Solution

PAIR OF LINEAR EQUATION IN TWO VARIABLE WS 2

Class 10 - Mathematics

1. (a) - (iii), (b) - (iv), (c) - (i), (d) - (iii)
2. (a) - (iii), (b) - (ii), (c) - (iv), d - (i)
3. (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
4. Given equations are:
   $\frac{3}{2}x+\frac{5}{3}y=7$ &
   9x - 10y = 14
   Comparing equation $\frac{3}{2}x+\frac{5}{3}y=7$ with $a_1x+b_1y+c_1=0$
   and $9x - 10y = 14$ with
   $a_2x+b_2y+c_2=0$,
   We get, $a_1=\frac{3}{2}$, $b_1=\frac{5}{3}$, $c_1=-7, a_2=9, b_2=-10, c_2=-14$
   $\frac{a_1}{a_2}=\frac{\frac{3}{2}}{9}=\frac{1}{6}$ and $\frac{b_1}{b_2}=\frac{\frac{5}{3}}{-10}=\frac{-1}{6}$
   Here $\frac{a_1}{a_2}\neq\frac{b_1}{b_2}$
   Therefore, equations have unique solution.
   Hence, they are consistent.
5. Given the linear equation 3x + 4y = 9.
   i. For intersecting lines $\frac{a_1}{a_2}\neq\frac{b_1}{b_2}$
      Another linear equation in two variables such that the geometrical representation of the pair so formed is intersecting lines is 3x - 5y = 10
   ii. For coincident lines $\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}$

   So, one of the possible equation is 6x + 8y = 18
6. The given equations are
   4x + 6y = 11
   So, 4x + 6y - 11= 0 .... (i)
   And 2x + ky = 7
   So, 2x + ky - 7 = 0 .... (ii)
   The given system of equation is of the form
   $a_1x + b_1y + c_1 = 0$
   $a_2x + b_2y + c_2 = 0$
   Compare with (i) and (ii) , we get
   $a_1 = 4, b_1 = 6, c_1 = -11$
   $a_2 = 2, b_2 = k, c_2 = -7$
   For unique solution, we have
   $\frac{a_1}{a_2}=\frac{b_1}{b_2}\neq\frac{c_1}{c_2}$
   $\frac{a_1}{a_2}=\frac{b_1}{b_2}$
   $\frac{4}{2}=\frac{6}{k}$
   $\Rightarrow$ a = 3
   Therefore, the given system of equations will be inconsistent, if k = 3.
7. No.
   Conditions for pair of linear equations are consistent
   $a_1/a_2 \neq b_1/b_2$. [unique solution]
   and $a_1/a_2 = b_1/b_2 = c_1/c_2$ [coincident or infinitely many solutions]
   The given pair of linear equations
   x + 3y = 11 and 2x + 6y = 11
   Comparing with ax + by + c = 0;

Here, $a_1 = 1$, $b_1 = 3$, $c_1 = -11$

And $a_2 = 2$, $b_2 = 6$, $c_2 = -11$

$a_1 / a_2 = 1/2$

$b_1 / b_2 = 1/2$

$c_1 / c_2 = 1$

Here, $a_1/a_2 = b_1/b_2 \neq c_1/c_2$.

Hence, the given pair of linear equations has no solution.

