RD SHARMA

Solutions

Class 7 Maths

Chapter 8

Ex 8.2

Q1. x – 3 = 5

SOLUTION :

x – 3 = 5

Adding 3 to both sides, we get

x – 3 + 3 = 5 + 3

x = 8

Verification :

Substituting x = 8 in LHS, we get

LHS = x – 3 and RHS = 5

LHS = 8 – 3 = 5 and RHS = 5

LHS = RHS

Hence, verified.

Q2. x + 9 = 13

SOLUTION :

x + 9 = 13

Subtracting 9 from both sides, we get

=> x + 9 – 9 = 13 – 9

=> x = 4

Verification :

Substituting x = 4 on LHS, we get

LHS = 4 + 9 = 13 = RHS

LHS = RHS

Hence, verified.

Q3. x − $\frac{3}{5}$ = $\frac{7}{5}$

SOLUTION :

x − $\frac{3}{5}$ = $\frac{7}{5}$

Adding 3/5 to both sides, we get

=> x − $\frac{3}{5}$ + $\frac{3}{5}$ = $\frac{7}{5}$ + $\frac{3}{5}$

=> x = $\frac{7}{5}$ + $\frac{3}{5}$

=> x = $\frac{10}{5}$

=> x=2

Verification :

Substituting x = 2 in LHS, we get

LHS = 2 − $\frac{3}{5}$ = 10 − $\frac{3}{5}$ = $\frac{7}{5}$. and RHS = $\frac{7}{5}$

LHS = RHS

Hence, verified.

Q4. 3x = 0

SOLUTION :

3x = 0

Dividing both sides by 3, we get

$\frac{3x}{3}$ = $\frac{0}{3}$

x = 0

Verification :

Substituting x = 0 in LHS = 3x, we get LHS = 3 × 0 = 0 and RHS = 0

LHS = RHS

Hence, verified.

Q5 . $\frac{x}{2} = 0$

SOLUTION :

$\frac{x}{2} = 0$

Multiplying both sides by 2, we get

=> $\frac{x}{2} \times 2 = 0 \times 2$

=> x = 0

Verification :

Substituting x= 0 in LHS, we get

LHS = $\frac{0}{2}$ = 0 and RHS = 0

LHS = 0 and RHS = 0

LHS = RHS

Hence, verified.

Q6 . $x - \frac{1}{3} = \frac{2}{3}$

SOLUTION :

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

Adding $\frac{1}{3}$ to both sides, we get

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

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

=> $x = \frac{3}{3}$

x = 1

Verification :

Substituting x= 1 in LHS, we get

LHS = $1 - \frac{1}{3} = \frac{3-1}{3} = \frac{2}{3}$, and RHS = $\frac{2}{3}$

LHS = RHS

Hence, verified.

Q7. $x + \frac{1}{2} = \frac{7}{2}$

SOLUTION :

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

Subtracting $\frac{1}{2}$ from both sides, we get

$x + \frac{1}{2} - \frac{1}{2} = \frac{7}{2} - \frac{1}{2}$

$x = \frac{7}{2} - \frac{1}{2} = \frac{6}{2}$

x = 3

Verification :

Substituting x = 3 in LHS, we get LHS = $3 + \frac{1}{2} = \frac{6+1}{2}$ =72. and RHS = 72

LHS = RHS

Hence, verified.

Q8. 10 – y = 6

SOLUTION :

$10 - y = 6$

Subtracting 10 from both sides, we get

$10 - y - 10 = 6 - 10$

-y = -4

Multiplying both sides by -1, we get

-y × -1 = -4 ×-1

y = 4

Verification :

Substituting y = 4 in LHS, we get

LHS = 10 – y = 10 – 4 = 6 and RHS = 6

LHS = RHS

Hence, verified.

Q9. 7 + 4y = -5

SOLUTION :

7 + 4y = -5

Subtracting 7 from both sides, we get

7 + 4y – 7 = -5 -7

4y = -12

Dividing both sides by 4, we get

y = -12/ 4

y = -3

Verification :

Substituting y = -3 in LHS, we get

LHS = 7 + 4y = 7 + 4(-3) = 7 – 12 = -5, and RHS = -5

LHS = RHS

Hence, verified.

Q10. $\frac{4}{5} - x = \frac{3}{5}$

SOLUTION :

$\frac{4}{5} - x = \frac{3}{5}$

Subtracting $\frac{4}{5}$ from both sides, we get

$\frac{4}{5} - x - \frac{4}{5} = \frac{3}{5} - \frac{4}{5}$

$- x = \frac{3}{5} - \frac{4}{5}$

$- x = -\frac{1}{5}$

Multiplying both sides by -1, we get

-x × (-1) = $-\frac{1}{5}$ × (-1)

x = $\frac{1}{5}$

Verification :

Substituting x= $\frac{1}{5}$ in LHS, we get

LHS = $\frac{4}{5}$ − $\frac{1}{5}$ = $\frac{4-1}{5}$ = $\frac{3}{5}$, and RHS = $\frac{3}{5}$

LHS = RHS

Hence, verified.

