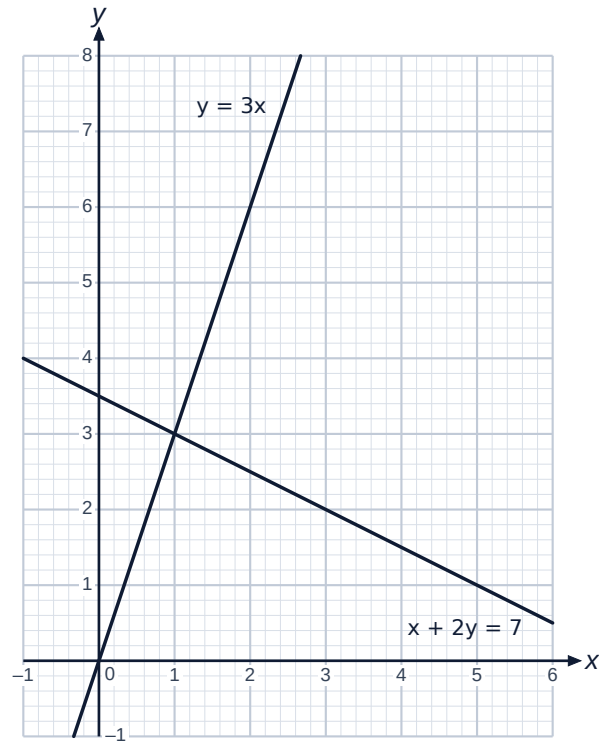
Q3

[2 marks]

The graphs of  $y = 3x$  and  $x + 2y = 7$  are drawn on the grid.  
Use the graph to solve the simultaneous equations

$$y = 3x$$

$$x + 2y = 7$$



Q4

[3 marks]

$x = 6$  and  $y = 4$ .

(a) Work out the value of  $2x + 2y$ .

(b) Work out the value of  $3x - y$ .

(c) Are  $x = 6$ ,  $y = 4$  the solution of the simultaneous equations  $2x + 2y = 20$  and  $3x - y = 13$ ? Give a reason.

Q5

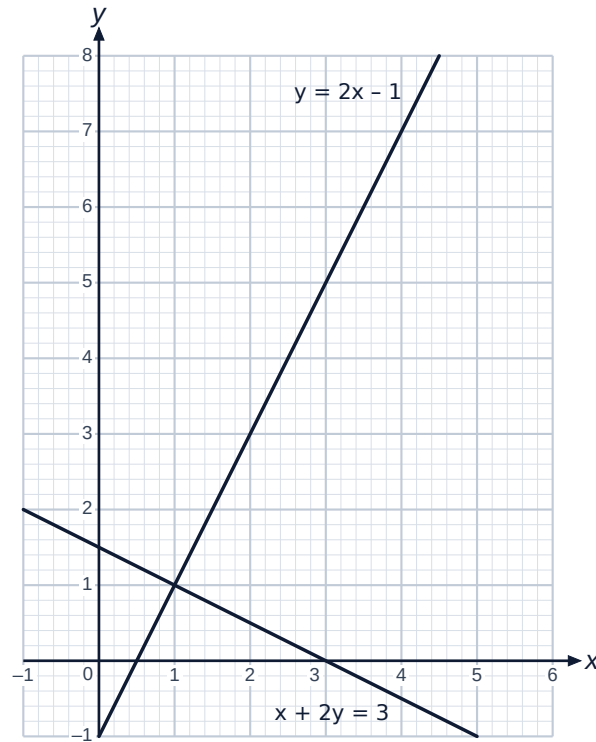
[2 marks]

The graphs of  $y = 2x - 1$  and  $x + 2y = 3$  are drawn on the grid.

Use the graph to solve the simultaneous equations

$$y = 2x - 1$$

$$x + 2y = 3$$



Q6

[3 marks]

$x = 4$  and  $y = 6$ .

(a) Work out the value of  $3x + 3y$ .

(b) Work out the value of  $2x - y$ .

(c) Are  $x = 4$ ,  $y = 6$  the solution of the simultaneous equations  $3x + 3y = 30$  and  $2x - y = 2$ ? Give a reason.

Q7

[3 marks]

$x = 2$  and  $y = 1$ .

(a) Work out the value of  $x + 4y$ .

(b) Work out the value of  $2x - y$ .

(c) Are  $x = 2$ ,  $y = 1$  the solution of the simultaneous equations  $x + 4y = 6$  and  $2x - y = 3$ ? Give a reason.

