

## Chapter – 02

### Linear Equations in One Variable

#### Exercises 2.3

**Question 1.** Solve the following equations and check your results.

$$3x = 2x + 18$$

**Answer:**

$$3x = 2x + 18$$

$$3x - 2x = 18 \Rightarrow x = 18$$

Checking the result:

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

R.H.S.:

$$= 2x + 18 = 2(18) + 18 = 36 + 18 = 54$$

Since L.H.S. = R.H.S

Hence, the solution is correct.

**Question 2.** Solve the following equations and check your results.

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

**Answer:**

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

Rearranging the terms, we get,

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

$$2t = -2$$

$$t = -1$$

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

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

Since L.H.S. = R.H.S

Hence, the solution is correct.

**Question 3.** Solve the following equations and check your results.

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

**Answer:**

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

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

$$2x = -4$$

$$x = -2$$

$$\text{L.H.S: } 5x + 9$$

$$= 5(-2) + 9 = -1$$

$$\text{R.H.S: } 5 + 3x$$

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

Since L.H.S. = R.H.S

Hence, the solution is correct.

**Question 4.** Solve the following equations and check your results.

$$4x + 3 = 6 + 2x$$

**Answer:**

$$4x - 2x = 6 - 3$$

$$2x = 3$$

$$x = \frac{3}{2}.$$

$$\text{L.H.S: } 4 \left( \frac{3}{2} \right) + 3 = 9$$

$$\text{R.H.S: } = 6 + 2 \left( \frac{3}{2} \right) = 9$$

Since L.H.S. = R.H.S

Hence, the solution is correct.

**Question 5.** Solve the following equations and check your results.

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

**Answer:**

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

$$3x = 15$$

$$x = \frac{15}{3} = 5.$$

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

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

Since L.H.S. = R.H.S

Hence, the solution is correct.

**Question 6.** Solve the following equations and check your results.

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

**Answer:**

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

$$8x + 4 = 3x + 4$$

$$8x - 3x = 4 - 4$$

$$5x = 0$$

$$x = 0$$

Check for the solution:

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

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

Since L.H.S. = R.H.S

Hence, the solution is correct.

**Question 7.** Solve the following equations and check your results.

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

**Answer:**

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

$$5x = 4x + 40 \quad 5x - 4x = 40 \quad x = 40$$

Check:

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

$$\text{R.H.S} = \frac{4}{5} (40 + 10) = \frac{4}{5} (50) = 40$$

Since L.H.S. = R.H.S

Hence, the solution is correct.

**Question 8.** Solve the following equations and check your results.

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

**Answer:**

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

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

$$3x = 2 \times 15$$

$$3x = 30$$

$$x = 10$$

$$\text{L.H.S: } \frac{2 \times 10}{3} + 1 = \frac{20+3}{3} = \frac{23}{3}$$

$$\text{R.H.S.} = \frac{7 \times 10}{15} + 3 = \frac{70+45}{15} = \frac{115}{15} = \frac{23}{3}$$

Since L.H.S. = R.H.S.

Hence, the solution is correct.

### Question 9.

Solve the following equations and check your results.

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

**Answer:**

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

$$3y = 21/3$$

$$3y = 7$$

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

L.H.S.

$$2y + \frac{5}{3} = 2 \times \frac{7}{3} + \frac{5}{3} = \frac{14}{3} + \frac{5}{3} = \frac{19}{3}$$

R.H.S:

$$\frac{26}{3} - y = \frac{26}{3} - \frac{7}{3} = \frac{26-7}{3} = \frac{19}{3}$$

Since L.H.S. = R.H.S.

Hence, the solution is correct.

**Question 10.** Solve the following equations and check your results.

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

**Answer:**

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

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

$$m = \frac{8}{2 \times 5}$$

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

$$\text{L.H.S: } 3 \left( \frac{4}{5} \right) = \frac{12}{5}$$

$$\text{R.H.S: } 5 \left( \frac{4}{5} \right) - \frac{8}{5} = \frac{20-8}{5} = \frac{12}{5}$$

Since L.H.S. = R.H.S.

Hence, the solution is correct.