Affiliated to CBSE, New Delhi (Affiliation No. 1030642)

GNPS

GOMTI NANDAN PUBLIC SCHOOL

Gandhi Ward, Bina (M.P.) 470113. | 9165 609 333. | info@mygnps.com | www.mygnps.com

CLASS X · MATHEMATICS STANDARD (041) · CBSE BOARD EXAMINATION 2027

CHAPTER 3

Pair of Linear Equations in Two Variables

Chapter Practice Booklet · Questions only · Answers in the separate Answer Booklet

61 practice questions | 4 case studies | Board question index | Original diagrams

INSIDE THIS BOOKLET

1	**Chapter Notes** Graphs, consistency, substitution and elimination, word problems, model answers + exam snapshot	2
A	**NCERT Practice** 14 questions	5
B	**Exemplar Practice** 15 questions	6
C	**Board Pattern Practice** 26 questions, with frequency stars	8
D	**Case-Based Questions** 4 case studies	10
E	**Challenge Questions** 6 questions for 95+	11
F	**Board PYQ Index** Real board questions by type	12
G	**My Mistakes** Your error log	13

STUDENT DETAILS

NAME _____

CLASS & SECTION _____

ROLL NO. _____

BOOKLET STARTED ON _____

CHAPTER TEST SCORE _____ / 20

1

READ THIS FIRST

Chapter Notes

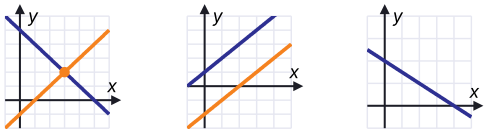
The whole chapter in short-note form: every definition, formula, method and model answer. Revise from here – you should not need the textbook again.

1 Linear equation in two variables

- Form: $ax + by + c = 0$, where a, b, c are real numbers and a, b are not both zero. Example: $2x + y - 6 = 0$.
- A **solution** is a pair (x, y) that makes both sides equal: $(1, 4)$, $(3, 0)$, $(0, 6)$ are solutions of $2x + y = 6$.
- Such an equation has **infinitely many** solutions. Its graph is a **straight line**: every point on the line is a solution, and every solution is a point on the line.

A **pair** of linear equations: $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$. A solution of the pair must satisfy **both** equations: it is a point on both lines.

2 Two lines: three possibilities



intersecting | parallel | coincident

Lines intersect	exactly one solution (unique) → **consistent**
Lines are parallel	no solution → **inconsistent**
Lines coincide	infinitely many solutions → **consistent** (dependent)

Consistent = has at least one solution.

3 Consistency from the coefficients

$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$	intersecting · unique solution · consistent
$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$	parallel · no solution · inconsistent
$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$	coincident · infinitely many · consistent

EXAMPLE

$3x - 2y + 5 = 0$ and $6x - 4y + 9 = 0$: $\frac{3}{6} = \frac{1}{2}$, $\frac{-2}{-4} = \frac{1}{2}$, $\frac{5}{9}$. So $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$: parallel lines, no solution.

Write both equations in the same form (both $= 0$, or both $= c$) before reading c_1 and c_2, and keep the signs.

4 Finding k for a given condition

- **Unique solution:** $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$. The answer has the form "$k \neq \ldots$".
- **No solution:** $\frac{a_1}{a_2} = \frac{b_1}{b_2}$ gives k; then check that $\frac{c_1}{c_2}$ is different.
- **Infinitely many:** all three ratios equal; use two of the equalities.

EXAMPLE

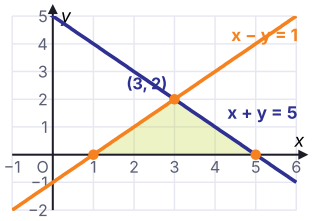
For what k do $2x + ky = 5$ and $4x + 6y = 10$ have infinitely many solutions?
$\frac{2}{4} = \frac{k}{6} = \frac{5}{10} \rightarrow \frac{k}{6} = \frac{1}{2} \rightarrow k = 3$.

