

Solving Equations With Variables On Both Sides Worksheet

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Part 1: Building a Foundation

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

Hint: Think about what you want to achieve when solving an equation.

- A) To eliminate all variables
- B) To balance both sides of the equation
- C) To multiply both sides by zero
- D) To add more variables to one side

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

Hint: Consider the common methods used in solving equations.

- A) Simplifying each side of the equation
- B) Moving all variables to one side
- C) Ignoring the constants
- D) Checking solutions by substitution

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

Hint: Think about how simplification affects the solving process.

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

Hint: Consider errors that often occur during the solving process.

1. Mistake 1

2. Mistake 2

Part 2: Understanding and Interpretation

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

Hint: Think about how to isolate the variable.

- A) Subtract $2x$ from both sides
- B) Add 5 to both sides
- C) Subtract 5 from both sides
- D) Divide both sides by x

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

Hint: Consider the properties of equality.

- A) You can add or subtract the same number from both sides.
- B) You should always start by dividing both sides by the coefficient of x .
- C) It is necessary to combine like terms.
- D) The solution should be checked by substituting back into the original equation.

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

Hint: Think about how combining like terms simplifies the equation.

Part 3: Application and Analysis

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

Hint: Isolate x by moving terms around.

- A) 1
- B) 6
- C) -6
- D) 12

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

Hint: Think about how to isolate x in the equation.

- A) Subtract $3x$ from both sides
- B) Add 3 to both sides
- C) Subtract 3 from both sides
- D) Divide both sides by 2

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

Hint: Break down your solution into clear steps.

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

Hint: Consider the implications of the equation being true.

- A) The terms are equal
- B) The terms are not related
- C) The left side is always greater
- D) The right side is always greater

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

Hint: Think about the properties of equality and simplification.

- A) The equation can be simplified by distributing 3 on the left side.
- B) The equation is already balanced.
- C) You need to move the x terms to one side.
- D) The equation has no solution.

Part 4: Evaluation and Creation

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

Hint: Consider how to check your work.

- A) Substitute $x = 2$ back into the original equation
- B) Divide both sides by 2
- C) Multiply both sides by 2
- D) Add 2 to both sides

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

Hint: Think about common mistakes in distribution and combining terms.

- A) Forgetting to distribute the 4
- B) Not combining like terms
- C) Subtract $2x$ from both sides
- D) Adding 1 to both sides

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

Hint: Think about how to structure your equation and solution.