

# Assignment

## Write

Explain the process of solving a two-step linear equation.

## Remember

You can use the Properties of Equality to rewrite equations and increase your efficiency with solving equations.

- If the equation contains fractions, you can multiply both sides of the equation by the least common denominator.
- If the equation contains decimals, you can multiply both sides of the equation by a multiple of 10.
- If the equation contains large values, you can divide both sides of the equation by a common factor.

## Practice

1. Madison Middle School has a Math and Science Club that holds meetings after school. The club has decided to enter a two-day competition that involves different math and science challenges. The first day of competition involves solving multi-step math problems. Teams will receive two points for every problem they get correct in the morning session and three points for every question they get correct in the afternoon session.
  - a. Write an equation to represent the situation. Remember to define your variable(s).
  - b. The team scores four points in the morning session, but finishes the day with 28 points. Solve the equation and interpret the solution in the context of the problem.
  - c. The second day of the competition was the science portion, involving hands-on science problems. Each correct science problem is worth 5 points. If the team started the day with 28 points and ended with 53 points, how many science problems did they get correct? Write and solve an equation to answer the question.
2. Employees at Driscoll's Electronics earn a base salary plus a 20% commission on their total sales for the year. Suppose the base salary is \$40,000.
  - a. Write an equation to represent the total earnings of an employee. Remember to define your variable(s).
  - b. Stewart wants to make \$65,000 this year. How much must he make in sales to achieve this salary? Write and solve an equation to answer this question.
  - c. Describe the equation  $52,000 + 0.3s = 82,000$  in terms of the problem situation.
3. The manager of a home store is buying lawn chairs to sell at his store. Each pack of chairs contains 10 chairs. The manager will sell each chair at a markup of 20% of the wholesale cost, plus a \$2.50 stocking fee.
  - a. Write an equation that represents the retail price of a chair,  $r$ , in terms of the wholesale price,  $w$ .
  - b. Use your equation to calculate the retail price of the chair if the wholesale price is \$8.40.
  - c. Use your equation to calculate the wholesale price if the retail price is \$13.30.

4. What is a number that when you multiply it by 0.9 and subtract 6.3 from the product, you get 4.5? Write and solve an equation to solve the riddle.
5. Craig and four of his friends had a car wash to earn some extra money. They split the profits and Craig got an extra \$18 to repay his parents for the car wash supplies. If Craig got \$32, how much total money did they split among themselves? Write and solve an equation to answer the question.
6. Susana bought a laptop for \$500. It was marked \$50 off because it was out of the box and slightly scratched. She also got a 20% student discount, which was taken off the original price. What was the original price of the laptop? Write and solve an equation to answer the question.
7. Solve each equation. Check your solution.
 

a. $1 = 3x - 11$	b. $7x + 2 = -12$
c. $9 = \frac{y}{4} - 2$	d. $13 - \frac{a}{7} = 6$
e. $-5b - 12 = 18$	f. $-8 = 2h - 14$
g. $-3(2x + 7) = 18$	h. $-14 = -2(5 - x)$
i. $45.99c - 50 = 133.96$	j. $1.1x + 2.35 = -8.1$
8. Solve each equation for the indicated variable.
 

a. $ax + by = c$ , for $y$	b. $h = \frac{1}{2}gt^2 + 160t$ , for $g$
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## Stretch

Solve each equation. Check your solution.

1.  $1.95(6.2 - 3x) - 4.81 = -18.46$
2.  $\frac{2}{3}\left(x - \frac{5}{2}\right) - \frac{7}{6} = -\frac{13}{3}$

## Review

Solve each equation using a double number line model.

1.  $4x - 5 = 7$
2.  $\frac{1}{3}x + 2 = 5$

Evaluate each expression for the indicated value.

3.  $-\frac{1}{2}a^2 + \frac{5}{6}a$ , for  $a = \frac{6}{7}$
4.  $-5.3r - 7.6 + 0.4r$ , for  $r = -2.4$

Determine each quotient.

5.  $2\frac{3}{8} \div -2\frac{1}{2}$
6.  $-14.8 \div -1.2$