SOLVING LINEAR EQUATIONS

✳ Recall that whatever operation is performed on one side of the equation must also be performed on the other.
✳ Remember that when an equation involves fractions you can multiply both sides of the equation by the least common denominator and proceed as usual.

Model Problems:

Solve:

1. $8x + 7 = 55$

$ -7 = -7$

$ 8x = 48$

$\dfrac{8x}{8} = \dfrac{48}{8}$

$ x = 6$

2. $3y + 1 = \dfrac{y + 17}{2}$

$6y + 2 = y + 17$

$ -y = -y$

$5y + 2 = 17$

$ -2 -2$

$5y = 15$

$\dfrac{5y}{5} = \dfrac{15}{5}$

$y = 3$

3. $9m - 4(2m - 3) = 11$

$9m - 8m + 12 = 11$

$ m + 12 = 11$

$ -12 = -12$

$ m = -1$

Practice Exercises:

Solve:

1. $3x + 1 = 10$

2. $12x + 30 = -6$

3. $8 - 3t = 2$

4. $15 - 3y = 15$

5. $2x - 5 = -11$

6. $6a + 5 = 9$

7. $-8x + 3 = -29$

8. $4 = 2 - 3c$

9. $\dfrac{1}{3}x + 1 = 7$

10. $\dfrac{y}{5} - 3 = 1$

11. $6d - 2 = 7d + 5$

12. $6y - 1 = 2y + 4$

13. $-9x = 32$

14. $7 + y = -2$

15. $x - (-11) = 7$

16. $12 = 2x + 3$

17. $5 = 2y - 81$

18. $\dfrac{x}{3} + 6 = -12$

19. $\dfrac{-2}{3}d = 18$

20. $\dfrac{x}{2} = -14$

21. $x - (-3) = -3$

22. $y + 11 = -13$

23. $9x + 2 = -11$

24. $8 - n = 12$

25. $6x - 10 - 4x = 7 - 2x$

Answers:

1. $x = 3$

2. $x = -3$

3. $t = 2$

4. $y = 0$

5. $x = -3$

6. $a = \dfrac{2}{3}$

7. $x = 4$

8. $c = -\dfrac{2}{3}$

9. $x = 18$

10. $y = 20$

11. $d = -7$

12. $y = \dfrac{5}{4}$

13. $x = -3\dfrac{5}{9}$

14. $y = -9$

15. $x = -4$

16. $x = 4\dfrac{1}{2}$

17. $y = 43$

18. $x = -54$

19. $d = -27$

20. $x = -28$

21. $x = -6$

22. $y = -24$

23. $x = \dfrac{-13}{9}$

24. $n = -4$

25. $n = \dfrac{17}{4}$