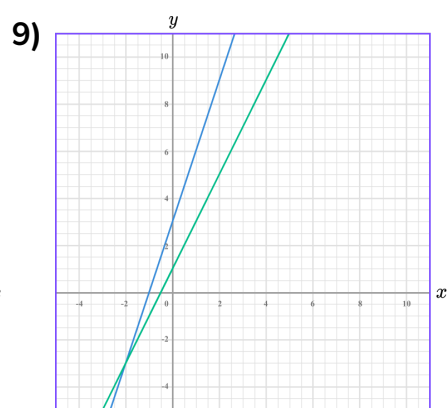
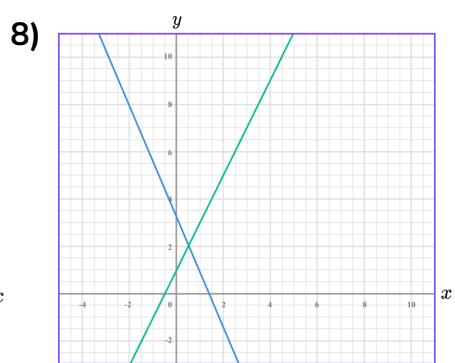
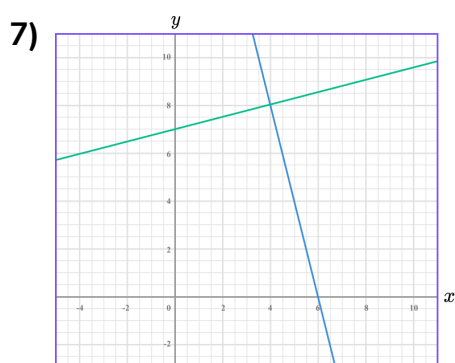
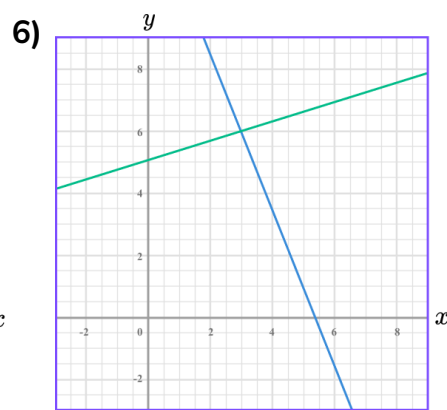
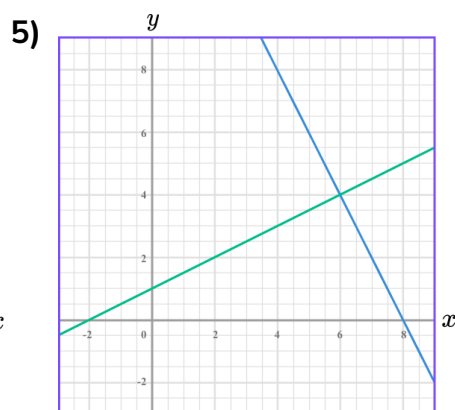
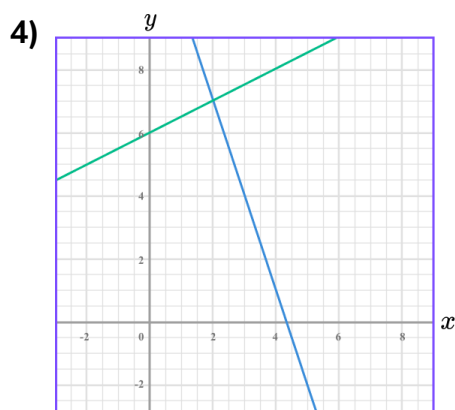
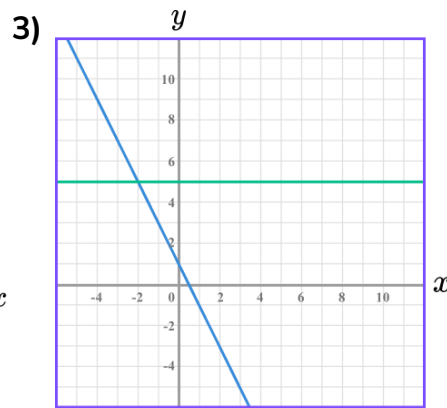
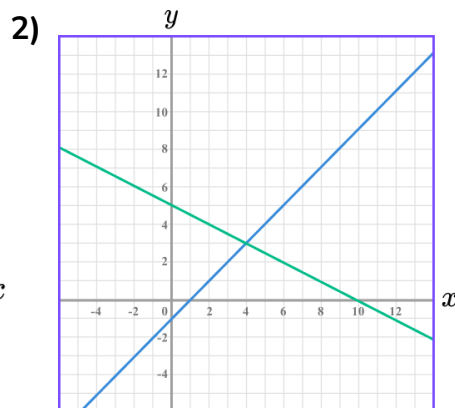
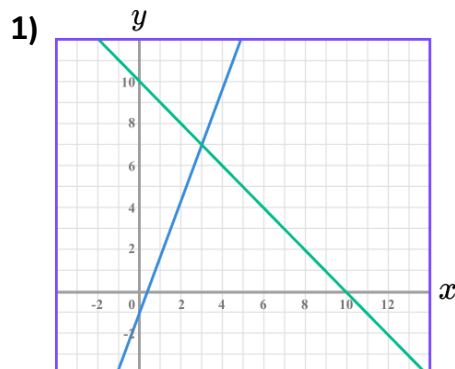


# Solving Simultaneous Equations Graphically - Worksheet

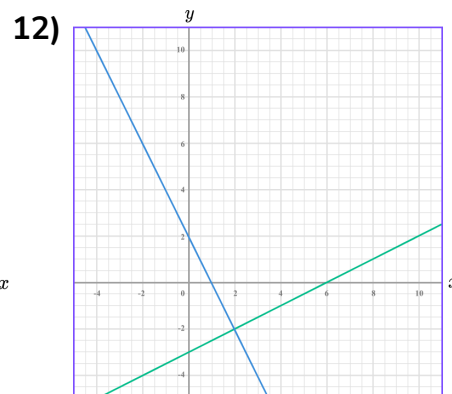
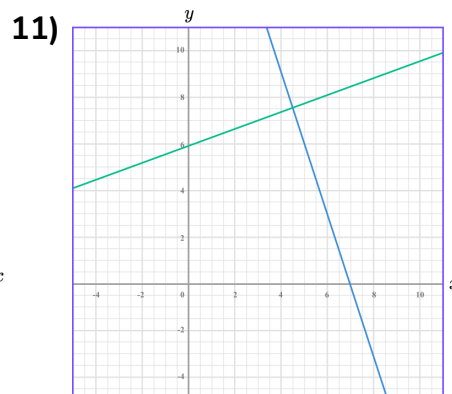
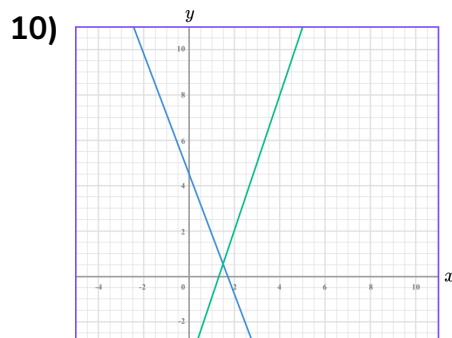
## Skill