8. The given pair of linear equations
   x - 2y - 8 = 0
   and 5x - 10y - c = 0
   On Comparing with ax + by + c = 0;
   Here, $a_1 = 1$, $b_1 = - 2$, $c_1 = - 8$;
   And $a_2 = 5$, $b_2 = - 10$, $c_2 = - c$;
   $a_1 / a_2 = 1/5$
   $b_1 / b_2 = 1/5$
   $c_1 / c_2 = 8/c$
   But if c = 40 (real value), then the ratio c_1/c_2 becomes 1/5 and then the system of linear equations has an infinitely many solutions.
   Hence, at c= 40, the system of linear equations does not have a unique solution.
9. x - y = 8.................(1)
   3 x - 3 y = 16.............(2)
   Here, $a_1 = 1, b_1 = -1, c_1 = -8$
   $a_2 = 3, b_2 = -3, c_2 = -16$
   We see that $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
   Hence, the lines represented by the equations(1) and (2) are parallel.
   Therefore, equations (1) and (2) have no solution, i.e., the given pair of linear equation is inconsistent.
10. From the given equations, We get,
    $\frac{a_1}{a_2} = \frac{5}{-10} = -\frac{1}{2}$
    $\frac{b_1}{b_2} = -\frac{3}{6} = -\frac{1}{2}$
    $\frac{c_1}{c_2} = \frac{11}{-22} = -\frac{1}{2}$
    Hence,
    $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$
    Therefore the given pair of line has an infinite number of solutions. So the given pair of linear equation is consistent.
11. The given system of equations:
    x + 2y = 5
    $\Rightarrow$ x + 2y - 5 = 0 ...(i)
    3x + ky + 15 = 0 ...(ii)
    These equations are of the forms:
    $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$
    where, $a_1 = 1$, $b_1 = 2$, $c_1 = -5$ and $a_2 = 3$, $b_2 = k$, $c_2 = 15$
    For the given system of equations to have no solutions, we must have:
    $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
    $\Rightarrow \frac{1}{3} = \frac{2}{k} \neq \frac{-5}{15}$
    $\Rightarrow \frac{1}{3} = \frac{2}{k}$ and $\frac{2}{k} \neq \frac{-5}{15}$
    $\Rightarrow$ k = 6, k $\neq$ -6
    Hence, the required value of k is 6.
12. Yes
    Conditions for pair of linear equations are consistent
    $a_1/a_2 \neq b_1/b_2$. [unique solution]

and $a_1/a_2 = b_1/b_2 = c_1/c_2$ [coincident or infinitely many solutions]

The given pair of linear equations -

2ax + by –a = 0 and 4ax + 2by - 2a = 0

Comparing with ax + by + c = 0;

Here, $a_1 = 2a$, $b_1 = b$, $c_1 = - a$;

And $a_2 = 4a$, $b_2 = 2b$, $c_2 = - 2a$;

$a_1 /a_2 = 1/2$

$b_1 /b_2 = 1/2$

$c_1 /c_2 = 1/2$

Here, $a_1/a_2 = b_1/b_2 = c_1/c_2$

Hence, the given pair of linear equations has infinitely many solutions, i.e., consistent or dependent.

13. Given equations are:

$\frac{4}{3}x$ + 2y = 8; 2x + 3y = 12

Compare equation $\frac{4}{3}x + 2y = 8$ with $a_1x + b_1y + c_1 = 0$ and 2x + 3y = 12

with $a_2x + b_2y + c_2 = 0$, We get, $a_1 = \frac{4}{3}$, $a_1 = \frac{4}{3}$, $b_1 = 2$, $c_1 = -8$, $a_2 = 2$, $b_2 = 3$, $c_2 = -12$

$\frac{a_1}{a_2} = \frac{\frac{4}{3}}{2} = \frac{2}{3}, \frac{b_1}{b_2} = \frac{2}{3}$ and $\frac{c_1}{c_2} = \frac{8}{12} = \frac{2}{3}$

Here $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

Therefore, the lines have infinitely many solutions.

Hence, they are consistent.

14. 5x - 3y - 11 = 0 $\rightarrow$ (1)

-10x + 6y + 22 = 0 $\rightarrow$(2)

5x - 3y - 11 = 0

Comparing with $a_1x + b_1y + c_1 = 0$

$a_1 = 5$, $b_1 = -3$, $c_1 = -11$

-10x + 6y + 22 = 0

comparing with $a_2x + b_2y + c_2 = 8$

$a_2 = -10$, $b_2 = 6$, $c_2 = 22$

$a_1 = 5$, $b_1 = -3$, $c_1 = -11$

$a_2 = -10$, $b_2 = 6$, $c_2 = 22$

$\frac{a_1}{a_2} = \frac{-1}{2}$ $\frac{b_1}{b_2} = \frac{-1}{2}$ $\frac{c_1}{c_2} = \frac{-1}{2}$

Since, $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

They have infinitely many solutions.

Therefore, system of equation is constraint and can be solved graphically.

