RS Aggarwal Solutions for Class 10 Maths Chapter 3 Exercise 3.3: The academic team of Physics Wallah has produced a comprehensive solution for Chapter 3 of the textbook RS Aggarwal Class 10 Linear Equations in Two Variables. The RS Aggarwal class 10 solution for Chapter 3 Linear Equations in Two Variables Exercise-3C is uploaded for reference only; do not copy the solutions. Before going through the solution of Chapter 3 Linear Equations in Two Variables Exercise-3C, one must have a clear understanding of Chapter 3 Linear Equations in Two Variables.

Read the theory of Chapter 3 Linear Equations in Two Variables and then try to solve all numerical of exercise-3C. It is strongly advised that students in class 10 utilize the NCERT textbook to solve numerical problems and refer to the NCERT solutions for maths in class 10.

RS Aggarwal Solutions for Class 10 Maths Chapter 3 Exercise 3.3 Overview

RS Aggarwal Solutions for Class 10 Maths Chapter 3 Exercise 3.3 focuses on linear equations, offering a structured approach to solving various problems. This exercise covers topics such as solving equations with variables on both sides, applications of linear equations in practical scenarios, and understanding the steps involved in finding solutions.

Each problem is addressed with clear, step-by-step explanations that help students grasp the underlying concepts effectively. The solutions also provide ample practice opportunities, ranging from basic to more complex equations, ensuring comprehensive preparation for exams. Overall, these solutions are invaluable for students looking to strengthen their understanding of linear equations and enhance their problem-solving skills in mathematics.

RS Aggarwal Solutions for Class 10 Maths Chapter 3 Exercise 3.3

Below we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 3 Exercise 3.3 for the ease of the students –

Question 1.

Solution:

Given: $3x + 5y = 12$ – eq 1

$5x + 3y = 4$ – eq 2

Here,

$a_1 = 3, b_1 = 5, c_1 = -12$

$a_2 = 5, b_2 = 3, c_2 = -4$

$\frac{a1}{a2} = \frac{3}{5}, \frac{b1}{b2} = \frac{5}{3}$

Here, $\frac{a1}{a2} \neq \frac{b1}{b2}$

∴ given system of equations have unique solutions.

Now,

In – eq 1

$3x = 12 - 5y$

$X = \frac{12-5y}{3}$

Substitute x in – eq 2

we get,

$5\times\left(\frac{12-5y}{3}\right) + 3y = 4$

$\frac{60-25y+9y}{3} = 4$

Question 2.

Solution:

Given: $2x - 3y = 17$ – eq 1

$4x + y = 13$ – eq 2

Here,

$a_1 = 2$, $b_1 = -3$, $c_1 = 17$

$a_2 = 4$, $b_2 = 1$, $c_2 = 13$

$\frac{a1}{a2} = \frac{1}{2}$, $\frac{b1}{b2} = \frac{-3}{1}$

Here, $\frac{a1}{a2} \neq \frac{b1}{b2}$

∴ Given system of equations have unique solutions.

Now,

In – eq 1

$2x = 17 + 3y$

$X = \frac{17 + 3y}{2}$

Substitute x in – eq 2

we get,

$4\times\left(\frac{17+3y}{2}\right) + y = 13$

$\frac{68 + 12y + 2y}{2} = 13$

$68 + 12y + 2y = 26$

$68 + 14y = 26$

$14y = 26 - 68$

$14y = -42$

$y = \frac{-42}{14} = -3$

∴ $y = -3$

Question 3

Solution:

Given: $\frac{x}{3}+\frac{y}{2}=3 \Rightarrow 2x + 3y = 18$ – eq 1

$x - 2y = 2$ – eq 2

Here,

$a_1 = 2, b_1 = 3, c_1 = 18$

$a_2 = 1, b_2 = -2, c_2 = 2$

$\frac{a1}{a2} = \frac{2}{1}, \frac{b1}{b2} = \frac{-3}{2}$

Here, $\frac{a1}{a2} \neq \frac{b1}{b2}$

∴ Given system of equations have unique solutions.