Q8

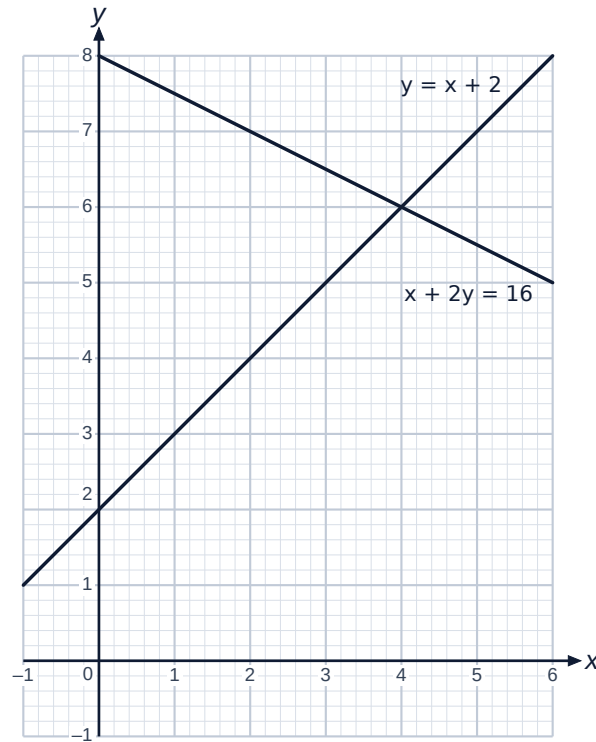
[2 marks]

The graphs of  $y = x + 2$  and  $x + 2y = 16$  are drawn on the grid.

Use the graph to solve the simultaneous equations

$$y = x + 2$$

$$x + 2y = 16$$



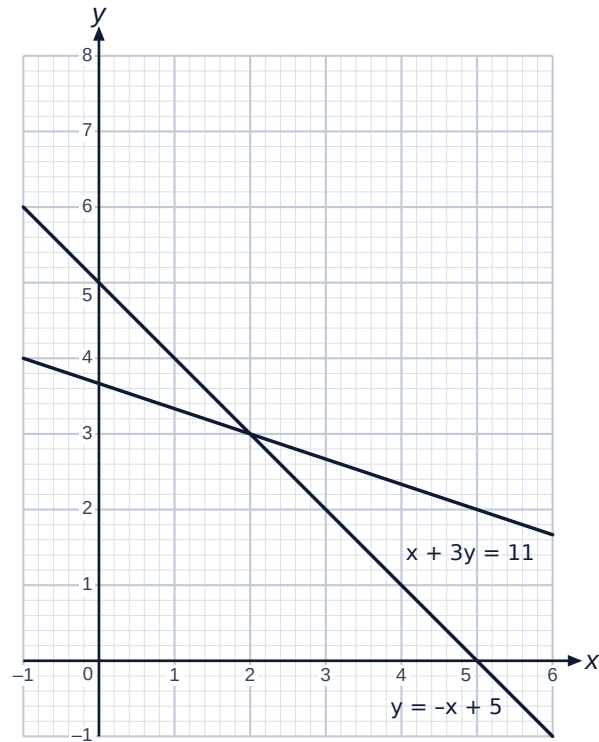
Q9

[2 marks]

The graphs of  $y = -x + 5$  and  $x + 3y = 11$  are drawn on the grid.  
Use the graph to solve the simultaneous equations

$$y = -x + 5$$

$$x + 3y = 11$$



Q10

[3 marks]

$x = 3$  and  $y = 2$ .

(a) Work out the value of  $3x + y$ .

(b) Work out the value of  $3x - y$ .

(c) Are  $x = 3$ ,  $y = 2$  the solution of the simultaneous equations  $3x + y = 11$  and  $3x - y = 7$ ? Give a reason.

Q11

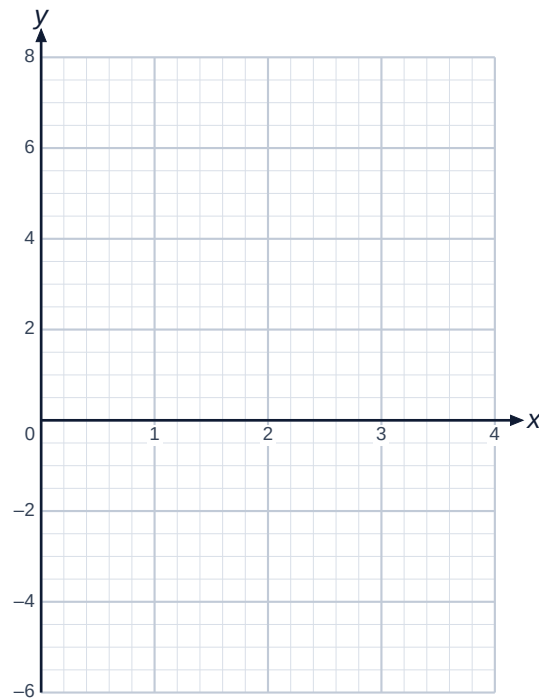
[4 marks]

Here are tables of values for  $y = -x + 5$  and  $3x + y = 7$ .

