UNIQUE STUDY POINT

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Class: **X**	Subject: **Mathematics**	Session: **2025-26**
Chapter: **Ch 3: Pair of Linear Equations in Two Variables (PYQ)**		

PREVIOUS YEAR QUESTIONS (PYQ)

Chapter 3: Pair of Linear Equations in Two Variables

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This document contains chapter-wise Previous Year Questions from CBSE Class X Board Examinations (2019–2025) for **Chapter 3: Pair of Linear Equations in Two Variables**. Each question includes the year of examination, marks allotted, and direct answer for quick revision.

Note: Questions on Cross-Multiplication Method & Equations Reducible to Linear Form are excluded (deleted from CBSE 2025-26 syllabus).

1 Mark Questions (MCQ / VSA)

[CBSE 2025 | 1 Mark]

Q1. The system of equations $2x + 1 = 0$ and $3y - 5 = 0$ has:

(a) unique solution
(b) two solutions
(c) no solution
(d) infinite number of solutions

Ans: (a) unique solution. $x = -1/2$ and $y = 5/3$.

[CBSE 2025 | 1 Mark]

Q2. Harsh correctly solved a pair of linear equations and found their only point of intersection as $(3, -2)$. One of the lines was $x - y = 5$. Which could have been the other line?

(a) $x + y = 1$
(b) $2x + 3y = 0$
(c) $2x - y = 4$
(d) $x + y = 5$

Ans: (b) $2x + 3y = 0$. Check: $2(3) + 3(-2) = 6 - 6 = 0$. ✓

[CBSE 2024 | 1 Mark]

Q3. The pair of linear equations $x + 2y + 5 = 0$ and $-3x = 6y - 1$ has:

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

Ans: (d) no solution. Rewriting: $x + 2y + 5 = 0$ and $3x + 6y - 1 = 0$. $a_1/a_2 = b_1/b_2 \neq c_1/c_2$ (parallel lines).

[CBSE 2024 | 1 Mark]

Q4. The value of k for which $5x + 2y - 7 = 0$ and $2x + ky + 1 = 0$ do not have a solution is:

(a) 5
(b) 4/5
(c) 5/4
(d) 5/2

Ans: (b) 4/5. For no solution: $a_1/a_2 = b_1/b_2 \neq c_1/c_2 \Rightarrow 5/2 = 2/k \Rightarrow k = 4/5$.

[CBSE 2024 | 1 Mark]

Q5. In a graph, two linear equations are shown as intersecting lines. The pair is:

(a) consistent with unique solution
(b) consistent with infinitely many solutions
(c) inconsistent
(d) inconsistent but can be made consistent

Ans: (a) consistent with unique solution.

[CBSE 2023 | 1 Mark]

Q6. The pair of linear equations $2x = 5y + 6$ and $15y = 6x - 18$ represents two lines which are:

(a) intersecting
(b) parallel
(c) coincident
(d) either intersecting or parallel

Ans: (c) coincident. $2x - 5y - 6 = 0$ and $6x - 15y - 18 = 0$. $a_1/a_2 = b_1/b_2 = c_1/c_2 = 1/3$.

[CBSE 2023 | 1 Mark]

Q7. The pair of equations $x = a$ and $y = b$ graphically represents lines which are:

(a) parallel
(b) intersecting at (b, a)
(c) coincident
(d) intersecting at (a, b)

Ans: (d) intersecting at (a, b). x = a is vertical, y = b is horizontal.

[CBSE 2023 | 1 Mark]

Q8. The pair of equations $y = 0$ and $y = -7$ has:

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

Ans: (d) no solution. Both are horizontal parallel lines.

[CBSE 2022 | 1 Mark]

Q9. One equation of a pair of dependent linear equations is $-5x + 7y = 2$. The second equation can be:

(a) $10x + 14y + 4 = 0$
(b) $-10x - 14y + 4 = 0$
(c) $-10x + 14y + 4 = 0$
(d) $10x - 14y = -4$

Ans: (d) $10x - 14y = -4$. This is $2 \times (-5x + 7y) = 2 \times 2$.

