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Two Step Inequalities Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

What is the first step in solving the two-step inequality $3x + 5 < 20$?

Hint: Think about how to isolate the variable.

◯ Add 5 to both sides
◯ **Subtract 5 from both sides ✓**
◯ Multiply both sides by 3
◯ Divide both sides by 3

| The first step is to subtract 5 from both sides.

Which of the following are inequality signs used in two-step inequalities?

Hint: Consider the symbols that indicate a relationship between values.

☐ **< ✔**
☐ **> ✔**
☐ =
☐ **≥ ✔**

| The correct inequality signs are <, >, and ≥.

Explain why it is necessary to reverse the inequality sign when multiplying or dividing both sides by a negative number.

Hint: Think about the direction of the inequality.

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Reverses the inequality sign to maintain the true relationship between the values.

List the two operations typically involved in solving a two-step inequality.

Hint: Think about the basic arithmetic operations.

1. First operation

Addition or Subtraction

2. Second operation

Multiplication or Division

The two operations are addition/subtraction and multiplication/division.

What does an open circle on a number line represent when graphING inequalities?

Hint: Consider whether the number is part of the solution set.

○ The number is included in the solution
○ **The number is not included in the solution ✓**
○ The inequality is an equation
○ The inequality is reversed

An open circle indicates that the number is not included in the solution.

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Part 2: Application and Analysis

Which inequality represents the statement: "Three times a number decreased by 4 is greater than 8"?

Hint: Translate the words into a mathematical expression.

○ **3x - 4 > 8 ✓**
○ 3x + 4 < 8
○ 3x - 4 < 8
○ 3x + 4 > 8

> The correct inequality is $3x - 4 > 8$.

If the inequality $2x + 3 \leq 11$ is solved, which of the following are possible solutions for x?

Hint: Consider the values that satisfy the inequality.

☐ **4 ✓**
☐ **3 ✓**
☐ 5
☐ 6

> Possible solutions include values less than or equal to 4.

Translate the following scenario into a two-step inequality: "A person needs to save at least $150 after spending $20 on groceries from their weekly allowance of $50."

Hint: Think about the total savings and expenses.

> **The inequality can be represented as $50 - 20 \geq 150$.**

Which step is incorrect in solving the inequality $3x + 4 < 10$ if the solution given is $x < 2$?

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Hint: Review the steps taken to isolate the variable.

◯ Subtract 4 from both sides
◯ **Divide both sides by 3 ✓**
◯ Reverse the inequality sign
◯ The solution is correct

❘ The incorrect step is likely the division by 3.

Analyze the inequality $2(x - 3) \geq 8$. Which of the following are correct steps to solve it?

Hint: Consider the order of operations and distribution.

☐ **Distribute the 2 ✓**
☐ Add 3 to both sides
☐ **Divide both sides by 2 ✓**
☐ Subtract 3 from both sides

❘ Correct steps include distributing and then isolating the variable.

Part 3: Evaluation and Creation

Evaluate the solution to the inequality $7 - 2x \leq 1$. What is the correct solution for x?

Hint: Isolate the variable to find the solution.

◯ **$x \geq 3$ ✓**
◯ $x \leq 3$
◯ $x \geq -3$
◯ $x \leq -3$

❘ The correct solution is $x \geq 3$.

Create a two-step inequality to represent the following situation: "A student needs to score more than 70% on their next two tests to pass the course."

Hint: Think about the total score needed.

☐ **x + y > 140 ✓**
☐ $x + y \geq 140$
☐ x + y < 140
☐ $x + y \leq 140$

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The correct inequality is $x + y > 140$.

Propose a real-world scenario that can be modeled by the inequality $2x + 3 \leq 15$, and explain how you would solve it.

Hint: Think about a situation involving limits or constraints.

An example could be budgeting, where x represents expenses.

Evaluate the steps taken to solve the inequality $5x - 9 > 16$. List any errors and correct them.

Hint: Review the solution process step by step.

1. First step

Add 9 to both sides

2. Second step

Divide by 5

Identify any mistakes in the operations and correct them.

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