(a) On the grid, draw the graphs of  $y = -x + 5$  and  $3x + y = 7$  for values of  $x$  from 0 to 4.

(b) Use your graphs to solve the simultaneous equations  $y = -x + 5$  and  $3x + y = 7$ .

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



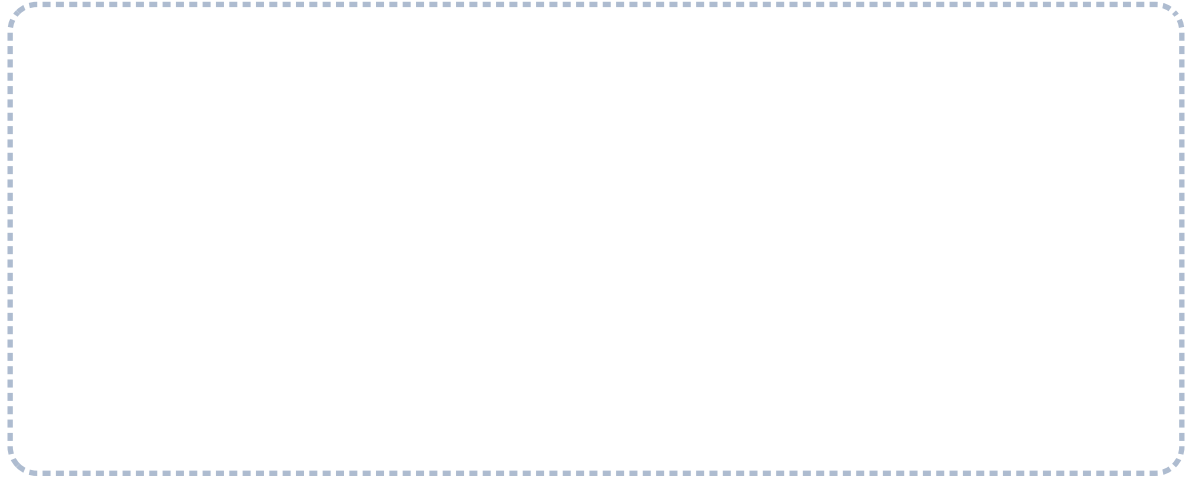
Q12

[4 marks]

Solve the simultaneous equations

$$4a + b = 8$$

$$a + b = 5$$



Q13

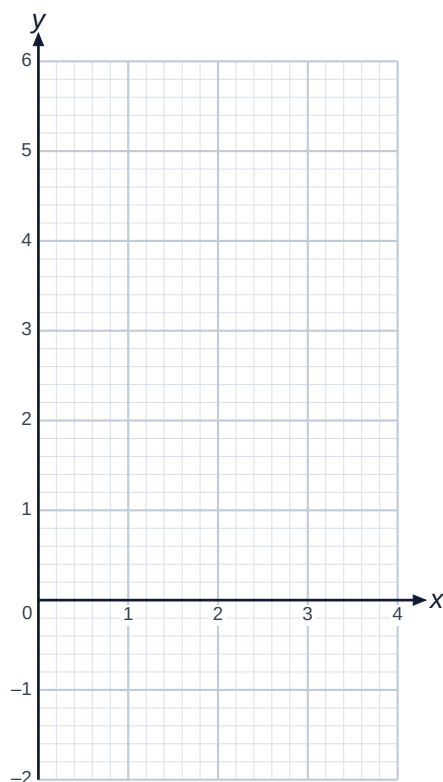
[4 marks]

Here are tables of values for  $y = x$  and  $2x + y = 6$ .

(a) On the grid, draw the graphs of  $y = x$  and  $2x + y = 6$  for values of  $x$  from 0 to 4.

(b) Use your graphs to solve the simultaneous equations  $y = x$  and  $2x + y = 6$ .

