GOVERNMENT OF KARNATAKA

DEPARTMENT OF SCHOOL EDUCATION (PRE-UNIVERSITY)

18TH CROSS, MALLESHWARAM, BENGALURU – 560 012

CHAPTERWISE MULTIPLE CHOICE QUESTIONS FOR COMPETATIVE EXAM

SUBJECT: MATHEMATICS – I PUC

NAME OF THE CHAPTER: LINEAR INEQUALITIES

RECAP

Definition:

Linear Equation containing >, <, ≥ or ≤ is called linear in equality.

Example: $ax+by>,\ 2x+y\le 4,\ 5x+8\ge 3$

Note:

- ✓ Linear inequality of the form $ax+b<0,\ ax+b\le 0,\ ax+b>0$ and $ax+b\ge 0$ are called linear inequality in one variable.
- ✓ Linear inequality of the form $ax+by+c<0,\ ax+by+c\le 0,\ ax+by+c>0$ and $ax+by+c\ge 0$ are called

  linear inequality in two variables.

Properties of linear inequalities:

Property 1: If we add or subtract any real number on both side of linear inequality then inequality does not changes.

Example: If $ax>by\Rightarrow ax\pm K>by\pm k,\ k\in R$

Property 2: If we multiply or divide by any positive real number on both side of linear inequality then inequality does not changes.

Example: If $ax>by\Rightarrow kax>Kby,\ k\in R$ and $k>0$

Property 3: If we multiply or divide by any negative real number on both side of linear inequality then inequality get reversed.

Example: If $ax>by\Rightarrow kax<Kby,\ k\in R$ and $k<0$

Property 4: If we take reciprocal on both side of linear inequality then inequality get reversed.

Example: *If* $\mathbf{ax>by\Rightarrow \frac{1}{ax}<\frac{1}{by}}$

Points to be noted:

1. Inequality exists only between two real numbers (not complex numbers).
2. If a be any real number then one and only one of these hold. $a > 0,\ a = 0,\ -a > 0$
3. If $a,\ b > 0$ then $a + b > 0,\ ab > 0.$

   (i) $a > b$ if $a - b > 0$

   (ii) $a < b$ if $b > a$ (Switching sides and changing the orientation of the inequality sign).

   (iii) $a \geq b$ if neither $a > b$ or $a = b$

   (iv) $a \leq b$ if neither $a < b$ or $a = b$
4. In a given inequality, terms / coefficients from one side to other side can be transferred as in the case of an equality.
5. On can add/subtract the same real number on both sides of an inequality, the direction of inequality does not change.
6. Two is equalities with same direction can be added (always) and multiplied (if both sides of the inequality are positive). But they can never be subtracted or divided.
7. Both sides of an inequality can be multiplied by same positive quantity without changing the direction of inequality.
8. The direction of inequality changes if it is multiplied both sides by a negative number.
9. If $a > b$ then $ac > bc$ if $a,\ b,\ c > 0.$
10. If $a > c$ and $b < c$ then $b < c < a$ or $b < a.$ Also if $a > b$ and $b > c$ then $a > c.$
11. (i) If $a > b > 0$ then $\frac{1}{b} > \frac{1}{a}$

    (ii) If $a > b > 0$ and $c > d > 0$ then $\frac{a}{d} \geq \frac{b}{d}.$ The equality sign holds iff $a = b$ and $c = d.$

Rules in Brief:

A “solution of an inequality is a number which when substituted for the variable makes the inequality a true statement.

Rule 1: Adding/subtracting the same number on both sides.

Rule 2: Switching sides and changing the orientation of the inequality sign.

Rule 3: (a) Multiplying/dividing by the same POSITIVE number on both sides.

(b) Multiplying/dividing by the same NEGATIVE number on both sides AND changing the orientation of the inequality sing.

Graphical Representation on Number Line

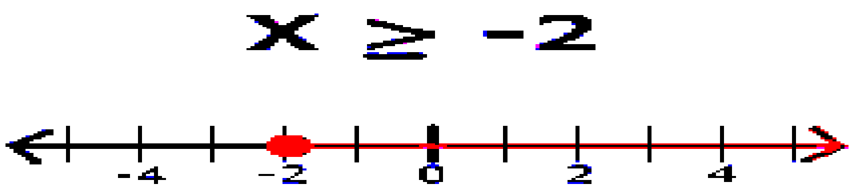
- **x > a** → open circle at a, shade right side.
- **x ≥ a** → closed circle at a, shade right side.
- **x < a** → open circle at a, shade left side.
- **x ≤ a** → closed circle at a, shade left side.

Example:

Solve 2x + 1 ≥- 3.