15. We have, for the equation

$2x + 3y - 9 = 0$

$a_1 = 2,\ b_1 = 3$ and $c_1 = -9$

and for the equation, 4x + 6y - 18 = 0

$a_2 = 4, b_2 = 6$ and $c_2 = -18$

Here $\frac{a_1}{a_2} = \frac{2}{4} = \frac{1}{2}$ $\ldots\ldots\ldots(i)$

$\frac{b_1}{b_2} = \frac{3}{6} = \frac{1}{2}$ $\ldots\ldots\ldots(ii)$

and $\frac{c_1}{c_2} = \frac{-9}{-18} = \frac{1}{2}$ $\ldots\ldots\ldots(iii)$

From (i), (ii) and (iii)

$\therefore \quad \frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

Hence, the system is consistent and dependent.

16. Given equations are

9*x* + 3*y* + 12 = 0

18*x* + 6*y* + 24 = 0

Comparing equation 9*x* + 3*y* + 12 = 0 with $a_1x + b_1y + c_1 = 0$

and $18x + 6y + 24 = 0$ with

$a_2x + b_2y + c_2 = 0$,

We get, $a_1 = 9$, $b_1 = 3$, $c_1 = 12$, $a_2 = 18$, $b_2 = 6$, $c_2 = 24$

We have $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ because $\frac{9}{18} = \frac{3}{6} = \frac{12}{24} \Rightarrow \frac{1}{2} = \frac{1}{2} = \frac{1}{2}$

Hence, lines are coincident.

17. Given equations are

$6x - 3y + 10 = 0$

$2x - y + 9 = 0$

Comparing equation $6x - 3y + 10 = 0$ with $a_1x + b_1y + c_1 = 0$

and $2x - y + 9 = 0$ with

$a_2x + b_2y + c_2 = 0$,

We get, $a_1 = 6$, $b_1 = -3$, $c_1 = 10$, $a_2 = 2$, $b_2 = -1$, $c_2 = 9$

We have $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ because $\frac{6}{2} = \frac{-3}{-1} \neq \frac{10}{9} \Rightarrow \frac{3}{1} = \frac{3}{1} \neq \frac{10}{9}$

Hence, lines are parallel to each other.

18. Conditions for pair of linear equations to be consistent is

$a_1/a_2 \neq b_1/b_2$... [unique solution]

and $a_1/a_2 = b_1/b_2 = c_1/c_2$ ...[coincident or infinitely many solutions]

Comparing the given pair of linear equations

$-3x - 4y - 12 = 0$ and $4y + 3x - 12 = 0$

with standard form we get:

$a_1 = -3$, $b_1 = -4$, $c_1 = -12$;

And $a_2 = 3$, $b_2 = 4$, $c_2 = -12$;

$a_1/a_2 = -3/3 = -1$

$b_1/b_2 = -4/4 = -1$

$c_1/c_2 = -12/-12 = 1$

Here, $a_1/a_2 = b_1/b_2 \neq c_1/c_2$

Hence, the pair of linear equations has no solution, i.e., inconsistent.

19. given eq.s are

$x = 2y$ and $4x + 3y = 20$

$x - 2y = 0$ and $4x + 3y = 20$

now $a_1 = 1$, $b_1 = -2$, $c_1 = 0$

$a_2 = 4$, $b_2 = 3$, $c_2 = 20$

clearly $\frac{a_1}{a_2}$ in not equal to $\frac{b_1}{b_2}$

therefore, system of eq. is consistent and has unique sol.

20. Inconsistent

$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

$\frac{1/a}{b} = \frac{1/b}{a} \neq \frac{c}{4ab}$

i.e., $\frac{1}{ab} = \frac{1}{ab} \neq \frac{c}{4ab}$

or $c \neq 4$

21. $3x + 2y = 12$

$\Rightarrow y = \frac{12-3x}{2}$

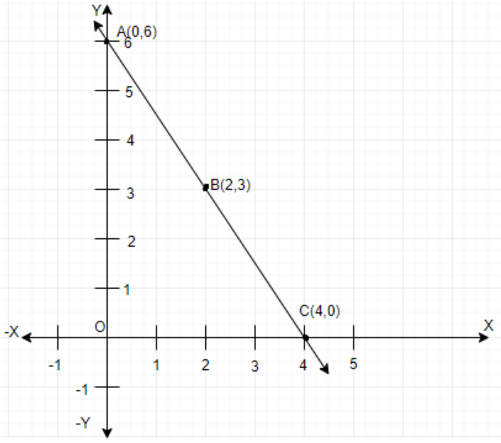
x	0	2	4
y	6	3	0

(Steps)

i. Given equation.
ii. Write y in terms of x.
iii. Complete the table.
iv. Plot the points A(0, 6), B(2, 3) and C(4, 0) on the graph paper.

v. Join the points.

