

Multi-Step Equations and Inequalities

Multi-Step Equations

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12.1.1 Solving Two-Step Equations

Solve. Check each answer.

1. $5x + 6 = 41$

2. $-9p - 15 = 93$

3. $-2m + 14 = 10$

4. $-7 = 7d - 8$

5. $-7 = -3c + 14$

6. $12y - 11 = 49$

Solve.

7. $24 + \frac{h}{4} = 10$

8. $\frac{k}{5} - 13 = 4$

9. $-17 + \frac{q}{8} = 13$

10. $24 = \frac{m}{10} + 32$

11. $-9 = 15 + \frac{v}{3}$

12. $\frac{m}{-7} - 14 = 2$

13. Each Saturday, a gym holds a 45-minute yoga class. The weekday yoga classes last 30 minutes. The number of weekday classes varies. Last week, the yoga classes totaled 165 minutes. How many weekday yoga classes were held?

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12.1.2 Solving Multi-Step Equations

Solve.

14. $b + 18 + 3b = 74$

15. $10x - 3 - 2x = 4$

16. $18w - 10 - 6w = 50$

17. $19 = 5n + 7 - 3n$

18. $-27 = -3p + 15 - 3p$

19. $-x - 8 + 14x = -34$

20. $2(x + 4) + 6 = 22$

21. $1 - 3(n + 5) = -8$

22. $4.3 - 1.4(p + 7) = -9.7$

23. $1.8 + 6n - 3.2 = 7.6$

24. $0 = 9\left(k - \frac{2}{3}\right) + 33$

25. $6(t - 2) - 76 = -142$

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26. Abby ran 3 times as many laps as Karen. Adding 4 to the number of laps Abby ran and then dividing by 7 gives the number of laps Jill ran. Jill ran 1 lap. How many laps did Karen run?

12.1.3 Solving Equations with Variables on Both Sides

Group the terms with variables on one side of the equal sign, and simplify.

27. $12h = 9h + 84$

28. $-10p - 8 = 2p$

29. $6q = 18 - 2q$

30. $-4c - 6 = -2c$

31. $-7s + 12 = -9s$

32. $6 + \frac{4}{5}a = \frac{9}{10}a$

Solve.

33. $9t = 4t + 120$

34. $42 + 3b = -4b - 14$

35. $\frac{6}{11}x + 4 = \frac{2}{11}x + 16$

36. $1.5a + 6 = 9a + 12$

37. $32 - \frac{3}{8}y = \frac{3}{4}y + 5$

38. $-6 - 8c = 3c + 16$

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39. **Consumer Math** Members at a swim club pay \$5 per lesson plus a one-time fee of \$60. Nonmembers pay \$11 per lesson. How many lessons would both a member and a nonmember have to take to pay the same amount?