

Inequalities and Interval Notation Quiz

Mathematics · Answer Key · 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) $x < -3$ 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) $(-6, 6)$