4.1 Simplifying Expressions and Solving Equations - Worksheet 1

1 Simplify the expression $2(7a - 4b) - 4(2a - b)$ using a complete presentation. Show the distribution step, the rearrangement step, the grouping step, and the arithmetic step.

2 Look through your presentation on the previous problem. Which steps do you think can most safely be skipped in terms of demonstrating your understanding? In terms of avoiding errors? Explain your reasoning.

3 Simplify the expression $3(x^2 - 2x + 4) - 2(2x^2 + 5)$ using a complete presentation. Show only the steps that you think are the important.

Be sure to pick an appropriate level of explanation for the presentation you're providing.

Note that your instructor may set specific expectations for your presentation. If they do that, then do what they tell you to do. Just remember that the real goal is to understand and be able to communicate that understanding effectively.

4.2 Simplifying Expressions and Solving Equations - Worksheet 2

1 Determine whether $p = -3$ is a solution of the equation $-2p - 4 = -2$.

In other words, determine if the two sides of the equation give the same value when $p = -3$.

2 Solve the equation $7x = x + 24$ using a complete presentation.

3 Consider the following presentation for solving the equation from the previous problem.

$7x = x + 24$	
$7x - x = x + 24 - x$	Subtract x from both sides
$7x - x = x - x + 24$	Rearrange the terms
$7x - x = (x - x) + 24$	Group the terms
$(7 - 1)x = (1 - 1)x + 24$	Factor out the x
$6x = 0x + 24$	Arithmetic
$6x = 24$	Simplify
$\frac{6x}{6} = \frac{24}{6}$	Divide both sides by 6
$x = 4$	Arithmetic

The work above is all technically correct. Why do you think this would be considered a problematic presentation?

Go beyond the idea that this it is too long. Think about the goals of the problem and how the work relates to that goal.

4.3 Simplifying Expressions and Solving Equations - Worksheet 3

1 Determine whether $q = -2$ is a solution of the equation $3q + 1 = -q - 7$.

2 Solve the equation $3(y + 4) - 2 = 2y - 7$ using a complete presentation.

Hint: Find a way to simplify to left side of the equation by writing it without parentheses.

3 Solve the equation $3(2n - 1) + 5 = 4n - 8$ using a complete presentation.

4 Simplify the expression $4(a^2 - 2ab + 3b^2) - 3(a^2 + 4ab) - 3(ab + 2b^2)$.

4.4 Simplifying Expressions and Solving Equations - Worksheet 4

1 Verify that $y = 4$ and $y = -4$ are both solutions of the equation $-y^2 + 6 = -10$.

To verify the solution means to show by direct calculation that the equation is true. It's similar to asking you to determine whether a given value is a solution, except that you already know that the calculation is supposed to show that it is a true equation.

2 For the previous problem, what mistake do you think would be common for students to make?

3 Solve the equation $5t + 8 = -3t + 15$ using a complete presentation.

4 Solve the equation $-2(s - 3) + 2 = 2s + 8$ using a complete presentation.

4.5 Simplifying Expressions and Solving Equations - Worksheet 5

1 Solve the equation $5(2a+7)-3a+4=3(a-3)-(2a+1)$ using a complete presentation.

2 There is no value of x that makes the equation $3x+5=5(x+1)-2x$ false. This means that every choice of the variable x will result in a true equation. Attempt to solve the equation using the normal method. Describe what your equation looks like and why it makes sense to conclude that all values of x make the equation true.

The situation described in this problem and the next often gets students confused. The point of this is to remind you what the meaning of these equations are so that you aren't just blindly memorizing more rules. It's important to understand the underlying logic of the problem.

3 There is no value of x that makes the equation $-2x+3=-2(2x+1)+2x$ true. This means that every choice of the variable x will result in a false equation. Attempt to solve the equation using the normal method. Describe what your equation looks like and why it makes sense to conclude that all values of x make the equation false.