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Solving Equations With Variables On Both Sides Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the primary goal when solving an equation with variables on both sides?

undefined. A) To eliminate all variables

undefined. B) To balance both sides of the equation ✓

undefined. C) To multiply both sides by zero

undefined. D) To add more variables to one side

The primary goal is to balance both sides of the equation.

Which of the following are steps in solving equations with variables on both sides? (Select all that apply)

undefined. A) Simplifying each side of the equation ✓

undefined. B) Moving all variables to one side ✓

undefined. C) Ignoring the constants

undefined. D) Checking solutions by substitution ✓

Steps include simplifying each side, moving variables, and checking solutions.

Explain why it is important to simplify both sides of an equation before solving it.

Simplifying helps to make the equation easier to work with and reduces errors.

List two common mistakes made when solving equations with variables on both sides.

1. Mistake 1

Forgetting to combine like terms.

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2. Mistake 2
Misapplying the distributative property.

Common mistakes include forgetting to combine like terms and misapplying operations.

Part 2: Understanding and Interpretation

When you have the equation 3x + 5 = 2x + 10, what is the first step you should take?

undefined. A) Subtract 2x from both sides ✓

undefined. B) Add 5 to both sides

undefined. C) Subtract 5 from both sides

undefined. D) Divide both sides by x

The first step is to subtract 2x from both sides to start isolating x.

Which of the following statements are true about solving equations with variables on both sides? (Select all that apply)

undefined. A) You can add or subtract the same number from both sides. ✓

undefined. B) You should always start by dividing both sides by the coefficient of x.

undefined. C) It is necessary to combine like terms. ✓

undefined. D) The solution should be checked by substituting back into the original equation. ✓

True statements include adding or subtract the same number and combining like terms.

Describe the role of combining like terms in solving equations with variables on both sides.

Combining like terms simplifies the equation, making it easier to isolate the variable.

Part 3: Application and Analysis

Solve the equation: 4x - 7 = 2x + 5. What is the value of x?

undefined. A) 1

undefined. B) 6 ✓

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undefined. C) -6

undefined. D) 12

The value of x is 6 after solving the equation.

Given the equation 5x + 3 = 3x + 11, which steps would you take to solve for x? (Select all that apply)

undefined. A) Subtract 3x from both sides ✓

undefined. B) Add 3 to both sides

undefined. C) Subtract 3 from both sides ✓

undefined. D) Divide both sides by 2

Steps include subtract 3x and then simplify the equation.

Solve the equation 7x + 2 = 5x + 10 and explain each step of your process.

The solution involves isolating x and explaining the reasoning behind each step.

If you have the equation 6x + 4 = 4x + 12, what can you infer about the relationship between the terms on both sides?

undefined. A) The terms are equal ✓

undefined. B) The terms are not related

undefined. C) The left side is always greater

undefined. D) The right side is always greater

The terms are equal when the equation holds true.

Analyze the equation 3(x + 2) = 2x + 6. Which of the following statements are correct? (Select all that apply)

undefined. A) The equation can be simplified by distributing 3 on the left side. ✓

undefined. B) The equation is already balanced.

undefined. C) You need to move the x terms to one side. ✓

undefined. D) The equation has no solution.

Correct statements include the need to distribute and the equation being balanced.

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Part 4: Evaluation and Creation

After solving the equation 9x + 5 = 3x + 17, you find x = 2. How would you verify this solution?

undefined. A) Substitute x = 2 back into the original equation ✓

undefined. B) Divide both sides by 2

undefined. C) Multiply both sides by 2

undefined. D) Add 2 to both sides

You would verify by substituting x = 2 back into the original equation.

Consider the equation 4(x - 1) = 2x + 6. Which of the following are potential errors in solving this equation? (Select all that apply)

undefined. A) Forgetting to distribute the 4 ✓

undefined. B) Not combining like terms ✓

undefined. C) Subtract 2x from both sides

undefined. D) Adding 1 to both sides

Potential errors include forgetting to distribute and not combining like terms.

Create your own equation with variables on both sides and provide a step-by-step solution. Explain why each step is necessary.

The response should include a clear equation and a logical explanation of each step.

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