### Group A - Two linear equations

Solve the pairs of simultaneous equations graphically:

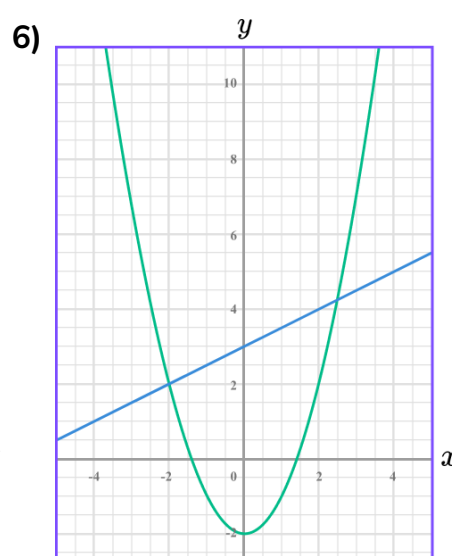
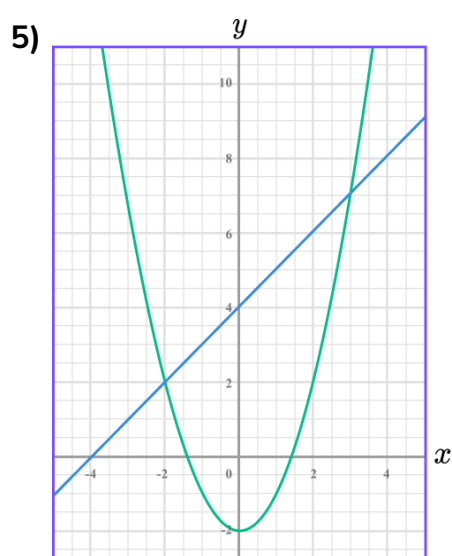
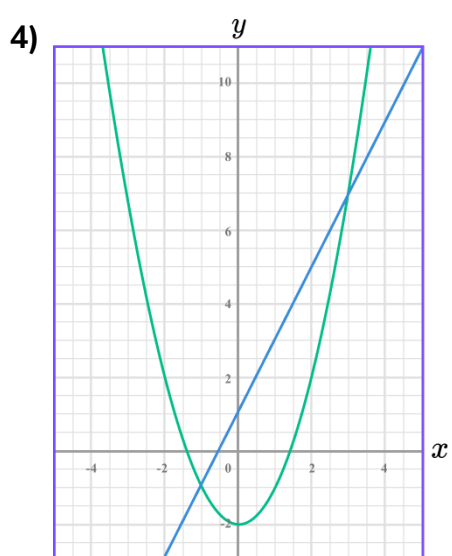
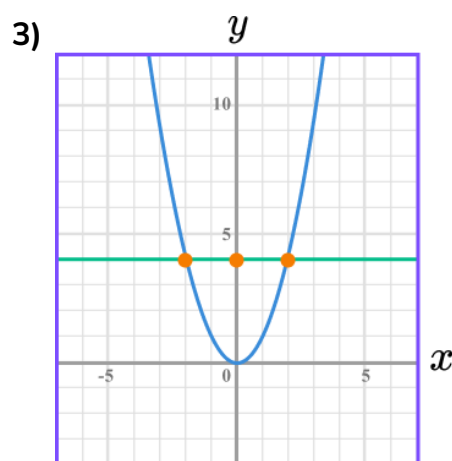
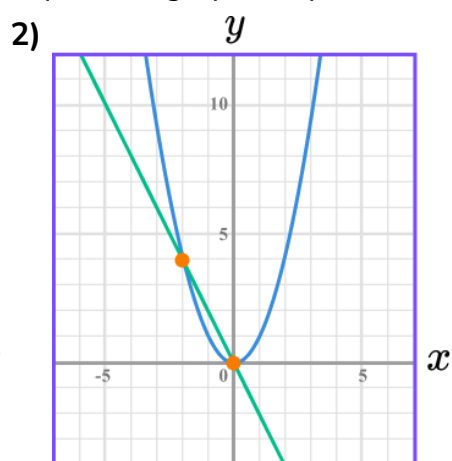
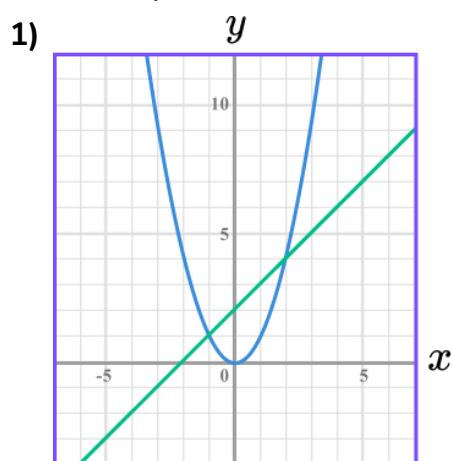


