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 3]

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

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 :

$6x + 5 = 2x + 17$

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

$\Rightarrow 4x = 12$

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

$\Rightarrow x = 3$

Verification:

Substituting x = 3 on both the sides:

L.H.S.: 6(3) + 5

=18 + 5

=23

R.H.S.: 2(3) + 17

= 6 + 17

= 23

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

Hence, verified.

Q13

Answer :

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

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

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

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

or, x = 36

Verification:

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

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

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

Hence, verified.

Q14

Answer :

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

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

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

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

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

or, x = 6

Verification:

Substituting x = 6 on both the sides:

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

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

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

Hence, verified.

Q15

Answer :

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

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

or, 3x + 6 −2x + 2 = 7

or, x + 8 = 7

or, x + 8 − 8 = 7 − 8 [Subtracting 8 from both the sides]

or, x = −1

Verification:

Substituting x = −1 in the L.H.S.:

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

$or, 3(1) - 2(-2)$

$or, 3 + 4 = 7 = R.H.S.$

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

Hence, verified.

Q16

Answer :

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

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

$\Rightarrow 7x +7 = 0$

$\Rightarrow x +1 = 0$ (Dividing by 7)

$\Rightarrow x = -1$

Verification:

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

L.H.S.: $5(-1 -1) + 2(-1 + 3) + 6$

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

$= -10 + 4 + 6 = 0 = R.H.S.$

Hence, verified.

********** END **********