CLASS 10 • MATHS REVISION • 2026–27

# Pair of Linear Equations in Two Variables

Define both unknowns with units before forming equations. Substitution works well when a coefficient is 1; elimination is often quicker when coefficients already match.

## Formulas and methods

Write the equations as $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$.

If $a_1b_2 - a_2b_1 \neq 0$, there is one solution: the lines intersect.

For genuine lines with proportional a,b coefficients, proportional constants give coincident lines and infinitely many solutions; non-proportional constants give parallel lines and no solution. Ratio tests must not divide by zero.

## Worked examples

### Solve $2x + y = 11$ and $x - y = 1$.

Add the equations: $3x = 12$, so $x = 4$. Substitute into $x - y = 1$: $y = 3$. Check: $2(4) + 3 = 11$.

### Two notebooks and three pens cost Rs 84. One notebook and one pen cost Rs 32. Find each price.

Let notebook price be n and pen price be p. Then $2n + 3p = 84$ and $n + p = 32$. Subtract twice the second equation from the first: $p = 20$. Thus $n = 12$. Check: $24 + 60 = 84$.

### Common mistake

Multiply every term, including the constant, when eliminating. A contradiction such as $0 = 5$ means no solution; $0 = 0$ alone does not determine unique values.

# Pair of Linear Equations in Two Variables — practice

Try these without looking at the answers. Show substitutions and units. Difficulty labels describe these questions, not official CBSE classifications.

1. [Foundation] Solve $x + y = 9$ and $x - y = 3$.

2. [Core] Solve $3x + 2y = 16$ and $x + y = 6$.

3. [Core] Classify $x + 2y = 5$ and $2x + 4y = 11$.

4. [Challenge] For which k do $2x + 3y = 7$ and $4x + 6y = k$ have infinitely many solutions?

# Pair of Linear Equations in Two Variables — answers

### 1. Solve $x + y = 9$ and $x - y = 3$.

Add: $2x = 12$. Thus $x = 6$, $y = 3$.

### 2. Solve $3x + 2y = 16$ and $x + y = 6$.

Subtract twice the second equation: $x = 4$. Then $y = 2$.

### 3. Classify $x + 2y = 5$ and $2x + 4y = 11$.

Doubling the first gives $2x + 4y = 10$, inconsistent with 11. Parallel lines; no solution.

### 4. For which k do $2x + 3y = 7$ and $4x + 6y = k$ have infinitely many solutions?

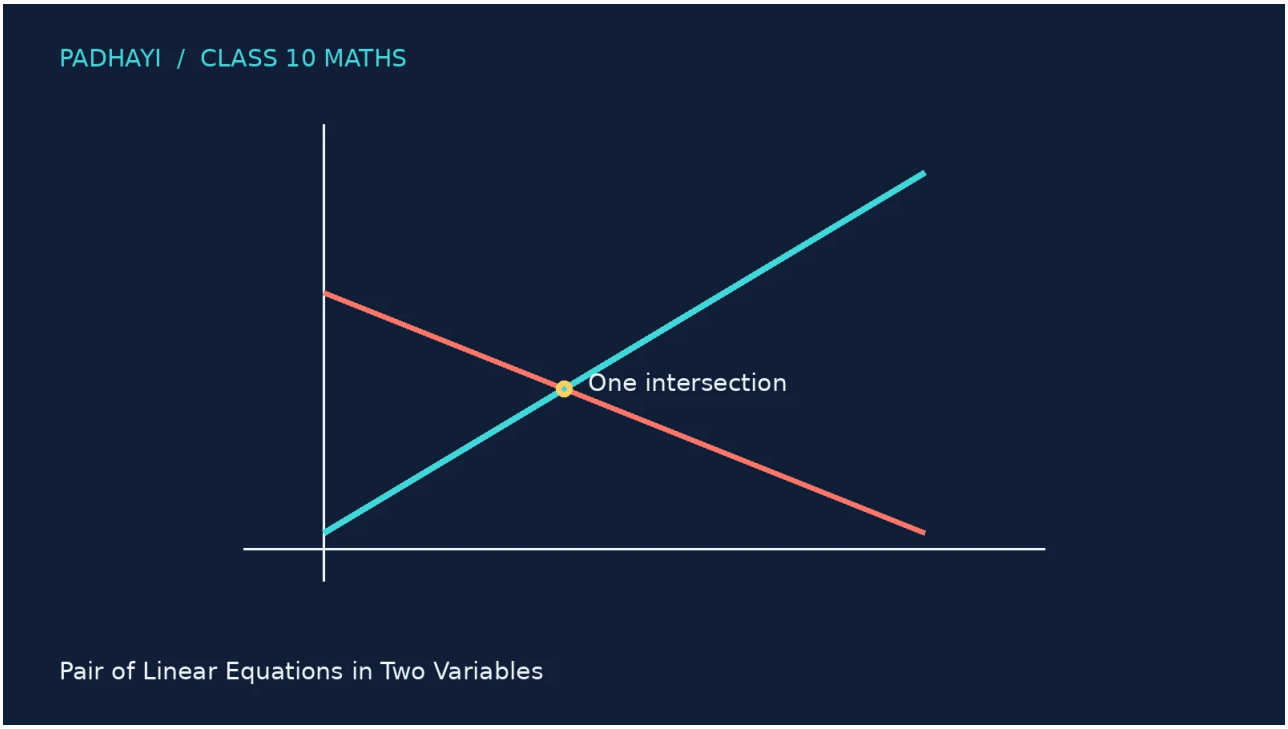
The second must be twice the first, including its constant: $k = 14$.

Next step: explain one method aloud, then solve a question from your NCERT textbook without using this sheet.

Original Padhayi revision material. Independent study aid; not an official CBSE or NCERT publication. Syllabus reference: CBSE Mathematics, Class X, 2026–27.

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## Visual reminder




Schematic illustration; diagrams are not necessarily drawn to scale.