LINEAR INEQUALITIES

1 MARK QUESTIONS

1. If a > b and c < 0, then which of the following is true?

(A) a + c < b + c (B) a – c < b – c

(C) ac > bc (D) a – c > b + c

[March, 2025]

2. If x > y and z < 0, then :

(A) xz > yz (B) xz ≥ yz

(C) $\frac{x}{z} > \frac{y}{z}$ (D) $\frac{x}{z} < \frac{y}{z}$

[March, 2024]

3. The graph of the inequation 2x + 3y > 6 is the:

(A) entire XOY-plane

(B) half-plane that contains the origin

(C) half-plane that neither contains the origin nor the points on the line 2x + 3y = 6

(D) whole XOY-plane excluding the points on the line 2x + 3y = 6

[March, 2024]

4. If $\frac{|x+1|}{x+1} > 0,\ x \in \mathbb{R}$, then :

(A) $x \in [-1, \infty)$ (B) $x \in (-1, \infty)$

(C) $x \in (-\infty, -1)$ (D) $x \in (-\infty, -1]$

[March, 2023]

5. If $13 \le k \le 21$, $9 \le p \le 19$, $2 < m < 6$ and k, p, m are integers, then which of the following inequality is always valid?

(A) $\frac{k-p}{m} < 3$ (B) $\frac{k-p}{m} \le 4$

(C) $\frac{k-p}{m} < 2$ (D) $\frac{k-p}{m} \le 3$

[SQP, 2025-26]

6. The values of $\frac{1}{x}$ for the given values of $x \in (-1,3) - \{0\}$ is

(A) $\left(-1, \frac{1}{3}\right) \cup (3, \infty)$

(B) $(-\infty, -1) \cup \left(\frac{1}{3}, \infty\right)$

(C) $\left(\frac{1}{3}, 1\right)$

(D) $\left(-\frac{1}{3}, -1\right)$

[SQP, 2024-25]

7. If $\frac{x+1}{x+2} \ge 1$, then

(A) $x \in [-\infty, 2]$ (B) $x \in (-\infty, -2)$

(C) $x \in (-\infty, 2]$ (D) $x \in (-\infty, 2)$

[SQP, 2023-24]

8. Let $p > 0$ and $q < 0$ and $p, q \in Z$, then choose the correct inequality from the given below options to complete the statement:

$p + q$ _____ $p - q$

(A) > (B) ≤

(C) ≥ (D) <

[SQP, 2022-23]

9. If $\frac{|x+1|}{x+1} > 0,\ x \in \mathbb{R}$, then :

(A) $x \in [-1, \infty)$ (B) $x \in (-1, \infty)$

(C) $x \in (-\infty, -1)$ (D) $x \in (-\infty, -1]$

[July, 2025]

10. **Assertion (A):** Solution set of inequality $|3x - 2| \le \frac{1}{2}, x \in \mathbb{R}$ is $\left[\frac{1}{2}, \frac{5}{6}\right]$.

Reason (R): $|x - a| \le r \Leftrightarrow \le a - r$ or $x \ge a + r$.

[July, 2025]

11. For two distinct positive numbers x and y

(A) $x + y > 2\sqrt{xy}$ (B) $\frac{x+y}{2} > xy$

(C) $\sqrt{xy} > \frac{x+y}{2}$ (D) $\frac{2xy}{x+y} > \sqrt{xy}$

[SQP, 2021-22]

12. Without finding the values of the square roots, prove that the inequality $\sqrt{5} + \sqrt{3} > \sqrt{6} + \sqrt{2}$ holds true.

[SQP, 2025-26]

2 MARKS QUESTIONS

13. Solve the inequality:

$$-\frac{2}{3} < -\frac{x}{3} + 1 \le \frac{2}{3}, x \in R$$

[2M, July, 2023]

14. Solve the inequality:

$$\frac{3}{5}x - \frac{2x-1}{3} > 1, x \in W$$

[2M, July, 2023]

15. Solve for x : $\frac{x+3}{x-2} \le 2$.

[2M, March, 2023]

3 MARKS QUESTIONS

16. Solve 3x + 8 > 2, when

(i) x is an integer.

(ii) x is a natural number.

(iii) x is a whole number.

[3M, July, 2024]

5 MARKS QUESTIONS

17. Solve for x : $1 \le |x - 2| \le 3$

[5M, July, 2025]