



QUESTION BANK - CHAPTER - 1 LINEAR EQUATIONS IN TWO VARIABLES

1 MARK QUESTIONS

(1) Choose the correct alternative from the following :

- (i) To draw graph of $4x + 5y = 19$, Find y when $x = 1$.
(A) 4 (B) 3 (C) 2 (D) -3
- (ii) Find the value of $\begin{vmatrix} 5 & 3 \\ -7 & -4 \end{vmatrix}$.
(A) -1 (B) -41 (C) 41 (D) 1
- (iii) For simultaneous equations in variables x and y , $D_x = 49$, $D_y = -63$, $D = 7$ then what is x ?
(A) 7 (B) -7 (C) $\frac{1}{7}$ (D) $-\frac{1}{7}$
- (iv) To solve $x + y = 3$; $3x - 2y - 4 = 0$ by determinant method find D .
(A) 5 (B) 1 (C) -5 (D) -1
- (v) $ax + by = c$ and $mx + ny = d$ and $an \neq bm$ then these simultaneous equations have -.
(A) only one common solution. (B) No solution
(C) Infinite number of solutions. (D) Only two solutions.

(2) Find the value of the following determinants :

- (1) $\begin{vmatrix} 5 & 2 \\ 7 & 4 \end{vmatrix}$ (2) $\begin{vmatrix} 4 & 3 \\ 2 & 7 \end{vmatrix}$ (3) $\begin{vmatrix} -3 & 8 \\ 6 & 0 \end{vmatrix}$ (4) $\begin{vmatrix} 3 & -1 \\ 1 & 4 \end{vmatrix}$
- (5) $\begin{vmatrix} -\frac{4}{7} & -\frac{6}{35} \\ 5 & -\frac{2}{5} \end{vmatrix}$ (6) $\begin{vmatrix} -1 & 7 \\ 2 & 4 \end{vmatrix}$ (7) $\begin{vmatrix} 5 & 3 \\ -7 & 0 \end{vmatrix}$ (8) $\begin{vmatrix} \frac{7}{3} & \frac{5}{3} \\ \frac{3}{2} & \frac{1}{2} \end{vmatrix}$

(3) Answer the following.

- (i) If $D_x = -18$ and $D = 3$ are the values of the determinants for certain simultaneous equations in x and y , find x .
- (ii) If $D_y = -15$ and $D = -5$ are the values of the determinants for certain simultaneous equations in x and y , find y .
- (iii) $3x + 4y = 8$; $x - 2y = 5$. Write D_x for the equations.



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(4) Fill in the blanks.

$$\begin{vmatrix} 3 & 2 \\ 4 & 5 \end{vmatrix} = 3 \times \boxed{} - \boxed{} \times 4 = \boxed{} - 8 = \boxed{}$$

(5) If the value of the determinant $\begin{vmatrix} m & 2 \\ -5 & 7 \end{vmatrix}$ is 31, find m.

2 MARK QUESTIONS

(1) Find values of D and D_x for the following equations :

- (i) $3x + y = 1$; $2x = 11y + 3$
- (ii) $x + 18 = 2y$; $y = 2x - 9$
- (iii) $3x + 2y + 11 = 0$; $7x - 4y = 9$
- (iv) $4x + 3y - 4 = 0$; $6x = 8 - 5y$
- (v) $3x - y = 7$; $x + 4y = 11$

(2) Answer the following.

- (i) $27x + 29y = 60$; $29x + 27y = 62$, find $x + y$
- (ii) $41x - 42y = 80$; $42x - 41y = 86$, find $x - y$
- (iii) $51x - 52y = 100$; $52x - 51y = 106$, find $x - y$
- (iv) $61x + 62y = 183$; $62x + 61y = 186$, find $x + y$
- (v) $71x - 72y = 140$; $72x - 71y = 146$, find $x - y$
- (vi) $31x + 32y = 60$; $32x + 31y = 66$, find $x + y$

(3) Get 3 collinear points for drawing graph of :

- (i) $x + y = 8$
- (ii) $x - y = 2$
- (iii) $y = -2x - 2$
- (iv) $2x + y = 6$
- (v) $y = x + 4$
- (vi) $y = 2x + 1$

(4) Solve the following :

- (i) Sum of two numbers is 60. The greater number is 8 more than thrice the smaller integer. Form two equations using x and y as variables.
- (ii) The perimeter of an isosceles triangle is 24cm. The length of its congruent sides is 13cm less than twice the length of its base form two equations with x and y as variables.
- (iii) In a right angled triangle, one of the acute angle exceeds the other by 20° . Form two equations in x and y as variables.
- (iv) Seg AB is the diameter of a circle. C is the point on the circumference such that in $\triangle ABC$, $\angle B$ is less by 10° than $\angle A$. Form two equations in x and y as variables.

