

# Inequalities Worksheet Answer Key PDF

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## Part 1: Building a Foundation

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**Which symbol represents "greater than or equal to"?**

undefined. >

undefined. <

**undefined.  $\geq$  ✓**

undefined.  $\leq$

The correct symbol for 'greater than or equal to' is ' $\geq$ '.

**Which of the following are types of inequalities? (Select all that apply)**

**undefined. Linear Inequalities ✓**

**undefined. Quadratic Inequalities ✓**

undefined. Exponential Inequalities

**undefined. Compound Inequalities ✓**

Linear, Quadratic, and Compound inequalities are types of inequalities.

**Explain what it means to solve an inequality. How is it different from solving an equation?**

**Solving an inequality involves finding the range of values that satisfy the inequality, while solving an equation finds specific values.**

**List the four inequality symbols and their meanings.**

1. What does '>' mean?

**Greater than**

2. What does '<' mean?

### Less than

3. What does ' $\geq$ ' mean?

### Greater than or equal to

4. What does ' $\leq$ ' mean?

### Less than or equal to

The four symbols are:  $>$  (greater than),  $<$  (less than),  $\geq$  (greater than or equal to),  $\leq$  (less than or equal to).

## Part 2: comprehension

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**What happens to the inequality sign when you multiply or divide both sides of an inequality by a negative number?**

undefined. It stays the same

**undefined. It reverses ✓**

undefined. It becomes an equation

undefined. It disappears

The inequality sign reverses when multiplying or dividing by a negative number.

**Which of the following statements about compound inequalities is true? (Select all that apply)**

**undefined. They always involve 'and' or 'or'. ✓**

**undefined. They can be solved by solving each inequality separately. ✓**

undefined. They are only used in linear inequalities.

undefined. They are represented by a single inequality.

Compound inequalities involve 'and' or 'or' and can be solved separately.

**Describe how a linear inequality can be represented on a number line.**

**A linear inequality is represented on a number line by shading the region that satisfies the inequality, with an open or closed dot at the boundary.**

## Part 3: Application

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Solve the inequality:  $3x - 5 > 7$ . What is the value of  $x$ ?

undefined.  $x > 4$  ✓

undefined.  $x < 4$

undefined.  $x > 2$

undefined.  $x < 2$

The solution is  $x > 4$ .

Which of the following inequalities represent the solution to the inequality  $2x + 3 \leq 9$ ? (Select all that apply)

undefined.  $x \leq 3$  ✓

undefined.  $x \geq 3$

undefined.  $x \leq 6$  ✓

undefined.  $x \geq 6$

The correct representations are  $x \leq 3$  and  $x \leq 6$ .

A company wants to ensure that its production cost does not exceed \$5000. If the cost per unit is \$50, write an inequality to represent the maximum number of units that can be produced.

The inequality is  $50x \leq 5000$ , where  $x$  is the number of units.

## Part 4: Analyzing Relationships

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Consider the system of inequalities:  $y > 2x + 1$  and  $y \leq -x + 4$ . Which of the following points is a solution to the system?

undefined. (1, 3) ✓

undefined. (2, 5)

undefined. (0, 0)

undefined. (3, 1)

The point (1, 3) satisfies both inequalities.

Which of the following are true about the graph of the inequality  $y < 2x - 3$ ? (Select all that apply)

undefined. The line  $y = 2x - 3$  is included in the solution.

**undefined. The region below the line is shaded. ✓**

**undefined. The line is dashed. ✓**

undefined. The region above the line is shaded.

The line is dashed and the region below the line is shaded.

**Analyze the inequality  $x^2 - 4x + 3 < 0$ . Determine the intervals where the inequality holds true.**

**The inequality holds true in the interval (1, 3).**

## Part 5: Evaluation and Creation

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**Which of the following real-world scenarios can be modeled by the inequality  $x + y \leq 100$ ?**

**undefined. A budget constraint where x and y are expenses. ✓**

undefined. A speed limit where x is speed and y is time.

undefined. A temperature range where x is minimum and y is maximum.

undefined. A height restriction where x is height and y is width.

A budget constraint where x and y are expenses can be modeled by this inequality.

**Evaluate the following statements and select those that correctly describe the solution set of the inequality  $5x - 2 \geq 3x + 4$ . (Select all that apply)**

**undefined.  $x \geq 3$  ✓**

undefined.  $x \leq 3$

**undefined. The solution set includes all numbers greater than or equal to 3. ✓**

undefined. The solution set includes all numbers less than or equal to 3.

The solution set includes all numbers greater than or equal to 3.

**Create a real-world problem that can be solved using the inequality  $4x + 2 \leq 10$ . Describe the context and provide a solution.**

**An example could be budgeting for a project where each item costs \$4, and you want to spend no more than \$10.**