

Rewriting equations with more than one variable uses the same “legal” moves process as solving an equation with one variable in Lessons 3.2.1, A.1.8, and A.1.9. The end result is often not a number, but rather an algebraic expression containing numbers and variables.

For “legal” moves, see the Math Notes box in Lesson 3.2.1. For additional examples and more practice, see the Checkpoint 6A materials at the back of the textbook.

Example 1

Solve for y	$3x - 2y = 6$
Subtract $3x$	$-2y = -3x + 6$
Divide by -2	$y = \frac{-3x+6}{-2}$
Simplify	$y = \frac{3}{2}x - 3$

Example 2

Solve for y	$7 + 2(x + y) = 11$
Subtract 7	$2(x + y) = 4$
Distribute the 2	$2x + 2y = 4$
Subtract $2x$	$2y = -2x + 4$
Divide by 2	$y = \frac{-2x+4}{2}$
Simplify	$y = -x + 2$

Example 3

Solve for x	$y = 3x - 4$
Add 4	$y + 4 = 3x$
Divide by 3	$\frac{y+4}{3} = x$

Example 4

Solve for t	$I = prt$
Divide by pr	$\frac{I}{pr} = t$

Problems

Solve each equation for the specified variable.

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| 1. Solve for y :
$5x + 3y = 15$ | 2. Solve for x :
$5x + 3y = 15$ | 3. Solve for w :
$2l + 2w = P$ |
| 4. Solve for m :
$4n = 3m - 1$ | 5. Solve for a :
$2a + b = c$ | 6. Solve for a :
$b - 2a = c$ |
| 7. Solve for p :
$6 - 2(q - 3p) = 4p$ | 8. Solve for x :
$y = \frac{1}{4}x + 1$ | 9. Solve for r :
$4(r - 3s) = r - 5s$ |

Answers (Other equivalent forms are possible.)

1. $y = -\frac{5}{3}x + 5$

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

3. $w = -l + \frac{P}{2}$

4. $m = \frac{4n+1}{3}$

5. $a = \frac{c-b}{2}$

6. $a = \frac{c-b}{-2}$ or $\frac{b-c}{2}$

7. $p = q - 3$

8. $x = 4y - 4$

9. $r = \frac{7s}{3}$