# Solving Simultaneous Equations Graphically - Worksheet

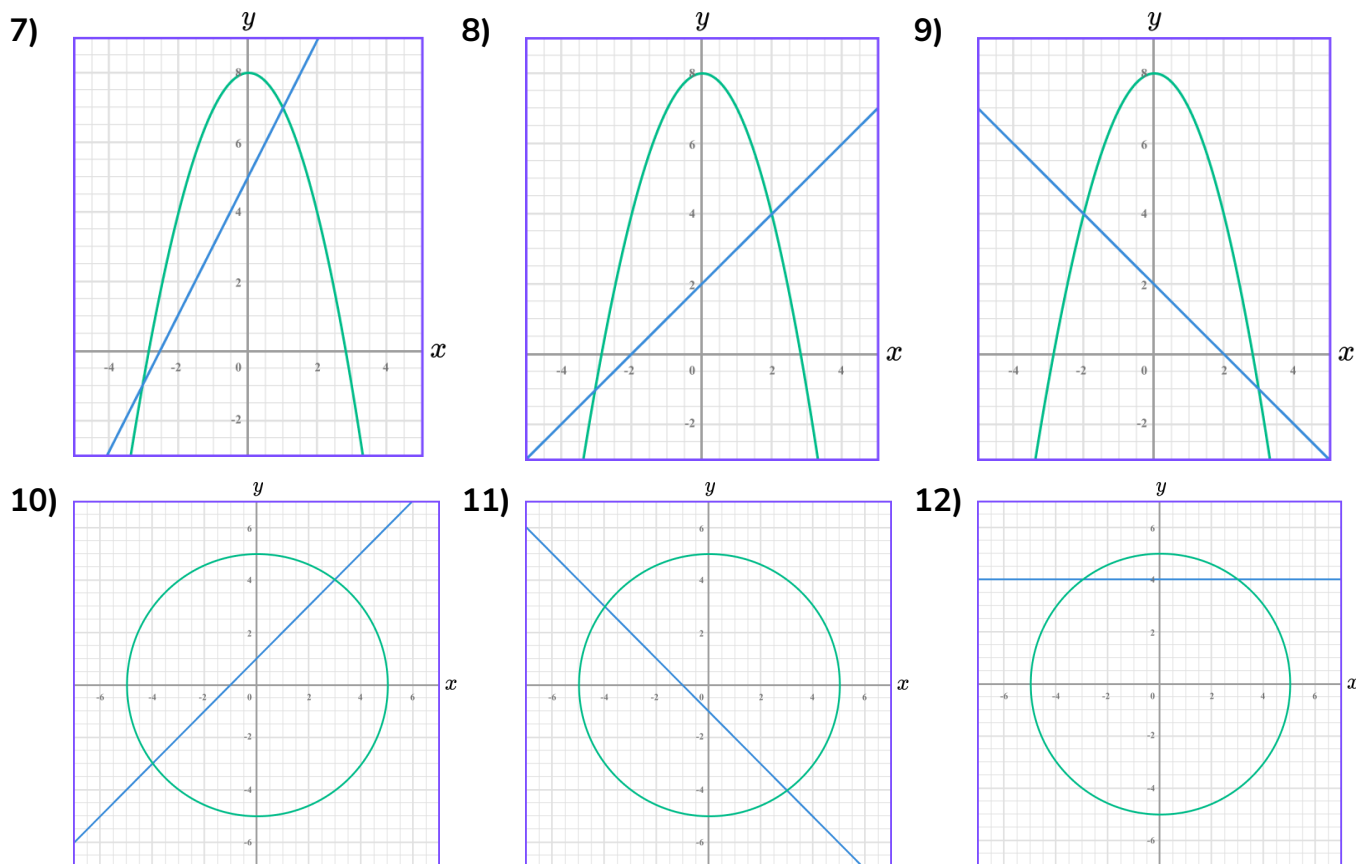


## Group B - One linear and one non-linear equation

Solve the pairs of simultaneous equations graphically:



# Solving Simultaneous Equations Graphically - Worksheet



## Group C - Drawing your own graphs

Solve the pairs of simultaneous equations graphically:

1)  $y = 2x$

$y = x + 1$

2)  $y = 3x$

$y = x + 4$

3)  $y = x + 2$

$y = 2x + 1$

4)  $y = x + 4$

$y = 3x + 2$

5)  $y = x - 4$

$y = 2x - 7$

6)  $y = 2x + 3$

$y = 4x - 1$

7)  $y = 2x + 2$

$y = -x + 5$

8)  $y = 2x + 3$

$y = -2x + 5$

9)  $y = 2x + 6$

$y = -3x + 1$

10)  $y = x^2$

$y = x$

11)  $y = x^2$

$y = x + 6$

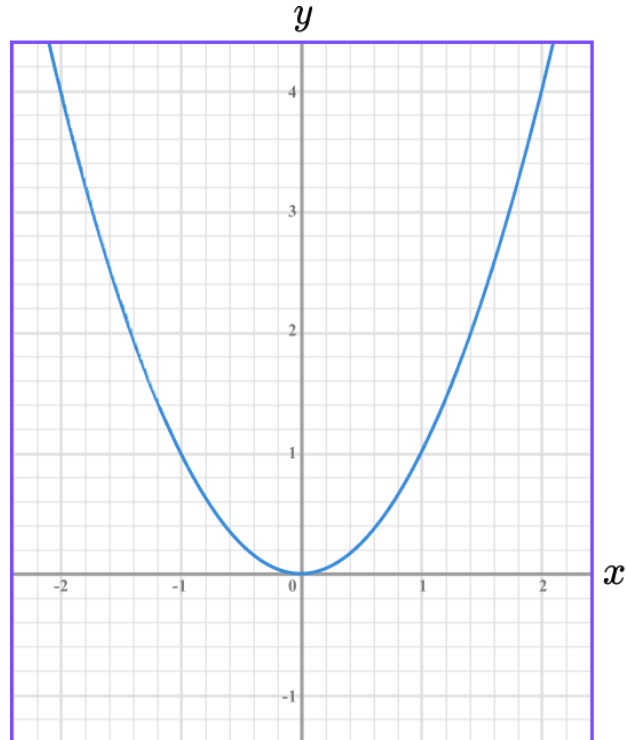
12)  $y = x^2 - 2$

$y = x + 4$

# Solving Simultaneous Equations Graphically - Worksheet

## Applied

- 1) (a) On the axes below, add the graph of  $y = 2x$



- (b) Saj and Harris answer the question below.

Solve the pair of simultaneous equations graphically:

$$y = x^2$$

$$y = 2x$$

Saj thinks the answer is (2, 4)

Harris thinks the answer is (4, 2)

Determine if either of them is correct by solving the simultaneous equations graphically.

# Solving Simultaneous Equations Graphically - Worksheet

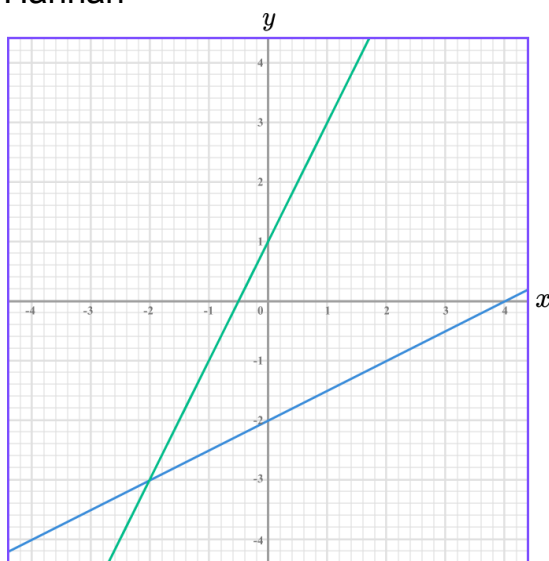
- 2) (a) Hannah and Amber solved the simultaneous equations below graphically and came up with the two answers below. Who is correct?

*Solve the pair of simultaneous equations below graphically:*

$$y = 2x + 1$$

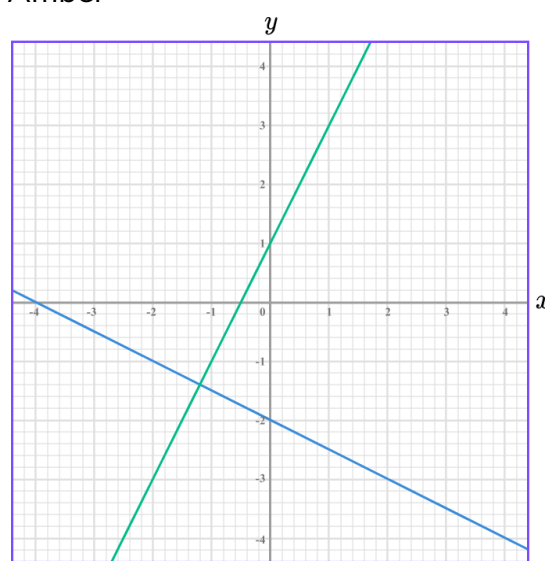
$$y = \frac{1}{2}x - 2$$

Hannah



Answer:  $(-2, -3)$

Amber



Answer:  $(-1.2, -1.4)$

- (b) What mistake was made by the other girl?
- 3) (a) Create a pair of simultaneous equations which have 2 solutions.
- (b) Create a pair of simultaneous equations which have no solutions.

