MATHS

BOOKS - CHETAN MATHS (TAMIL ENGLISH)

LINEAR EQUATIONS IN TWO VARIABLES

Example

1. $5x - 3y = 8, 3x + y = 2.$

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2. Solve: $3x + 2y = 29, 5x - y = 18$

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Practic Set 1 1

1. Complete the following activity to solve the simultaneous equations.

$5x + 3y = 9, 2x - 3y = 12$

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2. $3a + 5b = 26; a + 5b = 22$

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3. $x + 7y = 10, 3x - 2y = 7$

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4. $2x - 3y = 9, 2x + y = 13$

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5. $5m - 3n = 19, m - 6n = -7$

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6. $5x + 2y = -3, x + 5y = 4$

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7. $\frac{1}{3}x + y = \frac{10}{3}, 2x + \frac{1}{4}y = \frac{11}{4}$

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8. Solve $99x + 101y = 499; 101x + 99y = 501$

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9. $49x - 57y = 172, 57x - 49y = 252$

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Practic Set 1 2

1. Complete the following table to draw graph of the equations.

$x + y = 3, x - y = 4$

$x + y = 3$

x	3	☐	☐
y	☐	5	3
(x, y)	$(3, 0)$	☐	$(0, 3)$

$x - y = 4$

x	☐	-1	0
y	0	☐	-4
(x, y)	☐	☐	$(0, -4)$

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2. $x + y = 6, x - y = 4$

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3. $x + y = 5, x - y = 3$

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4. $x + y = 0, 2x - y = 9$

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5. $3x - y = 2, 2x - y = 3$

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6. $3x - 4y = -7, 5x - 2y = 0$

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7. $2x - 3y = 4, 3y - x = 4$

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Practic Set 1 3

1. Fill in the blanks with correct number.

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

$$= \square - 8$$

$$= \square$$

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2. $\begin{vmatrix} -1 & 7 \\ 2 & 4 \end{vmatrix}$

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3. $\begin{vmatrix} 5 & 3 \\ -7 & 0 \end{vmatrix}$

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4. $\begin{vmatrix} \frac{7}{3} & \frac{5}{3} \\ \frac{3}{2} & \frac{1}{2} \end{vmatrix}$

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5. $3x - 4y = 10, 4x + 3y = 5$

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6. $4x + 3y - 4 = 0, 6x = 8 - 5y$

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7. $x + 2y = -1, 2x - 3y = 12$

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8. $6x - 4y = -12, 8x - 3y = -2$

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9. $4m + 6n = 54, 3m + 2n = 28$.

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10. $2x + 3y = 2, x - \frac{y}{2} = \frac{1}{2}$.

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Practic Set 1 4

1. $\frac{2}{x} - \frac{3}{y} = 15, \frac{8}{x} + \frac{5}{y} = 77$

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2.

$$\frac{10}{x+y} + \frac{2}{x-y} = 4, \frac{15}{x+y} - \frac{5}{x-y} = -2$$

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3. Solve the following simultaneous equations:

$$\frac{27}{x-2} + \frac{31}{y+3} = 35, \frac{31}{x-2} + \frac{27}{y+3} = 89$$

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4. $\frac{1}{3x+y}+\frac{1}{3x-y}=\frac{3}{4}$, $\frac{1}{2(3x+y)}-\frac{1}{2(3x-y)}=-\frac{1}{8}$

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Practic Set 1 5

1. Two numbers differ by 3 . The sum of twice te smaller number and thrice the greater

number is 19 . Find the numbers .

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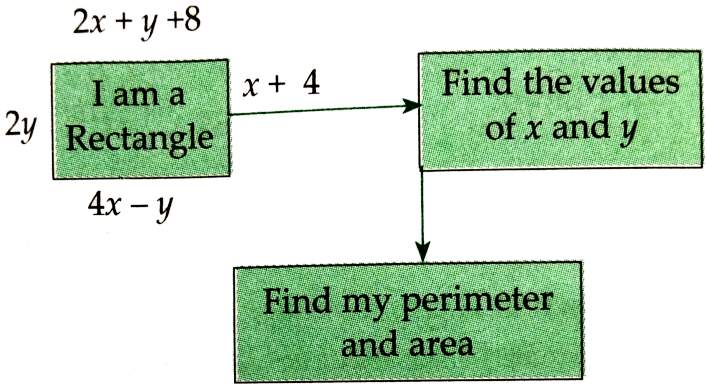
2. Complete the following activity .



