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PURE MATH

ALGEBRA AND FUNCTION

Level & Board	EDEXCEL (A-LEVEL)
TOPIC:	SIMULTANEOUS
PAPER TYPE:	SOLUTION 3
TOTAL QUESTIONS	8
TOTAL MARKS	38

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Given $y = 2x \rightarrow (i)$ $y = x + 10 \rightarrow (ii)$ We take the equation and substitute 2x for y 2x = x + 10x = 10put in (ii) y = 10 + 10y = 20So, $s.s = \{10, 20\}$ Q.2 As $5x - 2y = 31 \rightarrow (i)$ $4x + 3y = 11 \rightarrow (ii)$ $(i) \times 3$ $(ii) \times 2$ 15x - 6y = 938x + 6y = 22Adding Both equation 23x = 115x = 5 put in (ii) 20 + 3y = 113y = -9y = -3So, the solution is x = 5, y = -3

Q.1

Q.3

As $7x - 2y = 45 \rightarrow (i)$ $5x + y = 37 \rightarrow (ii)$ $(ii) \times 2$ $10x + 2y = 74 \rightarrow (iii)$ Adding (i) and (iii) 7x - 2y = 4510x + 2y = 7417x = 119*x* = 7 Put in (ii) 5(7) + y = 37y = 37 - 35y = 2Hence, $s.s = \{x = 7, y = 2\}$

Q.4

Let

 $2x + y = 5 \rightarrow (ii)$ (ii) × 2 $4x + 2y = 10 \rightarrow (iii)$ Adding (i) and (iii) 5x = 18 $x = \frac{18}{5} \quad \text{put in (ii)}$ $2\left(\frac{18}{5}\right) + y = 5$ $y = 5 - \frac{36}{5}$ $y = \frac{25 - 36}{5}$ $y = \frac{-11}{5}$ Hence, $s.s = \left\{\frac{18}{5}, \frac{-11}{5}\right\}$

 $x - 2y = 8 \rightarrow (i)$

$$x + 2y = -4 \rightarrow (i)$$

$$2x + 5y = 1 \rightarrow (ii)$$
(i) × 2
$$2x + 4y = -8 \rightarrow (iii)$$
Sub (ii) and (iii)
$$2x + 5y = 1$$

$$-(2x + 4y = -8)$$

$$y = 9$$
Put in (i)
$$x + 2(9) = -4$$

$$x + 18 = -4$$

$$x = -4 - 18$$

$$x = -22$$
So,
$$s.s = \{-22,9\}$$

Q.6

Let

$$2x + y = 5 \rightarrow (i)$$

$$x + 3y = 5 \rightarrow (ii)$$
(i) × 3, we have

$$6x + 3y = 15 \rightarrow (iii)$$
Sub (ii) and (iii)

$$-5x = -10$$

$$x = 2$$
Put in (ii)

$$2 + 3y = 5$$

$$y = 1$$
So,

$$s.s = \{2,1\}$$

 $3x + y = 18 \rightarrow (i)$ Let $4x + 2y = 21 \rightarrow (ii)$ $(i) \times 2$ 6x + 2y = 36Subtract (ii) and (iii), we get -2x = -15 \Rightarrow $\implies x = \frac{15}{2}$ $\Rightarrow x = 7.5$ Substitute x = 7.5 in (i) 3(7.5) + y = 18y = -45Hence

 $s.s = \{7, 5, -4.5\}$

 $x + y = 7 \rightarrow (i)$

Q.8

As

$$x + 2y = 11 \rightarrow (ii)$$

Subtract (i) and (ii), we get
$$\Rightarrow -y = -4$$
$$\Rightarrow y = 4$$

Put in (i)
$$\Rightarrow x + 4 = 7$$
$$\Rightarrow x = 7 - 4$$
$$\Rightarrow x = 3$$

Hence,

{3,4}

$$s.s = \{3, 4\}$$

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