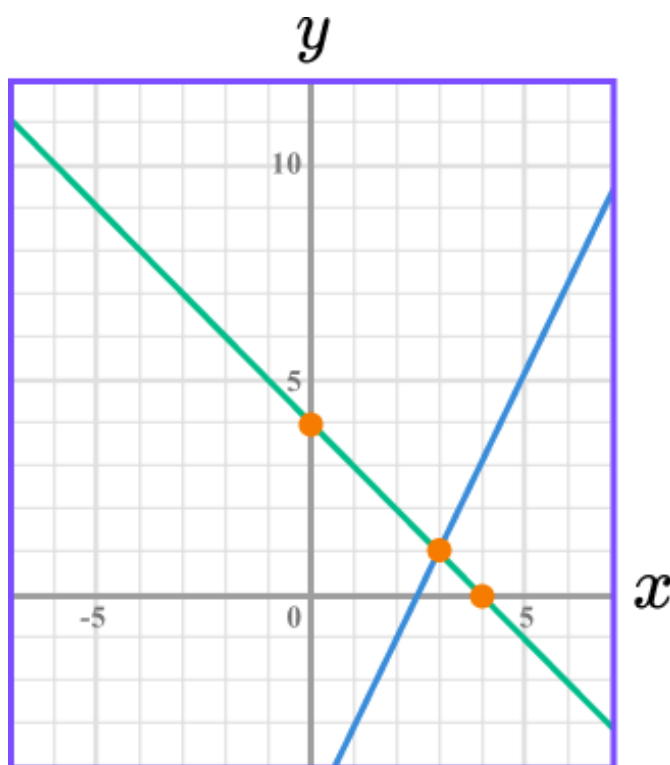
# Solving Simultaneous Equations Graphically - Exam Questions

- 1) The graphs with the equations of the straight lines

$$y = 2x - 5$$

$$3y + 3x = 12$$

have been drawn on the grid below.



Use the graphs to solve the simultaneous equations.

$x = \dots\dots\dots$

$y = \dots\dots\dots$

**(2 marks)**

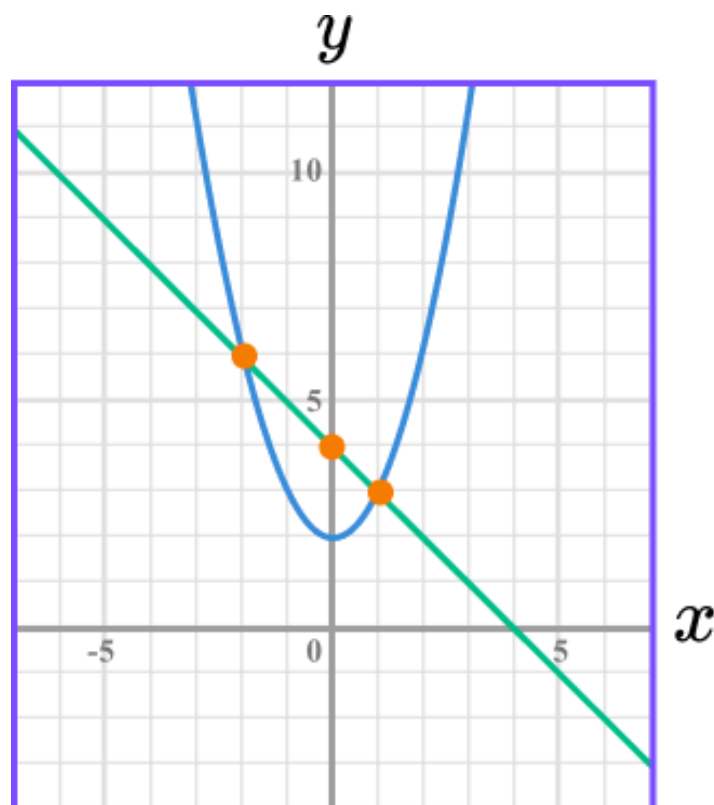
**Solving Simultaneous Equations Graphically - Exam Questions**

- 2) The graphs with the equations

$$y = x^2 + 2$$

$$2y + 2x = 8$$

has been drawn on the grid below.



Use the graphs to solve the simultaneous equations.

$$x = \dots\dots y = \dots\dots$$

$$x = \dots\dots y = \dots\dots$$

**(2 marks)**

**Solving Simultaneous Equations Graphically - Exam Questions**

3) By drawing the graphs of:

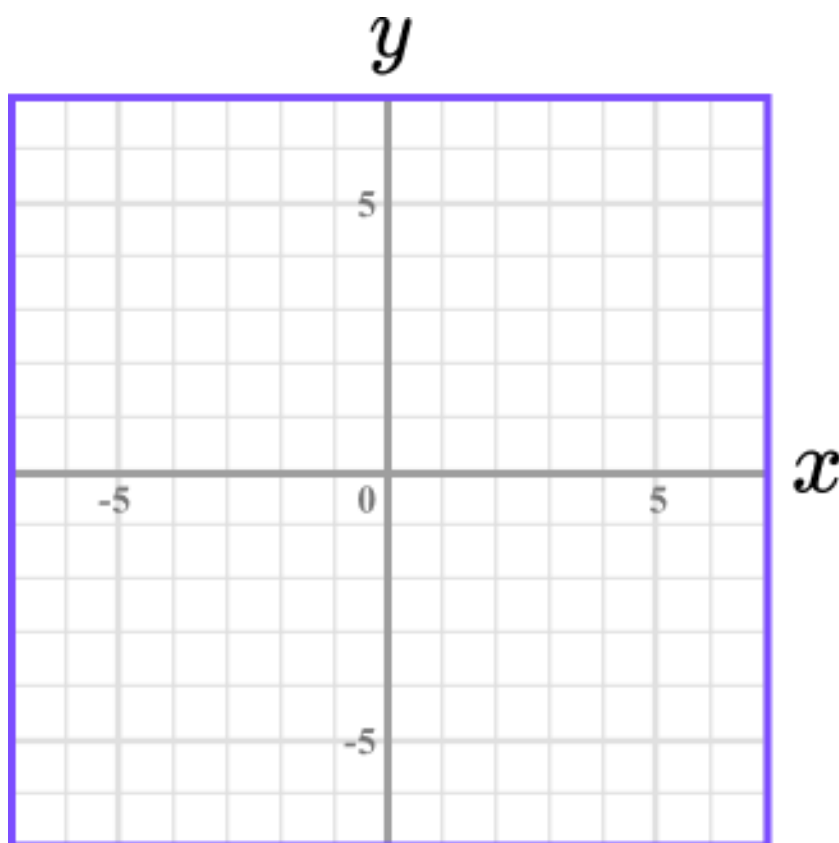
$$2y + 6x = 9$$

$$y = 2x - 3$$

Solve the simultaneous equations:

$$2y + 6x = 9$$

$$y = 2x - 3$$



$x = \dots\dots\dots$

$y = \dots\dots\dots$

**(3 marks)**



## Solving Simultaneous Equations Graphically - Exam Questions

4) By drawing the graphs of:

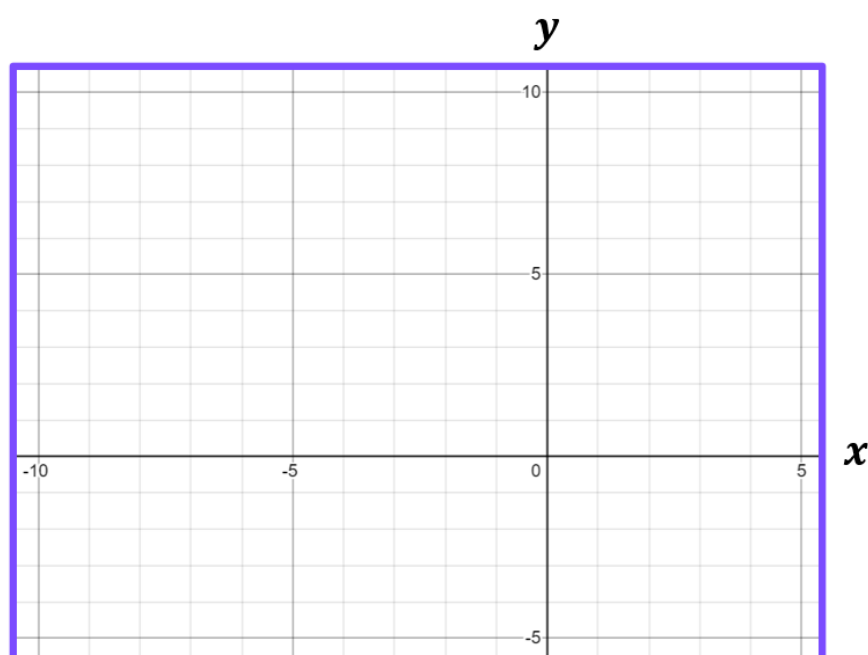
$$2y = x + 6$$

$$y = 3x + 8$$

Solve the simultaneous equations:

$$2y = x + 6$$

$$y = 3x + 8$$

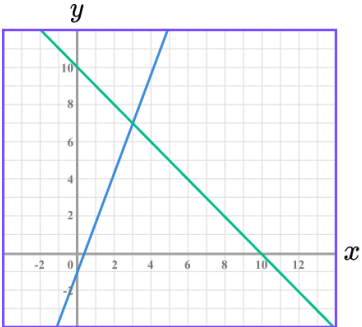
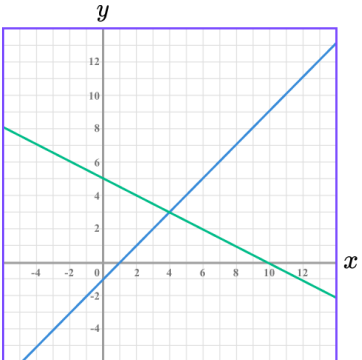
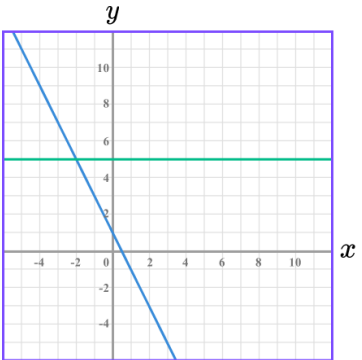
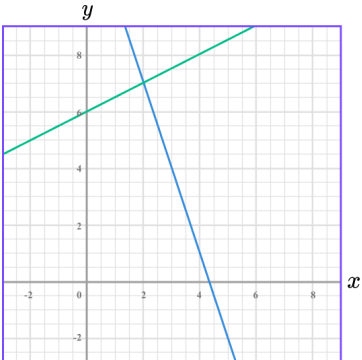


$x = \dots\dots\dots$

$y = \dots\dots\dots$

**(3 marks)**

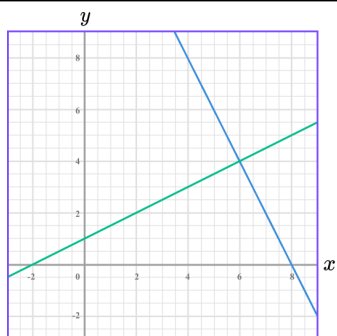
# Solving Simultaneous Equations Graphically - Answers

	Question	Answer
	Skill Questions	
Group A	<p>Solve the pairs of simultaneous equations graphically:</p> <p>1) </p> <p>2) </p> <p>3) </p> <p>4) </p>	<p>1) <math>x = 3, y = 7</math></p> <p>2) <math>x = 4, y = 3</math></p> <p>3) <math>x = -2, y = 5</math></p> <p>4) <math>x = 2, y = 7</math></p>

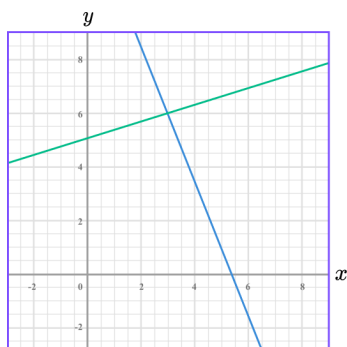
# Solving Simultaneous Equations Graphically - Answers

Group A  
contd

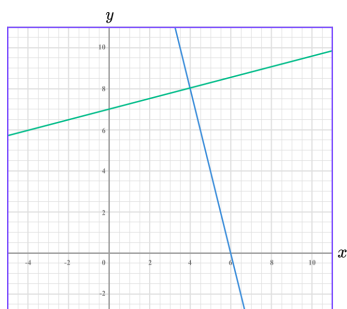
5)

5)  $x = 6, y = 4$ 

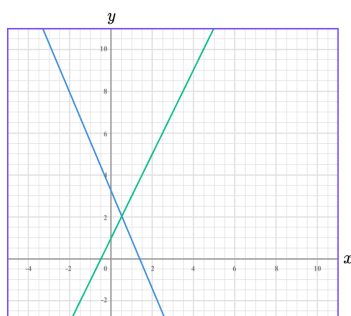
6)

6)  $x = 3, y = 6$ 

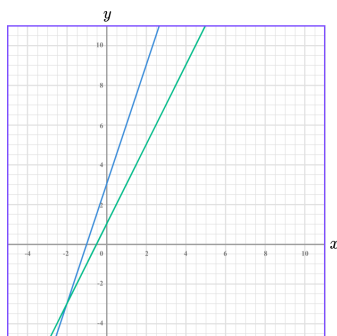
7)