2x ≥ -4 → x ≥ -2.

Graph: closed circle at -2, shading rightwards.



What Is the Wavy Curve Method?

The Wavy Curve Method (also called the Method of Intervals, or the Line Rule) is a quick, visual way to solve inequalities that are written as a product or quotient of simple linear factors, such as

$$\mathbf{F(x) = (x - a_1)^{k_1}(x - a_2)^{k_2}.....(x - a_{n-1})^{k_{n-1}}(x - a_n)^{k_n}}$$

Instead of testing every region by substituting numbers, we mark the critical points on a number line, draw one continuous wavy curve through them, and read the signs directly off the curve — this is much faster and far less error-prone.

> **Why "wavy"?**
>
> The curve we draw genuinely looks like a wave: it goes above the line (positive), dips below (negative), rises again, and so on — one smooth stroke passing through every critical point, left to right.

Generalised Method of Intervals for Solving Inequalities by Wavy Curve Method (Line Rule)

Let $\mathbf{F(x) = (x - a_1)^{k_1}(x - a_2)^{k_2}.....(x - a_{n-1})^{k_{n-1}}(x - a_n)^{k_n}}$ where, $k_1, k_2, \ldots, k_n \in Z$ and $a_1, a_2, \ldots, a_n$ are fixed real numbers satisfying the condition $a_1 < a_2 < a_3 < .... < a_{n-1} < a_n$

For solving F (x) > 0 or F(x) < 0, consider the following algorithm:

1. Mark all the critical points $a_1, a_2, \ldots, a_n$ on the number line, in increasing order.
2. Start with a PLUS (+) sign in the right-most interval — the region to the right of the largest point, a_n. This is always true, however F(x) is built.

3. Move from right to left, one critical point at a time. At each point, decide whether the sign changes or stays the same, using the ODD / EVEN rule below.
4. Draw a smooth curve that starts from the top right, and dips below the line whenever the sign is negative, and rises above it whenever the sign is positive — crossing the axis at odd-power points, and just touching it at even-power points.
5. Read off the answer: for F(x) > 0, take the union of all "+" (above-line) intervals; for F(x) < 0, take the union of all "−" (below-line) intervals.

The Odd / Even Sign Rule

Power of factor $(x - a)^k$	**At x = a**	**What the curve does**
k is ODD (1, 3, 5, ...)	**Sign CHANGES**	Curve crosses the number line — like an ordinary root
k is EVEN (2, 4, 6, ...)	**Sign STAYS SAME**	Curve only touches the line and bounces back (no crossing)

Solution of Rational Algebraic Inequation

If P(x) and Q(x) are polynomial in x, then the inequation

$\frac{P(x)}{Q(x)} > 0, \frac{P(x)}{Q(x)} < 0, \frac{P(x)}{Q(x)} \geq 0, \textit{ and } \frac{P(x)}{Q(x)} \leq 0$ are known as rational algebraic inequations.

Simple polynomial inequality When the inequality involves a fraction P(x)/Q(x), the same wavy curve idea applies — but the points that make the denominator zero can never be part of the answer (division by zero is undefined), so they are always marked with an OPEN (hollow) circle.

Step-by-step algorithm

1. Write down P(x) and Q(x), and factorise both completely into linear factors.
2. Make the coefficient of x in every factor positive (e.g. rewrite (2 − x) as −(x − 2)).
3. Find all critical points by setting every factor equal to zero.
4. Plot all critical points on the number line. n critical points create n + 1 regions.
5. Put a + sign in the right-most region, then move leftward applying the odd/even rule at each point.
6. Use a solid (closed) dot for points where the ORIGINAL inequality is allowed to be equal to zero (i.e. roots of P(x) with ≥ or ≤), and an open (hollow) dot for points that must always be excluded — every root of Q(x), because the denominator can never be zero.

ILLUSTRATIONS:

Solve: **$(x - 1)(x - 2)(x - 3) > 0$**

- Critical points: x = 1, 2, 3 — each appears to power 1 (odd), so the curve crosses the line at every point.
- Start with + on the right of x = 3, then alternate: −, +, − , + moving leftward.

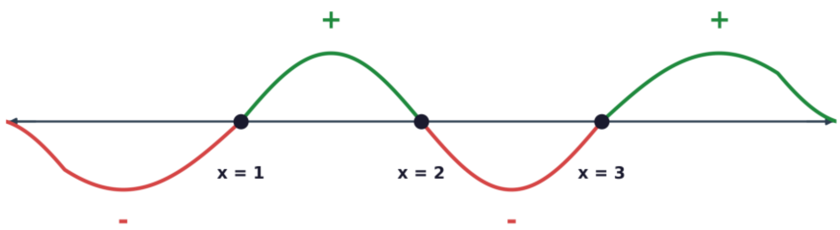


Figure 1: Signs alternate at every point because all three roots are simple (odd power).

