

Inequalities and Interval Notation Quiz

Mathematics · Practice Test · 17 Questions

1. Which point satisfies $x^2 + y^2 \leq 16$?

- A) (3, 4)
- B) (5, 0)
- C) (0, 5)
- D) (4, 4)

2. Which symbol indicates that endpoints are included in a number line solution?

- A) Open circles at boundary points
- B) Close circles at boundary points
- C) Parentheses
- D) Dashed lines

3. Why does $x^2 - 4 > 0$ produce two separate intervals?

- A) Values between roots satisfy
- B) Values beyond both roots satisfy
- C) Endpoints are excluded from solution
- D) Endpoints are included in solution

4. Why are brackets used in the interval $[-3, 3]$?

- A) Endpoints are excluded from solution
- B) Endpoints are included in solution
- C) The interval represents only integers
- D) The interval is infinite

5. A square garden's area is limited by $x^2 - 25 < 0$. Which values of x satisfy the condition?

- A) $x < -5$ or $x > 5$
- B) $-5 < x < 5$
- C) $x \leq -5$ or $x \geq 5$
- D) $-5 \leq x \leq 5$

6. Why does $x^2 - 36 < 0$ use closed circles at -6 and 6 on a number line?

- A) The endpoints are outside the graph
- B) The endpoints satisfy the inequality
- C) The inequality is strict
- D) The inequality involves absolute value

7. Which set-builder notation represents $(-3, 3)$?

- A) $\{x \mid -3 < x < 3\}$
- B) $\{x \mid x < -3 \text{ or } x > 3\}$
- C) $\{x \mid -3 \leq x \leq 3\}$
- D) $\{x \mid x \leq -3 \text{ or } x \geq 3\}$

8. Which interval represents the solution of $x^2 - 100 < 0$?

- A) $(-10, 10]$
- B) $(-10, 10)$
- C) $[-10, 10]$
- D) $(-\infty, -10) \cup (10, \infty)$

9. Which solution set satisfies $x^2 - 9 < 0$?

- A) $x < -3 \text{ or } x > 3$
- B) $-3 < x < 3$
- C) $x \leq -3 \text{ or } x \geq 3$
- D) $-3 \leq x \leq 3$

10. Which interval represents all values less than -2 ?

- A) $[-2, \infty)$
- B) $(-\infty, -2)$
- C) $(-\infty, -2]$
- D) $(-2, \infty)$

11. Which graph represents the inequality $y < x - 9$?

- A) A shaded region beside a line
- B) A shaded region below a parabola
- C) A shaded region above a line
- D) A shaded region below a line

12. A bridge remains stable when $x^2 - 64 < 0$. Which interval represents stability?

- A) Values from -8 through 8
- B) Values beyond -8 and 8
- C) Values less than -8
- D) Values greater than 8

13. Which notation represents the set $\{x \mid x < -2\}$?

- A) $(-\infty, -2]$
- B) $(-\infty, -2)$
- C) $[-2, \infty)$
- D) $(-2, \infty)$

14. Which statement correctly compares $x^2 - 16 < 0$ and $x^2 - 16 > 0$?

- A) Their graphs have different vertices.
- B) Their solution intervals are complementary.
- C) They have the same boundary points.
- D) They are equivalent inequalities.

15. Which equation forms the boundary of $x^2 + y^2 \leq 16$?

- A) $x - y = 16$
- B) $x^2 + y^2 = 16$
- C) $x + y = 16$
- D) $x^2 + y = 16$

16. Why is the boundary dashed for $x + y < 9$?

- A) Because the graph is always decreasing
- B) Because the boundary is not included
- C) Because the inequality is greater than
- D) Because the inequality involves absolute value

17. Why are brackets used in $[-5, 5]$?

- A) -5 and 5 are excluded from the solution
- B) -5 and 5 are included in the solution
- C) The interval is infinite
- D) The interval represents only integers