7)  $x = 4, y = 8$ 

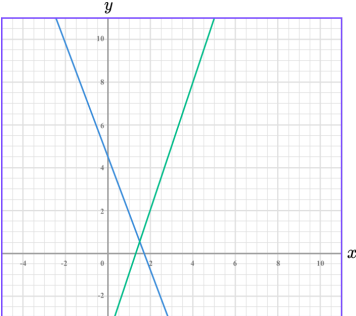
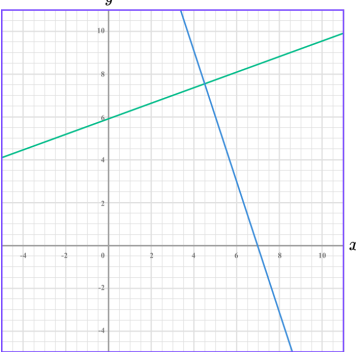
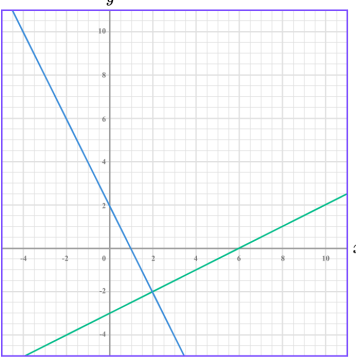
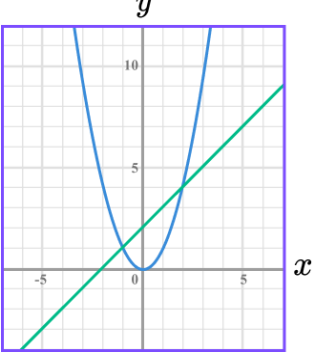
8)

8)  $x = 0.5, y = 2$ 

9)

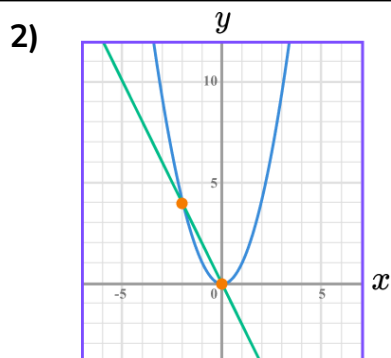
9)  $x = -2, y = -3$

# Solving Simultaneous Equations Graphically - Answers

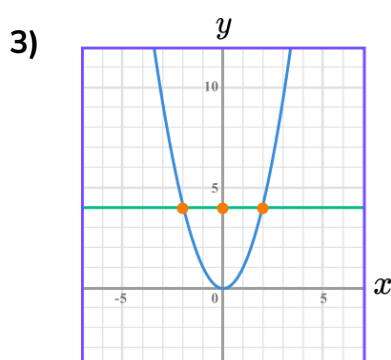
<p>Group A contd</p>	<p><b>10)</b> </p> <p><b>11)</b> </p> <p><b>12)</b> </p>	<p><b>10)</b> <math>x = 1.5, y = 0.5</math></p> <p><b>11)</b> <math>x = 4.5, y = 7.5</math></p> <p><b>12)</b> <math>x = 2, y = -2</math></p>
<p>Group B</p>	<p>Solve the pairs of simultaneous equations graphically:</p> <p><b>1)</b> </p>	<p><b>1)</b> <math>x = 2, y = 4</math> or <math>x = -1, y = 1</math></p>

# Solving Simultaneous Equations Graphically - Answers

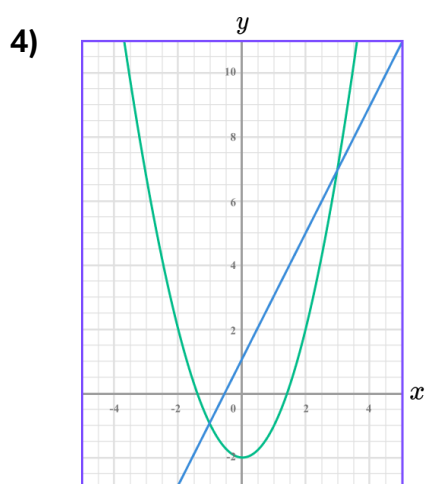
Group B  
contd



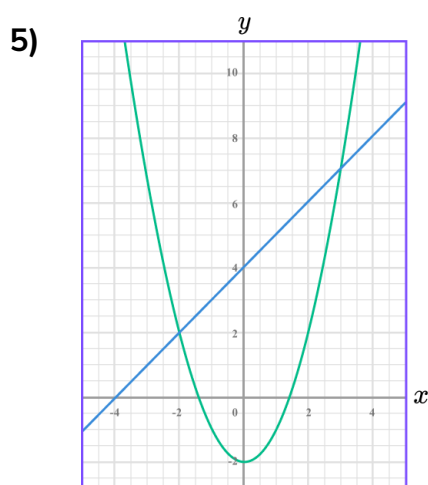
2)  $x = 0, y = 0$  or  
 $x = -2, y = 4$



3)  $x = -2, y = 4$  or  
 $x = 2, y = 4$



4)  $x = -1, y = 2$  or  
 $x = 3, y = 7$

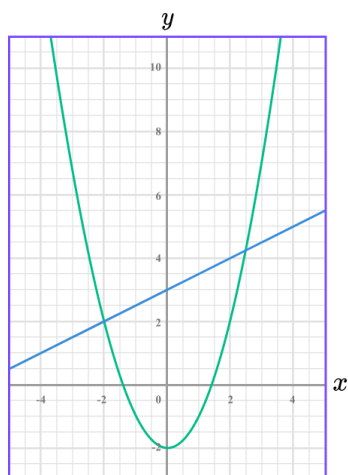


5)  $x = -2, y = 2$  or  
 $x = 3, y = 7$

# Solving Simultaneous Equations Graphically - Answers

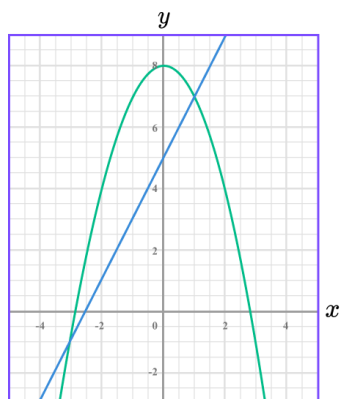
Group B  
contd

6)



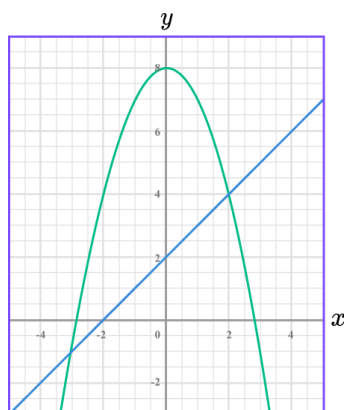
6)  $x = -2, y = 2$  or  
 $x = 2.5, y = 4.25$

7)



