Exercise 3C

Question 1:
x + 2y + 1 = 0 ---(1)
2x - 3y - 12 = 0 ---(2)
By cross multiplication, we have

$$\therefore \frac{x}{[2\times(-12)-1\times(-3)]} = \frac{y}{[1\times 2-1\times(-12)]} = \frac{1}{[1\times(-3)-2\times 2]}$$

$$\Rightarrow \frac{x}{(-24+3)} = \frac{y}{[2+12]} = \frac{1}{(-3-4)}$$

$$\Rightarrow \frac{x}{-21} = \frac{1}{-7}, \frac{y}{14} = \frac{1}{-7}$$

$$\Rightarrow x = \frac{-21}{-7} = 3,\ y = \frac{14}{-7} = -2$$

Hence, x = 3 and y = -2 is the solution

Question 2:
2x + 5y - 1 = 0 ---(1)
2x + 3y - 3 = 0 ---(2)
By cross multiplication we have

$$\therefore \frac{x}{5\times(-3)-3\times(-1)} = \frac{y}{(-1)\times 2-(-3)\times 2} = \frac{1}{2\times 3-2\times 5}$$

$$\Rightarrow \frac{x}{-15+3} = \frac{y}{-2+6} = \frac{1}{6-10}$$

$$\Rightarrow \frac{x}{-12} = \frac{y}{4} = \frac{1}{-4}$$

$$\Rightarrow \frac{x}{-12} = \frac{1}{-4} \Rightarrow x = \frac{-12}{-4} = 3$$

$$\Rightarrow \frac{y}{4} = \frac{1}{-4} \Rightarrow y = \frac{4}{-4} = -1$$

Hence the solution is x = 3, y = -1

Question 3:
3x - 2y + 3 = 0
4x + 3y - 47 = 0
By cross multiplication we have

$$\therefore \frac{x}{[(-2)\times(-47)-(3\times 3)]} = \frac{y}{[(3\times 4)-(-47)\times 3]} = \frac{1}{[3\times 3-(-2)\times 4]}$$

$$\Rightarrow \frac{x}{(94-9)} = \frac{y}{(12+141)} = \frac{1}{(9+8)}$$

$$\Rightarrow \frac{x}{85} = \frac{y}{153} = \frac{1}{17}$$

$$\Rightarrow \frac{x}{85} = \frac{1}{17}, \frac{y}{153} = \frac{1}{17}$$

$$17x = 85,\ 17y = 153$$

$$\Rightarrow x = \frac{85}{17}, y = \frac{153}{17}$$

Hence the solution is x = 5, y = 9

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