The Line meets the x-axis at (4, 0) and the y-axis at (0, 6).



22. No.

The Condition for no solution is : $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (parallel lines)

Given pair of equations,

x = 2y and y = 2x

or x - 2y = 0 and 2x - y = 0;

Comparing with ax + by + c = 0;

Here, $a_1 = 1$, $b_1 = -2$, $c_1 = 0$;

And $a_2 = 2$, $b_2 = -1$, $c_2 = 0$;

$a_1 / a_2 = 1/2$

$b_1 / b_2 = -2/-1 = 2$

Here, $a_1/a_2 \neq b_1/b_2$.

Hence, the given pair of linear equations has unique solution.

23. 5 x - 4 y - 8 = 0

7 x + 6 y - 9 = 0

Here, $a_1 = 5$, $b_1 = -4$, $c_1 = 8$

$a_2 = 7$, $b_2 = 6$, $c_2 = -9$

We see that $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

Hence, the lines representing the given pair of linear equations intersect at the point and the equations are consistent having unique solution.

24. For Infinite number of solutions $\Rightarrow \frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

$\frac{3}{a+b} = \frac{4}{2(a-b)} = \frac{12}{24}$

$\frac{3}{a+b} = \frac{1}{2} \Rightarrow$ a + b = 6

$\frac{2}{a-b} = \frac{1}{2} \Rightarrow$ a - b = 4

On solving, a = 5, b = 1

25. 2 x - 2 y - 2 = 0................(1)

4 x - 4 y - 5 = 0..................(2)

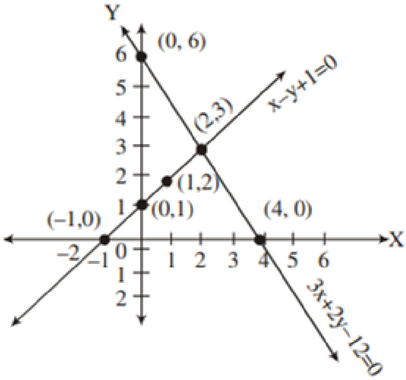
Here, $a_1 = 2, \quad b = -2, c_1 = -2$

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

We see that $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

Hence, the lines represented by the equations(1) and (2) are parallel.

Therefore, equations (1) and (2) have no solution, i.e., the given pair of a linear equation is inconsistent.

26. 

$= \frac{1}{2}(-2) = 1$ sq.unit

Solution is

x = 2, y = 3

27. The given lines represented by 2x + y = 3 and 4x + 2y = 6

compare with $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$

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

and $a_2 = 4, b_2 = 2, c_2 = -6$

If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$, then the lines are parallel.

Clearly $\frac{2}{4} = \frac{1}{2} = \frac{3}{6}$

Hence lines are coincident.

28. Condition for coincident lines,

$a_1/a_2 = b_1/b_2 = c_1/c_2$;

No, given pair of linear equations are

$\frac{x}{2} + y + \frac{2}{5} = 0$ and $4x + 8y + \frac{5}{16} = 0$

Comparing with ax + by + c = 0;

Here, $a_1 = 1/2$, $b_1 = 1$, $c_1 = 2/5$;

And $a_2 = 4$, $b_2 = 8$, $c_2 = 5/16$;

$a_1 /a_2 = 1/8$

$b_1 /b_2 = 1/8$

$c_1 /c_2 = 32/25$

Here, $a_1/a_2 = b_1/b_2 \neq c_1/c_2$, i.e. parallel lines

Hence, the given pair of linear equations has no solution.

29. here we have

$a_1 = \frac{3}{2}$, $b_1 = \frac{5}{3}$, $c_1 = 7$

$a_2 = \frac{3}{2}$, $b_2 = \frac{2}{3}$, $c_2 = 6$

clearly $\frac{a_1}{a_2}$ is not equal to $\frac{b_1}{b_2}$

therefore the given system of equation have unique solution.

Hence the given pair of equations will intersect at a point.

30. The Condition for no solution is : $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (parallel lines)

Yes.