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- (v) A house has rectangular yard in front of it for children to play. The length of that rectangle exceeds width by 6m and its perimeter is 60m, Form two equations in x and y as variable.
- (vi) AB is a segment. The point P is on the perpendicular bisector of segment AB such that length of AP exceeds length of AB by 7cm. If the perimeter of $\triangle ABP$ is 38cm. Form two equations in x and y .

(5) Find value of D for following equations :

(i) $y = \frac{5x-10}{2}$; $4x + 5 = -y$



3 MARK QUESTIONS

(1) Solve the following simultaneous equations :

- (i) $3a + 5b = 26$; $a + 5b = 22$
- (ii) $\frac{2}{x} - \frac{3}{y} = 15$; $\frac{8}{x} + \frac{5}{y} = 77$
- (iii) $2x - 3y = 9$; $2x + y = 13$
- (iv) $\frac{148}{x} + \frac{231}{y} = \frac{527}{xy}$; $\frac{231}{x} + \frac{148}{y} = \frac{610}{xy}$
- (v) $3a + 5b = 26$; $a + 5b = 22$
- (vi) $5m - 3n = 19$; $m - 6n = -7$
- (vii) $x + 7y = 10$; $3x - 2y = 7$
- (viii) $5x + 2y = -3$; $x + 5y = 4$

(2) Solve the following simultaneous equations using Cramer's rule.

- (i) $4x + 3y - 4 = 0$; $6x = 8 - 5y$
- (ii) $2x + 3y = 2$; $x - \frac{y}{2} = \frac{1}{2}$
- (iii) $3x - 4y = 10$; $4x + 3y = 5$
- (iv) $x + 2y = -1$; $2x - 3y = 12$
- (v) $6x - 4y = -12$; $8x - 3y = -2$
- (vi) $4m + 6n = 54$; $3m + 2n = 28$

4 MARK QUESTIONS

(1) Solve the following simultaneous equations :

- (i) $\frac{10}{x+y} + \frac{2}{x-y} = 4$; $\frac{15}{x+y} - \frac{5}{x-y} = -2$
- (ii) $\frac{1}{3x+y} + \frac{1}{3x-y} = \frac{3}{4}$; $\frac{1}{2(3x+y)} - \frac{1}{2(3x-y)} = -\frac{1}{8}$



$$(iii) \quad \frac{27}{x-2} + \frac{31}{y+3} = 85 ; \quad \frac{31}{x-2} + \frac{27}{y+3} = 89$$

$$(iv) \quad \frac{7}{2x+1} + \frac{13}{y+2} = 27 ; \quad \frac{13}{2x+1} - \frac{7}{y+2} = 33$$

$$(v) \quad \frac{1}{2(3x+4y)} + \frac{1}{5(2x-3y)} = \frac{1}{4} ; \quad \frac{5}{(3x+4y)} - \frac{2}{(2x-3y)} = -\frac{3}{2}$$

$$(vi) \quad \frac{7x-2y}{xy} = 5 ; \quad \frac{8x+7y}{xy} = 15$$

(2) Solve the following simultaneous equations graphically :

(i) $x + y = 5 ; x - y = 3$

(ii) $x + y = 6 ; x - y = 4$

(iii) $x + y = 0 ; 2x - y = 9$

(iv) $2x - 3y = 4 ; 3y - x = 4$

(v) $3x - 4y = -7 ; 5x - 2y = 0$

(vi) $3x - y = 2 ; 2x - y = 3$

(3) Solve the following :

(i) In a factory the ratio of salary of skilled and unskilled workers is 5 : 3. Total salary of one day of both of them is ₹720. Find daily wages of skilled and unskilled workers.

(ii) Kantabai bought $1\frac{1}{2}$ kg tea and 5kg sugar from a shop. She paid ₹50 as return fare for rickshaw. Total expense was ₹700. Then she realised that by ordering online the goods can be bought with free home delivery at the same price. So next month she placed the order online for 2kg tea and 7kg sugar. She paid ₹880 for that. Find the rate of sugar and tea per kg.

(iii) Two types of boxes A, B are to be placed in a truck having capacity of 10 tons. When 150 boxes of type A and 100 boxes of type B are loaded in the truck, it weighs 10 tons. But when 260 boxes of type A are loaded in the truck, it can still accommodate 40 boxes of type B, so that it is fully loaded. Find the weight of each type of box.

(iv) The denominator of a fraction is 4 more than twice its numerator. Denominator becomes 12 times the numerator, if both the numerator and the denominator are reduced by 6. Find the fraction.

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