Graphing Linear Inequalities Worksheet

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Part 1: Foundational Knowledge

What is the primary difference between a linear equation and a linear inequality?

Hint: Consider the nature of solutions for each.

- ◯ Linear equations have no solutions.
- ◯ Linear inequalities have solutions that are regions.
- ◯ Linear equations are always quadratic.
- ◯ Linear inequalities cannot be graphed.

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Hint: Consider the definitions of equations and inequalities.

- ◯ A) Linear equations have no solutions.
- ◯ B) Linear inequalities have solutions that are regions.
- ◯ C) Linear equations are always quadratic.
- ◯ D) Linear inequalities cannot be graphed.

Which of the following symbols are used in linear inequalities?

Hint: Think about the comparison operators.

- ☐ =

- [ ] >
- [ ] ≤
- [ ] ≠

Which of the following symbols are used in linear inequalities?

Hint: Consider the symbols that represent relationships.

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- [ ] B) >
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Explain how the boundary line is determined when graphING a linear inequality.

Hint: Consider the equation of the line and the inequality.

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Hint: Consider the equation of the line.

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Hint: Consider the role of the inequality symbol.

List the types of boundary lines used in graphING linear inequalities and when each is used.

Hint: Think about solid vs. dashed lines.

1. Answer 1:

2. Answer 2:

Part 2: comprehension

When graphING the inequality y > 2x + 3, which region should be shaded?

Hint: Consider the direction of the inequality.

- ◯ Above the line
- ◯ Below the line
- ◯ On the line
- ◯ None of the above

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Which of the following are true about the solutions to a linear inequality?

Hint: Consider the nature of the solutions.

- ☐ A) They can be a single point.
- ☐ B) They form a region on the graph.
- ☐ C) They are always finite.
- ☐ D) They can be verified using a test point.

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Describe how you would verify the correct region to shade when graphin a linear inequality.

Hint: Think about using test points.

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Part 3: Application and Analysis

Given the inequality 3x - 4y ≤ 12, which point is a solution?

Hint: Substitute the points into the inequality.

- ◯ A) (0, 0)
- ◯ B) (4, 0)
- ◯ C) (0, 4)
- ◯ D) (4, 4)

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If you are given the inequality y ≤ -x + 5, which of the following points satisfy the inequality?

Hint: Test each point in the inequality.

- ☐ (1, 4)
- ☐ (2, 3)
- ☐ (3, 1)
- ☐ (4, 0)

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Graph the inequality x + 2y > 6 and describe the steps you took to determine the shaded region.

Hint: Think about the boundary line and test points.

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When analyzing the system of inequalities y > x + 1 and y < -x + 5, what is the nature of their solution set?

Hint: Consider the intersection of the regions.

- ◯ A single point
- ◯ A line
- ◯ An overlapping region
- ◯ No solution

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Analyze the graph of the inequalities y ≤ 2x + 1 and y ≥ -x + 3. Describe the solution region and its significance.

Hint: Think about the area where both inequalities are satisfied.

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Part 4: Evaluation and Creation

When analyzing the system of inequalities $y > x + 1$ and $y < -x + 5$, what is the nature of their solution set?

Hint: Consider the intersection of the regions.

- ◯ A single point
- ◯ A line
- ◯ An overlapping region
- ◯ No solution

Analyze the graph of the inequalities $y \leq 2x + 1$ and $y \geq -x + 3$. Describe the solution region and its significance.

Hint: Consider the intersection of the two regions.

Which of the following statements are true about the solution regions of linear inequalities?

Hint: Think about the characteristics of these regions.

- ☐ They can be unbounded.
- ☐ They are always within the first quadrant.
- ☐ They can include entire quadrants.
- ☐ They are always bounded by the axes.

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Create a real-world scenario where a system of linear inequalities could be used to model a situation. Describe the inequalities and the solution region.

Hint: Think about constraints in a real-world context.

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