Given pair of equations are,

2x+4y - 3 = 0 and 6x + 12y - 6 = 0

Comparing with $a_1x + b_1y + c_1 = 0$; $a_2x + b_2y + c_2 = 0$

We get, $a_1 = 2$, $b_1 = 4$, $c_1 = -3$;

And $a_2 = 6$, $b_2 = 12$, $c_2 = -6$;

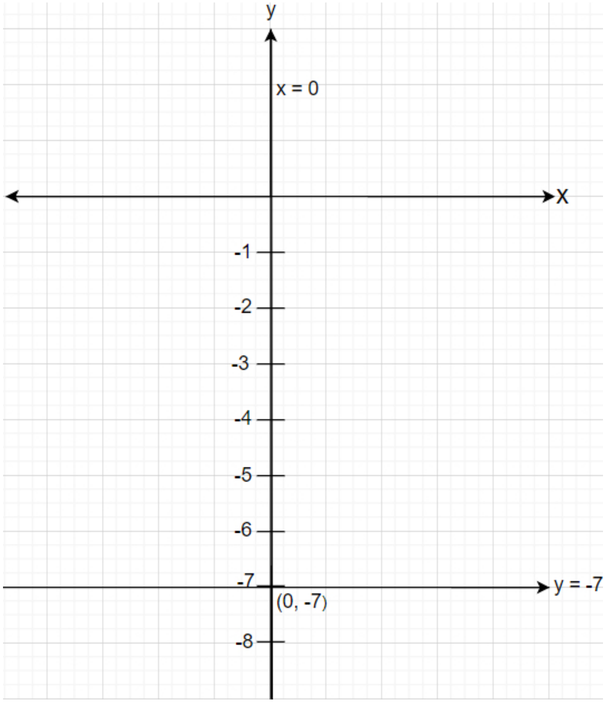
$a_1 /a_2 = 2/6 = 1/3$

$b_1 /b_2 = 4/12 = 1/3$

$c_1 /c_2 = -3/-6 = 1/2$

Here, $a_1/a_2 = b_1/b_2 \neq c_1/c_2$, i.e., parallel lines

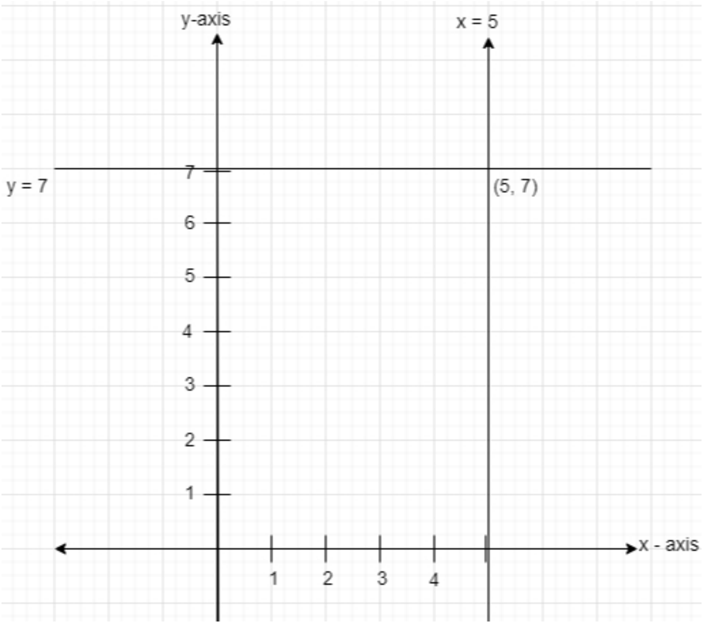
Hence, the given pair of linear equations has no solution.

31. 

equations x = 0 is the y-asix

x = 0 and y = -7 intersect at one point. It means it has one solution.

hence, system of equation is consistent.

32. 

equation x = 5 and y = 7 intersect at one point at (5, 7). It means it has one solution.