Answer

$x \in (1, 2) \cup (3, \infty)$

Example 2 — Rational inequality (open vs closed points)

Solve: **$(x + 2)(x - 1) / (x - 3) \le 0$**

- Critical points: x = −2, 1 (from the numerator, allowed to equal zero — closed dots) and x = 3 (from the denominator, never allowed — open dot).
- All three factors are simple (power 1, odd), so the sign alternates at every point, starting with + on the far right.

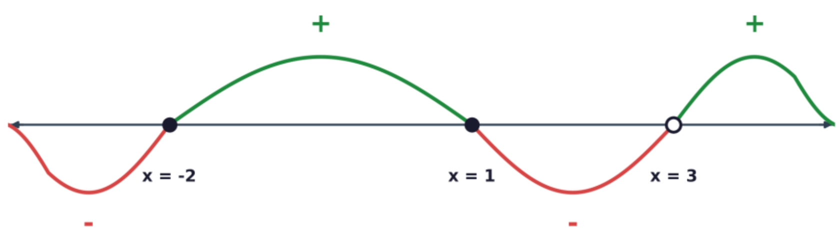


Figure 2: x = 3 is an open circle because the expression is undefined there.

Answer

$x \in (-\infty, -2] \cup [1, 3)$

Example 3 — Repeated (even-power) root

Solve: $(x-1)^2(x-2) \geq 0$

- Critical points: $x = 1$ (power 2 — EVEN) and $x = 2$ (power 1 — ODD).
- Start with + to the right of $x = 2$. Crossing $x = 2$ (odd), the sign changes to −. Crossing $x = 1$ (even), the sign does NOT change — it stays −.

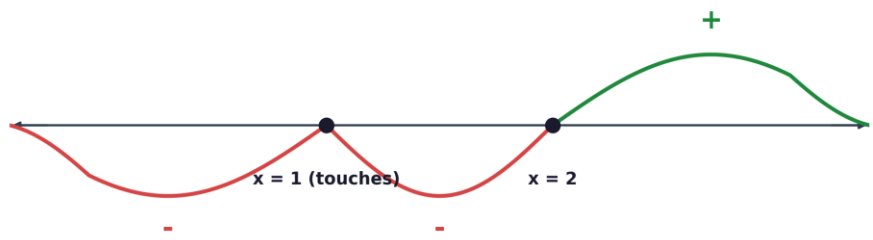


Figure 3: at x = 1 the curve only touches the axis and bounces back — no sign change.

Answer

$x = 1$ or $x \in [2, \infty)$

(x = 1 is included separately because the inequality allows equality, even though the curve stays negative around it.)

Modular (Absolute Value) Inequalities

Modulus inequalities are converted into ordinary inequalities first, using two standard rules, and then solved by the very same wavy curve method.

Standard modulus rules (for $a > 0$)

$|x| < a \iff -a < x < a$

$|x| > a \iff x < -a$ or $x > a$

$|x| \leq a \iff -a \leq x \leq a$ $|x| \geq a \iff x \leq -a$ or $x \geq a$

Example 4 — Direct modulus inequality

Solve: $|x - 2| < 3$

- This means: the distance of x from 2 is less than 3.
- Using the rule $|A| < a \iff -a < A < a$, we get: $-3 < x - 2 < 3$.
- Add 2 throughout: $-1 < x < 5$.

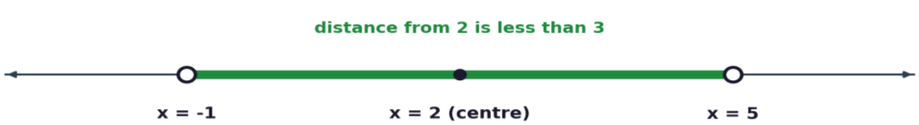


Figure 4: a plain shaded interval — both end points are open because the inequality is strict.

Answer: $x \in (-1, 5)$

Example 5 — Modulus combined with the wavy curve method

Solve: $|x - 1| / (x + 2) \geq 0$

- Since $|x - 1|$ is never negative, the sign of the whole expression is decided only by the denominator — except that the numerator becomes exactly 0 at $x = 1$, which is allowed since the inequality is ≥ 0.
- So treat it exactly like $(x - 1)^2(x + 2)^{-1}$ for sign purposes: $x = 1$ behaves like an EVEN power (touch, no crossing) and $x = -2$ is an open point (denominator zero).

