



Exercise 9B

Q10

Answer :

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

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

[Adding $\frac{1}{2}$ on both the sides]

$$\Rightarrow 2x = \frac{6+1}{2}$$

$$\Rightarrow 2x = \frac{7}{2}$$

$$\Rightarrow \frac{2x}{2} = \frac{7}{2 \times 2}$$

[Dividing both the sides by 2]

$$\Rightarrow x = \frac{7}{4}$$

Verification:

Substituting $x = \frac{7}{4}$ in the L.H.S.:

$$2\left(\frac{7}{4}\right) - \frac{1}{2}$$

$$= \frac{7}{2} - \frac{1}{2} = \frac{6}{2} = 3 = R.H.S.$$

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

Hence, verified.

Q11

Answer :

$$3(x + 6) = 24$$

$$\Rightarrow 3 \times x + 3 \times 6 = 24$$

[On expanding the brackets]

$$\Rightarrow 3x + 18 = 24$$

$$\Rightarrow 3x + 18 - 18 = 24 - 18$$

[Subtracting 18 from both the sides]

$$\Rightarrow 3x = 6$$

$$\Rightarrow \frac{3x}{3} = \frac{6}{3}$$

[Dividing both the sides by 3]

$$\Rightarrow x = 2$$

Verification:

Substituting $x = 2$ in the L.H.S.:

$$3(2 + 6) = 3 \times 8 = 24 = R.H.S.$$

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

Hence, verified.

Q12

Answer :

$$6x + 5 = 2x + 17$$

$$\Rightarrow 6x - 2x = 17 - 5 \quad [\text{Transposing } 2x \text{ to the L.H.S. and } 5 \text{ to the R.H.S.}]$$

$$\Rightarrow 4x = 12$$

$$\Rightarrow \frac{4x}{4} = \frac{12}{4} \quad [\text{Dividing both the sides by } 4]$$

$$\Rightarrow x = 3$$

Verification:

Substituting $x = 3$ on both the sides:

$$\text{L.H.S.: } 6(3) + 5$$

$$= 18 + 5$$

$$= 23$$

$$\text{R.H.S.: } 2(3) + 17$$

$$= 6 + 17$$

$$= 23$$

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

Hence, verified.

Q13

Answer :

$$\frac{x}{4} - 8 = 1$$

$$\Rightarrow \frac{x}{4} - 8 + 8 = 1 + 8 \quad [\text{Adding } 8 \text{ on both the sides}]$$

$$\Rightarrow \frac{x}{4} = 9$$

$$\Rightarrow \frac{x}{4} \times 4 = 9 \times 4 \quad [\text{Multiplying both the sides by } 4]$$

$$\text{or, } x = 36$$

Verification:

Substituting $x = 36$ in the L.H.S.:

$$\text{or, } \frac{36}{4} - 8 = 9 - 8 = 1 = \text{R.H.S.}$$

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

Hence, verified.

Q14

Answer :

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

$$\Rightarrow \frac{x}{2} - \frac{x}{3} = 1 \quad [\text{Transposing } \frac{x}{3} \text{ to the L.H.S.}]$$

$$\Rightarrow \frac{3x - 2x}{6} = 1$$

$$\Rightarrow \frac{x}{6} = 1$$

$$\Rightarrow \frac{x}{6} \times 6 = 1 \times 6 \quad [\text{Multiplying both the sides by } 6]$$

$$\text{or, } x = 6$$

Verification:

Substituting $x = 6$ on both the sides:

$$\text{L.H.S.: } \frac{6}{2} = 3$$

$$\text{R.H.S.: } \frac{6}{3} + 1 = 2 + 1 = 3$$

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

Hence, verified.

Q15

Answer :

$$3(x + 2) - 2(x - 1) = 7$$

$$\Rightarrow 3 \times x + 3 \times 2 - 2 \times x - 2 \times (-1) = 7 \quad [\text{On expanding the brackets}]$$

$$\text{or, } 3x + 6 - 2x + 2 = 7$$

$$\text{or, } x + 8 = 7$$

$$\text{or, } x + 8 - 8 = 7 - 8 \quad [\text{Subtracting } 8 \text{ from both the sides}]$$

$$\text{or, } x = -1$$

Verification:

Substituting $x = -1$ in the L.H.S.:

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

$$\text{or, } 3(1) - 2(-2)$$

$$\text{or, } 3 + 4 = 7 = \text{R.H.S.}$$

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

Hence, verified.

Q16

Answer :

$$5(x-1) + 2(x+3) + 6 = 0$$

$$\Rightarrow 5x - 5 + 2x + 6 + 6 = 0 \quad (\text{Expanding within the brackets})$$

$$\Rightarrow 7x + 7 = 0$$

$$\Rightarrow x + 1 = 0 \quad (\text{Dividing by 7})$$

$$\Rightarrow x = -1$$

Verification:

Putting $x = -1$ in the L.H.S.:

$$\text{L.H.S.: } 5(-1 - 1) + 2(-1 + 3) + 6$$

$$= 5(-2) + 2(2) + 6$$

$$= -10 + 4 + 6 = 0 = \text{R.H.S.}$$

Hence, verified.

***** END *****