33. Conditions for pair of linear equations to be consistent is

$a_1/a_2 \neq b_1/b_2.$ [for unique solution]

and $a_1/a_2 = b_1/b_2 = c_1/c_2$ [for coincident or infinitely many solutions]

The given pair of linear equations

$\frac{3}{5}x - y = \frac{1}{2}$ and $\frac{1}{5}x - 3y = \frac{1}{6}$

On comparing with standard form gives;

Here, $a_1 = 3/5$, $b_1 = - 1$, $c_1 = - 1/2$;

And $a_2 = 1/5$, $b_2 = 3$, $c_2 = - 1/6$;

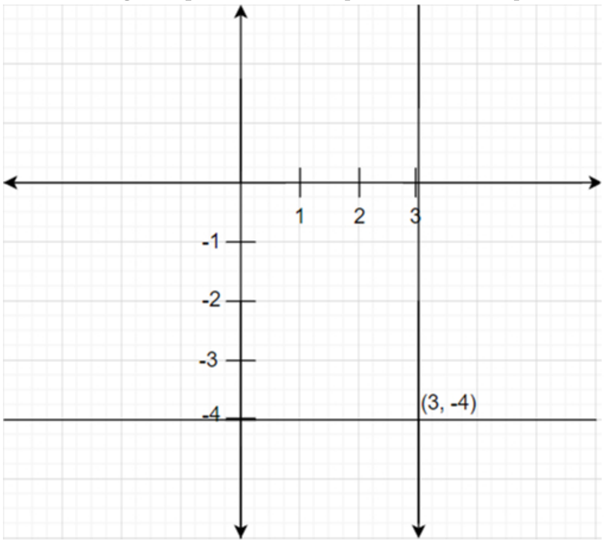
$a_1 /a_2 = 3$

$b_1 /b_2 = - 1/ - 3 = 1/3$

$c_1 /c_2 = 3$

Here, $a_1/a_2 \neq b_1/b_2$.

Hence, the given pair of linear equations has unique solution, i.e., consistent.

34. 

x = 3, corresponds to a line parallel to y-axis

y = -4, corresponds to a line parallel to x-axis

Solution of equation = (3, -4)

35. No

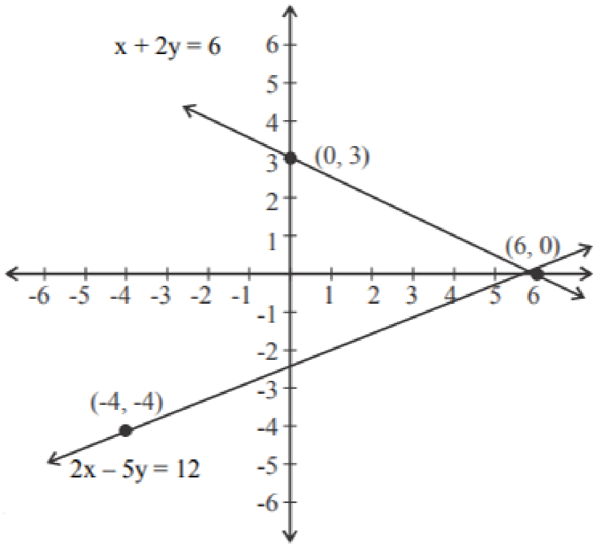
We may rewrite the equations as

4x + 3y = 6

12x + 9y = 15

Here, $\frac{a_1}{a_2} = \frac{1}{3}, \frac{b_1}{b_2} = \frac{1}{3}$ and $\frac{c_1}{c_2} = \frac{2}{5}$

As $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$, the given equations do not represent a pair of coincident lines.

36. 

x + 2y = 6

x	0	6
y	3	0

2x - 5y = -12

x	6	-4
y	0	-4

Solution is x = 6, y = 0

37. Formulation: Let the number of girls be x and the number of boys be y.

It is given that total ten students took part in the quiz.

$\therefore$ Number of girls + Number of boys = 10

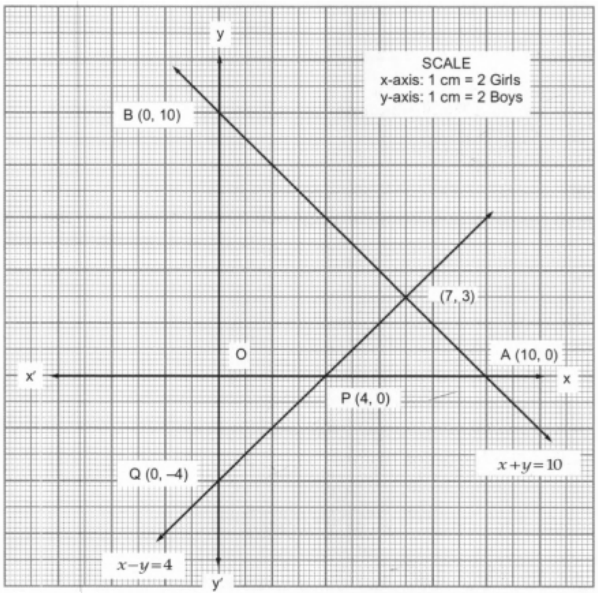
i.e. x + y = 10

It is also given that the number of girls is 4 more than the number of boys.