[CBSE 2020 | 1 Mark]

Q10. If the pair of equations $3x - y + 8 = 0$ and $6x - ry + 16 = 0$ represent coincident lines, then r is:

(a) 11
(b) −11
(c) 2
(d) −2

Ans: (c) 2. For coincident: $3/6 = -1/(-r) = 8/16 \Rightarrow 1/2 = 1/r \Rightarrow r = 2$.

[CBSE 2020 | 1 Mark]

Q11. The value of k for which the system $kx - y = 2$ and $6x - 2y = 3$ has a unique solution is:

(a) = 3
(b) ≠ 3
(c) ≠ 0
(d) = 0

Ans: (b) ≠ 3. For unique solution: $a_1/a_2 \neq b_1/b_2 \Rightarrow k/6 \neq 1/2 \Rightarrow k \neq 3$.

[CBSE 2019 | 1 Mark]

Q12. For what value of k do the equations $3x - y + 8 = 0$ and $6x - ky = -16$ have infinitely many solutions?

(a) 2
(b) −2
(c) 4
(d) −4

Ans: (a) 2. Condition: $3/6 = (-1)/(-k) = 8/16 \Rightarrow k = 2$.

Assertion-Reason Questions (1 Mark)

[CBSE 2024 | 1 Mark]

Q13. Assertion (A): The pair of linear equations $3x + 4y = 12$ and $5x + 8/3\ y = 8$ is consistent.
Reason (R): The pair $a_1x + b_1y + c_1 = 0$, $a_2x + b_2y + c_2 = 0$ is inconsistent if $a_1/a_2 = b_1/b_2 \neq c_1/c_2$.

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

Ans: (b) Both A and R true, R is not correct explanation of A. The pair has unique solution ($a_1/a_2 \neq b_1/b_2$), so it is consistent. R is a true statement but about inconsistency.

2 Mark Questions (SA-I)

[CBSE 2024 | 2 Marks]

Q14. If $2x + y = 13$ and $4x - y = 17$, find the value of $(x - y)$.

Ans: Adding: $6x = 30$, $x = 5$. From (i): $y = 13 - 10 = 3$. So $x - y = 5 - 3 = 2$.

[CBSE 2024 | 2 Marks]

Q15. Check whether the point (−4, 3) lies on both lines: x + y + 1 = 0 and x − y = 1.

Ans: Intersection: adding gives 2x = 0, x = 0, y = −1. Point of intersection is (0, −1). So (−4, 3) does NOT lie on both lines.

[CBSE 2024 | 2 Marks]

Q16. Solve: x + 2y = 9 and y − 2x = 2.

Ans: From (ii): y = 2 + 2x. Substituting in (i): x + 2(2+2x) = 9 ⇒ 5x = 5, x = 1, y = 4.

[CBSE 2019 | 2 Marks]

Q17. Find the value of k for which the pair kx + y = k^2 and x + ky = 1 has infinitely many solutions.

Ans: $a_1/a_2 = b_1/b_2 = c_1/c_2 \Rightarrow k/1 = 1/k = k^2/1$. From $k/1 = 1/k$: $k^2 = 1 \Rightarrow k = \pm 1$. From $1/k = k^2/1$: $k^3 = 1 \Rightarrow k = 1$. So k = 1.

[CBSE 2019 | 2 Marks]

Q18. Find the relation between p and q if x = 3, y = 1 is the solution of x − 4y + p = 0 and 2x + y − q − 2 = 0.

Ans: Substituting (3, 1): 3 − 4 + p = 0 ⇒ p = 1. Also 6 + 1 − q − 2 = 0 ⇒ q = 5. So 2p + q = 7.

3 Mark Questions (SA-II)

[CBSE 2025 | 3 Marks]

Q19. Solve the pair of equations algebraically: 101x + 102y = 304 and 102x + 101y = 305.