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3. The sum of father's age and twice the age of his son is 70 . If we double the age of the father and add it to the age of his son,the sum is 95 find their present ages.

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4. The denominator of a fraction is 4 more than twice the numerator . Denominator becomes 12 times the numerator, if both the

numerator and denominator are reduced by 6 . Find the fraction.

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5. The 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 weightes 10 tons . But when260 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 fof box ?

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6. Out of 1900 km, Vishal travelled some distance by bus and some by aeroplane . Bus travels with average speed 60 km/hr and the average speed of aeroplane is 700 km/hr . It takes 5 hours to complete the journey . Find the distance, Vishal travelled by bus .

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Problem Set 1

1. Complete the following table to draw the graph of $2x - 6y = 3$

x	-5	
y		0
(x, y)		

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2. Solve the following system of linear equation graphically and shade the region between the two lines and x-axis.

$2x + 3y = 12, \quad x - y = 1$

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3. $x - 3y = 1, 3x - 2y + 4 = 0$

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4. $5x - 6y + 30 = 0, 5x + 4y - 20 = 0$

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5. Solve $3x - y - 2 = 0, 2x + y - 8 = 0$ by method of cross multiplication .

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6. $3x + y = 10, x - y = 2$

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7. Find the value of the determinant $\begin{vmatrix} 4 & 3 \\ 2 & 7 \end{vmatrix}$.

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8. $\begin{vmatrix} 5 & -2 \\ -3 & 1 \end{vmatrix}$

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9. $\begin{vmatrix} 3 & -1 \\ 1 & 4 \end{vmatrix}$

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10. $6x - 3y = -10, 3x + 5y - 8 = 0$

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11. Solve the following equations by Cramer's method.

$4m - 2n = -4, 4m + 3n = 16$

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12. $3x - 2y = \frac{5}{2}, \frac{1}{3}x + 3y = \frac{-4}{3}$

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13. Solve the following equations by Cramer's method.

$7x + 3y = 15, 12y - 5x = 39$

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14. Solve for x and y

$\frac{2}{x} + \frac{2}{3y} = \frac{1}{6}, \frac{3}{x} + \frac{2}{y} = 0$

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15. Solve the following simultaneous equations:

$$\frac{7}{2x+1}+\frac{13}{y+2}=27,\ \frac{13}{2x+1}+\frac{7}{y+2}=33$$

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16. $\frac{148}{x}+\frac{231}{y}=\frac{527}{xy},\ \frac{231}{x}+\frac{148}{y}=\frac{610}{xy}$

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17. Solve the following system of equations:

$$\frac{7x-2y}{xy}=5, \quad \frac{8x+7y}{xy}=15$$

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18. $\frac{1}{2(3x+4y)}=\frac{1}{5(2x-3y)}=\frac{1}{4}$,

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19. A two digit number and the number with digits interchanged add up to 143 . In the

given number the digit in unit's place is 3 more than the digit in the ten's place . Find the original number.

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20. Kantabai bought $1\frac{1}{2}$ kg tea and 5 kg sugar from a shop. She paid Rs.50 as return fare for rickshaw. Total expense was Rs. 700 . Then she realised that by ordering online the goods can be bought with free home dilivery at the same price . So next month she placed the order

online for 2 kg tea and 7 kg sugar. she paid Rs. 880 for that . find the rate fo sugar and tea per kg.

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21. Places A and B are 30 km apart and they are on a straight road. Humid travels from A to B on bike. At the same time Joseph starts from B on bike, travels towards A. they meet each other after 20 minutes . If Joseph would have started from B at the same time but in the

opposite direction (instead of towards A) Hamid would have caught up with him after 3 hours . find the speed of Hamid and Joseph .