EXAMPLE

For what k do $kx + 2y = 3$ and $6x + 4y = 5$ have no solution?
$\frac{k}{6} = \frac{2}{4} \Rightarrow k = 3$; check $\frac{2}{4} \neq \frac{3}{5}$ ✓. So $k = 3$.

5 Graphical method

1. For each equation make a table of 2 or 3 points (easy ones: put $x = 0$, then $y = 0$).
2. Plot the points on the same axes and draw both lines with a ruler. Label each line.
3. Read the point where they meet. That is the solution. Check it in both equations.



Triangle with an axis: vertices = the meeting point + the two points where the lines cut that axis. Here (with the x-axis): $(3, 2)$, $(1, 0)$, $(5, 0)$; area $= \frac{1}{2} \times 4 \times 2 = 4$ sq units.

6 Substitution method

1. From one equation write one variable in terms of the other (choose the one with coefficient 1).
2. Substitute it in the other equation and solve for the remaining variable.
3. Put this value back to get the first variable. Check in both equations.

EXAMPLE

$2x + 3y = 13$, $x - 2y = -4$

$x = 2y - 4 \rightarrow 2(2y - 4) + 3y = 13 \rightarrow 7y = 21 \rightarrow y = 3$, $x = 2$.

Check: $4 + 9 = 13$ ✓, $2 - 6 = -4$ ✓

7 Elimination method

1. Multiply the equations so that one variable has equal (or opposite) coefficients.
2. Subtract (or add) to remove that variable. Solve for the other.
3. Substitute back to find the first variable.

EXAMPLE

$3x + 4y = 10$, $2x - 2y = 2$

Second × 2: $4x - 4y = 4$. Add: $7x = 14 \rightarrow x = 2$; then $4y = 10 - 6 \rightarrow y = 1$.

You get $0 = 0$	infinitely many solutions
You get $0 =$ a non-zero number	no solution
Coefficients swap, like $47x + 31y$ and $31x + 47y$	add and subtract the equations: get $x + y$ and $x - y$

8 Word problems: how to form the equations

Ages	n years ago: $x - n$, $y - n$; n years later: $x + n$, $y + n$
Two-digit number	tens digit x, units y: number $10x + y$; reversed $10y + x$
Fraction	$\frac{x}{y}$; change the numerator/denominator as told, then cross-multiply
Fixed charge + rate	total $= x + ny$ (x fixed, y per unit)
Boat / stream	downstream $u + v$, upstream $u - v$; speed $= \frac{\text{distance}}{\text{time}}$
Interest	$\frac{x \times r}{100}$ for one year on x at $r\%$
Angles	triangle sum 180°; supplementary 180°; complementary 90°

Always write "Let … be x and … be y" first. It carries the mark for forming equations.

9 Model answer: ages (3 marks)

Six years ago, a mother was four times as old as her daughter. Six years from now she will be twice as old as her daughter. Find their present ages.

1. Let the mother's present age be x years and the daughter's y years. ½
2. $x - 6 = 4(y - 6) \Rightarrow x - 4y = -18$ ½
3. $x + 6 = 2(y + 6) \Rightarrow x - 2y = 6$ ½
4. Subtract: $2y = 24 \Rightarrow y = 12$ 1
5. $x = 6 + 24 = 30$. Mother 30 years, daughter 12 years. ½

10 Model answer: graph and triangle (5 marks)

Draw the graphs of $x + y = 5$ and $x - y = 1$. Find the vertices of the triangle formed by these lines and the x-axis, and its area.

1. $x + y = 5$: $(0, 5)$, $(5, 0)$, $(2, 3)$ 1
2. $x - y = 1$: $(1, 0)$, $(3, 2)$, $(0, -1)$ 1
3. Lines drawn correctly on the same axes; they meet at $(3, 2)$ 1
4. Vertices: $(3, 2)$, $(5, 0)$, $(1, 0)$ 1
5. Area $= \frac{1}{2} \times$ base $\times$ height $= \frac{1}{2} \times 4 \times 2 = 4$ sq units 1

Use a ruler, write the equation on each line, and mark the meeting point with its coordinates.

