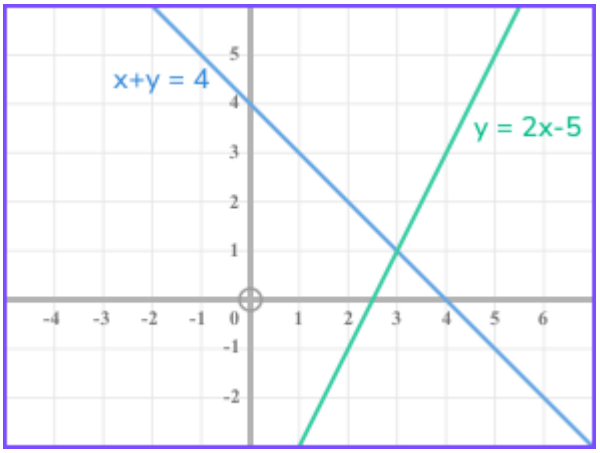
Simultaneous Equations - Worksheet

1. The following graph shows the straight lines x + y = 4 and y = 2x - 5.

Use the graph to find the coordinates of the point which satisfies both of the equations

x + y = 4
y = 2x - 5



a) x = 1, y = 3

b) x = 4, y = 4

c) x = 3, y = 1

d) x = 4, y = 2.5

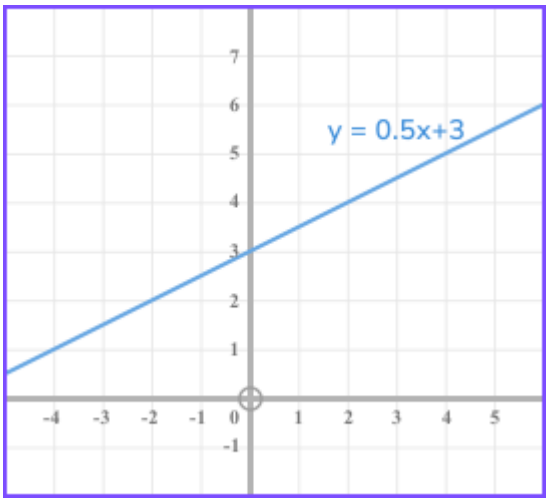
Simultaneous Equations - Worksheet

2. The following graph shows the line y = 0.5x + 3.

Use the graph to solve the simultaneous equations

y = 0.5x + 3

y = 4



a) x = 2, y = 4

b) x = 3, y = -6

c) x = 4, y = 5

d) x = 0, y = 0

Simultaneous Equations - Worksheet

3. The difference between two numbers, m and n, is 6. The sum of the two numbers is 22.

For their difference, we can write the equation

m - n = 6

Write an equation for their sum.

Solve the pair of simultaneous equations to find the values of m and n.

a) m = 10, n = 4

b) m = 14, n = 8

c) m = 10, n = 12

d) m = 28, n = 22

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4. The cost of 2 apples and 3 bananas is 90p. The cost of 3 apples and 1 banana is 65p. Find the cost of 1 apple and 1 banana.

