Two Step Inequalities Worksheet Answer Key PDF

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Part 1: Building a Foundation

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

undefined. Add 5 to both sides

undefined. Subtract 5 from both sides ✓

undefined. Multiply both sides by 3

undefined. 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?

undefined. < ✓

undefined. > ✓

undefined. =

undefined. ≥ ✓

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.

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

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

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?

undefined. The number is included in the solution
undefined. The number is not included in the solution ✓
undefined. The inequality is an equation
undefined. The inequality is reversed

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

Part 2: Application and Analysis

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

undefined. $3x - 4 > 8$ ✓
undefined. $3x + 4 < 8$
undefined. $3x - 4 < 8$
undefined. $3x + 4 > 8$

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?

undefined. 4 ✓
undefined. 3 ✓
undefined. 5
undefined. 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."

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 \(x < 2\)?

undefined. Subtract 4 from both sides
undefined. Divide both sides by 3 ✓
undefined. Reverse the inequality sign
undefined. 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?

undefined. Distribute the 2 ✓
undefined. Add 3 to both sides
undefined. Divide both sides by 2 ✓
undefined. 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 \(x\)?

undefined. x \geq 3 ✓
undefined. x \Leq 3
undefined. x \geq -3
undefined. 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."

undefined. x + y > 140 ✓
undefined. x + y \geq 140
undefined. x + y < 140
undefined. x + y \Leq 140

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.

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.

1. First step

Add 9 to both sides

2. Second step

Divide by 5

Identify any mistakes in the operations and correct them.