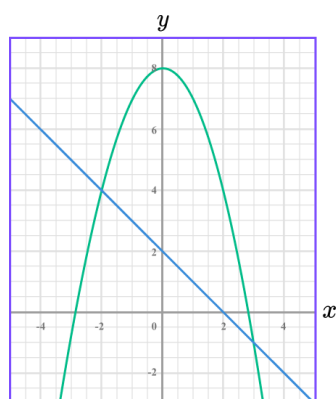
7)  $x = -3, y = -1$  or  
 $x = 1, y = 7$

8)



8)  $x = -3, y = -1$  or  
 $x = 2, y = 4$

9)

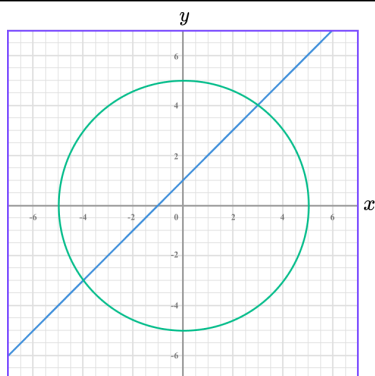


9)  $x = -2, y = 4$  or  
 $x = 3, y = -1$

# Solving Simultaneous Equations Graphically - Answers

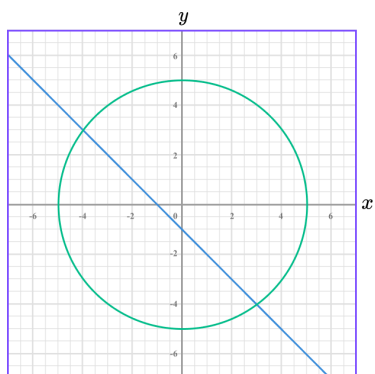
Group B  
contd

10)



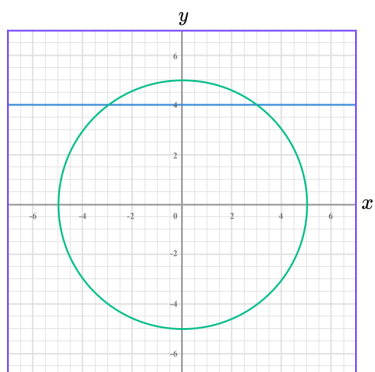
10)  $x = 3, y = 4$  or  
 $x = -4, y = -1$

11)



11)  $x = -4, y = 3$  or  
 $x = 3, y = -4$

12)



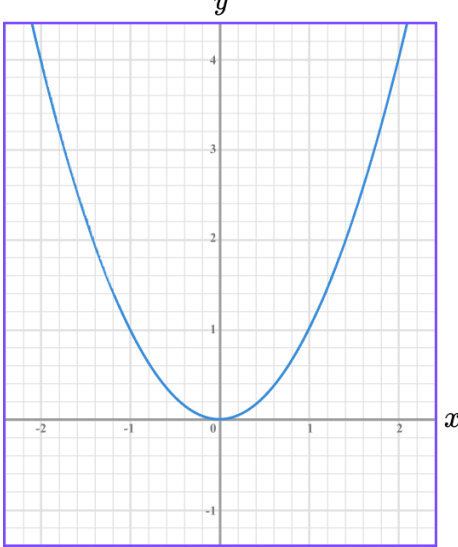
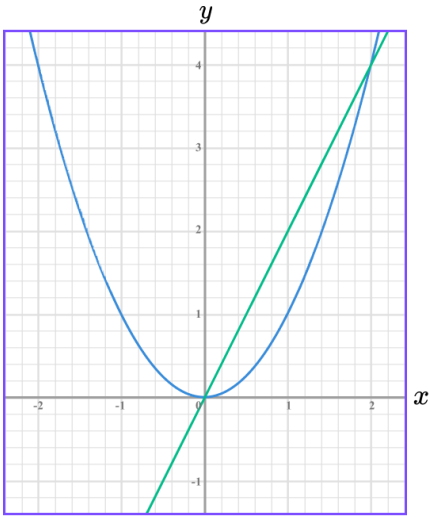
12)  $x = -3, y = 4$  or  
 $x = 3, y = 4$

## Solving Simultaneous Equations Graphically - Answers

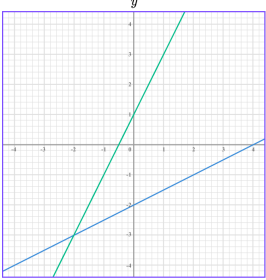
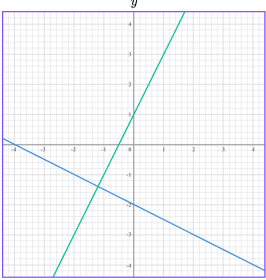
<b>Group C</b>	<p>Solve the pairs of simultaneous equations graphically:</p> <p><b>1)</b> <math>y = 2x</math>, <math>y = x + 1</math></p> <p><b>2)</b> <math>y = 3x</math>, <math>y = x + 4</math></p> <p><b>3)</b> <math>y = x + 2</math>, <math>y = 2x + 1</math></p> <p><b>4)</b> <math>y = x + 4</math>, <math>y = 3x + 2</math></p> <p><b>5)</b> <math>y = x - 4</math>, <math>y = 2x - 7</math></p> <p><b>6)</b> <math>y = 2x + 3</math>, <math>y = 4x - 1</math></p> <p><b>7)</b> <math>y = 2x + 2</math>, <math>y = -x + 5</math></p> <p><b>8)</b> <math>y = 2x + 3</math>, <math>y = -2x + 5</math></p> <p><b>9)</b> <math>y = 2x + 6</math>, <math>y = -3x + 1</math></p> <p><b>10)</b> <math>y = x^2</math>, <math>y = x</math></p> <p><b>11)</b> <math>y = x^2</math>, <math>y = x + 6</math></p> <p><b>12)</b> <math>y = x^2 - 2</math>, <math>y = x + 4</math></p>	<p><b>1)</b> <math>x = 1, y = 2</math></p> <p><b>2)</b> <math>x = 2, y = 6</math></p> <p><b>3)</b> <math>x = 1, y = 3</math></p> <p><b>4)</b> <math>x = 1, y = 5</math></p> <p><b>5)</b> <math>x = 3, y = -1</math></p> <p><b>6)</b> <math>x = 2, y = 7</math></p> <p><b>7)</b> <math>x = 1, y = 4</math></p> <p><b>8)</b> <math>x = 0.5, y = 4</math></p> <p><b>9)</b> <math>x = -1, y = 4</math></p> <p><b>10)</b> <math>x = 0, y = 0</math> and <math>x = 1, y = 1</math></p> <p><b>11)</b> <math>x = -2, y = 4</math> and <math>x = 3, y = 9</math></p> <p><b>12)</b> <math>x = 6, y = 10</math> and <math>x = -1, y = 3</math></p>
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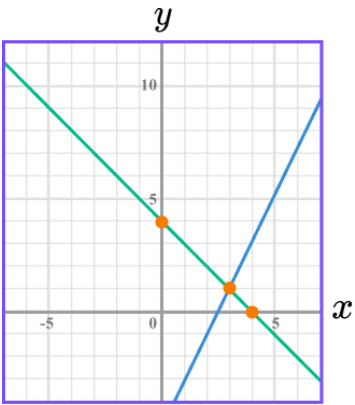
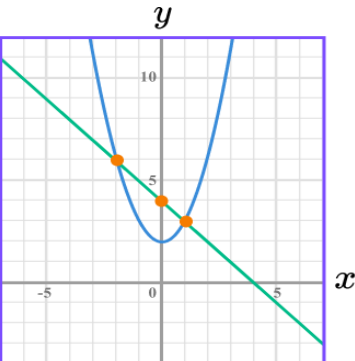
# Solving Simultaneous Equations Graphically - Answers