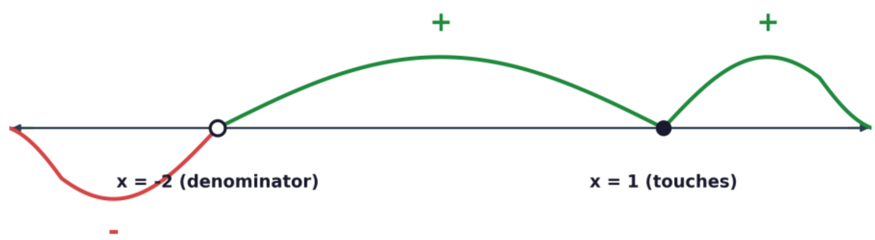


Figure 5: $x = -2$ is excluded (open circle); $x = 1$ only touches the axis and is included because equality is allowed.

Answer

$x \in (-2, \infty)$

($x = 1$ is already inside this interval, and the expression genuinely equals 0 there, so nothing extra needs to be added.)

Key Points to Remember

Golden rules

Always start with a + sign in the right-most interval — this never changes, no matter what the inequality looks like.

ODD power ⇒ curve CROSSES the line (sign changes). EVEN power ⇒ curve only TOUCHES the line (sign unchanged).

Before marking critical points, make sure the coefficient of x in every factor is POSITIVE — factor out a minus sign if needed.

Points that make a denominator zero are ALWAYS open circles and are never part of the answer, even if the inequality has ≥ or ≤.

For strict inequalities (>, <), every boundary point from the numerator is also an open circle.

For modulus inequalities, first remove the modulus using the standard rules, then apply the same wavy curve method.

Math Talk MCQs

1. **The solution set for $-12x > 38$, where x is a natural number, is** *(Easy)*

a) $\{1,2,3\}$ b) $\{1,2\}$ c) $\{1\}$ d) empty set

2. **The solution set of the inequality $6(2x+3)+x > 53-2x$ is** *(Easy)*

a) $\left(\frac{7}{3},\infty\right)$ b) $\left(-\infty,\frac{7}{3}\right)$ c) $\left(\frac{7}{3},2\right)$ d) $\left(-2,\frac{7}{3}\right)$

3. **The set of all x satisfying the inequality $8+3x > 4(x-3)+2$ is** *(Easy)*

a) $(18,\infty)$ b) $(20,\infty)$ c) $(-\infty,18)$ d) $(-\infty,20)$

4. **If $|x-2| \le 4$, then x lies in the interval** *(Average)*

a) $(-\infty,-2)$ b) $(-\infty,0)$ c) $[-2,6]$ d) $[-2,\infty)$

5. **If x satisfies the inequality $-3 < \frac{1}{2}+\frac{-3x}{2} \le 6$, then x lies in the interval** *(Easy)*

a) $\left[\frac{-11}{3},\frac{7}{3}\right)$ b) $\left(\frac{-11}{3},\frac{7}{3}\right]$ c) $\left(\frac{7}{3},\frac{11}{3}\right]$ d) $\left[\frac{-10}{3},\frac{7}{3}\right)$

6. **The solution of the inequality $|3x-4| \le 5$ is** *(Average)*

a) $\left[-\frac{1}{3},3\right]$ b) $[-1,4]$ c) $[1,\infty)$ d) $[-1,1]$

7. **If $|2x-3| < 5, x \in \mathbb{R}$, then x lies in the interval** *(Average)*

a) $[-1,1]$ b) $[-1,4]$ c) $(-1,4)$ d) $(-2,4)$

8. **Let x be a real number such that $x+\frac{x}{4}+\frac{x}{3} < 13$. Then the solution set is** *(Easy)*

a) $\left(-\infty,\frac{156}{19}\right)$ b) $\left(\frac{156}{19},\infty\right)$ c) $\left(\frac{154}{19},\infty\right)$ d) $\left(-\infty,\frac{154}{17}\right)$

9. **The solution set for the inequalities $-5 \le \frac{2-3x}{4} \le 9$ is** *(Average)*

a) $\left(\frac{-34}{2},\frac{-22}{3}\right)$ b) $\left(\frac{22}{2},\frac{34}{3}\right)$ c) $\left[\frac{-34}{3},\frac{22}{3}\right]$ d) $(-34,-22)$

10. **The set of all x satisfying the inequalities $-4 \le 2-3x < 7$ is** *(Average)*

a) $\left(2,\frac{5}{3}\right)$ b) $\left[2,\frac{5}{3}\right)$ c) $\left[\frac{-11}{3},2\right]$ d) $\left(-\frac{5}{3},2\right]$

