

Inequalities and Interval Notation Quiz

Mathematics · Practice Test · 33 Questions

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

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

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

- A) Close circles at boundary points
- B) Open circles at boundary points

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

- A) Values beyond both roots satisfy
- B) Values between roots satisfy only

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

- A) Endpoints are included in solution
- B) Endpoints are excluded from solution

5. Which values of x satisfy the condition $x^2 - 25 < 0$?

- A) $x < -5$ or $x > 5$
- B) $-5 < x < 5$

6. 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

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

- A) $\{x \mid -3 < x < 3\}$
- B) $\{x \mid x < -3 \text{ or } x > 3\}$

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

- A) $(-10, 10)$
- B) $(-10, 10]$

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

- A) $-3 < x < 3$
- B) $x < -3 \text{ or } x > 3$

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

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

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

- A) A shaded region beside a line
- B) A shaded region below a parabola

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

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

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

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

- A) Their solution intervals are complementary.
- B) Their graphs have different vertices.

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

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

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

- A) Because the boundary is not included.
- B) Because the graph is always decreasing.

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

- A) -5 and 5 are included in the solution
- B) -5 and 5 are excluded from the solution

18. Why are open circles used for $x^2 - 9 > 0$ at -3 and 3?

- A) 3 & -3 are excluded in the solution set
- B) 3 & -3 are included in the solution set

19. Why is shading used on a number line graph?

- A) To indicate solution regions clearly
- B) To indicate variable names clearly

20. Which student uses the correct reasoning when graphing $x^2 + y > 16$?

- A) The boundary is dashed because equality is excluded.
- B) The boundary is solid because equality is excluded.

21. Which interval notation represents all values between -5 and 5 without including the endpoints?

- A) $(-5, 5)$
- B) $(5, 5)$

22. A drone may fly where $x^2 + y < 18$. Which point is permitted?

- A) $(4, 4)$
- B) $(3, 8)$

23. Which statement best describes $x + 9 < 0$?

- A) Negative values satisfy inequality only
- B) No real values satisfy inequality

24. A learner concludes that $x^2 + 9 < 0$ has solutions. How should this be evaluated?

- A) Incorrect because no real solutions exist
- B) Correct because negative values exist

25. Which number line graph represents the solution of $x^2 - 9 < 0$?

- A) A graph with closed circles at -3 and 3, shaded between them.
- B) A graph with open circles at -3 and 3, shaded between them.

26. A weather station uses $x^2 + y \leq 13$. Which point represents an acceptable location?

- A) $(2, 3)$
- B) $(3, 2)$

27. Why does $x^2 + 4 < 0$ have no real solution?

- A) Square values cannot produce negatives
- B) Critical values are repeated roots

28. Which inequality has solution set $(-4, 4)$?

- A) $x^2 - 16 < 0$
- B) $x^2 - 16 > 0$

29. Which symbol indicates that endpoints are excluded from a number line solution?

- A) Open circles at boundary points
- B) Closed circles at boundary points

30. Which interval solves $x^2 - 49 < 0$?

- A) $(-7, 7)$
- B) $(-\infty, -7) \cup (7, \infty)$

31. A student shades the interval $(-7, 7)$ on a number line to represent $x^2 - 49 > 0$.

What is the best evaluation of their graph?

- A) Incorrect because the shaded regions should be outside the roots
- B) Correct because the shaded region should be between the roots

32. Which of the following inequality symbols indicates that the endpoint values are included in the solution set?

- A) $\geq$
- B) $<$

33. Which notation expresses solutions of $x^2 - 36 \geq 0$?

- A) $(-\infty, -6] \cup [6, \infty)$
- B) $(-6, 6)$