Now,

In – eq 1

$2x = 18 - 3y$

$X = \frac{18 - 3y}{2}$

Substitute x in – eq 2

we get,

$\left(\frac{18 - 3y}{2}\right) - 2y = 2$

$\frac{18 - 3y - 4y}{2} = 2$

$18 - 3y - 4y = 4$

$18 - 7y = 4$

$7y = 18 - 4$

$7y = 14$

$y = \frac{14}{7} = 2$

$\therefore y = 2$

Now, substitute y in – eq 1

We get,

$x - 2\times(2) = 2$

$x - 4 = 2$

$x = 2 + 4$

$x = 6$

$\therefore x = 6$

$\therefore x = 6$ and $y = 2$

Question 4.

Solution:

Given: $2x + 3y - 5 = 0$ – eq 1

$kx - 6y - 8 = 0$ – eq 2

Here,

$a_1 = 2, b_1 = 3, c_1 = -5$

$a_2 = k, b_2 = -6, c_2 = -8$

Given systems of equations has a unique solution

$\therefore \frac{a1}{a2} \neq \frac{b1}{b2}$

$\frac{2}{k} \neq \frac{3}{-6}$

$\frac{2}{k} \neq \frac{-1}{2}$

$2 \neq \frac{-k}{2}$

$k \neq 2 \times 2 = -4$

$\therefore k \neq -4$

Question 5.

Solution:

Given: $x - ky = 2$ – eq 1

$3x + 2y + 5 = 0$ – eq 2

Here,

$a_1 = 1$, $b_1 = -k$, $c_1 = -2$

$a_2 = 3$, $b_2 = 2$, $c_2 = 5$

Given systems of equations has a unique solution

$\therefore \frac{a1}{a2} \neq \frac{b1}{b2}$

$\frac{1}{3} \neq \frac{-k}{2}$

$2 \neq -3k$

$-3k \neq 2$

$k \neq \frac{-2}{3}$

Question 6.

Solution:

Given: 5x - 7y - 5 = 0 – eq 1

2x + ky - 1 = 0 – eq 2

Here,

$a_1 = 5$, $b_1 = -7$, $c_1 = -5$

$a_2 = 2$, $b_2 = k$, $c_2 = -1$

Given systems of equations has a unique solution

$\therefore \frac{a1}{a2} \neq \frac{b1}{b2}$

$\frac{5}{2} \neq \frac{-7}{k}$

$5k \neq (-7) \times 2$

$5k \neq -14$

$k \neq \frac{-14}{5}$

$\therefore k \neq \frac{-14}{5}$

Question 7.

Solution:

Given: 4x + ky + 8 = 0 – eq 1

x + y + 1 = 0 – eq 2

Here,

$a_1 = 4$, $b_1 = k$, $c_1 = 8$

$a_2 = 1$, $b_2 = 1$, $c_2 = 1$

Given systems of equations has a unique solution

$\therefore \frac{a1}{a2} \neq \frac{b1}{b2}$

$\frac{4}{1} \neq \frac{k}{1}$

$4 \neq k$

$\therefore k \neq 4$

Question 8.

Solution:

Given: $4x - 5y = k$ – eq 1

$2x - 3y = 12$ – eq 2

Here,

$a_1 = 4$, $b_1 = -5$, $c_1 = -k$

$a_2 = 2$, $b_2 = -3$, $c_2 = -12$

Given systems of equations has a unique solution

$\therefore \frac{a1}{a2} \neq \frac{b1}{b2}$

$\frac{4}{2} \neq \frac{-5}{-3}$

Here, the system of equations have unique solutions, irrespective of the value of k.

Question 9.

Solution:

Given: $kx + 3y = (k - 3)$ – eq 1

$12x + ky = k$ – eq 2

Here,

$a_1 = k$, $b_1 = 3$, $c_1 = k - 3$

$a_2 = 12$, $b_2 = k$, $c_2 = k$

Given systems of equations has a unique solution

$\therefore \frac{a1}{a2} \neq \frac{b1}{b2}$

$\frac{k}{12} \neq \frac{3}{k}$

$K^2 \neq 36$

$k \neq \sqrt{36}$

$\therefore k \neq \pm 6$

$\therefore k \neq 6$ and $k \neq -6$

That is k can be any real number other than - 6 and 6

$\therefore$ k is any real number other than 6 and - 6

Question 10.

