



Solve each equation below and check your solution.

<p>1.</p> $\frac{-3a}{-3} = \frac{39}{-3}$ $a = -13$	<p>Check</p> $-3a = 39$ $-3(-13) = 39$ $39 = 39$	<p>2.</p> $\begin{array}{r} -11 + y = -35 \\ +11 \quad +11 \end{array}$ $y = -24$	<p>Check</p> $-11 + y = -35$ $-11 + -24 = -35$ $-35 = -35$
<p>3.</p> $-\frac{z}{4} = 7$ $-4 \cdot \frac{z}{-4} = 7 \cdot -4$ $z = -28$	<p>Check</p> $-\frac{z}{4} = 7$ $-\frac{-28}{4} = 7$ $-(-7) = 7$ $7 = 7$	<p>4.</p> $\begin{array}{r} 5y - 2 = -7.5 \\ +2 \quad +2 \end{array}$ $\frac{5y}{5} = \frac{-5.5}{5}$ $y = -1.1$	<p>Check</p> $5y - 2 = -7.5$ $5(-1.1) - 2 = -7.5$ $-5.5 - 2 = -7.5$ $-5.5 + -2 = -7.5$ $-7.5 = -7.5$
<p>5.</p> $\begin{array}{r} -4.4 = \frac{1}{2}x - 0.4 \\ +0.4 \quad +0.4 \end{array}$ $2 \cdot -4 = \frac{1}{2}x \cdot 2$ $-8 = x$	<p>Check</p> $-4.4 = \frac{1}{2}x - 0.4$ $-4.4 = \frac{1}{2}(-8) - 0.4$ $-4.4 = -4 - 0.4$ $-4.4 = -4 + -0.4$ $-4.4 = -4.4$	<p>6.</p> $\begin{array}{r} 6 - x = 24 \\ -6 \quad -6 \end{array}$ $-x = 18$ $\frac{-1x}{-1} = \frac{18}{-1}$ $x = -18$	<p>Check</p> $6 - x = 24$ $6 - (-18) = 24$ $6 + 18 = 24$ $24 = 24$
<p>7.</p> $\begin{array}{r} 20 - \frac{3}{5}p = 56 \\ -20 \quad -20 \end{array}$ $-\frac{3}{5}p = 36$ $-\frac{5}{3} \cdot -\frac{3}{5}p = 36 \cdot -\frac{5}{3}$ $p = -60$	<p>Check</p> $20 - \frac{3}{5}p = 56$ $20 - \frac{3}{5}(-60) = 56$ $20 - (-36) = 56$ $20 + 36 = 56$ $56 = 56$	<p>8.</p> $\begin{array}{r} \frac{4}{9}c - \frac{5}{6} = \frac{2}{3} \\ +\frac{5}{6} \quad +\frac{5}{6} \end{array}$ $\frac{4}{9}c = \frac{4}{6} + \frac{5}{6}$ $\frac{4}{9}c = \frac{9}{6}$ $\frac{9}{4} \cdot \frac{4}{9}c = \frac{9}{6} \cdot \frac{9}{4}$ $c = \frac{27}{8} = 3\frac{3}{8}$	<p>Check</p> $\frac{4}{9}c - \frac{5}{6} = \frac{2}{3}$ $\frac{4}{9} \cdot \frac{27}{8} - \frac{5}{6} = \frac{2}{3}$ $\frac{27}{18} - \frac{15}{18} = \frac{2}{3}$ $\frac{12}{18} = \frac{2}{3}$ $\frac{2}{3} = \frac{2}{3}$

For #'s 9 - 13, set up an equation that represents the situation. Solve and answer the question. Remember to define what your variable represents. Show all work on a separate sheet of paper.

9. Translate into an equation and solve. Two times a number is increased by seven and the result is 93. Find the number.

$$2x + 7 = 93$$

$$x = 43$$

10. Sam went to CVS and bought some notepads and a magazine for \$5. If he spent a total of \$17.80 and each notepad cost \$3.20, how many notepads did he purchase?

$$n: \text{ the number of notepads} \quad 3.2n + 5 = 17.80$$

$$n = 4 \quad \text{Sam purchased 4 notepads}$$

11. Will rented a bike in Central Park for the afternoon. He was charged a rental fee of \$18 and \$4 per hour. If his bill totaled \$48, how many hours did he rent the bicycle?

$$h: \text{ the number of hours the bike was rented} \quad 4h + 18 = 48$$

$$h = 7.5$$

Will rented the bike for 7 hours and 30 min.

12. In August, Cory begins school shopping for his triplet daughters. One day, he bought 10 pairs of socks for \$2.50 each and 3 pairs of shoes for d dollars each. He spent a total of \$135.97. Find the cost of one pair of shoes.

$$d: \text{ the price of a pair of shoes} \quad 10(2.5) + 3d = 135.97$$

$$d = 36.99 \quad \text{The cost of one pair of shoes is } \$36.99$$

13. A checking account is set up with an initial balance of \$9400, and \$800 is removed from the account at the end of each month for rent. If no other transactions are made on the account, how many months will it take for the balance to reach \$3000?

$$m: \text{ the number of months it takes to get to } \$3000 \quad 9400 - 800m = 3000$$

$$m = 8$$

It will take 8 months for the account to reach a balance of \$3000

14. Jack said that the equation below can be solved using the division property of equality. Jill says that it should be solved using the multiplication property of equality. Who do you agree with? Support your response with mathematical evidence?

$$\frac{2}{3}x = 16$$

I agree with both. The solution can be found by dividing both sides of the equation by $\frac{2}{3}$ (*division property of equality*) or by multiplying both sides of the equation by $\frac{3}{2}$ (*multiplication property of equality*).

15. **Error Analysis:**

a) Describe and correct the error in finding the solution.

$$-6 + 2x = 10$$

$$-6 + \frac{2x}{2} = \frac{10}{2}$$

$$-6 + x = 5$$

$$\begin{array}{r} +6 \\ -6 + x = 5 \end{array}$$

$$x = 11$$

The error is in the order of inverse operations performed. Before the student divided both sides by 2, they should have added 6 to both sides of the equation. Always eliminate constants first then coefficients.

$$-6 + 2x = 10$$

$$-6 + 2x = 10$$

$$\begin{array}{r} +6 \\ -6 + 2x = 10 \end{array}$$

$$\frac{2x}{2} = \frac{16}{2}$$

$$x = 8$$

b) How can the person who solved this equation determine that an error was made?

You can determine if your solution is correct by doing a check. The solution to an equation is the value of the variable that makes the statement true.

$$-6 + 2x = 10$$

$$-6 + 2(11) = 10$$

$$-6 + 22 = 10$$

$16 \neq 10$ The solution doesn't check