

↳ **Example 4**

Solve the equation
 $7x - 9x - 6 = 21 - 5$.

Solution

Simplify both sides of the equation.
 Then, apply the rules for solving equations.

$$7x - 9x - 6 = 21 - 5$$

$$-2x - 6 = 16$$

Add 6 to both sides: $-2x - 6 + 6 = 16 + 6$

$$-2x = 22$$

Divide both sides by -2:

$$\frac{-2x}{-2} = \frac{22}{-2}$$

$$x = -11$$

The solution is $x = -11$.

Example 5

Solve $3x - 2 = 5$.
 Round your answer to the
 nearest tenth.

Solution

$$3x - 2 = 5$$

Add 2 to both sides: $3x - 2 + 2 = 5 + 2$

$$3x = 7$$

Divide both sides by 3:

$$\frac{3x}{3} = \frac{7}{3}$$

$$x \doteq 2.33$$

The solution is $x = 2.3$ to the nearest tenth.

Practice

Draw flow charts to show the solution steps for
 each equation.

1. $5x + 2 = 22$

2. $2x + 5 = 25$

Solve.

3. $3x = 11 + 1$

4. $2y - 5 = 9$

5. $5n + 2n = -14$

6. $3m + 7 = 19$

7. $4x + 2x = -18$

8. $4y - 9y = 35$

9. $5w + w = 7 + 23$

10. $6n + 3n = -18$

Solve.

11. $3y - 5y = 4$

12. $3t + 7t = -30$

13. $3x + 2x = -20$

14. $5 + 11 = 4y$

15. $15 = 2n + 3n$

16. $5 + n = -15$

17. $3 + m = -7$

18. $4 + x = 20$

Solve and check.

19. $\frac{x}{3} = 4 + 2$

21. $\frac{n}{3} + 3 = 5$

23. $4 + \frac{x}{3} = -7$

25. $\frac{x}{4} - \frac{1}{4} = -\frac{3}{4}$

20. $\frac{y}{2} = 6 - 3$

22. $\frac{m}{5} - 5 = -9$

24. $\frac{y}{2} + 5 = 3$

26. $\frac{y}{2} + \frac{1}{4} = \frac{3}{4}$

Solve and check.

27. $4x + 3x + 7 = 21$

28. $2y - 5y - 5 = 13$

29. $4t + 7t = 15 - 4$

30. $6s + 2s + s = 18$

31. $4t - 7t = 8 + 4$

32. $3y = 10 - 6 - 7$

33. $4 + 3t = -6 - 2$

34. $x + 2x = -15 - 6$

Solve and check.

35. $5n + 3n - 2n = 17 - 2 + 9$

36. $2m + 5m + m = -10 - 5 - 1$

37. $3x + 5x + 1 = 11 - 2$

38. $4 + 3t - 5t = 12$

39. $2s + 3s - 5 = 18 + 12$

40. $4y - 7 + 2y = -24 - 1$

Solve.

41. $2x + 1.4 = 7.8$

42. $5t - 2.1 = 8.9$

43. $1.4m - 3.6 = 3.4$

44. $9.2 = 1.5t + 1.7$

45. $6 - 1.2x = 8.4$

46. $9.3 + 2.5k = 1.3$

47. $2 - 1.8r = 11$

48. $4.2 + 0.5y = 8.1$

Solve. Round your answer to the nearest tenth.

49. $7x + 5 = -3$

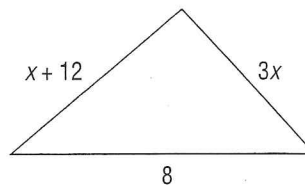
50. $2.4n - 3.8 = 1.1$

51. $3 = 3y + 8$

52. $4 = -6z + 14$

Problems and Applications

53. The equation $(x + 12) + 3x + 8 = 40$ represents the perimeter of the triangle. Find the lengths of the sides.



54. Pierre Trudeau was Prime Minister of Canada for 15 years. This was 3 years longer than twice the number of years that John Diefenbaker was Prime Minister. Solve the equation $2y + 3 = 15$ to find out how long John Diefenbaker was Prime Minister.

55. a) Solve the equation $2x + 5 = 11$, using the division rule first.

b) Is the result the same when you use the addition rule first?



c) Is one method better than the other? Explain.



56. Write an equation in which the solution requires at least 2 steps and is $x = -15$. Have a classmate solve your equation.

NUMBER POWER

Use each of the numbers from 1 to 9 only once to make each statement true.

$(\square - \square) \div \square = 1$

$\square + \square - \square = 1$

$\square - \square \times \square = 1$