a) 35p

b) 45p

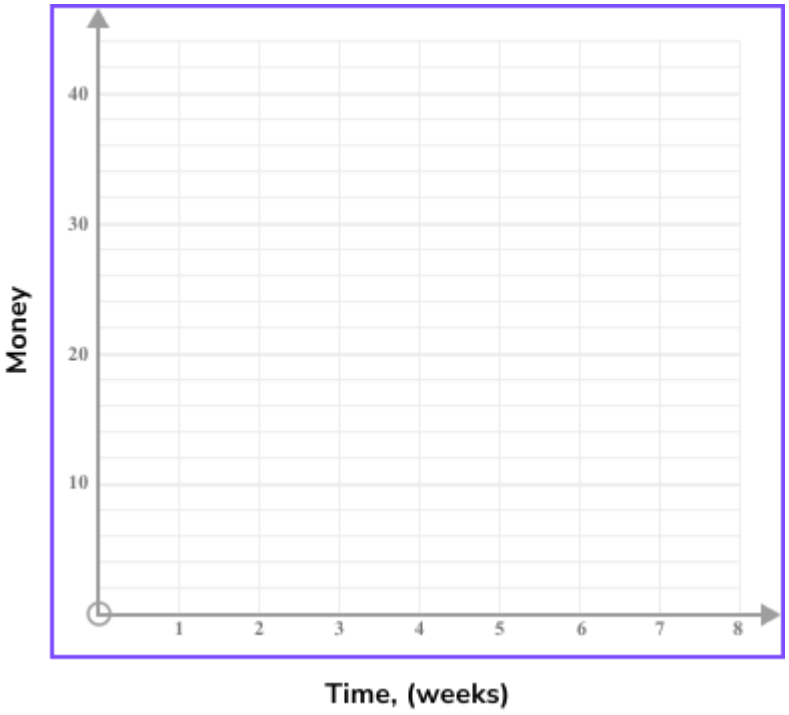
c) 40p

d) 30p

Simultaneous Equations - Worksheet

5. Lucy has £15 pocket money saved up. Lucy gets another £2 each week.

Plot a line on the axis below to show how Lucy's money will increase over time.



Charlie has no money saved. Charlie gets £5 pocket money each week.

Plot a line showing Charlie's money on the same set of axes.

Use your lines to determine how many weeks it will be until Lucy and Charlie have the same amount of money and the amount they will each have at that time.

a) 8 weeks £40

b) 3 weeks, £21

c) 5 weeks, £20

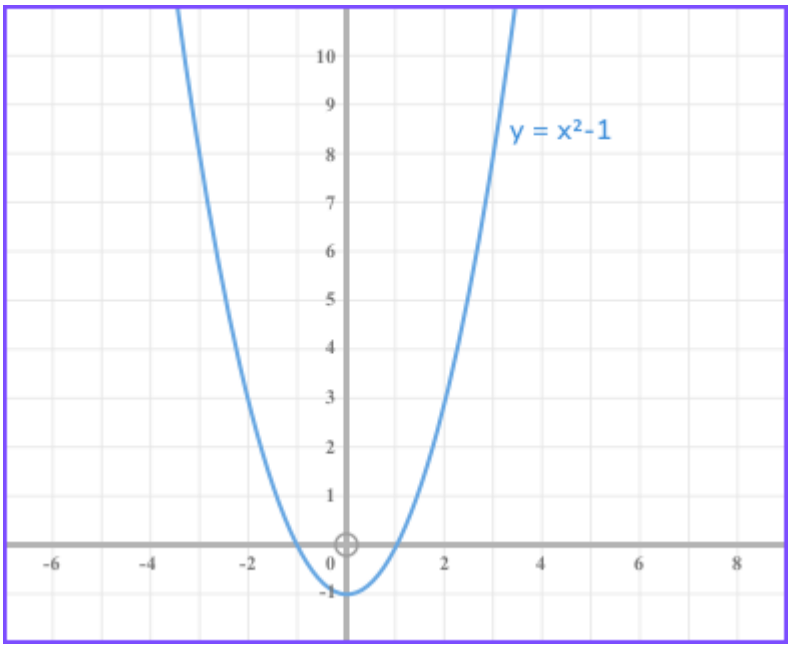
d) 5 weeks, £25

Simultaneous Equations - Worksheet

6. The following diagram shows the line $y = x^2 - 1$.

On the same set of axes, draw the graph of $y = 3x - 1$.