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



Q14

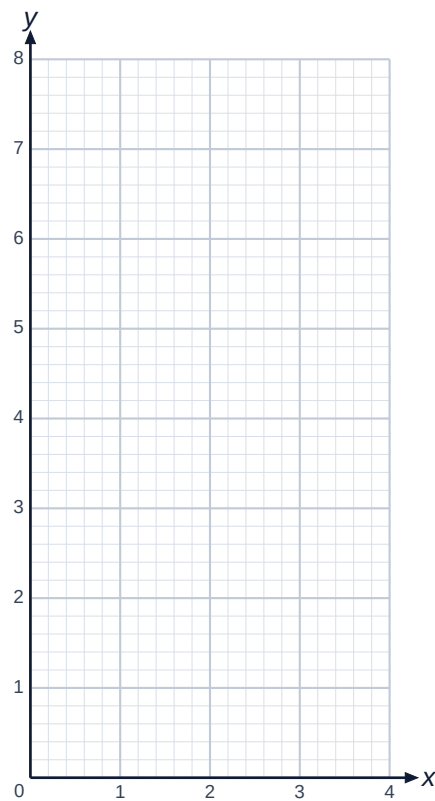
[4 marks]

Here are tables of values for  $y = -2x + 8$  and  $x + y = 5$ .

(a) On the grid, draw the graphs of  $y = -2x + 8$  and  $x + y = 5$  for values of  $x$  from 0 to 4.

(b) Use your graphs to solve the simultaneous equations  $y = -2x + 8$  and  $x + y = 5$ .

| $x$           | 0 | 1 | 2 | 3 | 4 |
|---------------|---|---|---|---|---|
| $y = -2x + 8$ | 8 | 6 | 4 | 2 | 0 |
| $x + y = 5$   | 5 | 4 | 3 | 2 | 1 |



Q15

[4 marks]

Solve the simultaneous equations

$$5a + 2b = 47$$

$$3a + 2b = 33$$

Q16

[4 marks]

Solve the simultaneous equations

$$x + 2y = 11$$

$$2x - 2y = 4$$

Q17

[4 marks]

Solve the simultaneous equations

$$p + q = 9$$

$$2p - q = 3$$

Q18

[4 marks]

Solve the simultaneous equations

$$4a + 3b = 30$$

$$2a + 3b = 18$$

Q19

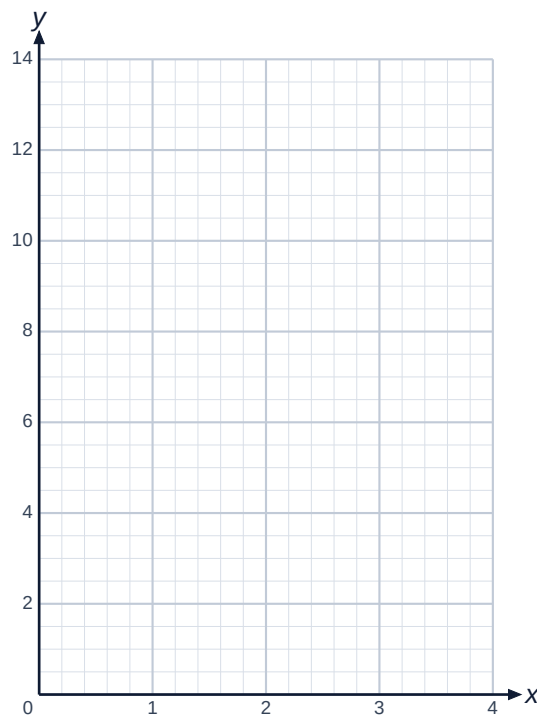
[4 marks]

Here are tables of values for  $y = x + 2$  and  $3x + y = 14$ .

(a) On the grid, draw the graphs of  $y = x + 2$  and  $3x + y = 14$  for values of  $x$  from 0 to 4.

(b) Use your graphs to solve the simultaneous equations  $y = x + 2$  and  $3x + y = 14$ .

| $x$           | 0  | 1  | 2 | 3 | 4 |
|---------------|----|----|---|---|---|
| $y = x + 2$   | 2  | 3  | 4 | 5 | 6 |
| $3x + y = 14$ | 14 | 11 | 8 | 5 | 2 |



Q20

[4 marks]

Solve the simultaneous equations

$$x + 3y = 8$$

$$3x - 3y = 0$$

Q21

[4 marks]

Solve the simultaneous equations

$$y = x + 2$$

$$3x + y = 26$$

Q22

[5 marks]

2 burgers and 2 drinks cost a total of £14.

4 burgers and 2 drinks cost a total of £22.

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

Q23

[4 marks]

Solve the simultaneous equations

$$p + q = -1$$

$$5p - 3q = -21$$

Q24

[4 marks]

Solve the simultaneous equations

$$2p + q = 18$$

$$2p - 2q = 6$$

Q25

[5 marks]

4 apples and 4 bananas cost a total of £1.20.

