

Inequalities and Interval Notation Quiz

Mathematics · Answer Key · 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