Q11. 2y − $\frac{1}{2}$ = −$\frac{1}{3}$

SOLUTION :

2y −$\frac{1}{2}$ = −$\frac{1}{3}$

Adding $\frac{1}{2}$ to both sides, we get

2y − $\frac{1}{2}$ + $\frac{1}{2}$ =− $\frac{1}{3}$ + $\frac{1}{2}$

2y = $\frac{-2+3}{6}$

2y = $\frac{1}{6}$

Dividing both sides by 2, we get

2y/2 = 16/2

y = $\frac{1}{12}$

Verification :

Substituting y = $\frac{1}{12}$ in LHS, we get

LHS = 2 $\frac{1}{12}$ − $\frac{1}{2}$ = $\frac{1}{6}$ − $\frac{1}{2}$ = $\frac{1-3}{6}$ = $\frac{-2}{6}$ = −$\frac{1}{3}$, and RHS = −$\frac{1}{3}$

LHS = RHS

Hence, verified.

Q12. 14 = $\frac{7x}{10}$ − 8

SOLUTION :

14 = $\frac{7x}{10}$ − 8

Adding 8 to both sides, we get

14 + 8 = $\frac{7x}{10}$ − 8 + 8

22 = $\frac{7x}{10}$

Multiplying both sides by 10, we get

22 × 10 = $\frac{7x}{10}$ × 10

220 = 7x

Dividing both sides by 7, we get

$\frac{220}{7}$ = $\frac{7x}{7}$

x = $\frac{220}{7}$

Verification:

Substituting x = $\frac{220}{7}$ in RHS, we get

LHS = 14. and RHS = $\frac{\frac{220}{7}}{\frac{7}{10}}$ 10 − 8 = $\frac{220}{10}$ − 8 = 22 − 8 = 14

LHS = RHS

Hence, verified.

Q13. 3(x + 2) = 15

SOLUTION :

3 (x + 2) = 15

Dividing both sides by 3, we get

$\frac{3(x+2)}{3} = \frac{15}{3}$

(x+2) = 5

Subtracting 2 from both sides, we get

x + 2 − 2 = 5 − 2

x = 3

Verification :

Substituting x = 3 in LHS, we get

LHS = 3 (x + 2) = 3 (3+2) = 3(5) = 15, and RHS = 15

LHS = RHS

Hence, verified.

Q14. $\frac{x}{4} = \frac{7}{8}$

SOLUTION :

$\frac{x}{4} = \frac{7}{8}$

Multiplying both sides by 4, we get

$\frac{x}{4} \times 4 = \frac{7}{8} \times 4$

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

Verification :

Substituting $x = \frac{7}{2}$ in LHS, we get

LHS = $\frac{7}{2}/4 = \frac{7}{8}$, and RHS = $\frac{7}{8}$

LHS = RHS

Hence, verified.

Q15. $\frac{1}{3}$ -2x = 0

SOLUTION :

$\frac{1}{3} - 2x = 0$

Subtracting $\frac{1}{3}$ from both sides, we get

$\frac{1}{3} - 2x - \frac{1}{3} = 0 - \frac{1}{3}$

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

Multiplying both sides by -1, we get

-2x × (-1) = $-\frac{1}{3}$ × (-1)

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

Dividing both sides by 2, we get $\frac{2x}{2} = \frac{1}{3}/2$

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

Verification :

Substituting x = $\frac{1}{6}$ in LHS, we get

LHS = $\frac{1}{3} - 2 \times \frac{1}{6} = \frac{1}{3} - \frac{1}{3} = 0$, and RHS = 0

LHS = RHS

Hence, verified.

Q16. 3(x + 6) = 24

SOLUTION :

$3(x + 6) = 24$

Dividing both sides by 3, we get

$\frac{3(x+6)}{3} = \frac{24}{3}$

$(x + 6) = 8$

Subtracting 6 from both sides, we get

$x + 6 - 6 = 8 - 6$

$x = 2$

Verification :

Substituting x = 2 in LHS , we get

LHS = 3 (x + 6) = 3 (2 + 6) = 24 , and RHS = 24

LHS = RHS

Hence, verified.

Q17. 3(x + 2)-2(x − 1) = 7

SOLUTION :

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

On expanding the brackets, we get

$3 \times x + 3 \times 2 - 2 \times x + 2 \times 1 = 7$

$3x + 6 - 2x + 2 = 7$

$3x - 2x + 6 + 2 = 7$

$x + 8 = 7$

Subtracting 8 from both sides, we get

$x + 8 - 8 = 7 - 8$

x = -1

Verification :

Substituting x = -1 in LHS, we get

LHS = 3 (x + 2) -2(x -1) = 3 (-1 + 2) -2(-1-1) = (3×1) − (2×-2) = 3 + 4 = 7, and RHS = 7

LHS = RHS

Hence, verified .

