

NCERT solution Linear equation Exercise 3

Question 1

Solve and check result: $3x = 2x + 18$

Answer

$$3x = 2x + 18$$

Transposing $2x$ to L.H.S, we obtain

$$3x - 2x = 18$$

$$x = 18$$

Let us evaluate both the LHS and RHS for validate the answer

$$\text{L.H.S} = 3x = 3 \times 18 = 54$$

$$\text{R.H.S} = 2x + 18 = 2 \times 18 + 18 = 36 + 18 = 54$$

$$\text{L.H.S.} = \text{R.H.S.}$$

It proves that result is correct

Question 2

Solve and check result: $5t - 3 = 3t - 5$

Answer

$$5t - 3 = 3t - 5$$

Transposing $3t$ to L.H.S and -3 to R.H.S, we obtain

$$5t - 3t = -5 - (-3)$$

$$2t = -2$$

Dividing both sides by 2

$$t = -1$$

Let us evaluate both the LHS and RHS for validate the answer

$$\text{L.H.S} = 5t - 3 = 5 \times (-1) - 3 = -8$$

$$\text{R.H.S} = 3t - 5 = 3 \times (-1) - 5 = -3 - 5 = -8$$

$$\text{L.H.S.} = \text{R.H.S.}$$

It proves that result is correct

Question 3

Solve and check result

$$5x + 9 = 5 + 3x$$

Answer

$$5x + 9 = 5 + 3x$$

Transposing $3x$ to L.H.S and 9 to R.H.S, we obtain

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

$$2x = -4$$

Dividing both sides by 2 , we obtain

$$x = -2$$

Let us evaluate both the LHS and RHS for validate the answer

$$\text{L.H.S} = 5x + 9 = 5 \times (-2) + 9 = -1$$

$$\text{R.H.S} = 5 + 3x = 5 + 3 \times (-2) = -1$$

$$\text{L.H.S.} = \text{R.H.S.}$$

It proves that result is correct

Question 4

Solve and check result:

$$4z + 3 = 6 + 2z$$

Answer

$$4z + 3 = 6 + 2z$$

Transposing $2z$ to L.H.S and 3 to R.H.S, we obtain

$$4z - 2z = 6 - 3$$

$$2z = 3$$

Dividing both sides by 2 , we obtain

$$z = 3/2$$

Let us evaluate both the LHS and RHS for validate the answer

$$\text{L.H.S} = 4z + 3 = 4 \times (3/2) + 3 = 6 + 3 = 9$$

$$\text{R.H.S} = 6 + 2z = 6 + 2 \times (3/2) = 6 + 3 = 9$$

$$\text{L.H.S.} = \text{R.H.S.}$$

It proves that result is correct

Question 5

Solve and check result:

$$2x - 1 = 14 - x$$

Answer

$$2x - 1 = 14 - x$$

Transposing x to L.H.S and 1 to R.H.S, we obtain

$$2x + x = 14 + 1$$

$$3x = 15$$

Dividing both sides by 3, we obtain

$$x = 5$$

Let us evaluate both the LHS and RHS for validate the answer

$$\text{L.H.S} = 2x - 1 = 2 \times (5) - 1 = 10 - 1 = 9$$

$$\text{R.H.S} = 14 - x = 14 - 5 = 9$$

$$\text{L.H.S.} = \text{R.H.S.}$$

It proves that result is correct

Question 6

Solve and check result:

$$8x + 4 = 3(x - 1) + 7$$

Answer

$$8x + 4 = 3(x - 1) + 7$$

$$8x + 4 = 3x - 3 + 7$$

Transposing $3x$ to L.H.S and 4 to R.H.S, we obtain

$$8x - 3x = -3 + 7 - 4$$

$$5x = -7 + 7$$

$$5x = 0$$

$$x = 0$$

Let us evaluate both the LHS and RHS for validate the answer

$$\text{L.H.S} = 8x + 4 = 8 \times (0) + 4 = 4$$

$$\text{R.H.S} = 3(x - 1) + 7 = 3(0 - 1) + 7 = -3 + 7 = 4$$

$$\text{L.H.S.} = \text{R.H.S.}$$

It proves that result is correct

Question 7-

Solve and check result:

$$x = \frac{4}{5}(x + 10)$$

Answer

$$x = \frac{4}{5}(x + 10)$$

Multiplying both sides by 5, we obtain

$$5x = 4(x + 10)$$

$$5x = 4x + 40$$

Transposing $4x$ to L.H.S, we obtain

$$5x - 4x = 40$$

$$x = 40$$

Let us evaluate both the LHS and RHS for validate the answer

$$\text{L.H.S} = x = 40$$

$$\text{R.H.S} = \frac{4}{5}(x + 10) = 40$$

$$\text{L.H.S.} = \text{R.H.S.}$$

It proves that result is correct

Question 8

Solve and check result:

$$\frac{2x}{3} + 1 = \frac{7x}{15} + 3$$

Answer -

$$\frac{2x}{3} + 1 = \frac{7x}{15} + 3$$

Transposing $\frac{7x}{15}$ on LHS and 1 on RHS

$$\frac{2x}{3} - \frac{7x}{15} = 3 - 1$$

$$\frac{10x - 7x}{15} = 2$$

Multiplying by 15 on both sides

$$10x - 7x = 30$$

$$3x = 30$$

Dividing by 3 on both the sides

$$x = 10$$

Let us evaluate both the LHS and RHS for validate the answer

$$\text{L.H.S} = \frac{2x}{3} + 1 = 23/3$$

$$\text{R.H.S} = \frac{7x}{15} + 3 = 23/3$$

$$\text{L.H.S.} = \text{R.H.S.}$$

It proves that result is correct

Question 9

Solve and check result

$$2y + \frac{5}{3} = \frac{26}{3} - y$$

Answer

$$2y + \frac{5}{3} = \frac{26}{3} - y$$

Transposing y to L.H.S and $5/3$ to R.H.S, we obtain

$$2y + y = \frac{26}{3} - \frac{5}{3}$$

$$3y = 21/3$$

$$3y = 7$$

Dividing both sides by 3, we obtain

$$y = 7/3$$

Let us evaluate both the LHS and RHS for validate the answer

$$\text{L.H.S} = 2y + \frac{5}{3} = 19/3$$

$$\text{R.H.S} = \frac{26}{3} - y = 19/3$$

$$\text{L.H.S.} = \text{R.H.S.}$$

It proves that result is correct

Question 10

Solve and check result:

$$3m = 5m - \frac{8}{5}$$

Answer

$$3m = 5m - \frac{8}{5}$$

Transposing $3m$ to R.H.S and $8/5$ to L.H.S

$$8/5 = 2m$$

Dividing both sides by 2

$$m = 4/5$$

Let us evaluate both the LHS and RHS for validate the answer

$$\text{L.H.S} = 3m = 12/5$$

$$\text{R.H.S} = 5m - (8/5) = 12/5$$

$$\text{L.H.S.} = \text{R.H.S.}$$

It proves that result is correct

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