Pre-Algebra
Skill Builder #LE - 1
Solving One-Step Linear Equations (Addition/Subtraction)

Note that an equation has the following structure:

left expression = right expression

We will sometimes use the abbreviations **LHS** and **RHS** to denote the left-hand side and the right-hand side of an equation, respectively. E**ach problem will always have two expressions separated by the equal sign**. It is **IMPORTANT to write the EQUAL SIGN between the LHS and the RHS**.

If we manipulate expressions, what then do we do with equations? The answer is we ***solve equations***, or try to. Initially we confine ourselves to studying **equations in one variable**.

Solving an equation simply means ***finding the value of the variable that will make the equation a true statement***. Going back to the example, solving the equation $x+3=5$ means finding the value of *x* that will satisfy the equation. Of course it is easy to see that the value of 2 for *x* will make the equation true. We call 2 the **solution** of the equation.

In the following two examples determine if the given value is a solution of the equation:

1) $2x-14=12;9$

$2\cdot 9-14=12$

$18-14=12$

$4=12$ **No**

2) $x^2+5x-2=22;3$

$3^2+5\cdot 3-2=22$

$9+15-2=22$

$22=22$ **Yes**

Now we use the addition property: $a=b \Leftrightarrow a+c=b+c$
Method: use this property to isolate the variable on one side of the equation.
In the following two examples use this property to solve the equation.

3) $x-12=18$

$x-12+12=18+12$

$x=30$

4) $19=10+z$

$19-10=10+z-10$

$9=z$

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For problems 1 & 2 see if the value is a solution of the equation and for 3 through 8 solve the equation.

1) $9x+11=21;1$

2) $4x-5=7;3$

3) $a+14=11$

4) $20=z-16$

5) $-10=k-32$

6) $17+b=-20$

7) $-27+x=-30$

8) $-20+c-40=-70+3$
(*a little more difficult)*

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Answer Key:

1) No

2) Yes

3) a=-3

4) z=36

5) k=22

6) b=-37

7) x=-3

8) c=-7

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