

Exercise 2.3

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, $3 \times 18 = (2 \times 18) + 18$

$$\Rightarrow 54 = 54$$

$$\Rightarrow \text{LHS} = \text{RHS}$$

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, $5 \times (-1) - 3 = 3 \times (-1) - 5$

$$\Rightarrow -5 - 3 = -3 - 5$$

$$\Rightarrow -8 = -8$$

$$\Rightarrow \text{LHS} = \text{RHS}$$

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, $5 \times (-2) + 9 = 5 + 3 \times (-2)$

$$\Rightarrow -10 + 9 = 5 + (-6)$$

$$\Rightarrow -1 = -1$$

$$\Rightarrow \text{LHS} = \text{RHS}$$

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

Solution:

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

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

$$\Rightarrow 2z = 3$$

$$\Rightarrow z = 3/2$$

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

$$(4 \times 3/2) + 3 = 6 + (2 \times 3/2)$$

$$\Rightarrow 6 + 3 = 6 + 3$$

$$\Rightarrow 9 = 9$$

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$$\Rightarrow \text{LHS} = \text{RHS}$$

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, $(2 \times 5) - 1 = 14 - 5$

$$\Rightarrow 10 - 1 = 9$$

$$\Rightarrow 9 = 9$$

$$\Rightarrow \text{LHS} = \text{RHS}$$

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

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

$$\Rightarrow 4 = 4$$

$$\Rightarrow \text{LHS} = \text{RHS}$$

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,

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

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

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

$$\Rightarrow 40 = 40$$

$$\Rightarrow \text{LHS} = \text{RHS}$$

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

Solution:

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

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

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

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$$\Rightarrow 3x = 2 \times 15$$

$$\Rightarrow 3x = 30$$

$$\Rightarrow x = 30/3$$

$$\Rightarrow x = 10$$

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

$$9. 2y + 5/3 = 26/3 - y$$

Solution:

$$2y + 5/3 = 26/3 - y$$

$$\Rightarrow 2y + y = 26/3 - 5/3$$

$$\Rightarrow 3y = (26 - 5)/3$$

$$\Rightarrow 3y = 21/3$$

$$\Rightarrow 3y = 7$$

$$\Rightarrow y = 7/3$$

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

$$\Rightarrow (2 \times 7/3) + 5/3 = 26/3 - 7/3$$

$$\Rightarrow 14/3 + 5/3 = 26/3 - 7/3$$

$$\Rightarrow (14 + 5)/3 = (26 - 7)/3$$

$$\Rightarrow 19/3 = 19/3$$

$$\Rightarrow \text{LHS} = \text{RHS}$$

$$10. 3m = 5m - 8/5$$

Solution:

$$3m = 5m - 8/5$$

$$\Rightarrow 5m - 3m = 8/5$$

$$\Rightarrow 2m = 8/5$$

$$\Rightarrow 2m \times 5 = 8$$

$$\Rightarrow 10m = 8$$

$$\Rightarrow m = 8/10$$

$$\Rightarrow m = 4/5$$

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

$$\Rightarrow 3 \times (4/5) = (5 \times 4/5) - 8/5$$

$$\Rightarrow 12/5 = 4 - (8/5)$$

$$\Rightarrow 12/5 = (20 - 8)/5$$

$$\Rightarrow 12/5 = 12/5$$

$$\Rightarrow \text{LHS} = \text{RHS}$$