11. **Let x be a real number such that $5 < |x-1| < 15$. Then** *(Average)*

a) $-18 < x < -3$ or $3 < x < 19$ b) $-14 < x < -3$ or $6 < x < 17$

c) $-16 < x < -2$ or $6 < x < 20$ d) $-14 < x < -4$ or $6 < x < 16$

12. **If $10 < |x+10| \le 25$, then x lies in** *(Average)*

a) $[-45,-20) \cup (0,15]$ b) $[-35,-25) \cup (0,15]$

c) $[-35,-20) \cup (0,15]$ d) $[-35,-20) \cup (0,25]$

13. **$-5 < x \le -1$ implies $-21 < 5x+4 \le b$, the least value of b is** *(Average)*

a) 5 b) -5 c) -4 d) 4

14. The set of all x satisfying the inequality $|3-4x| \leq 11$ is ***(Average)***

a) $[-2,7]$ b) $\left[-2,\frac{7}{2}\right]$ c) $[-7,2]$ d) $\left[\frac{-7}{2},2\right]$

15. If $x \neq 11$ satisfies the inequality $\frac{2x-21}{x-11} \geq 3$, then x lies in the interval ***(Easy)***

a) $(-\infty, 11)$ b) $(11,\ 12]$ c) $(11,12)$ d) $(11, \infty)$

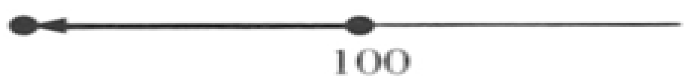
16. The solution set of inequality $|x+2| < 3$ is ***(Average)***

a) $-1 < x < 5$ b) $-5 < x < 1$ c) $-1 < x < 3$ d) $1 < x < 3$

17. Let x be a real number such that $7x+4 < 9x+8$. Then the solution set of the inequality is ***(Easy)***

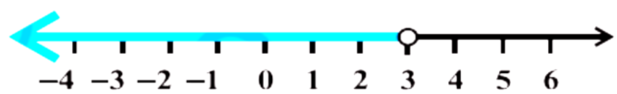
a) $(-\infty, -2)$ b) $(-\infty, -4)$ c) $(-2, \infty)$ d) $[-2, \infty)$

18. The number line represents which of the interval? ***(Easy)***



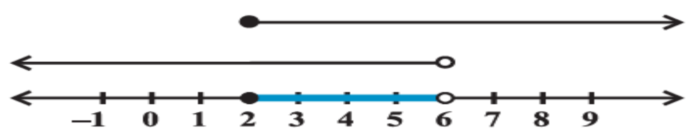
a) $(-\infty,\ 100)$ b) $(-\infty,\ 100]$ c) $(0,\ 100)$ d) $(100,\ \infty)$

19. The solution set of ***(Easy)***



a) $(-\infty, 0]$. b) $[-\infty, 3)$ c) $(-4, 3)$ d) $(-\infty, 3)$.

20. For the figure given below, consider the following statements 1,2 and 3



Statement 1: The solution of the inequality $\mathbf{2} \leq x < 6$ **for real x.**

Statement 2: solution of the inequality $\mathbf{2} \leq x < \infty$ **for real x.**

Statement 3: solution of the inequality **-** $\infty < x \leq 6$ **for real x.** ***(Average)***

a) Statement 1 is true and Statement 2 and 3 are false

b) Statement 1 and 3 are true but Statement 2 is false

c) Statement 2 and 3 are true but Statement 1 is false

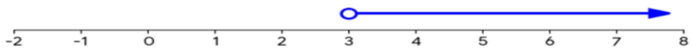
d) All the Statements 1 ,2 and 3 are true.

21. If 7x + 3 < 5x + 9. then the graph of the solutions on number line is ***(Average)***

A) 

B) 

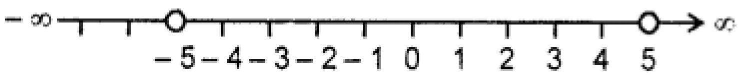
C) 

D) 

22. For the graph given below solution set for the real line ***(Easy)***

a) $(-5, \infty)$ b) $[-5, \infty)$ c) $(-\infty, -5)$ d) $(-5,1)$.

23. **For the graph given below solution set for the real line** ***(Easy)***



a) $(-\infty, 5)$ b) $[-\infty, 5)$ c) $(-5, 5)$ d) $(-\infty, -5)$.

