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
L.H.S $= 3x = 3 \times 18 = 54$
R.H.S $= 2x + 18 = 2 \times 18 + 18 = 36 + 18 = 54$
L.H.S. = 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

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

L.H.S $= 5x + 9 = 5 × (−2) + 9 = −1$
R.H.S $= 5 + 3x = 5 + 3 × (−2) = −1$
L.H.S. = 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
L.H.S $= 4z + 3 = 4 × (3/2) + 3 = 6 + 3 = 9$
R.H.S $= 6 + 2z = 6 + 2 × (3/2) = 6 + 3 = 9$
L.H.S. = 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

L.H.S $= 2x - 1 = 2 \times (5) - 1 = 10 - 1 = 9$
R.H.S $= 14 - x = 14 - 5 = 9$
L.H.S. = 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
L.H.S $= 8x + 4 = 8 \times (0) + 4 = 4$
R.H.S $= 3(x - 1) + 7 = 3 (0 - 1) + 7 = -3 + 7 = 4$
L.H.S. = 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

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

L.H.S $= \frac{2x}{3} + 1 = 23/3$
R.H.S $= \frac{7x}{15} + 3 = 23/3$
L.H.S. = 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
L.H.S $= 2y + \frac{5}{3} = 19/3$
R.H.S $= \frac{26}{3} - y = 19/3$
L.H.S. = 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
L.H.S = 3m=12/5
R.H.S = 5m –(8/5)=12/5
L.H.S. = R.H.S.
It proves that result is correct