

Two Step Inequalities Worksheet

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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

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

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

- $<$
- $>$
- $=$
- \geq

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.

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

Hint: Think about the basic arithmetic operations.

1. First operation

2. Second operation

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

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.

- $3x - 4 > 8$
- $3x + 4 < 8$
- $3x - 4 < 8$
- $3x + 4 > 8$

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

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.

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

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

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

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.

- $x \geq 3$
- $x \leq 3$
- $x \geq -3$
- $x \leq -3$

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.

- $x + y > 140$
- $x + y \geq 140$
- $x + y < 140$
- $x + y \leq 140$

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.

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

2. Second step