Solution:

Given: $2x - 3y = 5$ – eq 1

$6x - 9y = 15$ – eq 2

Here,

$a_1 = 2$, $b_1 = -3$, $c_1 = 5$

$a_2 = 6$, $b_2 = -9$, $c_2 = 15$

Here,

$\frac{a1}{a2} = \frac{2}{6} = \frac{1}{3}$

$\frac{b1}{b2} = \frac{-3}{-9} = \frac{1}{3}$

$\frac{c1}{c2} = \frac{5}{15} = \frac{1}{3}$

Here,

$\frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

∴ The given system of equations has infinite number of solutions.

Question 11.

Solution:

Given: $6x + 5y = 11$ – eq 1

$9x + \frac{15}{2}y = 21 \Rightarrow 18x + 15y = 42$ – eq 2

Here,

$a_1 = 6, b_1 = 5, c_1 = -11$

$a_2 = 18, b_2 = 15, c_2 = -42$

Here,

$\frac{a1}{a2} = \frac{6}{18} = \frac{1}{3}$

$\frac{b1}{b2} = \frac{5}{15} = \frac{1}{3}$

$\frac{c1}{c2} = \frac{-11}{-42} = \frac{11}{42}$

Here,

$\frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$

That is give system of equations are parallel lines, that is they don't have any solutions.

∴ The system of equations has no solution.

Question 12.

Solution:

(i) Given: $kx + 2y = 5$ – eq 1

$3x - 4y = 10$ – eq 2

Here,

$a_1 = k$, $b_1 = 2$, $c_1 = 5$

$a_2 = 3$, $b_2 = -4$, $c_2 = 10$

Given systems of equations has a unique solution

$\therefore \frac{a1}{a2} \neq \frac{b1}{b2}$

$\frac{k}{3} \neq \frac{2}{-4}$

$-4k \neq 6$

$k \neq \frac{6}{-4}$

$\therefore k \neq \frac{-3}{2}$

(ii) Given: $kx + 2y = 5$ – eq 1

$3x - 4y = 10$ – eq 2

Here,

$a_1 = k$, $b_1 = 2$, $c_1 = 5$

$a_2 = 3$, $b_2 = -4$, $c_2 = 10$

Given that systems of equations has no solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$

Here,

$\frac{k}{3} = \frac{2}{-4}$

Here,

$-4k = 6$

Question 13.

Solution:

(i) Given: x + 2y = 5 – eq 1

3x + ky + 15 = 0 – eq 2

Here,

$a_1 = 1$, $b_1 = 2$, $c_1 = -5$

$a_2 = 3$, $b_2 = k$, $c_2 = 15$

Given systems of equations has a unique solution

$\therefore \frac{a1}{a2} \neq \frac{b1}{b2}$

$\frac{1}{3} \neq \frac{2}{k}$

$k \neq 6$

$\therefore k \neq 6$

(ii) Given: x + 2y = 5 – eq 1

3x + ky + 15 = 0 – eq 2

Here,

$a_1 = 1$, $b_1 = 2$, $c_1 = -5$

Question 14.

Solution:

(i) Given: x + 2y = 3 – eq 1

5x + ky + 7 = 0 – eq 2

Here,

$a_1 = 1$, $b_1 = 2$, $c_1 = -3$

$a_2 = 5$, $b_2 = k$, $c_2 = 7$

Given systems of equations has a unique solution

$\therefore \frac{a1}{a2} \neq \frac{b1}{b2}$

$\frac{1}{5} \neq \frac{2}{k}$

k ≠10

∴ k ≠ 10

(ii) Given: x + 2y = 3 – eq 1

5x + ky + 7 = 0 – eq 2

Here,

$a_1 = 1, b_1 = 2, c_1 = -3$

$a_2 = 5, b_2 = k, c_2 = 7$

Given that system of equations has no solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$

Here,

$\frac{1}{5} = \frac{2}{k}$

Here,

k = 10

∴ k = 10

For the system of equations to have infinitely many solutions

$\frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{1}{5} = \frac{2}{k} = \frac{-3}{7}$ which is wrong.

Question 15.

