

Linear Inequalities

CBSE Class 11 Maths · Knowledge organiser

KEY DEFINITIONS

Linear inequality

A statement such as $ax + b < 0$ using $<$, $>$, $\leq$ or $\geq$ instead of $=$.

Solution set

All the values of the variable that make the inequality true.

Reversing the sign

Multiplying or dividing both sides by a negative number reverses the inequality.

KEY FORMULAS

$\times$ or $\div$ by a negative number reverses the sign; system = intersection; $\bullet$ included, $\circ$ excluded

WORKED EXAMPLE

Solve $5 - 2x \leq 11$, $x \in \mathbb{R}$.

$$-2x \leq 6 \Rightarrow x \geq -3: [-3, \infty).$$

YOU SHOULD BE ABLE TO...

- Solve one-step and two-step linear inequalities and write the solution as an interval.
- Clear fractions, solve double inequalities and systems, and show them on a number line.
- Model budgets, marks and speeds with inequalities and give whole-number answers where needed.
- Solve systems of three inequalities and count integer solutions.

COMMON MISTAKES

- ✗ Not reversing the sign when dividing by a negative number.
- ✗ Wrong end-points in the answer: $<$ gives an open circle and a round bracket.
- ✗ For a system, giving the union instead of the intersection.
- ✗ Giving a decimal number of people: round in the direction the inequality allows.