	Question	Answer
	Applied Questions	
1)	<p><b>a)</b> On the axes below, add the graph of <math>y = 2x</math></p>  <p><b>b)</b> Saj and Harris answer the question below.</p> <p>Solve the pair of simultaneous equations graphically:</p> $y = x^2$ $y = 2x$ <p>Saj thinks the answer is <math>x = 2, y = 4</math>  Harris thinks the answer is <math>x = 4, y = 2</math>  Determine if either of them is correct by solving the simultaneous equations graphically.</p>	<p><b>a)</b></p>  <p><b>b)</b> Neither Saj or Harris are correct as there are two solutions. Saj correctly said the first solution <math>x = 2, y = 4</math>, but <math>x = 0, y = 0</math> is also a solution.</p>

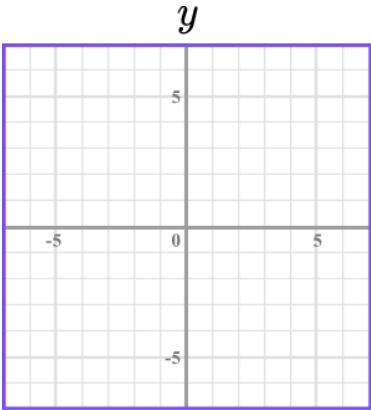
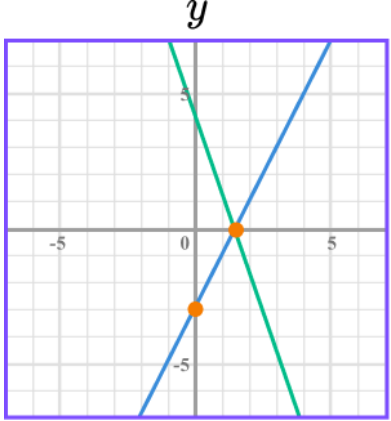
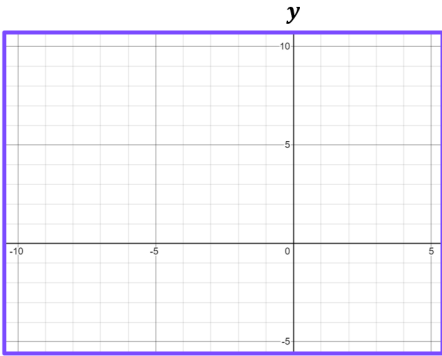
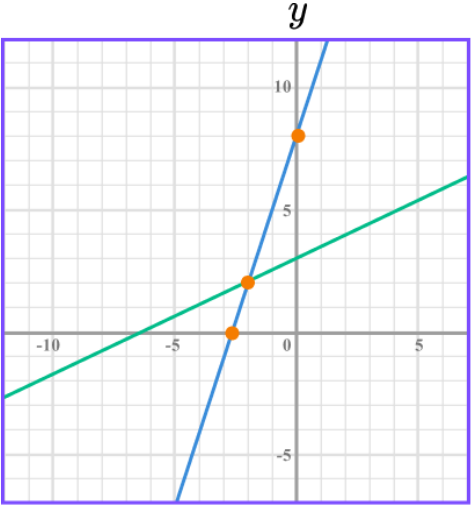
## Solving Simultaneous Equations Graphically - Answers

2)	<p><b>a)</b> Hannah and Amber solved the simultaneous equations below graphically and came up with the two answers below. Who is correct?</p> <p><i>Solve the pair of simultaneous equations below graphically:</i></p> $y = 2x + 1$ $y = \frac{1}{2}x - 2$ <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Hannah</p>  <p>Answer: <math>(-2, -3)</math></p> </div> <div style="text-align: center;"> <p>Amber</p>  <p>Answer: <math>(-1.2, -1.4)</math></p> </div> </div> <p><b>b)</b> What mistake was made by the other girl?</p>	<p><b>a)</b> Hannah is correct.</p> <p><b>b)</b> Amber has plotted the wrong gradient <math>-\frac{1}{2}</math>, instead of <math>\frac{1}{2}</math></p>
3)	<p><b>a)</b> Create a pair of simultaneous equations which has 2 solutions.</p> <p><b>b)</b> Create a pair of simultaneous equations which have no solutions.</p>	<p><b>a)</b> Answers may vary - 1 linear and 1 non-linear E.g.  <math>y = x^2</math>  <math>y = x + 6</math></p> <p><b>b)</b> Answers may vary          – 2 parallel linear equations           E.g.  <math>y = 2x + 3</math>  <math>y = 2x - 4</math></p>

# Solving Simultaneous Equations Graphically - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	<p>The graphs with the equations of the straight lines</p> $y = 2x - 5$ $3y + 3x = 12$ <p>have been drawn on the grid on the right.</p>  <p>Use the graphs to solve the simultaneous equations.</p>	$x = 3$ $y = 1$	<b>(1)</b> <b>(1)</b>
2)	<p>The graphs with the equations</p> $y = x^2 + 2$ $2y + 2x = 8$ <p>has been drawn on the grid on the right.</p>  <p>Use the graphs to solve the simultaneous equations.</p>	$x = -2, y = 6$ $x = 1, y = 3$	<b>(1)</b> <b>(1)</b>

## Solving Simultaneous Equations Graphically - Mark Scheme

<b>3)</b>	<p>By drawing the graphs of:</p> $2y + 6x = 9$ $y = 2x - 3$ <p>Solve the simultaneous equations:</p> $2y + 6x = 9$ $y = 2x - 3$ 	<p><math>2y + 6x - 9 = 0</math> plotted correctly</p> <p><math>y = 2x - 3</math> plotted correctly</p> <p><math>x = 1.5, y = 0</math></p> 	<p><b>(1)</b></p> <p><b>(1)</b></p> <p><b>(1)</b></p>
<b>4)</b>	<p>By drawing the graphs of:</p> $2y = x + 6$ $y = 3x + 8$ <p>Solve the simultaneous equations:</p> $2y = x + 6$ $y = 3x + 8$ 	<p><math>2y = x + 6</math> plotted correctly</p> <p><math>y = 3x + 8</math> plotted correctly</p> <p><math>x = -2, y = 2</math></p> 	<p><b>(1)</b></p> <p><b>(1)</b></p> <p><b>(1)</b></p>

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