24. The solution set of $-8 \le 5x - 3 < 7$ *is* ***(Easy)***

a) $-1 \le x < 2$ b) $-1 < x < 2$ c) $-1 \le x \le 2$ d) $-1 < x \le 2$

25. The number of pairs of consecutive odd natural numbers, both of which are Larger than 10, such that their sum is less than 40 ***(Easy)***

a) 1 b) 2 c) 3 d) 4

26. The number of pairs of consecutive even positive integers, both of which are larger than 5 such that their sum is less than 23. ***(Easy)***

a) 1 b) 2 c) 3 d) 4.

27. Ravi obtained 70 and 75 marks in first two unit test. Find the minimum marks he should get in the third test to have an average of at least 60 marks. ***(Easy)***

a) 30 b) 35 c) 40 d) 45.

28. Let x be a real number such that $\frac{3(x+3)}{7} \le \frac{6(x-1)}{5}$ Then the solution set of the inequality is ***(Average)***

a) $\left(-\infty, \frac{29}{9}\right)$ b) $\left(\frac{29}{9}, \infty\right)$ c) $\left[\frac{29}{9}, \infty\right)$ d) $(-\infty, \infty)$

29. Let A and P be the area and perimeter of a rectangle respectively. The length and breadth of the rectangle are $(x+2)$cm and $(x-2)$cm. If $A \le 140\ \text{cm}^2$ and $P \ge 20$ cm, then the range of possible values of x is ***(Average)***

a) $[5,12]$ b) $[2,12]$ c) $[5,10]$ d) $[2,6]$

30. If $3 \le 3t - 18 \le 18$, then which one of the following is true? *(Average)*

a) $15 \le 2t + 1 \le 20$ b) $8 \le t < 12$

c) $8 \le t + 1 \le 13$ d) $21 \le 3t \le 24$

31. Suppose a, b and c are real numbers such that $\frac{a}{b} > 1$ *and* $\frac{a}{c} < 0$ Which one of the following is true? *(Average)*

a) $a + b - c > 0$ b) $a > b$

c) $(a - c)(b - c) > 0$ d) $a + b + c > 0$

32. Solutions of the inequalities comprising a system in variable x are represented on number lines as given below, then *(Average)*

a) $x \in (-\infty, -3] \cup [3, \infty)$ b) $x \in [-3, 1]$

c) $x \in (-\infty, -4] \cup [3, \infty)$ d) $x \in [-4, 3]$

33. If $0 \le x \le 5$, then the greatest value of α and the least value of β satisfying the inequalities $\alpha \le 3x + 5 \le \beta$ are, respectively, *(Average)*

a) 0,5 b) 10,15 c) 5,10 d) 5,20

34. If 2 is a solution of the inequality $\frac{x-a}{a-2x} < -3$, then a must lie in the interval *(Average)*

a) (4,5) b) (2,5) c) (4,10) d) (2,10)

35. If $x \ne 11$ satisfies the inequality $\frac{2x-21}{x-11} \ge 3$, then x lies in the interval *(Average)*

a) $(-\infty, 11)$ b) $(11, 12]$ c) $(11, 12)$ d) $(11, \infty)$

36. If $\frac{x+1}{x-1} < 2$, then x lies in the interval *(Average)*

a) $(-\infty, -3) \cup (1, \infty)$ b) $(-\infty, -1) \cup (3, \infty)$

c) $(-\infty, 1) \cup (3, \infty)$ d) $(-3, -1)$

37. If x satisfies the inequality $\frac{x-3}{x-5} > 3$ then x lies in the interval *(Average)*

a) (3,8) b) (0,5) c) (5,6) d) $(-\infty, 3)$

38. The solution set of the inequation $\left|\frac{1}{x} - 2\right| < 4$ is *(Difficult)*

a) $\left(-\infty, \frac{-1}{2}\right) \cup \left(\frac{1}{6}, \infty\right)$ b) $\left(-\infty, \frac{-1}{2}\right)$

c) $\left(\frac{1}{6}, \infty\right)$ d) $\left(-\infty, \frac{1}{6}\right) \cup \left(\frac{1}{2}, \infty\right)$

39. **In a right-angled trapezium $ABCD, \angle A = 90°, \angle D = 90°, AB = 7a + 1, CD = 3a + 1$ and $AD = 3a$. If the perimeter of the trapezium is greater than 56 but less than 92, then the range of possible values of a, is** ***(Difficult)***

a) $4 < a < \frac{11}{2}$
b) $\frac{7}{2} < a < 5$
c) $3 < a < \frac{9}{2}$
d) $3 < a < 5$

40. **Let x be a real number such that $\frac{x-3}{x-2} \geq 1$. Then the solution set of the inequality is** ***(Average)***

a) $(-\infty, 3)$ b) $(-\infty, 2)$ c) $[0, \infty)$ d) $(-9, \infty)$

41. **If $\frac{2x-10}{x+2} \geq x - 5$ then x lies in** ***(Average)***

a) $(-\infty, -1) \cup [0,6]$
b) $(-\infty, -2) \cup [-1,5]$
c) $(-\infty, -2) \cup [0,10]$
d) $(-\infty, -2) \cup [0,5]$

