

Linear Equations in Two Variables

CBSE Class 9 Maths · Knowledge organiser

KEY DEFINITIONS

Linear equation in two variables

An equation that can be written $ax + by + c = 0$, with a and b not both zero.

Solution

An ordered pair (x, y) that makes the equation true.

Graph of the equation

A straight line: every point on it is a solution.

KEY FORMULAS

$ax + by + c = 0$ (a, b not both 0): infinitely many solutions, all on one straight line

$x = a$ $\parallel$ y -axis; $y = b$ $\parallel$ x -axis; intercepts: put $y = 0$, then $x = 0$

A point is on the line exactly when its coordinates satisfy the equation; $y = mx$ passes through the origin

WORKED EXAMPLE

Is $(4, -1)$ a solution of $x + 2y = 2$?

$4 + 2(-1) = 2$: yes.

YOU SHOULD BE ABLE TO...

- Write an equation in the form $ax + by + c = 0$, test a point and describe lines parallel to the axes.
- Find solutions and intercepts, find an unknown coefficient and form an equation from a situation.
- Build a linear model from a story, tabulate it and answer each part of a case study.
- Find where lines meet the axes and each other, test collinearity and find areas cut off by lines.

COMMON MISTAKES

- ✗ Substituting x and y the wrong way round when testing a point.
- ✗ Saying the equation has one solution (or two): it has infinitely many.
- ✗ Drawing $x = 3$ as a horizontal line: it is vertical.
- ✗ Forgetting the units or what x and y mean in a word problem.