11 Checks that save marks

- Put your answer back in **both** equations before you move on.
- In a word problem, the answer must make sense: ages and lengths positive, number of coins a whole number.
- For "no solution" always check the third ratio; if it is also equal, the lines coincide instead.
- A line $x = a$ is parallel to the y-axis; $y = b$ is parallel to the x-axis. So $x = 2$ and $x = 3$ have **no** common point, while $x = 2$ and $y = 3$ meet at $(2, 3)$.

Exam snapshot

What the board asks, and how to prepare

SYLLABUS 2026–27

- Pair of linear equations in two variables; graphical method of solution; consistency and inconsistency.
- Algebraic conditions for the number of solutions.
- Solving by **substitution** and by **elimination**; simple situational problems.

Not asked: cross-multiplication method and equations reducible to linear form (both deleted).

BOARD WEIGHTAGE

20 / 80

Unit II Algebra (Polynomials, Linear Equations, Quadratic Equations, AP) together. Every paper checked had a long question from this chapter: a 3- to 5-mark word problem, a 4-mark case study or a 5-mark graph question, plus a 1-mark question on the number of solutions.

MOST ASKED IN BOARD PAPERS, 2024–2026 + SAMPLE PAPER 2026–27 (4 PAPERS CHECKED)

How often	Question type	Marks	Papers
★★★	Number of solutions or consistency, from the coefficients or from a graph	1	3 of 4
★★★	Word problem: ages, investments at two rates, sales of two items	3–5	3 of 4
★☆☆	Solve a pair by elimination or substitution	2	1 of 4
★☆☆	Find constants when a solution of the pair is given	1	1 of 4
★☆☆	Draw both lines; triangle with an axis and its area	5	1 of 4

MISTAKES THAT COST MARKS

- Reading c_1, c_2 with the wrong sign, or from equations written in different forms.
- Saying "no solution" without checking the third ratio. If it is equal too, the lines coincide.
- Answering "$k = 6$" when the question asks for a unique solution. The answer is $k \neq 6$.
- Not writing "Let … be x …" in a word problem: the equation marks start there.
- Drawing a graph from only two points, or without labels and scale. Take three points and label each line.
- Mixing up the digits: the number is $10x + y$, not xy.

HOW TO USE THIS BOOKLET

1. **Day 1:** Notes, then Part A (NCERT) and Part B (Exemplar). Do every MUST DO question first.
2. **Day 2:** Part C (board pattern) and Part D (case studies).
3. **Day 3:** Part E (challenge) and the real board questions in Part F.
4. **Sun 13 Dec: Sunday chapter test – 20 marks in 40 minutes, without the booklet.**
5. Check every answer in the Answer Booklet. Write each mistake on the My Mistakes page.

RULES AT A GLANCE

Unique solution	$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ (intersecting)
No solution	$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (parallel)
Infinitely many	$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (coincident)
Consistent	unique or infinitely many solutions
Two-digit number	$10x + y$; reversed $10y + x$
Boat	downstream $u + v$, upstream $u - v$

PART A · NCERT PRACTICE

A NCERT Practice

The same skills as the NCERT examples and exercises, with new numbers. Finish every question before moving on.

Consistency and graphs

A1. By comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}, \frac{c_1}{c_2}$, find whether the lines intersect, are parallel or coincide: [3]

MUST DO

(i) $3x + 2y - 7 = 0$, $5x - 4y + 1 = 0$

(ii) $4x - 6y + 10 = 0$, $6x - 9y + 15 = 0$

(iii) $2x + 5y - 8 = 0$, $6x + 15y - 11 = 0$

A2. Check whether each pair is consistent or inconsistent: MUST DO [3]

(i) $x + 2y = 5$, $3x + 6y = 15$

(ii) $2x - 3y = 8$, $4x - 6y = 9$

(iii) $3x - y = 2$, $6x + 2y = 10$

A3. The pair of equations $x = 3$ and $y = -2$ represents two lines which are: [1]

(a) parallel (b) intersecting at $(3, -2)$

(c) coincident (d) intersecting at $(-2, 3)$

A4. Solve graphically: $x + y = 6$ and $2x - y = 3$. MUST DO [3]

