MATHS

NCERT - NCERT MATHEMATICS(BENGALI ENGLISH)

LINEAR EQUATIONS IN TWO VARIABLES

Examples

1. Sachin and Sehwag scored 137 runs together. Express the information in the form of an equation.

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2. Hema's age is 4 times the age of Mary. Write a linear equation in two variables to represent this information.

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3. A number is 27 more than the number obtained by reversing its digits. If its unit's and ten's digits are x and y respectively, write the linear equation representing the above statement.

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4. Express each of the following equations in the form of ax + by + c = 0 and write the values of a, b and c.

(i) 3x + 4y = 5 (ii) x - 5 = $\sqrt{3}y$

(iii) 3x = y (iv) $\frac{x}{2}+\frac{y}{2}=\frac{1}{6}$

(v) 3x - 7 = 0

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5. Write each of the following in the form of ax + by + c = 0 and find the values of a, b and c

(i) x = -5

(ii) y = 2

(iii) 2x = 3

(iv) 5y = -3

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6. Find four different solutions of $4x + y = 9$.

(Complete the table wherever necessary)

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7. Check which of the following are solutions of an equation $x + 2y = 4$? (Complete the table wherever necessary)

(i) (0, 2) (ii) (2, 0) (iii) (4, 0) (iv) $(\sqrt{2},-\sqrt{2})$

(v) (1, 1) (vi) (- 2, 3)

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8. If $x = 3, y = 2$ is a solution of the equation $5x - 7y = k$, find the value of k and write the resultant equation.

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9. If $x = 2k + 1$ and $y = k$ is a solutions of the equation $5x + 3y - 7 = 0$, find the value of k.

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10. Draw the graph of the equation $y - 2x = 4$ and then answer the following.

(i) Does the point (2, 8) lie on the line? Is (2, 8) a solution of the equation? Check by substituting (2, 8) in the equation.

(ii) Does the point (4, 2) lie on the line? Is (4, 2) a solution of the equation? Check algebraically also.

(iii) From the graph find three more solutions of the equation and also three more which are not solutions.

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11. $\left(\frac{5}{x}+2\right)-\frac{7}{y}=1$ in this equation replace y by x and find value of x and y.

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12. $(7x-y)-(y+x)=1$ in this equation replace y by x and find value of x and y.

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13. $(3x - y) + \frac{y + x}{3} = 1$ in this equation replace y by x and find value of x and y.

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Try This

1. Express the following linear equations in the form of ax + by + c = 0 and indicate the values of a, b, c in each case?

(i) 3x + 2y = 9 (ii) -2x + 3y = 6 (iii) 9x - 5y = 10

(iv) $\frac{x}{2} - \frac{y}{2} - 5 = 0$ (v) 2x = y

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2. $\frac{2x - 3y}{y - x} = 2$ in this equation replace y by x and find value of x and y.

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3. Take a graph paper, plot the point (2, 4), and draw a line passing through it.Now answer the

following questions.

How many linear equations in two variables exist for which (2, 4) is a solution?

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Do This

1. (i) Draw the graph of following equations.

(a) $x = 2$ (b) $x = -2$ (c) $x = 4$ (d) $x = -4$

(ii) Are the graphs of all these equations parallel to Y-axis?

(iii) Find the distance between the graph and the Y-axis in each case

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Exercise 8 1

1. Express the following linear equation in the form of ax+by+c=0 and indicate the values of a, b and c in each case.

(i) 8x + 5y - 3 = 0 (ii) 28x - 35y = - 7 (iii) 93x = 12 - 15y

(iv) 2x = - 5y (v) $\frac{x}{3}+\frac{y}{4}=7$ (vi) $y=\frac{-3}{2}x$

(vii) 3x+5y=12

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2. Write each of the following in the form of ax + by + c = 0 and find the values of a, b and c

(i) 2x = 5 (ii) y - 2 = 0 (iii) $\frac{y}{7}=3$ (iv) x= $\frac{-14}{13}$

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3. Express the following statements as a linear equation in two variables.

The sum of two numbers is 34.

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4. Express the following statements as a linear equation in two variables.

The cost of a ball pen is 5 less than half the cost of a fountain pen.

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5. Express the following statements as a linear equation in two variables.

Bhargavi got 10 more marks than double the marks of Sindhu.

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6. Express the following statements as a linear equation in two variables.

The cost of a pencil is 2 and a ball point pen is

15. Sheela pays 100 for the pencils and pens she purchased.

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7. Express the following statements as a linear equation in two variables.

Yamini and Fatima of class IX together contributed ` 200/- towards the Prime Minister's Relief Fund.

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8. Express the following statements as a linear equation in two variables.

The sum of a two digit number and the number obtained by reversing the order of its digits is 121. If the digits in unit's and ten's place are 'x' and 'y' respectively.

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Exercise 8 2

1. Find three different solutions of the each of the following equations.

(i) $3x + 4y = 7$ (ii) $y = 6x$ (iii) $2x - y = 7$

(iv) $13x - 12y = 25$ (v) $10x + 11y = 21$ (vi) $x + y = 0$

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2. If (0, a) and (b, 0) are the solutions of the following linear equations. Find 'a' and 'b'.

(i)$8x - y = 34$ (ii) $3x = 7y - 21$ (iii)$5x - 2y + 3 = 0$

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3. Check which of the following is solution of the equation 2x - 5y = 10

(i) (0, 2) (ii) (0, –2) (iii) (5, 0) (iv) $(2\sqrt{3}, -\sqrt{3})$ (v) $(\frac{1}{2}, 2)$

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4. Find the value of k, if x = 2, y =1 is a solution of the equation 2x + 3y = k. Find two more solutions of the resultant equation.