42. **If $(x - 1)(x^2 - 5x + 7) < (x - 1)$, then x belongs to** ***(Average)***

a) $(-\infty, -1) \cup (2,3)$
b) $(-\infty, -1] \cup [2,3]$
c) $(-\infty, 1) \cup (2,3)$
d) $(-\infty, 1) \cup [2,3)$

43. **The solution set of $\left|x + \frac{1}{x}\right| > 2$ is** ***(Difficult)***

a) $\mathbb{R}$ b) $\mathbb{R} - \{0\}$ c) $\mathbb{R} - \{1, -1\}$ d) $\mathbb{R} - \{-1,0,1\}$

44. **If $\frac{21x-6}{4} - 9 \leq 0$ and $\frac{x-1}{3} + 1 \geq 0, x \in \mathbb{R}$, then x lies in the interval** ***(Difficult)***

a) $[-2,1]$ b) $[-2,2]$ c) $[-1,2]$ d) $[2,4]$

45. **Statement 1:** The solution set of $\frac{x-1}{4} \geq 3$, for **real x is** $[13, \infty)$

Statement 2: If $a \leq b$, then $ak \leq bk \ if \ k > 0$ ***(Average)***

a) Statement 1 is true and Statement 2 is false.

b) Statement 1 is true and Statement 2 is true, Statement 2 is correct explanation for Statement 1

c) Statement 1 is true and Statement 2 is true, Statement 2 is not a correct explanation for Statement 1

d) Statement 1 is false and Statement 2 is false.

46. **Assertion (A):** Solution set of the system of inequalities 4x - 12 ≥ 0 and 2x - 7 ≤ 5 is [3,6].

Reason (R): If 4x - 12 ≥ 0 and 2x - 7 ≤ 5, then x ≥ 3 and x ≤ 6. ***(Average)***

a) A is false but R is true
b) A is false and R is false
c) A is true but R is false
d) A is true and R is true

47. **Statement 1:** Solution set of **linear inequality – 3x + 15 < – 12 is x** $\in (-\infty, 9)$.

Statement 2: If $a \leq b$, then $ak \geq bk$ if $k < 0$ ***(Average)***

a) Statement 1 is true, and Statement 2 is false.

b) Statement 1 is false, and Statement 2 is true.

c) Statement 1 is true, and Statement 2 is true

d) Statement 1 is false, and Statement 2 is false

48. **The solution set of the inequation** $\frac{x}{x+2} \leq \frac{1}{x}$ **is** ***(Average)***

a) $[-2,-1) \cup [0,2)$ b) $(-2,-1] \cup (0,2)$

c) $(-2,-1) \cup (0,2)$ d) $(-2,-1) \cup (0,2]$

49. **The solution set of the inequation** $\frac{5x+8}{4-x} \leq 2$ ***(Average)***

a) $(-\infty, 0] \cup (4, \infty)$ b) $[0, 4)$ c) $(-\infty, 4)$ d) $[0, \infty)$

50. **The solution set of in equation** $\frac{1}{2}\left(\frac{3}{5}x+4\right) \geq \frac{1}{3}(x-6)$ **is** ***(Average)***

a) $[120, \infty)$ b) $(-\infty, 120]$ c) $[0, 120]$ d) $[-120, 0]$

51. **If** $\frac{|x|-1}{|x|-2} \leq 0$**, then lies to the interval** ***(Difficult)***

a) $(-1, 2)$ b) $(-2, 2)$ c) $(-2,-1] \cup [1,2)$ d) $(-1,1)$

52. **The solution set of the in-equation** $\frac{\mathbf{x^2+6x-7}}{\mathbf{|x+4|}} < \mathbf{0}$ ***(Average) [2015-KCET]***

a) $(-7,1)$ b) $(-7,-4)$ c) $(-7,-4) \cup (-4,1)$ d) $(-7,-4) \cup (4,1)$

53. **If** $|x-2| \leq 1$**, then** ***(Easy) [2017-KCET]***

a) $x \in [1,3]$ b) $x \in (1,3)$ c) $x \in [-1,3)$ d) $x \in (-1,3)$

54. **If** $|x+5| \geq 10$**, then** ***(Easy) [2018-KCET]***

a) $x \in (-15,5]$ b) $x \in (-5,5]$ c) $x \in (-\infty,-15] \cup [5,\infty)$ d) $x \in [-\infty,-15] \cup [5,\infty)$

