Equations With Variables On Both Sides Worksheet

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Part 1: Building a Foundation

What is a variable in an equation?

Hint: Think about what represents an unknown in mathematics.

- ◯ A) A constant number
- ◯ B) A symbol representing an unknown value
- ◯ C) An operation like addition or subtraction
- ◯ D) A mathematical statement of equality

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

Hint: Look for equations that have variables on both sides of the equal sign.

- ☐ A) 2x + 3 = 5
- ☐ B) 3x + 4 = 2x + 7
- ☐ C) x + 5 = x - 2
- ☐ D) 7 = 3x

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

Hint: Consider the implications of finding the value of the variable.

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

Hint: Consider the implications of balancing both sides of the equation.

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

Hint: Think about the operations you perform to isolate the variable.

1. Step 1

2. Step 2

Part 2: Understanding and Interpretation

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

Hint: Consider how you can simplify the equation.

- ◯ A) Add 5 to both sides
- ◯ B) Subtract 2x from both sides
- ◯ C) Divide both sides by 4
- ◯ D) Multiply both sides by 2

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

Hint: Consider how to eliminate one of the variables.

- ◯ A) Add 5 to both sides
- ◯ B) Subtract 2x from both sides
- ◯ C) Divide both sides by 4
- ◯ D) Multiply both sides by 2

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

Hint: Think about operations that maintain equality.

- ☐ A) Combining like terms
- ☐ B) Adding the same number to both sides
- ☐ C) Subtractting the same number from both sides
- ☐ D) Dividing both sides by zero

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

Hint: Consider the implications of your solution being correct or incorrect.

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

Hint: Consider the implications of having a correct or incorrect solution.

Part 3: Application and Analysis

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

Hint: Isolate x by performing operations on both sides.

- ◯ A) 1
- ◯ B) 5
- ◯ C) -5
- ◯ D) 0

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

Hint: Isolate x to find its value.

- ◯ A) 1
- ◯ B) 5
- ◯ C) -5
- ◯ D) 0

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

Hint: Look for equations that can be derived from the original by performing operations.

- [ ] A) 3x = 9
- [ ] B) x = 3
- [ ] C) 5x = 2x + 9
- [ ] D) 3x - 3 = 6

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

Hint: Look for equations that can be transformed into the same form.

- [ ] A) 3x = 9
- [ ] B) x = 3
- [ ] C) 5x = 2x + 9
- [ ] D) 3x - 3 = 6

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

Hint: Break down your solution into clear, logical steps.

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

Hint: Detail your thought process as you solve the equation.

Part 4: Evaluation and Creation

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

Hint: Think about the nature of the equation and its solutions.

- ◯ A) It has a unique solution.
- ◯ B) It has no solution.
- ◯ C) It is true for all values of x.
- ◯ D) It is an inconsistent equation.

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

Hint: Consider the implications of simplifying both sides.

- ☐ A) The equation simplifies to 0 = 0.
- ☐ B) The equation has infinitely many solutions.
- ☐ C) The equation has no solution.
- ☐ D) The equation is true for all x.

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

Hint: Think of a simple linear equation that meets the criteria.