Solution:

Given: $2x + 3y = 7$ – eq 1

$(k - 1)x + (k + 2)y = 3k$ – eq 2

Here,

$a_1 = 2$, $b_1 = 3$, $c_1 = 7$

$a_2 = k - 1$, $b_2 = k + 2$, $c_2 = 3k$

Given that system of equations has infinitely many solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{2}{k-1} = \frac{3}{k+2} = \frac{7}{3k}$

Here,

$\frac{2}{k-1} = \frac{3}{k+2}$

$2\times(k + 2) = 3\times(k - 1)$

$2k + 4 = 3k - 3$

$3k - 2k = 4 + 3$

Question 16.

Solution:

Given: $2x + (k - 2)y = k$ - eq 1

$6x + (2k - 1)y = (2k + 5)$ - eq 2

Here,

$a_1 = 2$, $b_1 = k - 2$, $c_1 = k$

$a_2 = 6$, $b_2 = 2k - 1$, $c_2 = 2k + 5$

Given that system of equations has infinitely many solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{2}{6} = \frac{k-2}{2k-1} = \frac{k}{2k+5}$

Here,

$\frac{2}{6} = \frac{k-2}{2k-1}$

$2\times(2k - 1) = 6\times(k - 2)$

$4k - 2 = 6k - 12$

$12 - 2 = 6k - 4k$

Question 17.

Solution:

Given: kx + 3y = (2k + 1) – eq 1

2(k + 1)x + 9y = (7k + 1) – eq 2

Here,

$a_1 = k$, $b_1 = 3$, $c_1 = -(2k + 1)$

$a_2 = 2(k + 1)$, $b_2 = 9$, $c_2 = -(7k + 1)$

Given that system of equations has infinitely many solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{k}{2(k+1)} = \frac{3}{9} = \frac{-(2k+1)}{-(7k+1)}$

Here,

$\frac{k}{2(k+1)} = \frac{3}{9}$

9k = 6×(k + 1)

9k = 6k + 6

Question 18.

Solution:

Given: $5x + 2y = 2k$ – eq 1

$2(k + 1)x + ky = (3k + 4)$ – eq 2

Here,

$a_1 = 5$, $b_1 = 2$, $c_1 = -2k$

$a_2 = 2(k + 1)$, $b_2 = k$, $c_2 = -(3k + 4)$

Given that system of equations has infinitely many solution

$$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$$

$$\frac{5}{2(k+1)} = \frac{2}{k} = \frac{-2k}{-(3k+4)}$$

Here,

$\frac{5}{2(k+1)} = \frac{2}{k}$

5k = 4×(k + 1)

5k = 4k + 4

5K - 4k = 4

k = 4

∴ k = 4

Question 19

Solution:

Given: (k − 1)x − y = 5 − eq 1

(k + 1)x + (1 − k)y = (3k + 1) − eq 2

Here,

a_1 = (k - 1), b_1 = - 1, c_1 = - 5

a_2 = (k + 1) , b_2 = (1 - k), c_2 = - (3k + 1)

Given that system of equations has infinitely many solution

∴ $\frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{(k-1)}{(k+1)} = \frac{-1}{1-k} = \frac{-5}{-(3k+1)}$

Here,

$\frac{-1}{1-k} = \frac{-5}{-(3k+1)}$

(3k + 1) = - 5×(1 - k)

3k + 1 = - 5 + 5k

5K – 3k = 1 + 5

2k = 6

$k = \frac{6}{2}$

k = 3

∴ k = 3

Question 20.

Solution:

Given: (k – 3)x + 3y = k – eq 1

kx + ky = 12 – eq 2

Here,

$a_1 = (k - 3)$, $b_1 = 3$, $c_1 = - k$

$a_2 = k$, $b_2 = k$, $c_2 = - 12$

Given that system of equations has infinitely many solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{(k-3)}{k} = \frac{3}{k} = \frac{-k}{-12}$

Here,

$\frac{3}{k} = \frac{-k}{-12}$

$3\times(- 12) = - k\times(k)$

$- 36 = - k^2$

$K^2 = 36$

$k = \sqrt{36}$

$k = \pm 6$

k = 6 and k = - 6 – eq 3

Also,

$\frac{(k-3)}{k} = \frac{3}{k}$

$K(k - 3) = 3k$

$K^2 - 3k = 3k$

$K^2 - 6k = 0$

$K(k - 6) = 0$

K = 0 and k = 6 – eq 4

From – eq 3 and – eq 4

k = 6

∴ k = 6

Question 21.