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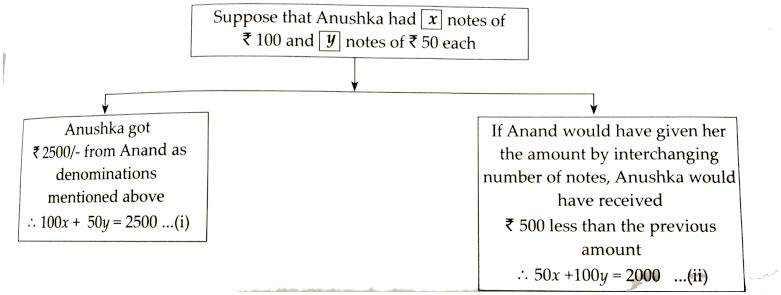
22. To find number of notes that Anushka had complete the following activity .



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23. Sum of the present ages of Manish and Savita is 31 . Manish's age 3 years ago was 4 times the age of Savita . Find their present ages .

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24. 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 Rs . 720 . Find daily wages of skilled and unskilled workers .

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25. For drawing the graph of $4x + 5y = 19$, if $x = 1$, what is the value of y?

A. -1

B. -41

C. 41

D. 1

Answer: A

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26. For simultaneous equations in x and y, if $D_x = 25$, $D_y = 50$ and $D = 5$, then what is the value of x?

A. 5

B. 1

C. -5

D. -1

Answer:

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27. Find the value of $\begin{vmatrix} 5 & 3 \\ -7 & -4 \end{vmatrix}$

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28. To solve $x + y = 3, 3x - 2y - 4 = 0$ by determinant method find D

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29. $ax + by = c$ and $mx + ny = d.$ If $an \neq bm$, then these simultaneous equations have

A. (0, 2)

B. (2, 0)

C. $(-2, 0)$

D. $(0, -2)$

Answer: B

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30. The general form of linear equation in two variables is .....

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31. Solve the following simultaneous linear equations in two variables by the method of elimination : $11x - 7y = 4; 7x + 11y = 18$

A. $x - 5y = 7$

B. $x - 7y = 5$

C. $x + 7y = 5$

D. $x - 7y = -5$

Answer:

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32. Find the value of $x + y$, if

$12x + 13y = 29$ and

$13x + 12y = 21$

A. $\begin{vmatrix} 3 & 4 \\ 1 & -2 \end{vmatrix}$

B. $\begin{vmatrix} 8 & 4 \\ 5 & -2 \end{vmatrix}$

C. $\begin{vmatrix} 4 & 8 \\ -2 & 5 \end{vmatrix}$

D. $\begin{vmatrix} 3 & 8 \\ 1 & 5 \end{vmatrix}$

Answer: B::D

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33. Express the following in following in the mathematical form using x and y variables : one number is 5 more than seven times the other number .

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34. Find the value of D_x, for solving the simultaneous equations $3x + 4y = 8$, $x - 2y = 5$ by Cramer's rule.

A. Simultaneous equations

B. linear equations

C. quadratic equations

D. non-linear equations .

Answer: A

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35. ..... Is the solutions of given simultaneous equations $x - y = 7, x + y = 11$.

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36. Solve the following simultaneous linear equations in two variables by the method of elimination : $2x + 2y = 10; 2y - 3x = -5$

A. $3x + 9 = \sqrt{2}y + 2$

B. $3x - 4x + xy = 0$

C. $2m - 8 = 4m$

D. $3x - 14 = 9$

Answer: B::C

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37. Solve the following simultaneous linear equations in two variables by the method of elimination : $23x + 17y = 63$; $17x + 23y = 57$

A. 1 and 2

B. 2 and 3

C. 3 and 4

D. 2 and 4

Answer: A::B::D

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38. $x+3y = -4$; $5x-7y=68$

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39. The pair of simultaneous equations from the following is .....

