

Mathematical Inequalities and Intervals Quiz

Mathematics · Answer Key · 16 Questions

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

- A) Open circles
- B) Closed circles**
- C) Dashed lines
- D) Arrows

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

- A) Values between roots satisfy
- B) Values beyond both roots satisfy**
- C) The parabola opens downward
- D) The vertex is at the origin

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

- A) Endpoints are excluded
- B) Endpoints are included**
- C) The interval is infinite
- D) The values are negative

4. For the garden inequality $x^2 - 25 < 0$, which values of x satisfy the condition?

- A) $x < -5$ or $x > 5$
- B) $-5 < x < 5$**
- C) $x > 25$
- D) $x < -25$

5. Why does $x^2 - 36 < 0$ use closed circles at -6 and 6?

- A) The endpoints are outside the graph
- B) The endpoints satisfy the inequality**
- C) The inequality is greater than zero
- D) The boundary is excluded

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

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

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

A) $(-10, 10]$

B) $(-10, 10)$

C) $[-10, 10)$

D) $(-\infty, -10)$

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

A) $x < -3$ or $x > 3$

B) $-3 < x < 3$

C) $x < 9$

D) $x > 3$

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

A) $(-2, \infty)$

B) $(-\infty, -2)$

C) $[-2, \infty)$

D) $(-\infty, -2]$

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

A) A shaded region above a line

B) A shaded region below a line

C) A shaded region inside a circle

D) A shaded region outside a parabola

11. 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 greater than 64

D) Values less than -8

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

A) $(-\infty, -2]$

B) $(-\infty, -2)$

C) $[-2, \infty)$

D) $(-2, \infty)$

13. 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) Both have the same solution set

D) Neither has a solution

14. Which equation forms the boundary of $x^2 + y = 16$?

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

15. 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 slope is positive
- D) Because it is a quadratic equation

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

- A) -5 and 5 are excluded
- B) -5 and 5 are included**
- C) The interval is empty
- D) The values are complex