Solution:

Given: $(a - 1)x + 3y = 2$ – eq 1

$6x + (1 - 2b)y = 6$ – eq 2

Here,

$a_1 = (a - 1)$, $b_1 = 3$, $c_1 = -2$

$a_2 = 6$, $b_2 = (1 - 2b)$, $c_2 = -6$

Given that system of equations has infinitely many solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{(a-1)}{6} = \frac{3}{(1-2b)} = \frac{-2}{-6}$

Here,

$\frac{3}{(1-2b)} = \frac{-2}{-6}$

$3\times(-6) = (1 - 2b)\times(-2)$

$-18 = -2 + 4b$

$4b = -18 + 2$

$4b = -16$

$b = \frac{-16}{4}$

b = - 4

Also,

$\frac{(a-1)}{6} = \frac{-2}{-6}$

- 6(a - 1) = - 2×6

- 6a + 6 = - 12

- 6a = - 12 - 6

- 6a = - 18

$a = \frac{-18}{-6}$

a = 3

∴ a = 3

∴ a = 3, b = - 4

Question 22.

Solution:

Given: (2a - 1)x + 3y = 5 – eq 1

3x + (b - 1)y = 2 – eq 2

Here,

$a_1 = (2a - 1)$, $b_1 = 3$, $c_1 = -5$

$a_2 = 3$, $b_2 = (b - 1)$, $c_2 = - 2$

Given that system of equations has infinitely many solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{(2a-1)}{3} = \frac{3}{(b-1)} = \frac{-5}{-2}$

Here,

$\frac{(2a-1)}{3} = \frac{-5}{-2}$

$- 2\times(2a - 1) = 3\times(- 5)$

$- 4a + 2 = - 15$

$- 4a = - 15 - 2$

$- 4a = - 17$

$b = \frac{-17}{-4}$

$\therefore b = - \frac{17}{4}$

Also,

$\frac{3}{(b-1)} = \frac{-5}{-2}$

$3(- 2) = - 5\times(b - 1)$

$- 6 = - 5b + 5$

$5b = 5 + 6$

$5b = 11$

$b = \frac{11}{5}$

Question 23.

Solution:

Given: $2x - 3y = 7$ – eq 1

$(a + b)x - (a + b - 3)y = 4a + b$ – eq 2

Here,

$a_1 = 2$, $b_1 = -3$, $c_1 = -7$

$a_2 = (a + b)$, $b_2 = -(a + b - 3)$, $c_2 = -(4a + b)$

Given that system of equations has infinitely many solution

$$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$$

$$\frac{2}{(a+b)} = \frac{-3}{-(a+b-3)} = \frac{-7}{-(4a+b)}$$

Here,

$$\frac{-3}{-(a+b-3)} = \frac{-7}{-(4a+b)}$$

$-3\times(-4a + b) = -7\times -(a + b - 3)$

$12a + 3b = 7a + 7b - 21$

$12a - 7a = -3b + 7b - 21$

$5a = 4b - 21$

$5a - 4b + 21 = 0$ –eq 3

Also,

$\frac{2}{(a+b)} = \frac{-7}{-(4a+b)}$

$2\times -(4a + b) = -7\times(a + b)$

$-8a - 2b = -7a - 7b$

$-8a + 7a = 2b - 7b$

$-a = -5b$

$a = 5b$ –eq 4

substitute – eq 4 in – eq 3

$5(5b) - 4b + 21 = 0$

$25b - 4b + 21 = 0$

$21b + 21 = 0$

$b = \frac{-21}{21}$

$b = -1$

substitute 'b' in – eq 4

$a = 5(-1)$

$a = -5$

$\therefore a = -5, b = -1$

Question 24.

