Chapter 3

ASSIGNMENT

OBJECTIVE EX - 3.1

1. The equations 3x - 5y + 2 = 0, and 6x + 4 = 10 y have :
   (A) No solution
   (B) A single solution
   (C) Two solutions
   (D) An infinite number of solution

2. If p + q = 1 and the ordered pair (p, q) satisfy 3x + 2y = 1 then is also satisfies :
   (A) 3x + 4y = 5
   (B) 5x + 4y = 4
   (C) 5x + 5y = 4
   (D) None of these.

3. If x = y, 3x - y = 4 and x + y + x = 6 then the value of z is :
   (A) 1
   (B) 2
   (C) 3
   (D) 4

4. The system of linear equation ax + by = 0, cx + dy = 0 has no solution if :
   (A) ad - bc > 0
   (B) ad - bc < 0
   (C) ad + bc = 0
   (D) ad - bc = 0

5. The value of k for which the system kx + 3y = 7 and 2x - 5y = 3 has no solution is :
   (A) $7 \& k = -\dfrac{3}{14}$
   (B) $4 \& k = \dfrac{3}{14}$
   (C) $\dfrac{6}{5} \& k \neq \dfrac{14}{3}$
   (D) $-\dfrac{6}{5} \& k \neq \dfrac{14}{3}$

6. If 29x + 37y = 103, 37x + 29y = 95 then :
   (A) x = 1, y = 2
   (B) x = 2, y = 1
   (C) x = 2, y = 3
   (D) x = 3, y = 2

7. On solving $\dfrac{25}{x+y} - \dfrac{3}{x-y} = 1, \dfrac{40}{x+y} + \dfrac{2}{x-y} = 5$ we get :
   (A) x = 8, y = 6
   (B) x = 4, y = 6
   (C) x = 6, y = 4
   (D) None of these

8. If the system 2x + 3y - 5 = 0, 4x + ky - 10 = 0 has an infinite number of solutions then :
   (A) $k = \dfrac{3}{2}$
   (B) $k \neq \dfrac{3}{2}$
   (C) $k \neq 6$
   (D) $k = 6$

9. The equation x + 2y = 4 and 2x + y = 5
   (A) Are consistent and have a unique solution
   (B) Are consistent and have infinitely many solution
   (C) are inconsistent
   (B) Are homogeneous linear equations

10. If $\dfrac{1}{x} - \dfrac{1}{y} = \dfrac{1}{z}$ then z will be :
    (A) y - x
    (B) x - y
    (C) $\dfrac{y-x}{xy}$
    (D) $\dfrac{xy}{y-x}$

Solve each of the following pair of simultaneous equations.

1. $\dfrac{x}{3} + \dfrac{y}{12} = \dfrac{7}{2}$ and $\dfrac{x}{6} - \dfrac{y}{8} = \dfrac{6}{8}$

2. $0.2\,x + 0.3y = 0.11 = 0,\quad 0.7x - 0.5y + 0.08 = 0$

3. $3\sqrt{2}x - 5\sqrt{3}y + \sqrt{5} = 0$

   $2\sqrt{3}x + 7\sqrt{2}y - 2\sqrt{5} = 0$

4. $\dfrac{x}{3} + y = 1.7 \quad$ and $\quad \dfrac{11}{x + \dfrac{y}{3}} = 10\,\forall\left[x + \dfrac{y}{3} \neq 0\right]$

5. Prove that the positive square root of the reciprocal of the solutions of the equations $\dfrac{3}{x} + \dfrac{5}{y} = 29$ and

   $\dfrac{7}{x} - \dfrac{4}{y} = 5\,(x \neq 0,\ y \neq 0)$ satisfy both the equation $2(\sqrt{3}x + 4) - 3(4y - 5) = 5$ and $7\left(\dfrac{9x}{\sqrt{3}} + 8\right) + 5(7y - 25) = 64$.

6. For what value of a and b, the following system of equations have an infinite no. of solutions. 2x + 3y = 7;
   (a-b) x + (a +b) + b - 2

7. Solve :

   (i) $\dfrac{7}{x^3} - \dfrac{6}{2^y} = 15;\ \dfrac{8}{3^x} = \dfrac{9}{2^y}$

   (ii) 119x - 381y = 643; 381x - 119y = -143

8. Solve: $\dfrac{bx}{a} - \dfrac{ay}{b} + a + b = 0$; bx - ay + 2ab = 0

9. Solve : $\dfrac{1}{3x} + \dfrac{1}{5y} = 1;\ \dfrac{1}{5x} + \dfrac{1}{3y} = 1\dfrac{2}{15}$

10. Solve   x - y + z = 6

    x - 22y - 2z = 5

    2x + y - 3z = 1

11. Solve, px + qy = r and qx = 1 + r

12. Find the value of k for which the given system of equations
    (A) has a Unique solution.   (B) becomes consistent.
    (i)   3x + 5y = 12   (ii)3x - 7y = 6

$$4x - 7y = k \qquad\qquad\qquad 21x - 49y = 1 - 1$$

13. Find the value of k for which the following system of linear equation becomes infinitely many solution. or represent the coincident lines.

