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

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

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

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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)*

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

Prepared by Bret Carthew, Fall 2010.