LINEAR INEQUALITY

$2 \boxed{<} 3$

$<$ Less than
$>$ Greater than
$\leq$ Less than equal to
$\geq$ Greater than equal to

↓ inequality

★ Linear Inequation (One variable, max. power 1)

$\geq, <, >$

$$\boxed{ax + b \leq 0}$$

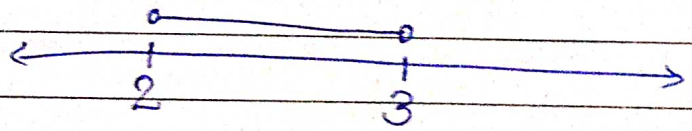
* IMPORTANT

- When +ve or -ve value is subtracted or added, no change in inequality sign.
- When +ve value is divided / multiplied, no change.
- When -ve value is divided / multiplied, inequality sign will reverse.

★ $x \in R$ (x value is a real number)

↓ belongs to

* $2 < x < 3$

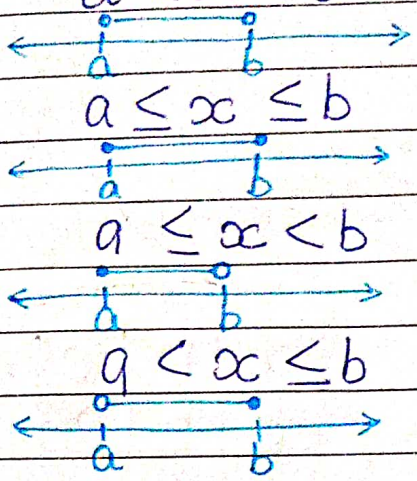


$x \in (2,3)$ [2 and 3 not included]

$x \in [2,3]$ [2 and 3 included]

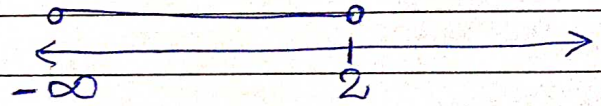
Date __/__/____

Inequality	Interval (Sol. Space)
a) $a < x < b$	$x \in (a,b)$
b) $a \leq x \leq b$	$x \in [a,b]$
c) $a \leq x < b$	$x \in [2,3)$
d) $a < x \leq b$	$x \in (a,b]$



Q. Solve $7x - 1 < 5x + 3$ where x belong to real number?

$$7x - 5x < 3 + 1$$
$$2x < 4$$
$$\frac{2x}{2} < \frac{4}{2}$$
$$x < 2$$



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

• ∞ में हमेशा Open Bracket.

★ Two equations :- • Common part is solution
• No common part – no solution

★ Linear Inequation in two Variable

$$ax + by \geq c$$

• More than / Not less than $x > \square$ / $x \geq \square$
• Less than / Not more than $x < \square$ / $x \leq \square$

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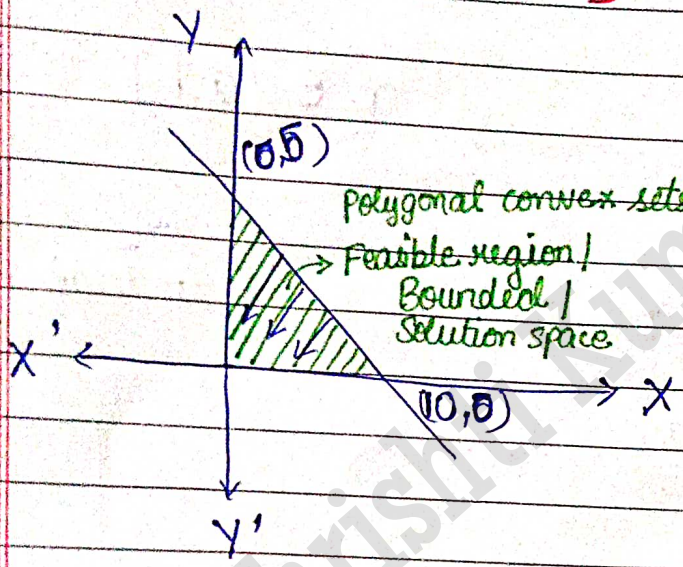
- Atleast / minimum $x \geq \square$
- Atmost / maximum $x \leq \square$

Graph

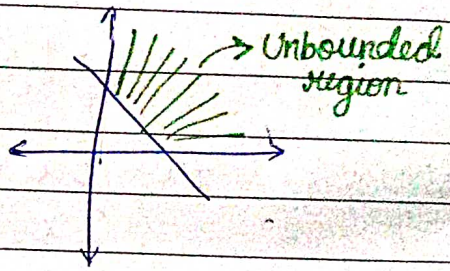
$x + 2y \leq 10$

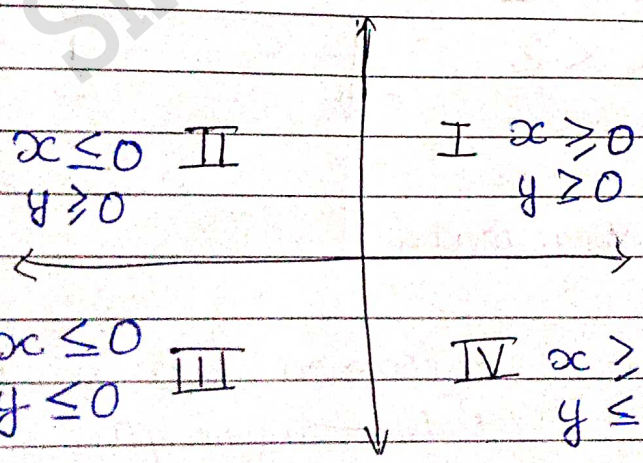
$0 + 2(0) \leq 10$

$0 \leq 10$ [TRUE]



x	0	10
y	5	0





* Value included नहीं है तो graph में dotted line.

✗ Optimal Solution

- Corners of a graph (extreme points)

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Q. The union however forbids him to employ less than 2 experienced person to each fresh person. The situation can be expressed as.

$x \geq 2y$ (exp. → x, fresh → y)

(fresh men के दुगने से कम नहीं होने चाहिए experienced)

Points to Remember :-

* When origin is not on any line.

$ax + by \leq c$ } Towards origin
$ax + by \geq c$ } Away from origin

• c — Positive.