

## Inequalities Quiz Questions and Answers PDF

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#### Which of the following are symbols used in inequalities? (Select all that apply)

- $>$  ✓
- $<$  ✓
- $=$
- $\geq$  ✓
- $\neq$

Inequalities use symbols such as  $<$  (less than),  $>$  (greater than),  $\leq$  (less than or equal to), and  $\geq$  (greater than or equal to) to compare values.

#### Which of the following is a linear inequality?

- $x^2 + 3x - 4 > 0$
- $2x + 5 < 10$  ✓
- $x^3 - 2x + 1 \leq 0$
- $|x - 1| > 3$

A linear inequality is an inequality that involves a linear expression. It can be represented in the form of  $ax + b < c$ ,  $ax + b > c$ ,  $ax + b \leq c$ , or  $ax + b \geq c$ , where  $a$ ,  $b$ , and  $c$  are constants and  $x$  is a variable.

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

- Linear ✓
- Quadratic ✓
- Polynomial ✓
- Exponential

Inequalities can be classified into several types, including linear inequalities, polynomial inequalities, and rational inequalities. Each type has its own characteristics and methods for solving them.

#### Which of the following inequalities have solutions that include $x = 3$ ? (Select all that apply)

- $x > 2$  ✓
- $x < 3$
- $x \geq 3$  ✓
- $x \leq 3$  ✓

To determine which inequalities include  $x = 3$  as a solution, we need to check if substituting  $x = 3$  satisfies each inequality. Any inequality that holds true when  $x = 3$  is included in the solution set.

**What type of inequality is represented by  $|x - 3| \leq 5$ ?**

- Linear
- Quadratic
- Absolute value ✓
- Rational

The inequality  $|x - 3| \leq 5$  represents a range of values for  $x$  that are within 5 units of 3. This can be expressed as the compound inequality  $-5 \leq x - 3 \leq 5$ , which simplifies to  $-2 \leq x \leq 8$ .

**Which of the following is NOT a solution to the inequality  $x < 4$ ?**

- 3
- 0
- 5 ✓
- 1

The inequality  $x < 4$  includes all real numbers less than 4, so any number equal to or greater than 4 is not a solution. Therefore, a number like 4 or any number greater than 4 is NOT a solution to the inequality.

**Which of the following are methods to solve inequalities? (Select all that apply)**

- Graphing ✓
- Substitution
- Addition or subtraction ✓
- Multiplication or division ✓

Common methods to solve inequalities include graphically representing the inequality, using algebraic manipulation, and applying the properties of inequalities such as adding or subtractively isolating the variable. Each method can help determine the solution set for the inequality in question.

**In the inequality  $3x - 7 > 2$ , what is the first step to isolate  $x$ ?**

- Add 7 to both sides ✓
- Subtract 7 from both sides
- Divide both sides by 3
- Multiply both sides by 3

■ To isolate  $x$  in the inequality  $3x - 7 > 2$ , the first step is to add 7 to both sides of the inequality.

**What does the solution  $x \geq 2$  look like on a number line?**

- Open circle at 2, shading to the right
- Closed circle at 2, shading to the right ✓
- Open circle at 2, shading to the left
- Closed circle at 2, shading to the left

■ The solution  $x \geq 2$  on a number line is represented by a solid dot at 2 and a line extending to the right, indicating all numbers greater than or equal to 2 are included.

**What symbol is used to represent "greater than"?**

- $<$
- $>$  ✓
- $\leq$
- $\geq$

■ The symbol used to represent "greater than" is " $>$ ". This symbol is commonly used in mathematics and comparisons to indicate that one value is larger than another.

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

- It stays the same
- It reverses ✓
- It becomes an equation
- It disappears

■ When you multiply or divide both sides of an inequality by a negative number, the direction of the inequality sign reverses. This is a crucial rule in solving inequalities to maintain the truth of the statement.

**Which notation is used to represent the solution set of an inequality on a number line?**

- Interval notation ✓

- Set-builder notation
- Equation notation
- Function notation

The solution set of an inequality on a number line is typically represented using open or closed circles to indicate whether endpoints are included, along with arrows or shading to show the direction of the solution set.

#### Which statements are true about compound inequalities? (Select all that apply)

- They always have "and" between them
- They can be solved separately ✓**
- They may use "or" to combine solutions ✓**
- They represent a single inequality

Compound inequalities involve two or more inequalities that are combined into one statement, and they can be connected by 'and' or 'or'. Understanding the relationship between the inequalities is crucial for solving them correctly.

#### What are common mistakes when solving inequalities? (Select all that apply)

- Forgetting to reverse the inequality sign when multiplying by a negative ✓**
- Misplacing decimal points
- Incorrectly graphing the solution ✓**
- Solving as if it were an equation ✓**

Common mistakes when solving inequalities include forgetting to reverse the inequality sign when multiplying or dividing by a negative number, incorrectly combining like terms, and failing to check the solution against the original inequality.