(1) $2x + 2y = 7$

(2) $4x + 3z = 9$

(3) $3y + 4z = 8$

(4) $3z + 9x = 18$

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40. The equation of X-axis is of the form

A. -3

B. 3

C. -7

D. 7

Answer: C

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41. The Co-ordinates of the point of origin are .....

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42. If the value of the determinant $\begin{vmatrix} m & -2 \\ 2 & 1 \end{vmatrix}$ is 7 then value of m is .....

A. 3

B. -6

C. 34

D. -34

Answer: A

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43. The perimeter of rectangle is 64, is expressed in the mathematical equation form as .....

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44. The value of determinant $\begin{vmatrix} 5 & 2 \\ 7 & 4 \end{vmatrix}$ is .....

A. 14

B. 3

C. 6

D. 21

Answer: C

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45. If $D_x = -18$ and D = 3 are values of determinant for certain simultaneous equation in x and y then value of x is .....

A. 2

B. -6

C. $\frac{2}{5}$

D. $\frac{-2}{5}$

Answer: B

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

A. unique solution

B. No solution

C. infinitely many solutions

D. none of these

Answer:

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47. If (a, 3) is point lying on graph of equation

$5x + 2y = -4$ then a = ...

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48. The simultaneous equations $3x + 5y = 16$ and $4x - y = 6$ have .....

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Problems For Practice Based On Practice Set 1 1 Solve The Following Simultaneous Equations

1. x+y=10 ; 5x-3y=-6

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2. 2x+y=3 ; x-3y=5

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3. $3x - y = 2, 5x - 2y = 1$

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4. $47x + 31y = 63, 31x + 47y = 15$

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5. $4m + 3n = 18, 3m - 2n = 5$

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6. $2x - 3y = 14, 5x + 2y = 16$

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7. $\frac{1}{3}x + 5y = 13, 2x + \frac{1}{2}y = 19$

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Problems For Practice Based On Practice Set 1 2 Solve The Following Simultaneous Equations Using Graphical Method

1. $\frac{1}{3}x + \frac{1}{4}y = 4, \frac{5}{6}x - \frac{1}{8}y = 4$

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2. $64m - 45n = 289; 45m - 64n = 365$

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3. $x + y = 8, x - y = 2$

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4. $3x + 4y = -5, x - y = -4$

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5. $x + 3y = 7, 2x + y = -1$

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Problems For Practice Based On Practice Set 1 3 Find The Value Of Following Determinans

1. $x + 2y = 5, 2x + y = -2$

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2. $4x - y = -5, 2x - y = -1$

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3. $\begin{vmatrix} 5 & -2 \\ 3 & 1 \end{vmatrix} =$

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Problems For Practice Based On Practice Set 1 3 Solve The Following Simultaneous Equatiosn Using Cramers Method

1. Find the value of the determinant : $\begin{vmatrix} -3 & 8 \\ 6 & 0 \end{vmatrix}$

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2. $\begin{vmatrix} \frac{1}{2} & \frac{-2}{3} \\ \frac{3}{4} & \frac{-4}{5} \end{vmatrix}$

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3. $3x - 2y = 3, 2x + y = 16$

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4. $x + 2y + 4 = 0, 3x = -4y - 16$

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5. Solve the simultaneous equations $3x - y = 7, x + 4y = 11$ using Cramer's rule.

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Problems For Practice Based On Practice Set 1 4 Solve The Following Simultaneous Equatiosns

1. $3x + y = 1, 2x = 11y + 3$

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2. $4x + 3y = 4, 6x + 5y = 8$

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3. $\frac{4}{x} + \frac{3}{y} = 1, \frac{8}{x} - \frac{9}{y} = 7$

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4. Solve the following simultaneous equations:

$$\frac{7}{2x+1} + \frac{13}{y+2} = 27, \frac{13}{2x+1} + \frac{7}{y+2} = 33$$

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Problems For Practice Based On Practice Set 1 5 Solve The Following Simultaneous Equatiosns

1. $\frac{14}{x+y}+\frac{3}{x-y}=5, \frac{21}{x+y}-\frac{2}{x-y}=1$

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

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3. Shabana's age 10 years hence, will be twice Juhi's present age. 6 years back Shabana's age was $\frac{5}{3}$ times Juhi's age at that time . Find their present ages.