4 apples and 3 bananas cost a total of £1.10.

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

Q26

[4 marks]

Solve the simultaneous equations

$$y = 3x$$

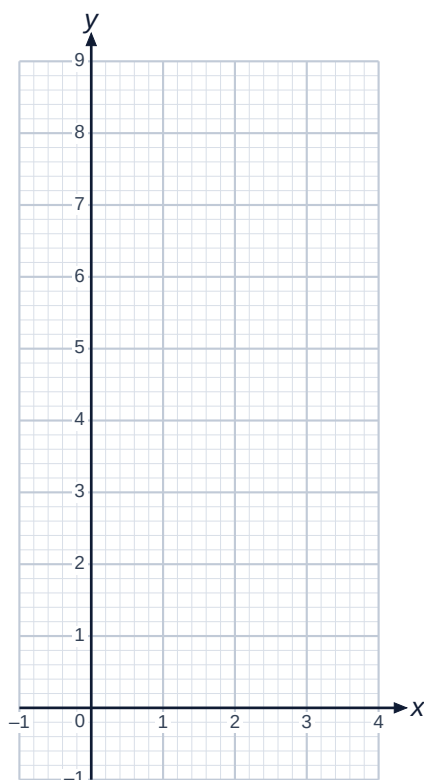
$$2x + 3y = 66$$

Q27

[6 marks]

- (a) Complete the tables of values for  $y = -x + 6$  and  $2x + y = 7$ .  
(b) On the grid, draw the graphs of  $y = -x + 6$  and  $2x + y = 7$  for values of  $x$  from  $-1$  to  $4$ .  
(c) Use your graphs to solve the simultaneous equations  $y = -x + 6$  and  $2x + y = 7$ .

| $x$          | $-1$ | $0$ | $1$ | $2$ | $3$ | $4$  |
|--------------|------|-----|-----|-----|-----|------|
| $y = -x + 6$ | $7$  | $6$ |     | $4$ | $3$ |      |
| $2x + y = 7$ | $9$  | $7$ |     |     | $1$ | $-1$ |



Q28

[4 marks]

Solve the simultaneous equations

$$3x + 2y = 11$$

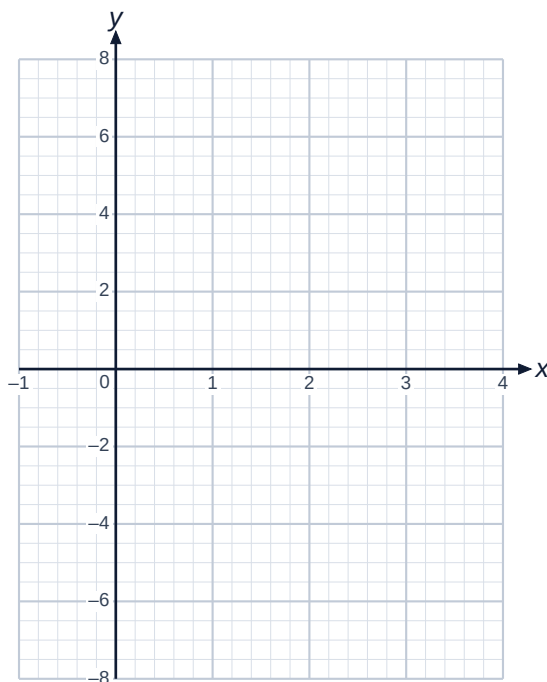
$$4x - 4y = 8$$

Q29

[6 marks]

- (a) Complete the tables of values for  $y = -x + 3$  and  $3x + y = 5$ .  
(b) On the grid, draw the graphs of  $y = -x + 3$  and  $3x + y = 5$  for values of  $x$  from  $-1$  to  $4$ .  
(c) Use your graphs to solve the simultaneous equations  $y = -x + 3$  and  $3x + y = 5$ .

| $x$          | $-1$ | $0$ | $1$ | $2$  | $3$ | $4$  |
|--------------|------|-----|-----|------|-----|------|
| $y = -x + 3$ |      | $3$ | $2$ |      | $0$ | $-1$ |
| $3x + y = 5$ | $8$  | $5$ |     | $-1$ |     | $-7$ |



Q30

[6 marks]

- (a) Complete the tables of values for  $y = 2x - 2$  and  $2x + y = 6$ .  
(b) On the grid, draw the graphs of  $y = 2x - 2$  and  $2x + y = 6$  for values of  $x$  from  $-1$  to  $4$ .  
(c) Use your graphs to solve the simultaneous equations  $y = 2x - 2$  and  $2x + y = 6$ .

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

