

# 2-2 Solve Addition and Subtraction Equations

Name \_\_\_\_\_

Date \_\_\_\_\_

**Solve:**  $k - 12 = -19$

$$k - 12 + 12 = -19 + 12 \leftarrow \text{Add 12 to isolate } k.$$

$$k = -7$$

**Check:**  $k - 12 = -19$

$$-7 - 12 \stackrel{?}{=} -19 \leftarrow \text{Substitute } -7 \text{ for } k.$$

$$-19 = -19 \text{ True}$$

**Solution set:**  $\{-7\}$

**Solve:**  $n + 17 = -5$

$$n + 17 - 17 = -5 - 17 \leftarrow \text{Subtract 17 to isolate } n.$$

$$n = -22$$

**Check:**  $n + 17 = -5$

$$-22 + 17 \stackrel{?}{=} -5 \leftarrow \text{Substitute } -22 \text{ for } n.$$

$$-5 = -5 \text{ True}$$

**Solution set:**  $\{-22\}$

**Solve each equation. Write a justification for each step.**

**Then check the solutions. Write your solution.**

1.  $t - 11 = 4$

$$t - 11 + 11 = 4 + 11$$

$$t = 15$$

**Check:**  $(15) - 11 \stackrel{?}{=} 4$

$$4 = 4 \text{ True}$$

$$\{15\}$$

2.  $b - 15 = 9$

3.  $g + 24 = 7$

4.  $y + 32 = 47$

5.  $d + 1.8 = 3.7$

6.  $t + 2.7 = 4.1$

7.  $b - 4.6 = 5.2$

8.  $p - 5.3 = 7.2$

9.  $a - \frac{2}{3} = \frac{1}{6}$

10.  $c - \frac{2}{5} = \frac{7}{10}$

11.  $28 = b - 8$

12.  $-12 = c - 2$

13.  $-11 = d + 4$

14.  $-2 = f + 13$

15.  $-1.5 = h + 5.1$

16.  $-6.2 = t + 4.8$

17.  $5.1 = r - 7.2$

18.  $9.1 = w - 1.6$

19.  $-\frac{5}{7} = a - \frac{3}{7}$

20.  $-\frac{3}{4} = d - \frac{1}{2}$

21.  $-\frac{11}{3} = j + \frac{6}{7}$

22.  $-\frac{9}{5} = k + \frac{5}{6}$

23.  $-4\frac{1}{2} + 2.5 = z - 3\frac{1}{5}$

24.  $-5\frac{7}{10} + 1.8 = q - 4\frac{3}{5}$



**Write and solve an equation for each problem.**

25. Billy saved \$25 more than Jane. If Billy saved \$119, how much did Jane save?

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27. Miggy uses 21 fewer bags of feed than Ernie. If Miggy uses 60 bags of feed, how many bags does Ernie use?

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29. Newton is 11 years younger than Ali. If Newton is 23 years old, how old is Ali?

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31. An airplane increases altitude by 2500 feet. If the plane's new altitude is 37,124 feet, what was the plane's altitude before the increase?

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26. A fir tree is 27 inches shorter than a pine tree. If the fir tree is 81 inches, how high is the pine tree?

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28. Fifteen less than a number is  $-54$ . What is the number?

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30. Anna is 18 years older than Sheila. If Sheila is 5 years old, how old is Anna?

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32. Fitz's average speed is 12 mi/h greater than Paul's average speed. If Fitz's average speed is 58 mi/h, what is Paul's average speed?

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### Problem Solving

33. A garden is increased by  $180 \text{ ft}^2$  to have room for  $60 \text{ ft}^2$  of tomatoes,  $96 \text{ ft}^2$  of zucchini,  $112 \text{ ft}^2$  of lettuce,  $222 \text{ ft}^2$  of corn, and  $40 \text{ ft}^2$  of peppers. What was the garden's original length if it was 11 ft longer than the width?

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34. After a library gave 120 paperbacks, 80 magazines, and 52 hardbacks to a school, the school had 2985 paperbacks, magazines, and hard-covered books. How many did the school have before the gift?

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### TEST PREPARATION

35. Solve:  $-\frac{3}{4} + y = -\frac{1}{6}$

A.  $\left\{\frac{5}{12}\right\}$

C.  $\left\{\frac{7}{12}\right\}$

B.  $\left\{\frac{1}{2}\right\}$

D.  $\left\{\frac{2}{3}\right\}$

36. Solve:  $29.62 + x = 32$

F.  $\{2.38\}$

H.  $\{29.94\}$

G.  $\{3.62\}$

J.  $\{61.62\}$