Ans: Adding: 203x + 203y = 609 ⇒ x + y = 3 ...(i). Subtracting: x − y = 1 ...(ii). From (i) and (ii): x = 2, y = 1.

[CBSE 2025 | 3 Marks]

Q20. In a pair of supplementary angles, the greater angle exceeds the smaller by 50°. Express as linear equations and find each angle.

Ans: x + y = 180 and x − y = 50. Adding: 2x = 230, x = 115°. So y = 65°.

[CBSE 2025 | 3 Marks]

Q21. Check whether the pair x + 3y = 6 and 3y − 2x = −12 is consistent. If so, solve graphically.

Ans: $a_1/a_2 = 1/(-2) \neq b_1/b_2 = 3/3$. Since $a_1/a_2 \neq b_1/b_2$, consistent with unique solution. Solving: from (i) x = 6 − 3y, substituting in (ii): 3y − 2(6−3y) = −12 ⇒ 9y = 0, y = 0, x = 6.

[CBSE 2024 | 3 Marks]

Q22. Solve: 7x − 2y = 5 and 8x + 7y = 15 and verify your answer.

Ans: Multiply (i) by 7 and (ii) by 2: 49x − 14y = 35 and 16x + 14y = 30. Adding: 65x = 65, x = 1. From (i): 7 − 2y = 5, y = 1. Verify: 7(1)−2(1) = 5 ✓ and 8(1)+7(1) = 15 ✓.

[CBSE 2019 | 3 Marks]

Q23. Find the values of a and b for which 2x + 3y = 7 and (a−b)x + (a+b)y = 3a + b − 2 have infinitely many solutions.

Ans: Condition: 2/(a−b) = 3/(a+b) = 7/(3a+b−2). From first two: 2(a+b) = 3(a−b) ⇒ a = 5b. From second and third: 3(3a+b−2) = 7(a+b) ⇒ 2a − 4b = 6 ⇒ a − 2b = 3. Substituting a = 5b: 3b = 3, b = 1, a = 5.

5 Mark Questions (LA / Word Problems)

[CBSE 2024 | 5 Marks]

Q24. Three years ago, Rashmi was thrice as old as Nazma. Ten years later, Rashmi will be twice as old as Nazma. How old are they now?

Ans: Let Rashmi = x, Nazma = y. (x−3) = 3(y−3) ⇒ x = 3y−6 ...(i). (x+10) = 2(y+10) ⇒ x = 2y+10 ...(ii). From (i) and (ii): 3y−6 = 2y+10, y = 16. So x = 42. Rashmi = 42 years, Nazma = 16 years.

[CBSE 2023 | 5 Marks]

Q25. A fraction becomes 9/11 if 2 is added to both numerator and denominator. If 3 is added to both numerator and denominator, it becomes 5/6. Find the fraction.

Ans: Let fraction = x/y. (x+2)/(y+2) = 9/11 ⇒ 11x − 9y = −4 ...(i). (x+3)/(y+3) = 5/6 ⇒ 6x − 5y = −3 ...(ii). Solving: x = 7, y = 9. Fraction = 7/9.

[CBSE 2022 | 5 Marks]

Q26. Places A and B are 100 km apart on a highway. One car starts from A and another from B at the same time. If they travel in same direction, they meet in 5 hours. If they travel towards each other, they meet in 1 hour. Find speed of each car.

Ans: Let speeds = x and y km/h (x > y). Same direction: 5(x−y) = 100 ⇒ x−y = 20 ...(i). Opposite: 1(x+y) = 100 ⇒ x+y = 100 ...(ii). Solving: x = 60, y = 40 km/h.

[CBSE 2020 | 5 Marks]

Q27. The sum of a two-digit number and the number obtained by reversing the digits is 66. If the digits of the number differ by 2, find the number.

Ans: Let tens = x, units = y. Number = 10x + y. Reversed = 10y + x. Sum: 11(x+y) = 66, x+y = 6. Difference: x−y = 2 (or y−x = 2). Case 1: x = 4, y = 2 ⇒ Number = 42. Case 2: x = 2, y = 4 ⇒ Number = 24.