A5. Draw the graphs of $x - y + 2 = 0$ and $2x + y - 8 = 0$. Find the vertices of the triangle formed by these lines and the x-axis, and shade it. Also find its area. [4]

Substitution method

A6. Solve by the substitution method: MUST DO [3]

(i) $x + y = 11,\ x - y = 3$ (ii) $3x - y = 7,\ 2x + 3y = 12$ (iii) $\frac{x}{2} + \frac{y}{3} = 4,\ x - y = 3$

A7. Solve $3x + 2y = 12$ and $5x - 3y = 1$, and hence find m for which $y = mx + 1$. [3]

Elimination method

A8. Solve by the elimination method: MUST DO [3]

(i) $x + 2y = 9,\ 3x - 2y = 3$ (ii) $4x + 3y = 18,\ 3x - 2y = 5$

A9. Use elimination on $2x - y = 5$ and $4x - 2y = 12$. What do you conclude? [2]

Word problems

A10. If 1 is added to both the numerator and the denominator of a fraction, it becomes $\frac{4}{5}$. If 5 is subtracted from both, it becomes $\frac{1}{2}$. Find the fraction. MUST DO [3]

A11. Six years ago, a mother was four times as old as her daughter. Six years from now, she will be twice as old as her daughter. Find their present ages. MUST DO [3]

A12. The sum of the digits of a two-digit number is 12. The number formed by reversing the digits is 18 more than the original number. Find the number. [3]

A13. A taxi charges a fixed amount plus a charge for every km. The fare for 10 km is ₹180 and for 15 km is ₹255. Find the fixed charge and the charge per km. How much is the fare for 25 km? [3]

A14. The area of a rectangle increases by 50 square units if its length is increased by 5 units and its breadth by 2 units. The area decreases by 10 square units if the length is decreased by 4 units and the breadth is increased by 1 unit. Find the length and breadth. [3]

B

PART B · EXEMPLAR PRACTICE

Exemplar Practice

Exemplar-style questions on the same ideas, one step harder. Give a reason for every 2-mark answer.

Multiple choice

1 mark each

B1. The lines $3x + 2ky = 2$ and $2x + 5y + 1 = 0$ are parallel if k is: [1]

(a) $\frac{3}{2}$ (b) $\frac{15}{4}$ (c) $\frac{2}{5}$ (d) $\frac{4}{15}$

B2. If a pair of linear equations is consistent, then the lines are: [1]

(a) always intersecting (b) parallel

(c) always coincident (d) intersecting or coincident

B3. The pair $x + 2y = 3$ and $5x + ky + 7 = 0$ has a unique solution when: [1]

(a) $k = 10$ (b) $k = -10$ (c) $k \neq 10$ (d) for every real k

B4. The pair of equations $y = 0$ and $y = -7$ has: [1]

(a) one solution (b) two solutions

(c) infinitely many solutions (d) no solution

B5. If $x = a$, $y = b$ is the solution of $x - y = 2$ and $x + y = 4$, then a and b are: [1]

(a) 3 and 5 (b) 5 and 3 (c) 3 and 1 (d) -1 and -3

B6. A purse has only ₹5 and ₹10 coins: 30 coins worth ₹210 in all. The number of ₹10 coins is: [1]

(a) 18 (b) 15 (c) 12 (d) 20

B7. A father is three times as old as his son. After 12 years he will be twice as old as his son. Their present ages (father, son) are: [1]

(a) (36, 12) (b) (30, 10) (c) (42, 14) (d) (48, 16)

Short answer with reasons

2–3 marks

B8. Do the equations $4x + 3y - 1 = 5$ and $12x + 9y = 15$ represent a pair of coincident lines? Justify. [2]

B9. True or false: "For every real c, the pair $x - 2y = 8$ and $5x - 10y = c$ has a unique solution." Justify. [2]

B10. Given the equation $3x - 4y + 7 = 0$, write another linear equation in two variables so that the pair forms (i) intersecting lines (ii) parallel lines (iii) coincident lines. [3]