Q18. 8(2x − 5)-6(3x − 7) = 1

SOLUTION :

$8(2x - 5) - 6(3x - 7) = 1$

On expanding the brackets, we get $(8×2x) − (8 \times 5) − (6 \times 3x) + (-6) \times(-7) = 1$

$16x - 40 - 18x + 42 = 1$

$16x - 18x + 42 - 40 = 1$

-2x + 2 = 1

Subtracting 2 from both sides, we get

-2x+ 2 − 2 = 1 -2

-2x = -1

Multiplying both sides by -1, we get

-2x × (-1) = -1× (-1)

2x = 1

Dividing both sides by 2, we get

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

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

Verification :

Substituting $x = \frac{1}{2}$ in LHS, we get

$= 8(2 \times \frac{1}{2} - 5) - 6(3 \times \frac{1}{2} - 7)$

$= 8(1 - 5) - 6(32 - 7)$

$= 8 \times (-4) - (6 \times 32) + (6 \times 7) = -32 - 9 + 42 = -41 + 42 = 1 =$ RHS

LHS = RHS

Hence, verified .

Q19. $6(1 - 4x) + 7(2 + 5x) = 53$

SOLUTION :

$6(1 - 4x) + 7(2 + 5x) = 53$

On expanding the brackets, we get $(6 \times 1) - (6 \times 4x) + (7 \times 2) + (7 \times 5x) = 53$

$6 - 24x + 14 + 35x = 53$

$6 + 14 + 35x - 24x = 53$

$20 + 11x = 53$

Subtracting 20 from both sides, we get $20 + 11x - 20 = 53 - 20$

$11x = 33$

Dividing both sides by 11, we get

$\frac{11x}{11} = \frac{33}{11}$

$x = 3$

Verification :

Substituting $x = 3$ in LHS, we get

$= 6(1 - 4 \times 3) + 7(2 + 5 \times 3)$

$= 6(1 - 12) + 7(2 + 15)$

$= 6(-11) + 7(17)$

$= -66 + 119$

$= 53 =$ RHS

LHS = RHS

Hence, verified.

Q20. $5(2 - 3x) - 17(2x - 5) = 16$

SOLUTION :

$5(2 - 3x) - 17(2x - 5) = 16$

On expanding the brackets , we get $(5 \times 2) - (5 \times 3x) - (17 \times 2x) + (17 \times 5) = 16$

$10 - 15x - 34x + 85 = 16$

$10 + 85 - 34x - 15x = 16$

$95 - 49x = 16$

Subtracting 95 from both sides, we get $-49x + 95 - 95 = 16 - 95$

$-49x = -79$

Dividing both sides by -49, we get

$\frac{-49x}{-49} = \frac{-79}{-49}$

$x = \frac{79}{49}$

Verification :

Substituting x = $\frac{79}{49}$ in LHS, we get

= $5(2 - 3 \times \frac{79}{49}) - 17(2 \times \frac{79}{49} - 5)$

= $(5 \times 2) - (5 \times 3 \times \frac{79}{49}) - (17 \times 2 \times \frac{79}{49}) + (17 \times 5)$

= $10 - \frac{1185}{49} - \frac{2686}{49} + 85$

= $\frac{490 - 1185 - 2686 + 4165}{49} = \frac{784}{49} = 16 = $ RHS

LHS = RHS

Hence, verified.

Q21. $\frac{x-3}{5} - 2 = -1$

SOLUTION :

$\frac{x-3}{5} - 2 = -1$

Adding 2 to both sides, we get

$\frac{x-3}{5} - 2 + 2 = -1 + 2$

$\frac{x-3}{5} = 1$

Multiplying both sides by 5, we get

$\frac{x-3}{5} \times 5 = 1 \times 5$

$x - 3 = 5$

Adding 3 to both sides, we get

$x - 3 + 3 = 5 + 3$

$x = 8$

Verification :

Substituting x = 8 in LHS, we get

= $\frac{8-3}{5} - 2 = \frac{5}{5} - 2 = 1 - 2 = -1 = $ RHS

LHS = RHS

Hence, verified.

Q22. 5(x − 2)+3(x + 1) = 25

SOLUTION :

$5(x - 2) + 3(x + 1) = 25$

On expanding the brackets, we get

$(5 \times x) - (5 \times 2) + 3 \times x + 3 \times 1 = 25$

$5x - 10 + 3x + 3 = 25$

$5x + 3x - 10 + 3 = 25$

$8x - 7 = 25$

Adding 7 to both sides, we get

$8x - 7 + 7 = 25 + 7$

$8x = 32$

Dividing both sides by 8, we get

$\frac{8x}{8} = \frac{32}{8}$

$x = 4$

Verification :

Substituting x= 4 in LHS, we get

= $5(4 - 2) + 3(4 + 1) = 5(2) + 3(5) = 10 + 15 = 25 = $ RHS

LHS = RHS

Hence, verified.