

Multi Step Inequalities Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

What does the inequality symbol " \leq " represent?

Hint: Think about the meaning of the symbols.

- A) Less than
- B) Greater than
- C) Less than or equal to ✓
- D) Greater than or equal to

■ The symbol " \leq " represents that a value is less than or equal to another value.

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The symbol " \leq " represents that a value is less than or equal to another value.

Which of the following are inequality symbols? (Select all that apply)

Hint: Consider the symbols used in inequalities.

- A) =
- B) $<$ ✓
- C) $>$ ✓
- D) \leq ✓

The inequality symbols include $<$, $>$, and \leq .

Which of the following are inequality symbols? (Select all that apply)

Hint: Consider the symbols used to compare values.

- A) =
- B) $<$ ✓
- C) $>$ ✓
- D) \leq ✓

Inequality symbols include $<$, $>$, \leq , and \geq .

Which of the following are inequality symbols? (Select all that apply)

Hint: Consider the symbols used to compare values.

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- B) $<$ ✓
- C) $>$ ✓
- D) \leq ✓

Inequality symbols include $<$, $>$, \leq , and \geq .

Explain the difference between strict inequalities and inclusive inequalities.

Hint: Consider how each type of inequality treats the boundary values.

Strict inequalities do not include the boundary value (e.g., $<$, $>$), while inclusive inequalities do include the boundary value (e.g., \leq , \geq).

Explain the difference between strict inequalities and inclusive inequalities.

Hint: Consider how each type treats the boundary values.

Strict inequalities do not include the boundary value (e.g., $<$, $>$), while inclusive inequalities do (e.g., \leq , \geq).

Explain the difference between strict inequalities and inclusive inequalities.

Hint: Consider how each type treats the boundary values.

Strict inequalities do not include the boundary value, while inclusive inequalities do.

When you multiply both sides of an inequality by a negative number, what must you do to the inequality sign?

Hint: Consider the effect of multiplying by a negative.

- A) Leave it unchanged
- B) Flip it ✓
- C) Remove it
- D) Double it

■ You must flip the inequality sign when multiplying or dividing by a negative number.

When you multiply both sides of an inequality by a negative number, what must you do to the inequality sign?

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■ You must flip the inequality sign when multiplying by a negative number.

Part 2: comprehension and Application

Which property allows you to simplify the expression $3(x + 4)$ in an inequality?

Hint: Think about the properties of operations.

- A) Commutative Property
- B) Associative Property
- C) Distributive Property ✓

D) Identity Property

| The Distributive Property allows you to simplify the expression.

Which property allows you to simplify the expression $3(x + 4)$ in an inequality?

Hint: Think about how you can distribute terms.

- A) Commutative Property
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 C) Distributive Property ✓
 D) Identity Property

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 C) Distributive Property ✓
 D) Identity Property

| The Distributive Property allows you to simplify the expression.

Which of the following are valid steps when solving the inequality $2x + 3 > 7$? (Select all that apply)

Hint: Consider the operations that can isolate x .

- A) Subtract 3 from both sides ✓
 B) Add 3 to both sides
 C) Divide both sides by 2 ✓
 D) Multiply both sides by 2

| Valid steps include subtract 3 from both sides and divide both sides by 2.

Which of the following are valid steps when solving the inequality $2x + 3 > 7$? (Select all that apply)

Hint: Consider the operations needed to isolate x .

- A) Subtract 3 from both sides ✓
 B) Add 3 to both sides

- C) Divide both sides by 2 ✓
- D) Multiply both sides by 2

Valid steps include subtract 3 from both sides and divide both sides by 2.

Which of the following are valid steps when solving the inequality $2x + 3 > 7$? (Select all that apply)

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Valid steps include subtract 3 from both sides and divide both sides by 2.

Describe how you would check if a solution to an inequality is correct.

Hint: Think about substituting the solution back into the original inequality.

To check a solution, substitute the value back into the original inequality to see if it holds true.

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Hint: Think about substituting values back into the original inequality.

■ You can check a solution by substituting it back into the original inequality to see if it holds true.

Solve the inequality: $5x - 7 < 18$. What is the value of x ?

Hint: Isolate x to find its value.

- A) $x < 5$ ✓
- B) $x < 3$
- C) $x > 5$
- D) $x > 3$

■ The solution is $x < 5$.

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■ The solution is $x < 5$.

You have the inequality $4(x - 2) \geq 12$. Which of the following are correct steps to solve it? (Select all that apply)

Hint: Consider the operations needed to isolate x .

- A) Distribute the 4 ✓
- B) Add 2 to both sides
- C) Divide both sides by 4 ✓
- D) Subtract 8 from both sides

■ Correct steps include distributing the 4 and dividing both sides by 4.

You have the inequality $4(x - 2) \geq 12$. Which of the following are correct steps to solve it? (Select all that apply)

Hint: Consider how to manipulate the inequality to isolate x .

- A) Distribute the 4 ✓
- B) Add 2 to both sides
- C) Divide both sides by 4
- D) Subtract 8 from both sides ✓

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Hint: Consider how to manipulate the inequality to isolate x .