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4. If 1 is added to the numerator of a certain fraction its value becomes $\frac{1}{2}$ and if 1 is added to its denominator its value becomes $\frac{1}{3}$. Find the original fraction.

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Assignment A Choose The Correct Atlernative Answer And Fill In The Blanks

1. Sum of two number is 45 and the greater number is twice the smaller number . Find the numbers.

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2. A man travels 370 km partly by train and partly by car. If he covers 250 km by train and the rest by car, it takes him 4 hours. But, if he travels 130 km by train and the rest by car, he takes 18 minutes longer. Find the speed of the train and that of the car.

A. Only one common solution.

B. No solution

C. Infinite number of solutions.

D. Only two Solutions

Answer:

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Assignment B Solve The Following Questions

1. If x = 8 + $\sqrt{28}$, and then find the value of $\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)$

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2. $ax + by = c$ and $mx + ny = d$. If $an \neq bm$, then these simultaneous equations have

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3. Write D_x for the following simultaneous equations . $5x + 2y = 10, \ -3x + y = \ -11$

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Assignment Perform The Following Activities Any 2

1. Find the value of determinate : $\begin{vmatrix} 5 & 7 \\ 2 & 4 \end{vmatrix}$

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2. $\sqrt{2}x - \sqrt{5}y = 16$

If the equation a linear equation in two variables ?

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3. Complete the following table to draw graph for equation x + 2y = 5

x	0		2	
y		-2		1
(x, y)				

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4. Solve the following simultaneous equations

$x + y = 8; x - y = 2$

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Assignment Perform The Following Activities Any 1

1. Find the value of the following determinalts

:

$$\begin{vmatrix} \frac{7}{8} & \frac{5}{3} \\ \frac{3}{2} & \frac{1}{2} \end{vmatrix}$$

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2. Find the value of the following determinalts

:

$$\begin{vmatrix} 3 & -1 \\ 1 & 4 \end{vmatrix}$$

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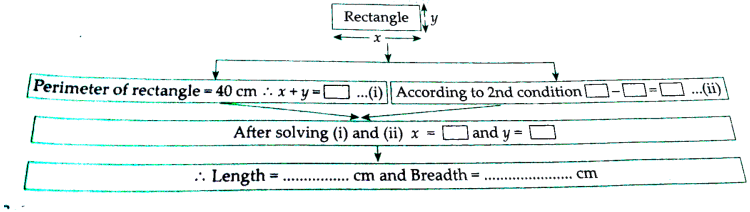
Assignment Attempt The Following Any 2

1. The perimeter of rectangle is 40 cm . The length of rectangle is 2 cm more than twice its breadth then find the length and the breadth of rectangle .

Complete the following activity.



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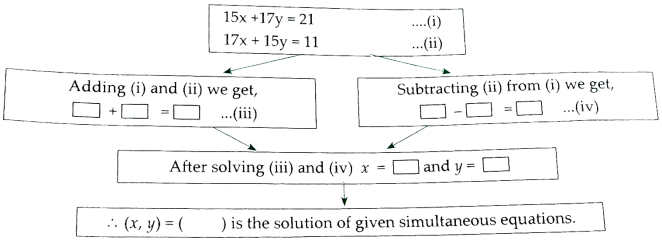
2. Solve $15x + 17x = 21, 17x + 15y = 11$

Complete the following activity .



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3. A boat takes 6 hours to travel 8 km up stream and 32 km down stream and it takes 7

hours to travel 20 km upstreamand 16 km downstream. Fing the speed of the boat in still water and the speed of the stream.

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4. Solve the folowing simultaneous equations using Graphical method :

$2x + 3y = 12, x - y = 1$

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5. A two digit number and the number with digits interchanged add up to 143 . In the given number the digit in unit's place is 3 more than the digit in the ten's place . Find the original number.

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