∴ Number of girls = Number of boys + 4

i.e. x = y + 4

or, x - y = 4



38. Condition for coincident lines is given by:

$a_1/a_2 = b_1/b_2 = c_1/c_2$;

Given pair of linear equations is

- 2x - 3y - 1 = 0 and 4x + 6y + 2 = 0;

Comparing with standard form we have;

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

And $a_2 = 4$, $b_2 = 6$, $c_2 = 2$;

$a_1/a_2 = -2/4 = -1/2$

$b_1/b_2 = -3/6 = -1/2$

$c_1/c_2 = -1/2$

Here, $a_1/a_2 = b_1/b_2 = c_1/c_2$, i.e., coincident lines

Hence, the given pair of linear equations is coincident.

39. 2x - 3y + 13 = 0

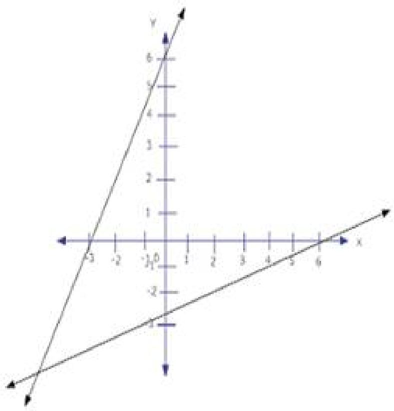
3x - 2y + 12 = 0

when $x = \frac{-13+3y}{2}$

x	**6.5**	**5**
y	0	-1

when $y = \frac{3x+12}{2}$

x	0	-3
y	6	3



40. No

Condition for coincident lines is given by:

$a_1/a_2 = b_1/b_2 = c_1/c_2$;

Given pair of linear equations is

$3x + \frac{1}{7}y = 3$ and 7x + 3y = 7

Comparing with standard form, we get:

$a_1 = 3$, $b_1 = 1/7$, $c_1 = -3$;

And $a_2 = 7$, $b_2 = 3$, $c_2 = -7$;

$a_1/a_2 = 3/7$

$b_1/b_2 = 1/21$

$c_1/c_2 = -3/-7 = 3/7$

Here, $a_1/a_2 \neq b_1/b_2$.

Hence, the given pair of linear equations has a unique solution.

41. Given lines are 3x + 2y = 8 and 6 x - 4y = 9

$a_1 = 3$, $b_1 = 2$, $c_1 = -8$

$a_2 = 6$, $b_2 = -4$, $c_2 = -9$

$\frac{3}{6} \neq \frac{2}{-4}$

$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

Hence, the pair of linear equation is consistent.

42. Given equations are

3x + 2y = 5

2x− 3y = 7

Comparing equation 3x + 2y = 5 with $a_1x + b_2y + c_1 = 0$

and 2x − 3y = 7

with $a_2x + b_2y + c_2 = 0$,

We get, $a_1 = 3$, $b_1 = 2$, $c_1 = -5$, $a_2 = 2$, $b_2 = -3$, $c_2 = -7$

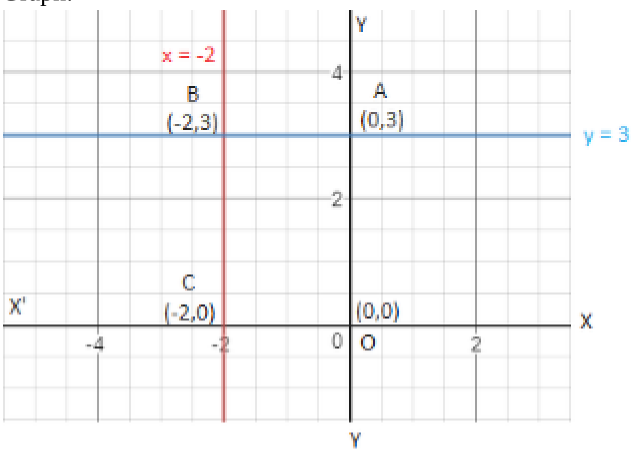
$\frac{a_1}{a_2} = \frac{3}{2}$ and $\frac{b_1}{b_2} = \frac{2}{-3}$

Here $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ which means equations have unique solution.

