

# Equations With Variables On Both Sides Worksheet Answer Key PDF

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## Part 1: Building a Foundation

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### What is a variable in an equation?

undefined. A) A constant number

**undefined. B) A symbol representing an unknown value ✓**

undefined. C) An operation like addition or subtraction

undefined. D) A mathematical statement of equality

A variable is a symbol that represents an unknown value.

### What is a variable in an equation?

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A variable is a symbol that represents an unknown value in an equation.

### Which of the following are examples of equations with variables on both sides?

undefined. A)  $2x + 3 = 5$

**undefined. B)  $3x + 4 = 2x + 7$  ✓**

**undefined. C)  $x + 5 = x - 2$  ✓**

undefined. D)  $7 = 3x$

Equations with variables on both sides include those where the variable appears on both sides of the equation.

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Equations with variables on both sides include those where the variable appears on both sides of the equation.

**Explain the purpose of solving an equation with variables on both sides.**

**The purpose is to find the value of the variable that makes the equation true.**

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**List two steps involved in solving equations with variables on both sides.**

1. Step 1

**Move the variable terms to one side.**

2. Step 2

**Combine like terms and isolate the variable.**

Common steps include moving variables to one side and simplifying the equation.

## **Part 2: Understanding and Interpretation**

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**What is the first step in solving the equation  $4x + 5 = 2x + 9$ ?**

undefined. A) Add 5 to both sides

**undefined. B) Subtract  $2x$  from both sides ✓**

undefined. C) Divide both sides by 4

undefined. D) Multiply both sides by 2

The first step is to move the variable terms to one side of the equation.

**What is the first step in solving the equation  $4x + 5 = 2x + 9$ ?**

undefined. A) Add 5 to both sides

**undefined. B) Subtract 2x from both sides ✓**

undefined. C) Divide both sides by 4

undefined. D) Multiply both sides by 2

The first step is to subtract 2x from both sides to isolate the variable.

**Which of the following operations help in simplifying equations with variables on both sides?**

**undefined. A) Combining like terms ✓**

**undefined. B) Adding the same number to both sides ✓**

**undefined. C) Subtracting the same number from both sides ✓**

undefined. D) Dividing both sides by zero

Operations that maintain equality, such as adding or subtracting the same number, help simplify equations.

**Which of the following operations help in simplifying equations with variables on both sides?**

**undefined. A) Combining like terms ✓**

**undefined. B) Adding the same number to both sides ✓**

**undefined. C) SubtractING the same number from both sides ✓**

undefined. D) Dividing both sides by zero

Operations like combining like terms and adding or subtracting the same number help simplify equations.

**Describe why it is important to check your solution after solving an equation.**

**Checking your solution ensures that the value satisfies the original equation.**

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**Checking your solution ensures that the value satisfies the original equation.**

### **Part 3: Application and Analysis**

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**Solve the equation  $3x + 4 = 2x + 9$ . What is the value of  $x$ ?**

undefined. A) 1

**undefined. B) 5 ✓**

undefined. C) -5

undefined. D) 0

The value of  $x$  is found by isolating it through algebraic manipulation.

**Solve the equation  $3x + 4 = 2x + 9$ . What is the value of  $x$ ?**

undefined. A) 1

**undefined. B) 5 ✓**

undefined. C) -5

undefined. D) 0

The value of  $x$  is found by isolating it on one side of the equation.

**Which of the following equations are equivalent to  $5x - 3 = 2x + 6$  after simplifying?**

**undefined. A)  $3x = 9$  ✓**

**undefined. B)  $x = 3$  ✓**

**undefined. C)  $5x = 2x + 9$  ✓**

undefined. D)  $3x - 3 = 6$

Equivalent equations maintain the same solution set after simplification.

**Which of the following equations are equivalent to  $5x - 3 = 2x + 6$  after simplifying?**

**undefined. A)  $3x = 9$  ✓**

**undefined. B)  $x = 3$  ✓**

**undefined. C)  $5x = 2x + 9$  ✓**

undefined. D)  $3x - 3 = 6$

Equivalent equations will have the same solution after simplification.

**Solve the equation  $6x + 2 = 4x + 10$  and explain each step you took to find the solution.**

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

Solve the equation  $6x + 2 = 4x + 10$  and explain each step you took to find the solution.

Explain the steps taken to isolate  $x$  and find the solution.

## Part 4: Evaluation and Creation

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Consider the equation  $5x + 10 = 5(x + 2)$ . What can you conclude about this equation?

undefined. A) It has a unique solution.

undefined. B) It has no solution.

undefined. **C) It is true for all values of  $x$ . ✓**

undefined. D) It is an inconsistent equation.

This equation is true for all values of  $x$ , indicating it is an identity.

Evaluate the solutions for the equation  $3(x - 2) = 3x - 6$ . Which statements are correct?

undefined. **A) The equation simplifies to  $0 = 0$ . ✓**

undefined. **B) The equation has infinitely many solutions. ✓**

undefined. C) The equation has no solution.

undefined. **D) The equation is true for all  $x$ . ✓**

The equation simplifies to a true statement, indicating it has infinitely many solutions.

Create an equation with variables on both sides that has exactly one solution. Solve your equation and explain your process.

The equation should be solvable to yield a unique solution, and the process should be clearly explained.