THIRD SPACE LEARNING

GCSE Exam Questions

Simultaneous Equations | Algebra

GCSE Exam Questions: Simultaneous Equations

1) Solve the simultaneous equations:

$3a + b = -4$

$3a - 4b = 6$

(4 marks)

2) Solve the simultaneous equations:

$x + 3y = 12$

$5x - y = 4$

(4 marks)

3) **(a)** Solve the simultaneous equations:

$4x + y = 25$

$x - 3y = 16$

(4)

(b) Hence, or otherwise, find the coordinate of the intersections between the following lines:

$4x + y = 25$

$x - 3y = 16$

(1)

(5 marks)

GCSE Exam Questions: Simultaneous Equations

4) Find the point of intersections between the following lines:

$3y - 2x = -3$

$2y + x = 12$

(4 marks)

5) Solve the following simultaneous equations

$4x + 3y - 5 = 0$

$2x - 5y - 3 = 6$

(4 marks)

6) The cost of a plumber consists of two parts: the fixed costs and the hourly rate.
One piece of work takes the plumber 5 hours and costs £155.
Another piece of work takes the plumber 8 hours and costs £230.

(a) i) What is the hourly rate of the plumber?

(3)

ii) What is the fixed cost for the plumber?

(2)

(b) How much would the plumber charge for 2 hours of work?

(2)

(7 marks)

GCSE Exam Questions: Simultaneous Equations Answers

	Question	Answer	Marks
1)	Solve the simultaneous equations $3a + b = -4$ $3a - 4b = 6$	$5b = -10$ $b = -2$ One unknown substituted back into either equation $a = -\frac{2}{3}$	**(1)** **(1)** **(1)** **(1)**
2)	Solve the simultaneous equations $x + 3y = 12$ $5x - y = 4$	Correct attempt to multiply either equation to equate coefficients E.g $5x + 15y = 60$ or $x + 3y = 12$ $5x - y = 4$ $15x - 3y = 12$ Correct attempt to find y or x ($16y = 56$ or $16x = 24$ seen) One unknown substituted back into either equation $y = \frac{7}{2}$ **oe and** $x = \frac{3}{2}$ **oe**	**(1)** **(1)** **(1)** **(1)**
3) (a)	Solve the simultaneous equations $4x + y = 25$ $x - 3y = 16$	Correct attempt to multiply either equation to equate coefficients E.g $12x + 3y = 75$ or $4x + y = 25$ $x - 3y = 16$ $4x - 12y = 64$ Correct attempt to find y or x ($13x = 91$ or $13y = -39$ seen) One unknown substituted back into either equation $x = 7$ **and** $y = -3$	**(1)** **(1)** **(1)** **(1)**
(b)	Hence, or otherwise, find the coordinate of intersections between the following lines: $4x + y = 25$ $x - 3y = 16$	(7 , -3) must be written as a coordinate	**(1)**

GCSE Exam Questions: Simultaneous Equations Answers

	Question	Answer	Marks
4)	Find the point of intersections between the following lines: $3y - 2x = -3$ $2y + x = 12$	Correct attempt to multiply either equation to equate coefficients E.g $3y - 2x = -3$ or $6y - 4x = -6$ $4y + 2x = 24$ $6y + 3x = 36$ Correct attempt to find y or x e.g. $7y = 21$ seen. One unknown substituted back into either equation $x = 6$ **and** $y = 3$ (6 , 3) as coordinate	**(1)** **(1)** **(1)** **(1)** **(1)**
5)	Solve the following simultaneous equations $4x + 3y - 5 = 0$ $2x - 5y - 3 = 6$	Attempt to rearrange the equations or correct attempt to multiply either equation to equate coefficients Finding value of either unknown correctly One unknown substituted back into either equation $x = 2$ **and** $y = -1$	**(1)** **(1)** **(1)** **(1)**
6) **(a) i)**	The cost of a plumber consists of two parts: the fixed costs and the hourly rate. One piece of work takes the plumber 5 hours and costs £155. Another piece of work takes the plumber 8 hours and costs £230 What is the hourly rate of the plumber?	Attempt to generate two linear equations: $F + 5h = 155$ and $F + 8h = 230$ Correct attempt to find h e.g. $3h = 75$ seen. $h = 25$	**(1)** **(1)** **(1)**
ii)	ii) What is the fixed cost for the plumber?	Correct substitution of *their h* into one of *their* linear equations $F = 30$	**(1)** **(1)**
(b)	How much would the plumber charge for 2 hours of work?	Correct evidence of substituting "*their F*" + 2 × "*their h*" **ft or** 30 + 2 × 25 **oe** (£)80	**(1)** **(1)**

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