Use your graph to find the two solutions to the simultaneous equations $y = x^2 - 1$ and $y = 3x - 1$.



a) x = 2 and y = 3 or x = -2 and y = 3

b) x = 0 and y = -1 or x = 3 and y = 8

c) x = 3 and y = 8

d) 3 = 0 and y = 0 or y = 3 and y = 9

Simultaneous Equations - Worksheet

7. Fiona has a box of chocolates containing 12 identical chocolates. The total weight of the box and the chocolates is 294g. Fiona eats 7 of the chocolates and the total weight of the box and chocolates decreases to 210g.

What is the weight of the box?

a) 12g

b) 150g

c) 84g

d) 126g

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8. 600 tickets to a village fair were sold. Adult tickets were sold for £5 and child tickets were sold for £3. A total of £2500 was made from ticket sales. Work out the number of adult tickets and the number of child tickets sold.

a) 300 adult tickets, 200 child tickets

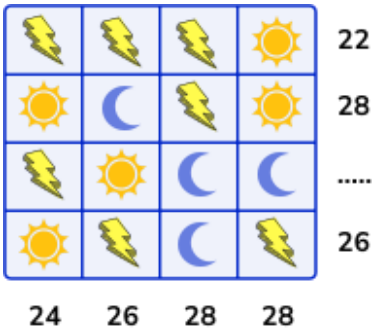
b) 450 adult tickets, 150 child tickets

c) 200 adult tickets, 500 child tickets

d) 350 adult tickets, 250 child tickets

Simultaneous Equations - Worksheet

9. Write and solve two simultaneous equations based on the puzzle below. Use your solution to find the value of each symbol in the puzzle and hence find the missing total.



a) 24

b) 28

c) 30

d) 26

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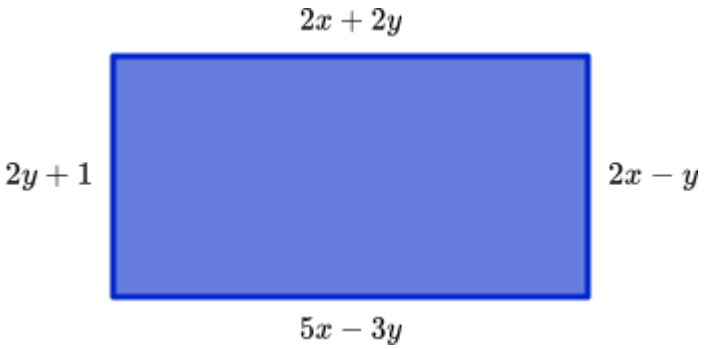
10. Find the perimeter of the following rectangle



a) 46

b) 16

c) 5

d) 20

Simultaneous Equations - Worksheet

11. The area of a rectangle is 48cm^2. The perimeter of the rectangle is 32cm. Write two equations using this information and solve them simultaneously to find the length and width of the rectangle.

a) Length 12cm, width 4cm

b) Length 24cm, width 2cm

c) Length 6cm, width 10cm

d) Length 8cm, width 6cm

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12. The sum of two numbers is 16. The difference between the squares of the two numbers is 32. Find the difference between the two numbers.

a) 2

b) 7

c) 9

d) $\sqrt{32}$

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13. A circle has equation $x^2 + y^2 = 25$ and a line has equation $y = 3x - 5$. The circle and the line intersect at the points A and B. Find the coordinates of the points A and B.

a) (0, -5) and (3, 4)

b) (0, 5) and (3, 4)

c) (3, 4) and (10, 25)

d) (-3, -4) and (0, -5)

Simultaneous Equations - Worksheet

14. The lines $y = 2x^2 - 13x + 15$ and $x - y + 3 = 0$ intersect at the points P and Q. Find the length of the line PQ.

a) 61

b) 11

c) $5\sqrt{2}$ - answer

d) $\sqrt{10}$

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15. Solve the simultaneous equations

