

Linear Inequalities — CBSE Pattern Test 1

Class 11 Maths · 90 minutes · 40 marks · Sections A–D with answer key · Narayan Gurukul Academy

Test 1 — CBSE Pattern (90 minutes, 40 marks)

Class 11 Maths · Linear Inequalities · Narayan Gurukul Academy (ClassApna)

General Instructions: (1) This paper has four sections — Section A (1×10), Section B (2×4), Section C (3×4) and Section D (5×2) — total 40 marks. Time allowed: 90 minutes.
(2) All questions are compulsory. No overall choice is given; internal choice, where allowed, is clearly marked.
(3) For MCQ questions choose the single correct option; for VSA answers write a single line.
(4) Take $g = 10 \text{ m/s}^2$. All symbols carry their usual meaning. Use of a calculator is not permitted.

Section A — MCQ & VSA ($10 \times 1 = 10$ marks)

- The solution of $x + 3 > 7$ is
 - $x > 4$
 - $x < 4$
 - $x > 10$
 - $x < 10$
- The inequality $-3x > 9$ gives
 - $x < -3$
 - $x > -3$
 - $x < 3$
 - $x > 3$
- Multiplying both sides of an inequality by a negative number
 - reverses the inequality sign
 - keeps the sign unchanged
 - makes both sides equal
 - is not allowed
- The solution of the system $x > 2$ and $x < 5$ is
 - $2 < x < 5$
 - $x > 5$
 - $x < 2$
 - no solution
- The solution of $|x| < 3$ is
 - $-3 < x < 3$
 - $x < 3$
 - $x > -3$
 - $x > 3$ or $x < -3$
- The solution of $|x| > 2$ is
 - $x < -2$ or $x > 2$
 - $-2 < x < 2$
 - $x > 2$
 - $x < -2$
- The inequality $x + y < 5$ in two variables represents
 - a half-plane

- (B) a line
 - (C) a circle
 - (D) a single point
8. The solution of a system of linear inequalities in two variables is
- (A) the intersection of the half-planes
 - (B) the union of the half-planes
 - (C) a single line
 - (D) an empty set always
9. Solve $x + 3 > 7$.
10. State the rule for adding the same number to both sides of an inequality.

Section B — Short Answer I ($4 \times 2 = 8$ marks)

11. Solve $2x < 8$.
12. State the rule for adding the same number to both sides of an inequality.
13. Solve $|x| < 3$.
14. What is the boundary line for $x + y \leq 5$?

Section C — Short Answer II ($4 \times 3 = 12$ marks)

15. Solve $5x - 3 < 3x + 1$ and represent the solution on a number line.
16. Solve the system $3x - 7 < 5 + x$ and $11 - 5x \leq 1$.
17. Solve $|2x - 1| \leq 3$.
18. Solve the system $x \geq 0, y \geq 0, x + y \leq 5$ graphically.

Section D — Long Answers ($2 \times 5 = 10$ marks)

19. Solve the following system: $2x + 1 > 3$ and $3x - 2 \leq 5$, represent it on the number line, and solve $|3x - 4| \geq 2$.
20. A manufacturer has 600 litres of a 12% acid solution. How many litres of a 30% acid solution must be added so that the acid content is more than 15% but less than 18%?

Answer Key (Marking Scheme)

- Q1 — (A) $x > 4$. Q2 — (A) $x < -3$. Q3 — (A) reverses the inequality sign. Q4 — (A) $2 < x < 5$.
- Q5 — (A) $-3 < x < 3$. Q6 — (A) $x < -2$ or $x > 2$. Q7 — (A) a half-plane. Q8 — (A) the intersection of the half-planes.
- Q9 — $x > 4$.
- Q10 — The inequality does not change when the same number is added to both sides.
- Q11 — $x < 4$.
- Q12 — As above.
- Q13 — $-3 < x < 3$.
- Q14 — $x + y = 5$.
- Q15 — $x < 2$.
- Q16 — $2 \leq x < 6$.
- Q17 — $-1 \leq x \leq 2$.
- Q18 — The triangle bounded by the axes and $x + y = 5$.

Q19 — $1 < x \leq 7/3$; $x \leq 2/3$ or $x \geq 2$.

Q20 — $120 < x < 200$ litres.