Alg. Lesson 2-4 Solving equations with variables on both sides

OAS: A1.A.1.1 Use knowledge of solving equations with rational values to represent and solve mathematical and real-world problems (e.g., angle measures,geometric formulas, science, or statistics) and interpret the solutions in the original context.

Now we are going to put together all the two step equation notes that we have learned…….

Here is the order we work multistep equations:
1. distributive property and parenthesis
2. combine like terms
3. additive inverse property and property of equality
4. simplify
5. multiplicative inverse property and property of equality
6. simplify
7. check

Skip steps if they do not apply to the problem.

$$Ex)\quad 4(x+5) = 3(2x+4) - x \quad solve\ and\ check$$

$4(x+5) = 3(2x+4) - x$	given
$4x + 4(5) = 3(2x) + 3(4) - x$	Distributive property
$4x + 20 = 6x + 12 - x$	simplify
$4x + 20 = 5x + 12$	Combine like terms
$-20 \qquad -20$	Additive inverse property and property of equality
$4x = 5x - 8$	simplify
$-5x \quad -5x$	Additive inverse property and property of equality
$-x = -8$	simplify
$\frac{-1}{-1}x = \frac{-8}{-1}$	Multiplicative inverse property and property of equality
$x = 8$	simplify
$4(8+5) = 3(2(8)+4) - (8)$	check

$4(13) = 3(16 + 4) - 8$ $52 = 3(20) - 8$ $52 = 60 - 8$ $52 = 52$	

If you work out a problem and the answer ends up in:
$10 = 10$ (or any number equals itself), this is called an <u>identity</u>. No matter what number you put in for x, it will ALWAYS be true. Therefore, your answer should be "all numbers".

If you work out a problem and the answer ends up in:
10 = 4 (or any solution that will never equal itself), this is called a <u>null set</u>. No matter what number you put in for x, it will NEVER be true and your answer is null set (Ø).