[CBSE 2019 | 5 Marks]

Q28. Five years hence, the age of Jacob will be three times that of his son. Five years ago, Jacob's age was seven times that of his son. What are their present ages?

Ans: Let Jacob = x, Son = y. (x+5) = 3(y+5) ⇒ x − 3y = 10 ...(i). (x−5) = 7(y−5) ⇒ x − 7y = −30 ...(ii). Subtracting: 4y = 40, y = 10. x = 40. Jacob = 40, Son = 10 years.

Case Study Questions (4 Marks)

[CBSE 2023 | 4 Marks]

Q29. Case Study: Two friends Ani and Biju have some marbles. Ani says to Biju, "if you give me 10 marbles, I shall have twice as many as left with you." Biju replies, "if you give me 10, I shall have three times as many as left with you."
(A) Form the pair of linear equations. [1]
(B) Find the number of marbles Ani has. [1]
(C) Find the total number of marbles. [2]

Ans: Let Ani = x, Biju = y. (A) $x + 10 = 2(y - 10) \Rightarrow x - 2y = -30$ ...(i). $y + 10 = 3(x - 10) \Rightarrow 3x - y = 40$ ...(ii). (B) Solving: From (i) $x = 2y - 30$, sub in (ii): $6y - 90 - y = 40$, $y = 26$. $x = 22$. Ani = 22 marbles. (C) Total = 22 + 26 = 48 marbles.

[CBSE 2022 | 4 Marks]

Q30. Case Study: A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km downstream.
(A) If speed of boat in still water = x km/h and speed of stream = y km/h, write the upstream and downstream speeds. [1]
(B) Form the pair of linear equations. [1]
(C) Determine the speed of stream and the speed of boat in still water. [2]

Ans: (A) Upstream = (x−y) km/h, Downstream = (x+y) km/h. (B) $30/(x-y) + 44/(x+y) = 10$ and $40/(x-y) + 55/(x+y) = 13$. Let $1/(x-y) = u$, $1/(x+y) = v$. So $30u + 44v = 10$, $40u + 55v = 13$. (C) Solving: $u = 1/5$, $v = 1/11$. $x-y = 5$, $x+y = 11$. $x = 8$, $y = 3$. Boat = 8 km/h, Stream = 3 km/h.

CHAPTER SUMMARY: PYQ Analysis

(As per CBSE 2025-26 Syllabus | Cross-Multiplication & Reducible Equations Excluded)

Topic	Years Asked	Frequency	Marks
Consistency / Nature of Solution	2019, 2020, 2022, 2023, 2024, 2025	10+	1
Solving by Elimination Method	2019, 2020, 2023, 2024, 2025	8+	2–3
Solving by Substitution Method	2020, 2023, 2024, 2025	6+	2–3
Value of k (unique/infinite/no soln)	2019, 2020, 2022, 2024	5+	1–2
Word Problems (Age)	2019, 2024	3+	3–5
Word Problems (Speed/Distance)	2022, 2023	3+	4–5
Word Problems (Fraction/Number)	2020, 2023	3+	3–5
Graphical Interpretation	2023, 2024, 2025	4+	1–3
Case Study (Application)	2022, 2023	2+	4

Key Observations:

- Condition for consistency (a■/a■, b■/b■, c■/c■ comparison) is the MOST frequently asked 1-mark topic.
- Solving by elimination and substitution methods are asked every year (2–3 marks).
- Word problems (age, speed, fraction, number) appear as 3–5 mark questions consistently.
- Graph-based questions (identifying intersecting/parallel/coincident lines) are common.
- Cross-Multiplication Method and Equations Reducible to Linear Form are DELETED from 2025-26 syllabus.
- Case study questions involve real-life applications (marbles, boats, etc.).
- Expected marks from this chapter: 5–8 marks.

"Practice makes perfect. Solve PYQs to master your Board Exam!"

Best Wishes for Your Board Exam!

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