$3x^2 + 2xy + y^2 = 89$
$2x + y = 11$

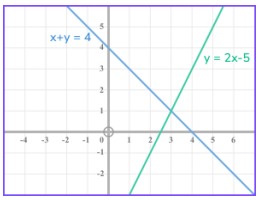
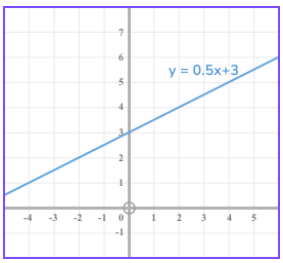
a) x = 2 and y = 7 or x = 5 and y = 1

b) x = $\frac{3}{2}$ and y = 8 or x = 2 and x = 7

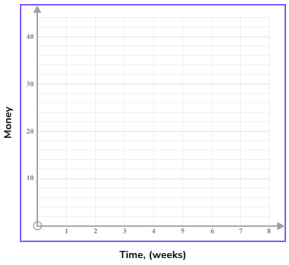
c) x = 1 and y = 9 or x = 5 and y = 1

d) x = $\frac{16}{3}$ and y = $\frac{1}{3}$ or x = 2 and y = 7

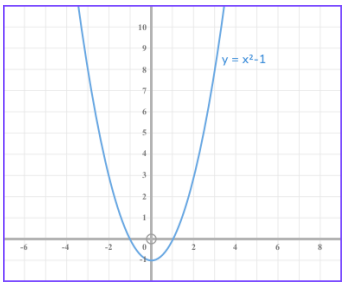
Simultaneous Equations - Answers

	Question	Answer
1.	**The following graph shows the straight lines x + y = 4 and y = 2x - 5.** **Use the graph to find the coordinates of the point which satisfies both of the equations** **x + y = 4** **y = 2x - 5**  **a)** x = 1, y = 3 **b)** x = 4, y = 4 **c)** x = 3, y = 1 **d)** x = 4, y = 2.5	**c)** x = 3, y = 1
2.	**The following graph shows the line y = 0.5x + 3.** **Use the graph to solve the simultaneous equations** **y = 0.5x + 3** **y = 4**  **a)** x = 2, y = 4 **b)** x = 3, y = -6 **c)** x = 4, y = 5 **d)** x = 0, y = 0	**a)** x = 2, y = 4

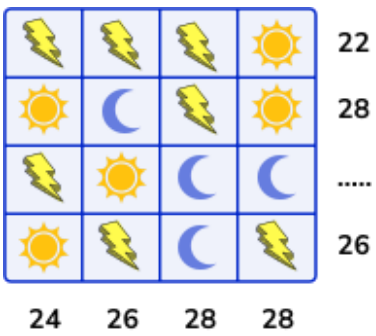
Simultaneous Equations - Answers

3.	**The difference between two numbers, m and n, is 6. The sum of the two numbers is 22.** **For their difference, we can write the equation** **m - n = 6** **Write an equation for their sum.** **Solve the pair of simultaneous equations to find the values of m and n.** **a)** m = 10, n = 4 **b)** m = 14, n = 8 **c)** m = 10, n = 12 **d)** m = 28, n = 22	**b)** m = 14, n = 8
4.	**The cost of 2 apples and 3 bananas is 90p. The cost of 3 apples and 1 banana is 65p. Find the cost of 1 apple and 1 banana.** **a)** 35p **b)** 45p **c)** 40p **d)** 30p	**a)** 35p
5.	**Lucy has £15 pocket money saved up.** **Lucy gets another £2 each week.** **Plot a line on the axis below to show how Lucy's money will increase over time.**  	**d)** 5 weeks, £25

