CLASS IX: MATHS
Chapter 4: Linear Equations in Two Variables

Questions and Solutions | Exercise 4.1 - NCERT Books

Q1. The cost of notebook is twice the cost of a pen. Write a linear equation in two variable to represent this statement.

Sol. Let the cost of a pen be Rs. x and that of a notebook be Rs. y. We are given that $y = 2 \times x$ i.e., $y = 2x$. Hence, the required linear equation is $y = 2x$

Q2. Express the following linear equations in the form $ax + by + c = 0$ and indicate the values of a, b and c in each case :

(i) $2x + 3y = 9.\overline{35}$ (ii) $x - y/5 - 10 = 0$
(iii) $-2x + 3y = 6$ (iv) $x = 3y$
(v) $2x = -5y$ (vi) $3x + 2 = 0$
(vii) $y - 2 = 0$ (viii) $5 = 2x$

Sol. (i) $2x + 3y - 9.\overline{35} = 0$
Here, $a = 2, b = 3, c = -9.\overline{35}$

(ii) $x - y/5 - 10 = 0$
i.e., $1x + (-1/5)y + (-10) = 0$
Here, $a = 1, b = -1/5, c = -10$

(iii) $-2x + 3y = 6$
i.e., $2x - 3y + 6 = 0$,
i.e., $2x + (-3)y + 6 = 0$
Here, $a = 2, b = -3, c = 6$

(iv) $x = 3y$, i.e., $1x + (-3)y + 0 = 0$
Here, $a = 1, b = -3, c = 0$

(v) $2x = -5y$, i.e., $2x + 5y + 0 = 0$
Here, $a = 2, b = 5, c = 0$

(vi) $3x + 2 = 0$
i.e. $(3)x + (0)y + (2) = 0$
Here, $a = 3, b = 0$ and $c = 2$.

(vii) $y - 2 = 0$
i.e. $(0)x + (1)y + (-2) = 0$
Here, $a = 0, b = 1$ and $c = -2$.

(viii) $5 = 2x$

$\Rightarrow 5 - 2x = 0$

$\Rightarrow -2x + 0y + 5 = 0$

$\Rightarrow (-2)x + (0)y + (5) = 0$

Here, $a = -2$, $b = 0$ and $c = 5$.

Questions and Solutions | Exercise 4.2 - NCERT Books

Q1. Which one of the following statements is true, and why?

$y = 3x + 5$ has

(i) A unique solution

(ii) Only two solutions

(iii) Infinitely many solutions.

Sol. Option (iii) is true because a linear equation has an infinitely many solutions. Moreover when represented graphically a linear equation in two variable is a straight line which has infinite points and hence, it has infinite solutions.

Q2. Write four solutions for each of the following equations :

(i) $2x + y = 7$ (ii) $\pi x + y = 9$ (iii) $x = 4y$

Sol. (i) $2x + y = 7$

For $x = -1$, we get $-2 + y = 7$, i.e., $y = 9$

$\therefore (-1, 9)$ is a solution.

For $x = 0$, we get $y = 7$

$\therefore (0, 7)$ is a solution.

For $x = 1$, we get $2 + y = 7$, i.e., $y = 5$

$\therefore (1, 5)$ is a solution.

For $x = 2$, we get $4 + y = 7$, i.e., $y = 3$

$\therefore (2, 3)$ is a solution.

Hence, we have four solutions $(-1, 9)$, $(0, 7)$, $(1, 5)$ and $(2, 3)$

(ii) Proceed as in (i) and we can have four solutions

as $(0, 9)$, $(1, 9 - \pi)$, $(2, 9 - 2\pi)$ and $(3, 9 - 3\pi)$.

(iii) Proceed as in (i) and we can have four solutions
as (0, 0), (4, 1), (8, 2) and (12, 3)

Q3. Check which of the following are solutions of the equation x – 2y = 4 and which are not
(i) (0, 2) (ii) (2, 0) (iii) (4, 0)
(iv) $\left(\sqrt{2}, 4\sqrt{2}\right)$ (v) (1, 1)

Sol. (i) Substituting x = 0, y = 2 in the equation
x – 2y = 4, we get 0 – 2 (2) = 4, i.e., – 4 = 4 but – 4 ≠ 4
∴ (0, 2) is not a solution

(ii) 2 – 2 (0) ≠ 4
∴ (2, 0) is not a solution.

(iii) Substituting x = 4 and y = 0 in the equation
x – 2y = 4, we get
L.H.S. = 4 – 2(0) = 4 – 0 = 4 = R.H.S.
∴ L.H.S. = R.H.S.
∴ (4, 0) is a solution.

(iv) $\sqrt{2} - 2(4\sqrt{2}) = 4$, i.e., $\sqrt{2} - 8\sqrt{2} = 4$,
i.e., $-7\sqrt{2} = 4$ but $-7\sqrt{2} \neq 4$
∴ $(\sqrt{2}, 4\sqrt{2})$ is not a solution

(v) 1 – 2 (1) ≠ 4
∴ (1, 1) is not a solution.

Q4. Find the value of k if x = 2, y = 1 is a solution of the equation 2x + 3y = k.

Sol. (2) (2) + (3) (1) = k, i.e., 4 + 3 = k, i.e., k = 7.