55. **If** $|3x-5| \leq 2$**, then** ***(Easy) [2019-KCET]***

a) $-1 \leq x \leq \frac{9}{3}$ b) $1 \leq x \leq \frac{9}{3}$ c) $1 \leq x \leq \frac{7}{3}$ d) $-1 \leq x \leq \frac{7}{3}$

56. **Given that a, b and x are real numbers and** $a < b, x < 0$ **then** ***(Easy) [2023-KCET]***

a) $\frac{a}{x} < \frac{b}{x}$ b) $\frac{a}{x} \leq \frac{b}{x}$ c) $\frac{a}{x} > \frac{b}{x}$ d) $\frac{a}{x} \geq \frac{b}{x}$

57. **Consider the following statements :** *(Average) [2025-KCET]*

Statement-I: The set of all solutions of the linear inequalities

$3x + 8 < 17$ and $2x + 8 \geq 12$ are $x < 3$ and $x \geq 2$ respectively.

Statement-II: The common set of solutions of linear inequalities

$3x + 8 < 17$ and $2x + 8 \geq 12$ is $(2, 3)$

Which of the following is true?

a) Statement-I is true but statement-II is false

b) Statement-I is false but statement-II is true

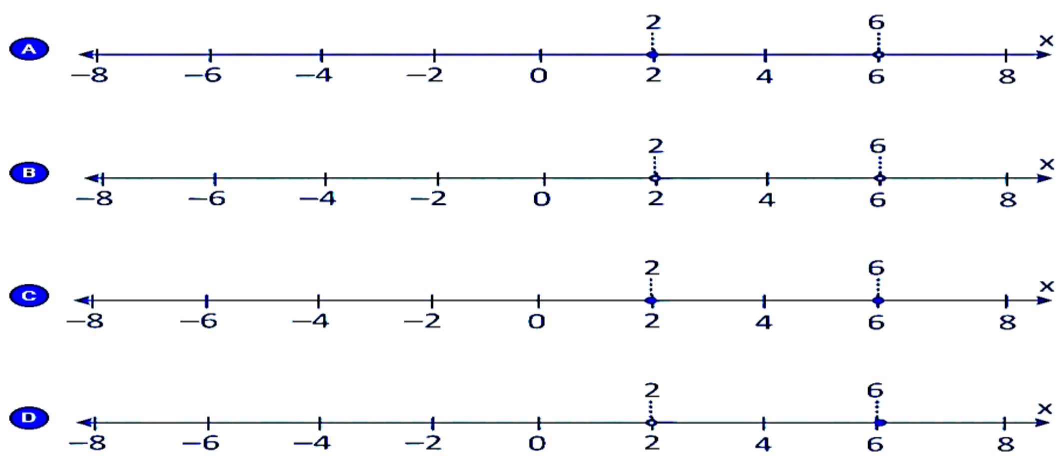
c) Both the statements are true

d) Both the statements are false

58. **The solution of** $(x-1) \leq 2(x-3)$ **is** *(Easy) [2026-KCET]*

a) $x \leq -5$ b) $x \geq -5$ c) $x \leq 5$ d) $x \geq 5$

59. **The solution for the following system of inequalities** $3x - 7 < 5 + x$ **and** $11 - 5x \leq 1$ **on a real number line is** *(Average)*



60. **The number of solutions of the inequation** $|x-2| + |x+2| < 4$ *(Average)*

a) 1 b) 2 c) 3 d) 0

61. **If** $|x-1| + |x-3| \leq 8$**, then the values of x lie in the interval** *(Average)*

a) $(-\infty - 2)$ b) $[-2.6]$ c) $(-3, 7)$ d) $[6, \infty)$

62. **If** $\frac{|x-3|}{x-3} > 0$**, then** *(Average)*

a) $x \in (-3, \infty)$ b) $x \in (3, \infty)$ c) $x \in (1, \infty)$ d) $x \in (-1, \infty)$

Math Talk MCQs									
1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
d	a	c	c	a	a	c	a	c	d
11	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***
d	c	d	b	b	b	c	b	d	a
21	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
b	a	c	a	d	c	b	c	a	c
31	***32***	***33***	***34***	***35***	***36***	***37***	***38***	***39***	***40***
c	c	d	a	b	c	c	a	d	b
41	***42***	***43***	***44***	***45***	***46***	***47***	***48***	***49***	***50***
d	c	d	b	b	d	b	d	a	b
51	***52***	***53***	***54***	***55***	***56***	***57***	***58***	***59***	***60***
c	c	a	d	c	c	c	d	a	d
61	***62***								
b	b								