- A) Distribute the 4 ✓
- B) Add 2 to both sides
- C) Divide both sides by 4
- D) Subtract 8 from both sides ✓

■ Correct steps include distributing the 4 and adding 8 to both sides.

Translate the following scenario into an inequality: "A student needs at least 75% to pass the exam."

Hint: Think about how to express the requirement mathematically.

The inequality can be expressed as $x \geq 75$, where x is the percentage score.

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The inequality can be expressed as $x \geq 75$, where x is the percentage score.

Part 3: Analysis, Evaluation, and Creation

If you have the inequality $-3x + 5 \leq 2$, what is the first step to isolate x ?

Hint: Consider the operations needed to isolate the variable.

- A) Add 5 to both sides
- B) Subtract 5 from both sides ✓
- C) Multiply both sides by -3
- D) Divide both sides by -3

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

If you have the inequality $-3x + 5 \leq 2$, what is the first step to isolate x ?

Hint: Consider how to manipulate the inequality to isolate x .

- A) Add 5 to both sides
- B) Subtract 5 from both sides ✓
- C) Multiply both sides by -3
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■ The first step is to subtract 5 from both sides.

If you have the inequality $-3x + 5 \leq 2$, what is the first step to isolate x ?

Hint: Consider how to manipulate the inequality to isolate x .

- A) Add 5 to both sides
- B) Subtract 5 from both sides ✓
- C) Multiply both sides by -3
- D) Divide both sides by -3

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

Consider the inequality $2x + 4 < 3x - 1$. Which of the following steps are part of solving this inequality? (Select all that apply)

Hint: Think about the operations needed to isolate x .

- A) Subtract $2x$ from both sides ✓
- B) Add 1 to both sides

- C) Subtract 4 from both sides ✓
- D) Divide both sides by x

Valid steps include subtract $2x$ from both sides and subtract 4 from both sides.

Consider the inequality $2x + 4 < 3x - 1$. Which of the following steps are part of solving this inequality? (Select all that apply)

Hint: Think about how to isolate x in this inequality.

- A) Subtract $2x$ from both sides ✓
- B) Add 1 to both sides
- C) Subtract 4 from both sides ✓
- D) Divide both sides by x

Steps include subtract $2x$ from both sides and subtract 4 from both sides.

Consider the inequality $2x + 4 < 3x - 1$. Which of the following steps are part of solving this inequality? (Select all that apply)

Hint: Think about how to isolate x .

- A) Subtract $2x$ from both sides ✓
- B) Add 1 to both sides
- C) Subtract 4 from both sides ✓
- D) Divide both sides by x

Valid steps include subtract $2x$ from both sides and subtract 4 from both sides.

Analyze the inequality $6 - 2x > 10$ and explain the process to find the solution set.

Hint: Consider how to isolate x and what the solution set represents.

To solve, isolate x by subtract 6 from both sides and then divide by -2 , flipping the inequality sign.

Analyze the inequality $6 - 2x > 10$ and explain the process to find the solution set.

Hint: Consider how to isolate x and what the solution set looks like.

To solve, isolate x by first subtract 6 from both sides, then divide by -2 , flipping the inequality sign.

Analyze the inequality $6 - 2x > 10$ and explain the process to find the solution set.

Hint: Consider how to isolate x and what the solution set looks like.

To solve, isolate x by subtract 6 from both sides and then divide by -2 , flipping the inequality sign.

Which of the following is the correct solution set for the inequality $3(x - 1) \leq 2x + 4$?

Hint: Consider the steps you would take to solve the inequality.

- A) $x \leq 7$
- B) $x \geq 7$
- C) $x \leq 5$ ✓
- D) $x \geq 5$

■ The correct solution set is $x \leq 5$.

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Hint: Consider how to simplify both sides.

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Which of the following is the correct solution set for the inequality $3(x - 1) \leq 2x + 4$?

Hint: Isolate x to find the correct solution set.

- A) $x \leq 7$ ✓
- B) $x \geq 7$
- C) $x \leq 5$
- D) $x \geq 5$

■ The correct solution set is $x \leq 7$.

Given the inequality $x/2 - 3 > 1$, which of the following values satisfy the inequality? (Select all that apply)

Hint: Consider the values that make the inequality true.

- A) $x = 10$ ✓
- B) $x = 8$ ✓
- C) $x = 6$
- D) $x = 4$

■ The values that satisfy the inequality are $x = 10$ and $x = 8$.

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Values that satisfy the inequality include $x = 10$ and $x = 8$.

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C) $x = 6$

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The values that satisfy the inequality are $x = 10$ and $x = 8$.

Create a real-world scenario that can be represented by the inequality $5x + 2 \leq 20$, and explain how you would solve it.

Hint: Think about a situation where you have a limit or maximum.

An example could be budgeting where x represents the number of items purchased, and the total cost must not exceed \$20.

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Create a real-world scenario that can be represented by the inequality $5x + 2 \leq 20$, and explain how you would solve it.

Hint: Think about a situation where you have constraints.

An example could be budgeting where x represents the number of items purchased, and you need to stay within a budget.