

NCERT solution Linear equation Exercise 5

Question 1 Solve the linear equation

$$\frac{x}{2} - \frac{1}{5} = \frac{x}{3} + \frac{1}{4}$$

Answer

$$\frac{x}{2} - \frac{1}{5} = \frac{x}{3} + \frac{1}{4}$$

L.C.M. of the denominators, 2, 3, 4, and 5, is 60.

So Multiplying both sides by 60, we obtain

$$30x - 12 = 20x + 15$$

Transposing $20x$ to R.H.S and 12 to L.H.S, we obtain

$$30x - 20x = 15 + 12$$

$$10x = 27$$

$$X = 27/10 = 2.7$$

Question 2 Solve the linear equation

$$\frac{n}{2} - \frac{3n}{4} + \frac{5n}{6} = 21$$

Answer

$$\frac{n}{2} - \frac{3n}{4} + \frac{5n}{6} = 21$$

L.C.M. of the denominators, 2, 4, and 6, is 12.

Multiplying both sides by 12, we obtain

$$6n - 9n + 10n = 252$$

$$7n = 252$$

Dividing by 7 on both the sides

n=36

Question 3- Solve the linear equation

$$x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$$

Answer

$$x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$$

L.C.M. of the denominators, 2, 3, and 6, is 6.

Multiplying both sides by 6, we obtain

$$6x + 42 - 16x = 17 - 15x$$

Transposing 15x to RHS and 42 to LHS

$$6x - 16x + 15x = 17 - 42$$

$$5x = -25$$

Dividing by 5 on both the sides

$$x = -5$$

Question 4- Solve the linear equation

$$\frac{x - 5}{3} = \frac{x - 3}{5}$$

Answer

$$\frac{x - 5}{3} = \frac{x - 3}{5}$$

L.C.M. of the denominators, 3 and 5, is 15.

Multiplying both sides by 15, we obtain

$$5(x - 5) = 3(x - 3)$$

$$5x - 25 = 3x - 9$$

Transposing 3x to RHS and 25 to LHS

$$5x - 3x = 25 - 9$$

$$2x = 16$$

Dividing both the sides by 2

$$x = 8$$

Question 5- Solve the linear equation

$$\frac{3t - 2}{4} - \frac{2t + 3}{3} = \frac{2}{3} - t$$

Answer

$$\frac{3t - 2}{4} - \frac{2t + 3}{3} = \frac{2}{3} - t$$

L.C.M. of the denominators, 3 and 4, is 12.

Multiplying both sides by 12, we obtain

$$3(3t - 2) - 4(2t + 3) = 8 - 12t$$

$$9t - 6 - 8t - 12 = 8 - 12t$$

Transposing 12t to RHS and 6 and 12 to LHS

$$9t - 8t + 12t = 8 + 6 + 12$$

$$13t = 26$$

Dividing by 13 on both the sides

$$t = 2$$

Question 6 Solve the linear equation

$$m - \frac{m - 1}{2} = 1 - \frac{m - 2}{3}$$

Answer

$$m - \frac{m - 1}{2} = 1 - \frac{m - 2}{3}$$

L.C.M. of the denominators, 2 and 3, is 6.

Multiplying both sides by 6, we obtain

$$6m - 3(m - 1) = 6 - 2(m - 2)$$

$$6m - 3m + 3 = 6 - 2m + 4$$

Transposing 2m to RHS and 3 to LHS

$$6m - 3m + 2m = 6 + 4 - 3$$

$$5m = 7$$

Dividing by 5 on both the sides

$$m = 7/5$$

Question 7- Simplify and solve the linear equation

$$3(t - 3) = 5(2t + 1)$$

Answer

$$3(t - 3) = 5(2t + 1)$$

$$3t - 9 = 10t + 5 \text{ (Opening the brackets)}$$

$$-9 - 5 = 10t - 3t$$

$$-14 = 7t$$

$$t = -2$$

Question 8- Simplify and solve the linear equation

$$15(y - 4) - 2(y - 9) + 5(y + 6) = 0$$

Answer

$$15(y - 4) - 2(y - 9) + 5(y + 6) = 0$$

$$15y - 60 - 2y + 18 + 5y + 30 = 0 \text{ (Opening the brackets)}$$

$$18y - 12 = 0$$

$$18y = 12$$

$$y = 12/18 = 2/3$$

Question 9- Simplify and solve the linear equation

$$3(5z - 7) - 2(9z - 11) = 4(8z - 13) - 17$$

Answer

$$3(5z - 7) - 2(9z - 11) = 4(8z - 13) - 17$$

$$15z - 21 - 18z + 22 = 32z - 52 - 17 \text{ (Opening the brackets)}$$

$$-3z + 1 = 32z - 69$$

$$-3z - 32z = -69 - 1$$

$$-35z = -70$$

$$z = 2$$

Question 10- Simplify and solve the linear equation
 $0.25(4f - 3) = 0.05(10f - 9)$

Answer

$$0.25(4f - 3) = 0.05(10f - 9)$$

Multiplying both sides by 20, we obtain

$$5(4f - 3) = 10f - 9$$

$$20f - 15 = 10f - 9$$

$$20f - 10f = -9 + 15$$

$$10f = 6$$

$$f = 6/10 = 3/5$$