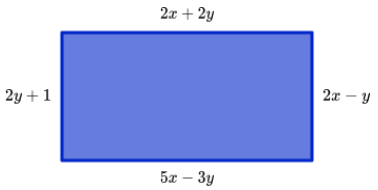
Simultaneous Equations - Answers

	Charlie has no money saved. Charlie gets £5 pocket money each week. **Plot a line showing Charlie's money on the same set of axes.** **Use your lines to determine how many weeks it will be until Lucy and Charlie have the same amount of money and the amount they will each have at that time.** **a)** 8 weeks £40 **b)** 3 weeks, £21 **c)** 5 weeks, £20 **d)** 5 weeks, £25	
6.	**The following diagram shows the line $y = x^2 - 1$.** **On the same set of axes, draw the graph of $y = 3x - 1$.** **Use your graph to find the two solutions to the simultaneous equations $y = x^2 - 1$ and $y = 3x - 1$.**  **a)** x = 2 and y = 3 or x = -2 and y = 3 **b)** x = 0 and y = -1 or x = 3 and y = 8 **c)** x = 3 and y = 8 **d)** 3 = 0 and y = 0 or y = 3 and y = 9	**b)** x = 0 and y = -1 or x = 3 and y = 8

Simultaneous Equations - Answers

7.	**Fiona has a box of chocolates containing 12 identical chocolates. The total weight of the box and the chocolates is 294g. Fiona eats 7 of the chocolates and the total weight of the box and chocolates decreases to 210g.** **What is the weight of the box?** **a)** 12g **b)** 150g **c)** 84g **d)** 126g	**b)** 150g
8.	**600 tickets to a village fair were sold. Adult tickets were sold for £5 and child tickets were sold for £3. A total of £2500 was made from ticket sales. Work out the number of adult tickets and the number of child tickets sold.** **a)** 300 adult tickets, 200 child tickets **b)** 450 adult tickets, 150 child tickets **c)** 200 adult tickets, 500 child tickets **d)** 350 adult tickets, 250 child tickets	**d)** 350 adult tickets, 250 child tickets
9.	**Write and solve two simultaneous equations based on the puzzle below. Use your solution to find the value of each symbol in the puzzle and hence find the missing total.**  	**c)** 30

Simultaneous Equations - Answers

	a) 24 **b)** 28 **c)** 30 **d)** 26	
10.	**Find the perimeter of the following rectangle**  **a)** 46 **b)** 16 **c)** 5 **d)** 20	**a)** 46
11.	**The area of a rectangle is 48cm^2. The perimeter of the rectangle is 32cm. Write two equations using this information and solve them simultaneously to find the length and width of the rectangle.** **a)** Length 12cm, width 4cm **b)** Length 24cm, width 2cm **c)** Length 6cm, width 10cm **d)** Length 8cm, width 6cm	**a)** Length 12cm, width 4cm
12.	**The sum of two numbers is 16. The difference between the squares of the two numbers is 32. Find the difference between the two numbers.** **a)** 2 **b)** 7 **c)** 9 **d)** $\sqrt{32}$	**a)** 2

Simultaneous Equations - Answers

13.	**A circle has equation $x^2 + y^2 = 25$ and a line has equation $y = 3x - 5$. The circle and the line intersect at the points A and B. Find the coordinates of the points A and B.** **a)** (0, -5) and (3, 4) **b)** (0, 5) and (3, 4) **c)** (3, 4) and (10, 25) **d)** (-3, -4) and (0, -5)	**a)** (0, -5) and (3, 4)
14.	**The lines $y = 2x^2 - 13x + 15$ and $x - y + 3 = 0$ intersect at the points P and Q. Find the length of the line PQ.** **a)** 61 **b)** 11 **c)** $5\sqrt{2}$ **d)** $\sqrt{10}$	**c)** $5\sqrt{2}$
15.	**Solve the simultaneous equations** $3x^2 + 2xy + y^2 = 89$ $2x + y = 11$ **a)** x = 2 and y = 7 or x = 5 and y = 1 **b)** x = $\frac{3}{2}$ and y = 8 or x = 2 and x = 7 **c)** x = 1 and y = 9 or x = 5 and y = 1 **d)** x = $\frac{16}{3}$ and y = $\frac{1}{3}$ or x = 2 and y = 7	**d)** x = $\frac{16}{3}$ and y = $\frac{1}{3}$ or x = 2 and y = 7