B11. For what values of a and b does the pair $2x + 3y = 7$ and $(a + b)x + (2a - b)y = 21$ have infinitely many solutions? MUST DO [3]

B12. Find k for which $kx - 4y = 3$ and $6x - 12y = 9$ have infinitely many solutions. [2]

Long answer

3–4 marks

B13. Draw the graphs of $x + 2y = 6$ and $x - 2y = 2$. Find the vertices of the triangle formed by these lines and the y-axis, and its area. MUST DO [4]

B14. A boat goes 24 km downstream in 2 hours and comes back upstream in 3 hours. Find the speed of the boat in still water and the speed of the stream. [3]

B15. Find two numbers whose sum is 75 and whose difference is 15. Show that the pair of equations you form is consistent. [2]

C

PART C · BOARD PATTERN

Board Pattern Practice

Question types from real 2024–2026 board papers and the 2026–27 Sample Paper, grouped by type. ★★★ = asked in 3 or 4 of the 4 papers checked · ★★ = 2 papers · ★ = 1 paper.

ASSERTION–REASON: HOW TO ANSWER

(a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, but R is not the correct explanation of A.
(c) A is true, but R is false.
(d) A is false, but R is true.

Number of solutions · consistency

★★★ 3 of 4 papers · 1 mark

C1. The pair $2x + 3y = 5$ and $4x + 6y = 10$ has: MUST DO [1]

(a) a unique solution
(b) no solution
(c) infinitely many solutions
(d) exactly two solutions

C2. The lines $x - 2y = 3$ and $3x - 6y = 7$ are: [1]

(a) intersecting (b) parallel (c) coincident (d) perpendicular

C3. Which equation, taken with $2x + y = 7$, gives exactly one solution, namely $(3, 1)$? [1]

(a) $4x + 2y = 14$ (b) $2x + y = 5$ (c) $x + y = 5$ (d) $x - y = 2$

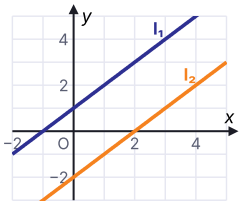
C4. If $kx + 2y = 5$ and $3x + y = 1$ have a unique solution, then: MUST DO [1]

(a) $k = 6$ (b) $k \neq 6$ (c) $k = \frac{3}{2}$ (d) $k \neq \frac{3}{2}$

C5. The value of k for which $x + 2y = 4$ and $3x + ky = 9$ have no solution is: [1]

(a) 2 (b) 3 (c) 9 (d) 6

C6. The graphs of two linear equations are the lines l_1 and l_2 shown. The pair of equations is: [1]



(a) consistent with a unique solution
(b) consistent with infinitely many solutions
(c) inconsistent
(d) dependent

C7. The number of solutions of the pair $x = 4$ and $x = -1$ is: [1]

(a) 0 (b) 1 (c) 2 (d) infinitely many

C8. ASSERTION–REASON [1]

Assertion (A): The pair $2x + 3y = 6$ and $4x + 6y = 12$ is consistent.

Reason (R): If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$, the pair has infinitely many solutions.

C9. ASSERTION–REASON [1]

Assertion (A): The pair $x + y = 4$ and $2x + 2y = 8$ has exactly one solution.

Reason (R): If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$, the lines coincide.

C10. Find the value of p for which $px + 4y = 8$ and $3x + 6y = 12$ have infinitely many solutions. [2]
MUST DO

C11. For what value of k do $2x + ky = 1$ and $3x - 5y = 7$ have (i) a unique solution (ii) no solution? [2]

Values from a given solution

★☆☆ 1 of 4 papers · 1 mark

C12. If $x = 2$, $y = -1$ is a solution of $3x + ky = 8$, then k is: [1]

(a) 2 (b) -2 (c) 14 (d) -14

C13. If $x = 3$, $y = 2$ is the solution of $ax + by = 13$ and $bx - ay = 0$, find a and b. [2]

Solve the pair algebraically

★☆☆ 1 of 4 papers · 2 marks

C14. Solve: $5x - 3y = 9$ and $3x + 2y = 13$. MUST DO [2]