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5. If $x = 2 - \alpha$ and $y = 2 + \alpha$ is a solution of the equation $3x - 2y + 6 = 0$ find the value of 'α'. Find three more solutions of the resultant equation.

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6. If $x = 1, y = 1$ is a solution of the equation $3x + ay = 6$, find the value of 'a'.

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7. Write five different linear equations in two variables and find three solutions for each of them?

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Exercise 8 3

1. $\frac{x}{2} - \frac{y}{3} = 3$ in this equation replace y by x and find value of x and y.

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2. $(5x + 2) - 7y = 1$ in this equation replace y by x and find value of x and y.

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3. Draw the graph of the equation 2x + 3y = 11. Find the value of y when x = 1 from the graph.

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4. Draw the graph of the equation $y - x = 2$.

Find from the graph

(i) the value of y when $x = 4$

(ii) the value of x when $y = -3$

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5. Draw the graph of the equation $2x+3y=12$.

Find the solutions from the graph

(i) Whose y-coordinate is 3

(ii) Whose x-coordinate is -3

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6. $(3x+2)+(y+x)=1$ in this equation replace y by x and find value of x and y.

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7. $\frac{2x-5}{y+x}=1$ in this equation replace y by x and find value of x and y.

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8. Gopaiah sowed wheat and paddy in two fields of total area 5000 square meters. Write a linear equation and draw a graph to represent the same?

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9. $3(x-y)+\frac{y}{4}=1$ in this equation represent x as a function of y.

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10. A stone is falling from a mountain. The velocity of the stone is given by V = 9.8t. Draw its graph and find the velocity of the stone '4' seconds after start.

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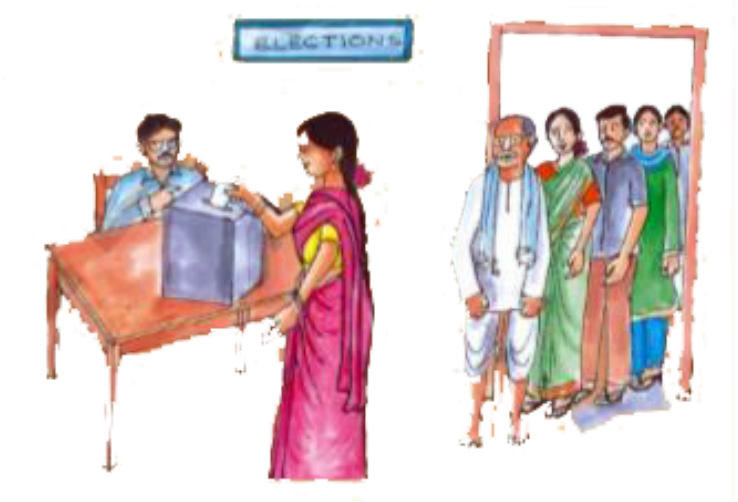
Exercise 8 4

1. In a election 60% of voters cast their votes. Form an equation and draw the graph for this data. Find the following from the graph.

(i) The total number of voters, if 1200 voters cast their votes

(ii) The number votes cast, if the total number of voters are 800



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2. When Rupa was born, her father was 25 years old. Form an equation and draw a graph for this data. From the graph find

(i) The age of the father when Rupa is 25 years old.

(ii) Rupa's age when her father is 40 years old.

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3. An auto charges 15 for first kilometer and 8 each for each subsequent kilometer. For a

distance of ‘x’ km. an amount of ‘y’ is paid.

Write the linear equation representing this information and draw the graph. With the help of graph find the distance travelled if the fare paid is 55? How much would have to be paid for 7 kilometers?

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4. $2\frac{x-y}{y+x}=1$ in this equation replace y by x and find value of x and y.

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5. $2(x-y)+\frac{y+x}{3}=0$ in this equation replace y by x and find value of x and y.

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6. $2x+\frac{y}{5}=1$ in this equation replace y by x and find value of x and y.

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7. $2x + \frac{y-1}{3} = 0$ in this equation replace y by x and find value of x and y.

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8. $2x + 3y = 9$ in this equation replace y by $\frac{7-4x}{5}$ and find x.

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9. $\frac{x}{3} + \frac{y}{2} = 1$ in this equation represent x as a function of y.

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10. In countries like USA and Canada temperature is measured in Fahrenheit where as in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius F = $\left(\frac{9}{5}\right)C + 32$

If the temperature is 30°C, what is the temperature in Fahrenheit?

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11. In countries like USA and Canada temperature is measured in Fahrenheit where as in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius $F = (\frac{9}{5})C + 32$

If the temperature is 95°F, what is the temperature in Celsius?

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12. In countries like USA and Canada temperature is measured in Fahrenheit where as in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius F = $\left(\frac{9}{5}\right)C + 32$

Is there a temperature that has numerically the same value in both Fahrenheit and Celsius? If yes find it?

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Exercise 8 5

1. $\frac{2}{x} + \frac{3}{y} = 2$ in this equation represent x as a function of y.

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2. Give the graphical representation of 2x - 11= 0 as an equation in

(i) one variable (ii) two variables

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3. Solve the equation $3x + 2 = 8x - 8$ and represent the solution on

(i) the number line (ii) the Cartesian plane

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4. Write the equation of the line parallel to X-axis, and passing through the point

(i) (0, –3) (ii) (0, 4) (iii) (2, –5) (iv) (3,4)

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5. Write the equation of the line parallel to Y-axis and passing through the point

(i) (-4, 0) (ii) (2, 0) (iii) (3, 5) (iv) (-4,-3)

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6. Write the equation of three lines that are

(i) parallel to the X-axis (ii) parallel to the Y-axis

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