Solution:

Given: $2x + 3y = 7$ – eq 1

$(a + b + 1)x + (a + 2b + 2)y = 4(a + b) + 1$ – eq 2

Here,

$a_1 = 2$, $b_1 = 3$, $c_1 = -7$

$a_2 = (a + b + 1)$, $b_2 = (a + 2b + 2)$, $c_2 = -(4(a + b) + 1)$

Given that system of equations has infinitely many solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{2}{(a+b+1)} = \frac{3}{(a+2b+2)} = \frac{-7}{-(4(a+b)+1)}$

Here,

$\frac{3}{(a+2b+2)} = \frac{-7}{-(4(a+b)+1)}$

$3\times -(4(a + b) + 1) = -7\times(a + 2b + 2)$

$-12a - 12b - 3 = -7a - 14b - 14$

$-12a + 7a - 3 = 12b - 14b - 14$

$-5a - 3 = -2b - 14$

$5a - 2b - 11 = 0$ –eq 3

Also,

$$\frac{2}{(a + b + 1)} = \frac{-7}{-(4(a + b) + 1)}$$

$2 \times -(4(a + b) + 1) = -7 \times (a + b + 1)$

$-8a - 8b - 2 = -7a - 7b - 7$

$-8a + 7a = 8b - 7b - 7 + 2$

$-a = b - 5$

$a + b = 5$

$a = 5 - b$ –eq 4

substitute – eq 4 in – eq 3

$5(5 - b) - 2b - 11 = 0$

$25 - 5b - 2b - 11 = 0$

$-7b + 14 = 0$

$b = \frac{-14}{-7}$

$b = 2$

substitute ‘b’ in – eq 4

$a = 5 - 2$

$a = 3$

$\therefore a = 3,\ b = 2$

Question 25.

Solution:

Given: $2x + 3y = 7$ – eq 1

$(a + b)x + (2a - b)y = 21$ – eq 2

Here,

$a_1 = 2$, $b_1 = 3$, $c_1 = -7$

$a_2 = (a + b)$, $b_2 = (2a - b)$, $c_2 = -21$

Given that system of equations has infinitely many solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{2}{(a+b)} = \frac{3}{(2a-b)} = \frac{-7}{-21}$

Here,

$\frac{3}{(2a-b)} = \frac{-7}{-21}$

$3\times -21 = -7\times(2a - b)$

$-63 = -14a + 7b$

$14a - 7b - 63 = 0$

$2a - b - 9 = 0$ –eq 3

Also,

$\frac{2}{(a+b)} = \frac{-7}{-21}$

$2\times -21 = -7\times(a + b)$

$-42 = -7a - 7b$

7a + 7b + 42 = 0

a + b + 6 = 0

a + b = 6

a = 6 – b –eq 4

substitute – eq 4 in – eq 3

2(6 – b) – b – 9 = 0

12 – 2b – b – 9 = 0

- 3b + 3 = 0

b = $\frac{-3}{-3}$

b = 1

substitute 'b' in – eq 4

a = 6 - 1

a = 5

∴ a = 5, b = 1

Question 26.

Solution:

Given: 2x + 3y = 7 – eq 1

2ax + (a + b)y = 28 – eq 2

Here,

$a_1 = 2$, $b_1 = 3$, $c_1 = -7$

$a_2 = 2a$, $b_2 = (a + b)$, $c_2 = -28$

Given that system of equations has infinitely many solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$

$\frac{2}{2a} = \frac{3}{(a+b)} = \frac{-7}{-28}$

Here,

$\frac{3}{(a+b)} = \frac{-7}{-28}$

$3\times -28 = -7\times(a + b)$

$-84 = -7a - 7b$

$7a + 7b - 84 = 0$

$a + b - 12 = 0$ –eq 3

Also,

$\frac{2}{2a} = \frac{-7}{-28}$

$2\times -28 = -7\times 2a$

$-56 = -14a$

$14a = 56$

$a = \frac{56}{14}$

$a = 4$ –eq 4

substitute – eq 4 in – eq 3

$4 + b - 12 = 0$

$a + b - 12 = 0$

$b - 8 = 0$

$b = 8$

$\therefore a = 4, b = 8$

Question 27.

Solution:

Given: $8x + 5y = 9$ – eq 1

$kx + 10y = 15$ – eq 2

Here,

$a_1 = 8, b_1 = 5, c_1 = -9$

$a_2 = k, b_2 = 10, c_2 = -15$

Here,

Given that system of equations has no solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$

$\frac{8}{k} = \frac{5}{10} \neq \frac{-9}{-15}$

Here,

$\frac{8}{k} = \frac{5}{10}$

$8\times10 = 5\times k$

Question 28.