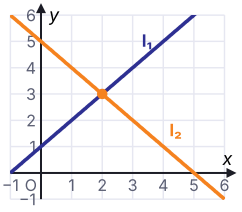
C15. Solve: $\frac{x}{3} + \frac{y}{4} = 4$ and $\frac{x}{2} - \frac{y}{4} = 1$. [2]

C16. Solve: $47x + 31y = 63$ and $31x + 47y = 15$. [3]

Graphical method

★☆☆ 1 of 4 papers · 5 marks

C17. The graphs of two equations are shown. The solution of the pair is: [1]



(a) (3, 2) (b) (2, 3) (c) (1, 2) (d) (0, 5)

C18. Solve graphically: $x + 2y = 4$ and $3x - 2y = 4$. MUST DO [3]

C19. Draw the graphs of $2x - y + 2 = 0$ and $2x + y - 6 = 0$. Find the coordinates of the vertices of the triangle formed by these lines and the x-axis, and find its area. MUST DO [5]

Word problems

★★★ 3 of 4 papers · 3–5 marks

C20. Five years ago, a father was seven times as old as his son Ravi. Five years from now, he will be three times as old as Ravi. Find their present ages. MUST DO [3]

C21. A two-digit number is 4 times the sum of its digits. If 18 is added to the number, its digits are reversed. Find the number. [3]

C22. The sum of the numerator and denominator of a fraction is 14. If 1 is added to the denominator, the fraction becomes $\frac{1}{2}$. The fraction is: [1]

(a) $\frac{5}{9}$ (b) $\frac{4}{10}$ (c) $\frac{6}{8}$ (d) $\frac{3}{11}$

C23. Two angles are supplementary. The larger is 30° more than twice the smaller. Find the angles. [2]

C24. A school bought 3 chairs and 2 tables for ₹4,700, and 5 chairs and 3 tables for ₹7,400. Find the cost of one chair and one table. [3]

C25. Two cars start at the same time from towns P and Q, 180 km apart. If they move towards each other, they meet after 2 hours. If they move in the same direction (the faster car behind), they meet after 9 hours. Find their speeds. [3]

C26. Meera invested one amount at 6% and another at 10% simple interest per year, and got ₹2,100 as interest in one year. If she had invested the two amounts the other way round, she would have got ₹200 less. Find the two amounts. MUST DO [5]

D

PART D · SECTION E STYLE

Case-Based Questions

Each case carries 4 marks (1 + 1 + 2), as in Section E of the board paper. Read the situation carefully before answering.

D1. Case Study · Canteen Sales [4]

The school canteen sells sandwiches at ₹x each and juice at ₹y a glass. On Monday it sold 40 sandwiches and 30 glasses of juice for ₹1,950. On Tuesday it sold 30 sandwiches and 50 glasses of juice for ₹2,150.

(i) Write the pair of linear equations for this situation. [1]

(ii) Is this pair consistent? Give a reason using the ratios. [1]

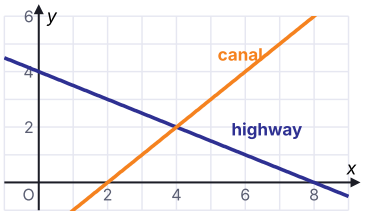
(iii) Find the price of a sandwich and of a glass of juice. [2]

OR

(iii) On Wednesday the canteen sold 50 sandwiches and 40 glasses of juice. How much did it collect? [2]

D2. Case Study · Town Map [4]

On a town map (1 unit = 1 km), a highway runs along the line $x + 2y = 8$ and a canal along the line $x - y = 2$. The railway line runs along the x-axis. A bridge is built where the highway crosses the canal.



(i) Do the highway and the canal cross? Give a reason using the ratios. [1]

(ii) At which point does the highway meet the railway line? [1]

(iii) Find the coordinates of the bridge. [2]

OR

(iii) The highway, the canal and the railway line enclose a triangular plot. Find its area. [2]

D3. Case Study · School Trip [4]

For a school trip, 2 buses and 3 vans together carry 150 students, and 3 buses and 2 vans together carry 175 students. Every bus carries the same number of students, and so does every van.

