

Pre-Algebra
Skill Builder #LE - 4
Solving Linear Equations of the Form $ax+b=cx+d$

Method for solving these types of equations:

- 1) Put the terms involving the variables on one side.
- 2) Put the terms involving the constants on the other side.
- 3) Use the Multiplication/Division Property to solve the equation.

Here is a walk-through of some examples of the above form. Study the steps very carefully so that when you are doing the problems on the next page you will be prepared.

- | | | |
|----|--|---|
| 1) | $7x + 15 = 4x - 42$
$7x - 4x + 15 = 4x - 4x - 42$
$3x + 15 = -42$
$3x + 15 - 15 = -42 - 15$
$3x = -57$
$\frac{1}{3} \cdot 3x = \frac{1}{3}(-57)$
$\frac{3}{3} \cdot x = -\frac{57}{3}$
$x = -19$ | We want to solve for the variable.
I have chosen to put my variables on the LHS.
On each side I combine like terms.
Now I put my constants on the RHS.
On each side I combine like terms.
I multiply both sides by the reciprocal of 3.

I write it this way to prepare for cancelling.

Now we have our answer. |
| 2) | $-5x + 23 = 8x - 16$
$-5x - 8x + 23 = 8x - 8x - 16$
$-13x + 23 = -16$
$-13x + 23 - 23 = -16 - 23$
$-13x = -39$
$-\frac{1}{13}(-13x) = -\frac{1}{13}(-39)$
$\frac{13}{13} \cdot x = \frac{39}{13}$
$x = 3$ | We want to solve for the variable.
I have chosen to put my variables on the LHS.
On each side I combine like terms.
Now I put my constants on the RHS.
On each side I combine like terms.
I multiply both sides by the reciprocal of -13.

I write it this way to prepare for cancelling.

Now we have our answer. |
| 3) | $1.2x + 0.4 = 0.7x - 23.6$
$1.2x - 0.7x + 0.4 - 0.4 = 0.7x - 0.7x - 23.6 - 0.4$
$0.5x = -24$
$2(0.5x) = 2(-24)$
$x = -48$ | We will do this problem with less steps.
Looks difficult but it is not.
See how simple this looks.
Two is the reciprocal of 0.5.
Now we have our answer. |

Pre-Algebra
Skill Builder #LE - 4
Solving Linear Equations of the Form $ax+b=cx+d$

Solve the following equations.

1) $8t + 10 = 5t - 8$

2) $3t - 8 = 6t - 5$

3) $-12x + 14 = -8x + 9$

4) $-10x - 3 = -7x + 6$

5) $4w - 9 = 2w - 7$

6) $7w - 8 = 5w + 4$

7) $6z + 2 = 3z + 11$

8) $2y - 8 = 6y + \frac{5}{4}$

(a little more difficult)

Pre-Algebra
Skill Builder #LE - 4
Solving Linear Equations of the Form $ax+b=cx+d$

Answer Key:

1) $t = -6$

2) $t = -1$

3) $x = \frac{5}{4}$

4) $x = -3$

5) $w = 1$

6) $w = 6$

7) $z = 3$

8) $y = -\frac{37}{16}$