Solution:

Given: kx + 3y = 3 – eq 1

12x + ky = 6 – eq 2

Here,

$a_1 = k, b_1 = 3, c_1 = - 3$

$a_2 = 12, b_2 = k, c_2 = - 6$

Here,

Given that system of equations has no solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$

$\frac{k}{12} = \frac{3}{k} \neq \frac{-3}{-6}$

Here,

$\frac{k}{12} = \frac{3}{k}$

$k \times k = 3 \times 12$

Question 29.

Solution:

Given: 3x - y - 5 = 0 – eq 1

6x - 2y + k = 0 – eq 2

Here,

$a_1 = 3, b_1 = - 1, c_1 = - 5$

$a_2 = 6, b_2 = - 2, c_2 = k$

Here,

Given that system of equations has no solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$

$\frac{3}{6} = \frac{-1}{-2} \neq \frac{-5}{k}$

Here,

$\frac{-1}{-2} \neq \frac{-5}{k}$

$- k \neq - 2 \times - 5$

$- k \neq - 10$

$K \neq 10$

$\therefore k \neq - 10$

Question 30.

Solution:

Given: kx + 3y = k - 3 – eq 1

12x + ky = k – eq 2

Here,

$a_1 = k$, $b_1 = 3$, $c_1 = -(k - 3)$

$a_2 = 12$, $b_2 = k$, $c_2 = -k$

Here,

Given that system of equations has no solution

$\therefore \frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$

$\frac{k}{12} = \frac{3}{k} \neq \frac{-(k-3)}{-k}$

Here,

$\frac{k}{12} = \frac{3}{k}$

$k \times k = 3 \times 12$

$k^2 = \sqrt{36}$

$K = \pm 6$ –eq 3

Also,

$\frac{3}{k} \neq \frac{-(k-3)}{-k}$

$3 \times - k \neq - (k - 3) \times k$

$- 3k \neq - k^2 + 3k$

$K^2 - 3k - 3k \neq 0$

$K^2 - 6k \neq 0$

$K(k - 6) \neq 0$

$K \neq 0$ and $k \neq 6$ –eq 4

From –eq 3 and –eq 4 we can conclude

$K = -6$

$\therefore k = - 6$

Question 31.

Solution:

Given: $5x - 3y = 0$ – eq 1

$2x + ky = 0$ – eq 2

Here,

$a_1 = 5, b_1 = -3, c_1 = 0$

$a_2 = 2, b_2 = k, c_2 = 0$

Here,

Given that system of equations has non zero solution.

$\therefore \frac{a1}{a2} = \frac{b1}{b2}$

$\frac{5}{2} = \frac{-3}{k}$

Here,

$\frac{5}{2} = \frac{-3}{k}$

$5 \times k = -3 \times 2$

$5k = -6$

$K = \frac{-6}{5}$

$\therefore k = \frac{-6}{5}$

Benefits of RS Aggarwal Solutions for Class 10 Maths Chapter 3 Exercise 3.3

RS Aggarwal Solutions for Class 10 Maths Chapter 3 Exercise 3.3 provides several benefits for students studying linear equations:

Structured Approach: The solutions follow a structured and systematic approach to solving problems, making it easier for students to understand the steps involved.

Clarity in Concepts: Each step is explained clearly and concisely, helping students grasp the underlying concepts of linear equations better.

Variety of Problems: The exercises typically cover a wide range of problems, from basic to advanced levels, which helps in comprehensive practice and understanding of different types of linear equations.

Step-by-Step Solutions: Detailed step-by-step solutions are provided for each problem, making it easier for students to follow the logic and methodology used to solve them.

Practice Material: These solutions serve as valuable practice material, offering ample opportunities for students to apply the concepts they have learned and improve their problem-solving skills.

Exam Preparation: They are particularly useful for exam preparation, as they align closely with the syllabus and help students familiarize themselves with the type of questions that may appear in exams.

Self-Assessment: Students can use these solutions for self-assessment and self-study purposes, checking their understanding and identifying areas where they may need more practice or review.

Accuracy and Reliability: RS Aggarwal Solutions are known for their accuracy and reliability, ensuring that students can rely on them for correct solutions and explanations.