Hence they are consistent.

43. According to the question, given lines are x = -2, y = 3, x-axis and y-axis.

Graph:



From graph, vertices of rectangle are

$O(0,0), A(0,3), B(-2,3)$ and $C(-2,0)$.

Length of rectangle = Length of OA = 3.

Breadth of rectangle = Length of OC = 2.

We know that, Area of rectangle = length x breadth

$= OA \times AB$

$= 3 \times 2$

$= 6$ sq. units.

44. The given equations are

4x + 6y = 18

So, 4x + 6y - 18 =0 .... (i)

And 2x + 3y = 9

So, 2x + 3y - 9 = 0 .... (ii)

The given equations are in the form of

$a_1x + b_1 y + c_1 = 0$

and $a_2x + b_2y + c_2 = 0$

After comparing, we get

$a_1 = 4$, $b_1 = 6$, $c_1 = -18$

$a_2 = 2$, $b_2 = 3$, $c_2 = -9$

It can be observed that:

$\frac{a_1}{a_2} = \frac{4}{2} = 2$

$\frac{b_1}{b_2} = \frac{6}{3} = 2$

$\frac{c_1}{c_2} = \frac{-18}{-9} = 2$

$\therefore \frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

Thus, the given system of equations has infinitely many solutions and thus is consistent.

45. Rearranging the terms in the equations, we get

x + 2y – 3 = 0

3x + 6y – 9 = 0

Here, $\frac{a_1}{a_2} = \frac{1}{3}, \frac{b_1}{b_2} = \frac{1}{3}, \frac{c_1}{c_2} = \frac{1}{3}$

As $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

Hence the pair of equations is consistent.

46. Given equations are as:

2x − 3y = 8

4x − 6y = 9

Comparing equation 2x − 3y = 8 with $a_1x + b_1y + c_1 = 0$

and 4x − 6y = 9 with

$a_2x + b_2y + c_2 = 0$,

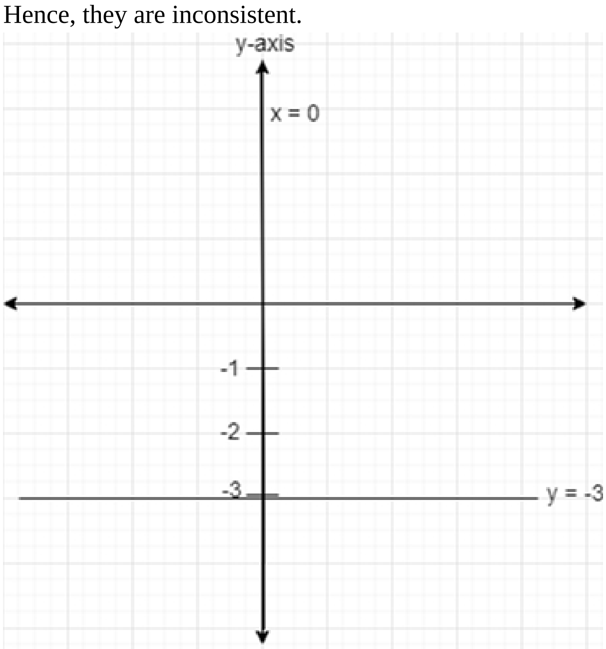
We get, $a_1 = 2$, $b_1 = -3$, $c_1 = -8$, $a_2 = 4$, $b_2 = -6$, $c_2 = -9$

Here $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ because $\frac{2}{4} = \frac{-3}{-6} \neq \frac{-8}{-9} \Rightarrow \frac{1}{2} = \frac{1}{2} \neq \frac{-8}{-9}$

Therefore, equations have no solution because they are parallel.

Hence, they are inconsistent.

47.



equation x = 0 i.e. y-axis and y = -3 intersect at a point (0, -3). It means it has one solution.

hence, system of equations is consistent.