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Multi Step Equations Worksheet

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Part 1: Building a Foundation

What is the first step in solving a multi-step equation?

Hint: Think about the order of operations.

○ Combine like terms
○ Use inverse operations
○ Simplify each side
○ Check the solution

Which of the following are considered inverse operations? (Select all that apply)

Hint: Think about operations that undo each other.

☐ Addition and Subtraction
☐ Multiplication and Division
☐ Exponentiation and Logarithms
☐ Addition and Multiplication

Explain why it is important to perform the same operation on both sides of an equation.

Hint: Consider the properties of equality.

List the steps involved in solving a multi-step equation.

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Hint: Think about the logical sequence of operations.

1. Step 1

[   ]

2. Step 2

[   ]

3. Step 3

[   ]

Which property is used to simplify the expression 3(x + 4)?

Hint: Consider how to distribute the number outside the parentheses.

◯ Associative Property
◯ Distributative Property
◯ Communtative Property
◯ Identity Property

Part 2: Understanding and Application

In the equation 2x + 3 = 11, which steps are needed to solve for x? (Select all that apply)

Hint: Think about how to isolate x.

☐ Subtract 3 from both sides
☐ Add 3 to both sides
☐ Divide both sides by 2
☐ Multiply both sides by 2

Describe how combining like terms can simplify solving multi-step equations.

Hint: Consider the impact on the equation's complexity.

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Solve the equation: 4(x - 2) = 8. What is the value of x?

Hint: Think about isolating x step by step.

○ 0
○ 2
○ 4
○ 6

Given the equation 5x - 3 = 2x + 9, which operations will help isolate x? (Select all that apply)

Hint: Consider how to move terms around the equation.

☐ Add 3 to both sides
☐ Subtract 2x from both sides
☐ Subtract 5x from both sides
☐ Add 2x to both sides

Solve the equation 3(x + 5) = 2x + 15 and explain each step.

Hint: Break down the equation step by step.

Part 3: Analysis, Evaluation, and Creation

In the equation 2(x + 3) = x + 6, what mistake might lead to an incorrect solution?

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Hint: Think about common errors in distribution.

⬡ Forgetting to distribute the 2
⬡ Combining like terms incorrectly
⬡ Not subtract x from both sides
⬡ Adding 3 to both sides

Analyze the equation 3x + 4 = 2x + 10. Which of the following are true? (Select all that apply)

Hint: Consider the steps needed to simplify the equation.

☐ Subtract 2x from both sides simplifies the equation
☐ Adding 4 to both sides is necessary
☐ The solution involves only one step
☐ The equation can be solved by isolating x

Analyze the steps needed to solve the equation 4x - 7 = 2(x + 3) and identify any potential errors.

Hint: Break down the equation and look for mistakes.

Which equation represents a correctly solved multi-step equation?

Hint: Consider the properties of equality and operations.

⬡ 3(x + 2) = 3x + 6
⬡ 2x + 5 = 2(x + 2)
⬡ x/2 + 3 = 2x + 6
⬡ 4(x - 1) = 4x - 4

Create a multi-step equation that has a solution of x = 5. Which of the following could be your equation? (Select all that apply)

Hint: Think about how to construct equations with known solutions.

☐ 2x + 10 = 20
☐ 3(x - 1) = 12
☐ x + 4 = 9

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☐ 5x = 25

Design a real-world problem that can be solved using a multi-step equation, and explain how you would solve it.

Hint: Think about practical applications of equations.

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