(i) Write the pair of equations, taking x students per bus and y per van. [1]

(ii) By subtracting the equations, find how many more students a bus carries than a van. [1]

(iii) Find the number of students a bus and a van can carry. [2]

OR

(iii) For 245 students the school books 5 buses. How many vans are needed for the rest? [2]

D4. Case Study · River Ferry [4]

A ferry goes 36 km downstream in 2 hours and 30 km upstream in 3 hours. Let the speed of the ferry in still water be u km/h and the speed of the stream v km/h.

(i) Write the speed of the ferry downstream and upstream in terms of u and v. [1]

(ii) Form the two equations. [1]

(iii) Find u and v. [2]

OR

(iii) A tourist takes the ferry 90 km downstream and back. How long does the round trip take? [2]

E

PART E · FOR 95+

Challenge Questions

Harder than the usual board question. Try these after Parts A–D: they stretch the same methods to the toughest 3- and 5-mark questions.

E1. For what values of a and b does the pair $3x + 4y = 12$ and $(a+b)x + 2(a-b)y = 5a - 1$ have infinitely many solutions? [3]

E2. Solve for x and y: $px + qy = p + q$ and $qx - py = q - p$. [3]

E3. Find k so that the three lines $2x + y = 7$, $x - y = 2$ and $kx + y = 9$ pass through one point. [3]

E4. If Riya gives ₹100 to Sam, Sam will have twice as much as Riya has left. If instead Sam gives ₹50 to Riya, they will have equal amounts. How much does each have? [3]

E5. Draw the graphs of $x - y = 1$ and $2x + y = 8$. Shade the triangle formed by these lines and the y-axis, and find its vertices and area. [4]

E6. In a cyclic quadrilateral $ABCD$, $\angle A = (2x + 4)^\circ$, $\angle B = (y + 3)^\circ$, $\angle C = (2y + 10)^\circ$ and $\angle D = (4x - 5)^\circ$. Find the four angles. [3]

F

PART F · REAL BOARD QUESTIONS

Board PYQ Index

Real questions from recent Maths Standard board papers and the 2026–27 Sample Paper, by type. Open the official paper and solve the listed questions.

Frequency	Question type	Marks	Where asked (year: paper code, question number)	Practise here
★★★	**Number of solutions / consistency**	1	**2026:** 30/1/1 Q5 · **2024:** 30/1/1 Q18 · **SQP 2026–27:** Q3	A1–A5, B1–B4, B8–B12, C1–C11, E1
★★★	**Word problems**	3–5	**2025:** 30/1/1 Q32 · **2024:** 30/1/1 Q29 · **SQP 2026–27:** Q36 (case)	A10–A14, B6–B7, B14–B15, C20–C26, D1, D3–D4, E4, E6
★☆☆	**Solve a pair algebraically**	2	**2024:** 30/1/1 Q21	A6–A9, C14–C16, E2
★☆☆	**Values from a given solution**	1	**2025:** 30/1/1 Q2	B5, C12–C13, E3
★☆☆	**Graph: triangle with an axis**	5	**2026:** 30/1/1 Q32	A3–A5, B13, C17–C19, D2, E5

PAPERS CHECKED

- **2026:** 30/1/1 (Delhi, Set 1)
- **2025:** 30/1/1 (Delhi, Set 1)
- **2024:** 30/1/1 (Delhi, Set 1)
- **CBSE Sample Paper 2026–27** (Mathematics Standard)

Sets of one code family (30/1/1, 30/1/2, 30/1/3) share most questions, so each counts as one paper. Download the official papers from cbse.gov.in → Previous Year Question Papers, and solve the exact questions listed above.

PART G · YOUR RECORD

G My Mistakes

Write down each mistake from this chapter, including the chapter test.

Every wrong answer is a free lesson. Write it here, find the rule you missed, and redo the question after three days. Bring this page to class before the next test.

Date	Part & Q No.	What went wrong	Correct rule or method	Redone ✓