(i) $6x + 3y = k - 3$

$2k\,x + 6y = 6$

(ii) $x + 2y + 7 = 0$

$2x + ky + 14 = 0$

14. Find the value of k or C for which the following systems of equations be in consistent or no solution.

(i) $2 \times ky + k + 2 = 0$

$kx + 8y + 3k = 0$

(ii) $Cx + 3y = 3$

$12x + Cy = 6$

15. Solve for x and y :

$(a - b) x + (a + b) y = a^2 - 2ab - b^2$

$(a + b) (x + y) = a^2 + b^2$ **[CBSE - 2008]**

16. Solve for x and y :

$37x + 43y = 123$

$43x + 37y = 117$ **[CBSE - 2008]**

OBJECTIVE EX. 3.3

1. The graphs of $2x + 3y - 6 = 0$, $4x - 3y - 6 = 0$, $x = 2$ and $y = \dfrac{2}{3}$ intersects in :

(A) Four points   (B) one point   (C) two point   (D) infinite number of points

2. The sum of two numbers is 20, their product is 40. The sum of their reciprocal is :

(A) $\dfrac{1}{2}$ (B) 2   (C) 4   (D) $\dfrac{1}{10}$

3. If Rs. 50 is distributed among 150 children giving 50 p to each boy and 25 p to each girl. Then the number of boys is :

(A) 25   (B) 40   (C) 36   (D) 50

4. In covering a distance of 30 km. Amit takes 2 hrs. more than suresh. If Amit doubles his speed, he would take one hour less than suresh. Amits' speed is :

(A) 5 km/hr.   (B) 7.5 km/hr.   (C) 6 km/hr.   (D) 6.2 km/hr.

5. If in a fraction 1 less from two times of numerator & 1 add in denominator then new fraction will be :

(A) $2\left(\dfrac{x-1}{y+1}\right)$ (B) $\dfrac{2(x+1)}{y+1}$ (C) $\left(\dfrac{x}{y}\right)$ (D) $\dfrac{2x-1}{y+1}$

SUBJECTIVE 3.4

1. The denominator of a fraction is greater than its numerator by 7. If 4 is added to both its numerator and denominator, then it becomes $\frac{1}{2}$. Find the fraction.

2. In a certain number is divided by the sum of its two digits, the quotient is 6 and remainder is 3. If the digits are interchanged and the resulting number is divided by the sum of the digits, then the quotient is 4 and the remainder is 9. Find the number.

3. 2 men and 3 boys together can do a piece of work is 8 days. The same work si done in 6 days by 3 men and 2 boys together. How long would 1 boy alone or 1 man alone take to complete the work

4. The um of two no s is 18. the sum of their reciprocal is $\frac{1}{4}$. Find the numbers.

5. In a cyclic quadrilateral ABCD, $\angle A = (2x + 4)^0$, $\angle B = (y + 3)^0$, $\angle C = (2y + 10)^0$ and $\angle D = (4x - 5)^0$ then find out the angles of quadrilateral.

6. Solve graphically and find the pints where the given liens meets the y - axis : $2x + y - 11 = 0$, $x - y - 1 = 0$.

7. Use single graph paper & draw the graph of the following equations. Obtain the vertices of the triangles so obtained : $2y - x = 8$, $5y - x = 14$ & $y - 2x = 1$.

8. Draw the graph of $x - y + 1 = 10$; $3x + 2y - 12 = 0$. Calculate, the area bounded by these lines and x - axis.

9. A man sold a chair and a table together for Rs. 1520 thereby making a profit of 25% on chair and 10% on table. By selling them together for Rs. 1535 he would have made a profit of 10% on the chair and 25% on the table. Find cost price of each.

10. A man went to the Reserve Bank of India with a note or Rs. 500. He asked the cashier to give him Rs. 5 and Rs. 10 notes in return. The cashier gave him 70 notes in all. Find how many notes of Rs. 5 and Rs. 10 did the man receive.

11. Solve graphically: $5x - 6y + 30 = 0$; $5x + 4y - 20 = 0$ Also find the vertices of the triangle formed by the above two lines and x -axis.

12. The sum of the digits of a two-digit number is 12. "The number obtained by interchanging the two digits exceeds the given number by 18. Find the number.

13. Draw the graphs of the following equations and solve graphically:
$3x + 2y + 6 = 0$; $3x + 8y - 12 = 0$
Also determine the co-ordinates of the vertices of the triangle formed by these lines and the x - axis.

14. A farmer wishes to purchase a number of sheep found the if they cost him Rs 42 a head, he would not have money enough by Rs 25; But if they cost him Rs 40 a head, he would them have Rs 40 more than he required; find the number of sheeps, and the money which he had.