Exercise 2.3 Page: 30

Solve the following equations and check your results.

1. $3x = 2x + 18$

Solution:

$3x = 2x + 18$
$\Rightarrow 3x - 2x = 18$
$\Rightarrow x = 18$
Putting the value of x in RHS and LHS we get,
$3 \times 18 = (2 \times 18)+18$
$\Rightarrow 54 = 54$
$\Rightarrow$ LHS = RHS

2. $5t - 3 = 3t - 5$

Solution:

$5t - 3 = 3t - 5$
$\Rightarrow 5t - 3t = -5 + 3$
$\Rightarrow 2t = -2$
$\Rightarrow t = -1$
Putting the value of t in RHS and LHS we get,
$5\times(-1) - 3 = 3\times(-1) - 5$
$\Rightarrow -5 - 3 = -3 - 5$
$\Rightarrow -8 = -8$
$\Rightarrow$ LHS = RHS

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

Solution:

$5x + 9 = 5 + 3x$
$\Rightarrow 5x - 3x = 5 - 9$
$\Rightarrow 2x = -4$
$\Rightarrow x = -2$
Putting the value of x in RHS and LHS we get,
$5\times(-2) + 9 = 5 + 3\times(-2)$
$\Rightarrow -10 + 9 = 5 + (-6)$
$\Rightarrow -1 = -1$
$\Rightarrow$ LHS = RHS

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

Solution:

$4z + 3 = 6 + 2z$
$\Rightarrow 4z - 2z = 6 - 3$
$\Rightarrow 2z = 3$

$\Rightarrow z = \frac{3}{2}$

Putting the value of z in RHS and LHS we get,

$(4 \times \frac{3}{2}) + 3 = 6 + (2 \times \frac{3}{2})$

$\Rightarrow 6 + 3 = 6 + 3$

$\Rightarrow 9 = 9$

$\Rightarrow$ LHS = RHS

5. $2x - 1 = 14 - x$

Solution:

$2x - 1 = 14 - x$

$\Rightarrow 2x + x = 14 + 1$

$\Rightarrow 3x = 15$

$\Rightarrow x = 5$

Putting the value of x in RHS and LHS we get,

$(2\times5) - 1 = 14 - 5$

$\Rightarrow 10 - 1 = 9$

$\Rightarrow 9 = 9$

$\Rightarrow$ LHS = RHS

6. $8x + 4 = 3(x - 1) + 7$

Solution:

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

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

$\Rightarrow 8x + 4 = 3x + 4$

$\Rightarrow 8x - 3x = 4 - 4$

$\Rightarrow 5x = 0$

$\Rightarrow x = 0$

Putting the value of x in RHS and LHS we get,

$(8\times0) + 4 = 3(0 - 1) + 7$

$\Rightarrow 0 + 4 = 0 - 3 + 7$

$\Rightarrow 4 = 4$

$\Rightarrow$ LHS = RHS

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

Solution:

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

$\Rightarrow x = \frac{4x}{5} + \frac{40}{5}$

$\Rightarrow x - \frac{4x}{5} = 8$

$\Rightarrow \frac{(5x-4x)}{5} = 8$

$\Rightarrow x = 8 \times 5$

$\Rightarrow x = 40$

Putting the value of x in RHS and LHS we get,

$40 = \frac{4}{5}(40 + 10)$

$\Rightarrow 40 = \frac{4}{5} \times 50$

$\Rightarrow 40 = \frac{200}{5}$

$\Rightarrow 40 = 40$

$\Rightarrow$ LHS = RHS

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

Solution:

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

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

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

$\Rightarrow 3x = 2 \times 15$

$\Rightarrow 3x = 30$

$\Rightarrow x = 10$

Putting the value of x in RHS and LHS we get,

$\frac{(2\times10)}{3} + 1 = \frac{(7\times10)}{15} + 3$

$\Rightarrow \frac{20}{3} + 1 = \frac{70}{15} + 3$

$\Rightarrow \frac{(20+3)}{3} = \frac{(70+45)}{15}$

$\Rightarrow \frac{23}{3} = \frac{115}{15}$

$\Rightarrow \frac{23}{3} = \frac{23}{3}$

$\Rightarrow$ LHS = RHS

9. $2y + \frac{5}{3} = \frac{26}{3} - y$

Solution:

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

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

$\Rightarrow 3y = \frac{26 - 5}{3}$

$\Rightarrow 3y = \frac{21}{3}$

$\Rightarrow 3y = 7$

$\Rightarrow y = \frac{7}{3}$

Putting the value of y in RHS and LHS we get,

$(2\times\frac{7}{3}) + \frac{5}{3} = \frac{26}{3} - \frac{7}{3}$

$\frac{14}{3} + \frac{5}{3} = \frac{26}{3} - \frac{7}{3}$

$\Rightarrow \frac{14+5}{3} = \frac{26-7}{3}$

$\Rightarrow \frac{19}{3} = \frac{19}{3}$

$\Rightarrow$ LHS = RHS

10. $3m = 5m - \frac{8}{5}$

Solution:

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

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

$\Rightarrow -2m = -\frac{8}{5}$

$\Rightarrow 2m \times 5 = 8$

$\Rightarrow 10m = 8$

$\Rightarrow m = \frac{8}{10}$

$\Rightarrow m = \frac{4}{5}$

Putting the value of m in RHS and LHS we get,

$3 \times \frac{4}{5} = (5 \times \frac{4}{5}) - \frac{8}{5}$

$\Rightarrow \frac{12}{5} = 4 - \frac{8}{5}$

$\Rightarrow \frac{12}{5} = \frac{(20-8)}{5}$

$\Rightarrow \frac{12}{5} = \frac{12}{5}$

$\Rightarrow$ LHS = RHS