"Full Coverage": Simultaneous Equations

This worksheet is designed to cover one question of each type seen in past papers, for each GCSE Higher Tier topic. This worksheet was automatically generated by the DrFrostMaths Homework Platform: students can practice this set of questions interactively by going to www.drfrostmaths.com/homework, logging on, *Practise → Past Papers/Worksheets* (or *Library → Past/Past Papers* for teachers), and using the 'Revision' tab.

Question 1

Categorisation: Solve simultaneous equations where the coefficients of one of the variables are the same.

[Edexcel IGCSE May2012-4H Q7 Edited]

Solve the simultaneous equations

$$3a + 2b = 1$$

$$a + 2b = 5$$

.....

Question 2

Categorisation: As above, but where one coefficient is positive and the other negative.

[Edexcel IGCSE Jan2013-3H Q5 Edited]

Solve the simultaneous equations

$$y - 2x = 6$$

$$y + 2x = 0$$

.....

Question 3

Categorisation: Solve linear simultaneous equations where the coefficients are different, and both second coefficients are negative.

[Edexcel GCSE(9-1) Mock Set 3 Autumn 2017 1F Q24, 1H Q5]

Solve the simultaneous equations

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

$$2x - 4y = 2$$

.....

Question 4

Categorisation: As above, but where one coefficient is positive, the other negative.

[Edexcel IGCSE May2014-4H Q15 Edited]

Solve the simultaneous equations

$$3x + 2y = 7$$

$$4x - 3y = 15$$

.....

Question 5

Categorisation: Appreciate that the solution to two linear simultaneous equations gives the point of intersection of two straight lines.

[Edexcel IGCSE May2013(R)-4H Q13b Edited]

P is the point of intersection of the lines with equations $5x + 3y = 9$ and $7x - 2y = 25$

Write down the coordinates of *P*.

.....

Question 6

Categorisation: Form (and solve) simultaneous equations from written information.

[Edexcel GCSE June2007-5H Q2]

Kate buys 2 lollies and 5 choc ices for £6.50

Pete buys 2 lollies and 3 choc ices for £4.30

Work out the cost of one lolly.

Give your answer in pence.

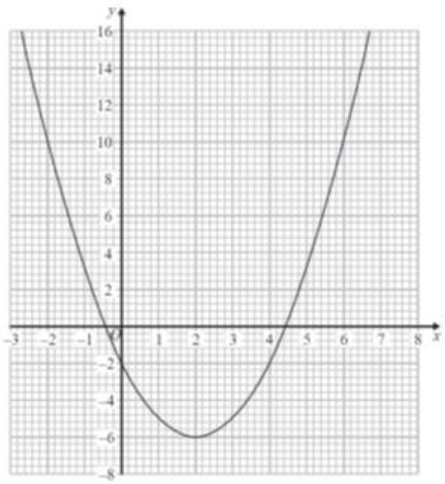
..... p

Question 7

Categorisation: Estimate the solution(s) to simultaneous equations by plotting the lines and finding the point of intersection.

[Edexcel GCSE Jun2016-1H Q19b]

The diagram shows the graph of $y = x^2 - 4x - 2$



Use the graph to find estimates for the values of *x* that satisfy the simultaneous equations

$y = x^2 - 4x - 2$, $x + y = 6$

$x =$ .....

$x =$ .....

Question 8

Categorisation: Solve quadratic simultaneous equations where y or x is already the subject of the linear equation.

[Edexcel IGCSE June2011-3H Q22]

Solve the simultaneous equations

$$y = 2x - 3$$

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

.....

Question 9

Categorisation: As above, but where prior rearrangement of the linear equation is required.

[Edexcel GCSE(9-1) Mock Set 1 Autumn 2016 - 1H Q20]

Solve algebraically

$x^2 + y^2 = 18$
$x - 2y = -3$

.....

Question 10

Categorisation: Solve quadratic simultaneous equations where use of the quadratic formula is required.

[Edexcel GCSE June2013-2H Q25]

Solve the simultaneous equations

$$x^2 + y^2 = 9$$

$$x + y = 2$$

Give your answers correct to **2 decimal places**.

.....

Question 11

Categorisation: Solve quadratic simultaneous equations where y is the subject of both equations.

[Edexcel IGCSE May2012-3H Q21 Edited]

Solve the simultaneous equations

$$y = 2x^2$$

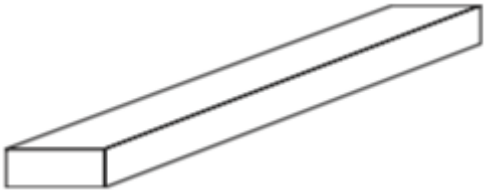
$$y = 20 - 3x$$

.....

Question 12

Categorisation: Form and solve (non-linear) simultaneous equations in a spatial context.

[Edexcel GCSE(9-1) Mock Set 3 Autumn 2017 2H Q22]



A solid cuboid has a volume of 40 cm^3.
The cuboid has a total surface area of 100 cm^2.
One edge of the cuboid has length 2 cm.

Find the length of a diagonal of the cuboid.
Give your answer correct to 3 significant figures.

..... cm

Answers

Question 1

$a = -2$, $b = 3.5$

Question 2

$x = -1.5$, $y = 3$

Question 3

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

Question 4

$x = 3$, $y = -1$

Question 5

$(3, -2)$

Question 6

50 p

Question 7

any value in the range $x =$ -1.8 to
$x =$ -1.6 and any value in the range
$x =$ 4.6 to $x =$ 4.8

Question 8

$x = 1$, $y = -1$ or $x = \frac{7}{5}$, $y = -\frac{1}{5}$

Question 9

$x = 3$, $y = 3$ or $x = -4.2$, $y = -0.6$

Question 10

$x = 2.87$, $y = -0.87$ or $x = -0.87$,
$y = 2.87$

Question 11

$x = \frac{5}{2}$, $y = \frac{25}{2}$ or $x = -4$, $y = 32$

Question 12

13.7 cm