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Pair of Linear Equations in Two Variables — CBSE Class 10 Mathematics Chapter Test

FREE CHAPTER TEST · CLASS X · MATHEMATICS (041) · PATTERN OF THE CBSE SAMPLE QUESTION PAPER 2026-27

TIME ALLOWED	MAXIMUM MARKS	QUESTIONS	NAME / ROLL NO.
1½ hours	40	19 (A 10 · B 3 · C 2 · D 2 · E 2)	

GENERAL INSTRUCTIONS

Read the following instructions very carefully and strictly follow them:

1. This question paper contains 19 questions. All questions are compulsory.
2. This question paper is divided into five sections: A, B, C, D and E.
3. In Section A, Questions 1 to 8 are multiple choice questions (MCQs) and Questions 9 and 10 are assertion-reason based questions of 1 mark each.
4. In Section B, Q11–13 are very short answer (VSA) type questions, carrying 2 marks each.
5. In Section C, Q14–15 are short answer (SA) type questions, carrying 3 marks each.
6. In Section D, Q16–17 are long answer (LA) type questions, carrying 5 marks each.
7. In Section E, Q18–19 are case study based questions, carrying 4 marks each, with sub-parts of the values of 1, 1 and 2 marks.
8. There is no overall choice. However, an internal choice has been provided in 1 question of Section B, 1 question of Section C, 1 question of Section D and in the 2-mark sub-part of each question of Section E.
9. Use of calculators is not allowed.
10. This chapter test follows the section structure, question types and marks per question of the CBSE Class X Mathematics (Standard, 041) Sample Question Paper 2026-27, at half the length of the 80-mark board paper: 40 marks in 1½ hours.
11. The answer key and the marking scheme are at the end of this booklet. Attempt the paper in 1½ hours before you look at them.

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Chapter: Pair of Linear Equations in Two Variables · **Topics:** Consistency and number of solutions · Substitution method · Elimination method · Graphical meaning · Situational problems

SECTION A

This section comprises 10 questions of 1 mark each: 8 multiple choice questions (MCQs) and 2 assertion-reason based questions.

1. The pair of equations $x + 2y = 3$ and $2x + 4y = 6$ has 1

(A) no solution (B) a unique solution

(C) infinitely many solutions (D) exactly two solutions

2. For what value of k does the pair $kx + 2y = 3$, $8x + ky = 6$ have no solution? 1

(A) 4 (B) -4

(C) ± 4 (D) 0

3. The solution of $x + y = 16$ and $x - y = 6$ is 1

(A) $x = 11, y = 5$ (B) $x = 5, y = 11$

(C) $x = 10, y = 6$ (D) $x = 12, y = 4$

4. The lines $3x + 2y = 5$ and $6x + 4y = 7$ are 1

(A) intersecting (B) coincident

(C) perpendicular (D) parallel

5. If $x = 2, y = 3$ is a solution of $2x - 3y + k = 0$, then k is 1

(A) 5 (B) -5

(C) 13 (D) -13

6. The graphs of $x = 3$ and $y = -2$ intersect at 1

(A) $(-2, 3)$ (B) $(2, -3)$

(C) $(-3, 2)$ (D) $(3, -2)$

7. The sum of two numbers is 35 and their difference is 13. The numbers are 1

(A) 25 and 10 (B) 24 and 11

(C) 22 and 13 (D) 20 and 15

8. A pair of linear equations is consistent when its graph is a pair of 1

(A) parallel lines only (B) coincident lines only

(C) intersecting or coincident lines (D) parallel or coincident lines

9. **Assertion (A):** The pair $x + y = 5$ and $2x + 2y = 10$ has infinitely many solutions. 1

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

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

10. **Assertion (A):** The pair $2x + 3y = 5$ and $4x + 6y = 11$ is consistent. 1

Reason (R): If $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$, the pair has no solution.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

SECTION B

This section comprises 3 very short answer (VSA) type questions of 2 marks each.

11. (a) Solve $3x + 2y = 12$ and $3x - 4y = -6$, and hence find m for which $y = mx + 4$. 2

OR

(b) Solve by elimination: $5x + 3y = 21$ and $2x - 3y = 0$.

12. Find k for which the pair $3x + 4y = 12$ and $(k + 1)x + 2ky = 5k + 2$ has infinitely many solutions. 2

13. The perimeter of a rectangular plot is 64 m, and its length is 6 m more than its width. Find its length and width. 2

SECTION C

This section comprises 2 short answer (SA) type questions of 3 marks each.

14. (a) Show that the pair $x + y - 5 = 0$ and $2x - y - 4 = 0$ has a unique solution, find it, and find the vertices of the triangle formed by these lines and the x-axis. 3

OR

(b) Four years ago, a mother was five times as old as her daughter. Six years from now, she will be three times as old as her daughter. Find their present ages.

15. A fraction becomes 1 if 3 is added to its numerator only. It becomes ½ if 2 is added to its denominator only. Find the fraction. 3

SECTION D

This section comprises 2 long answer (LA) type questions of 5 marks each.

16. (a) An auto-rickshaw charges a fixed amount plus a charge per km. For 8 km the fare is ₹ 132, and for 12 km it is ₹ 188. Find the fixed charge and the charge per km, and the fare for 20 km. 5

OR

(b) The sum of the digits of a two-digit number is 12. Four times the number equals seven times the number obtained by reversing its digits. Find the number.

17. (i) Ravi withdrew ₹ 4000 from a bank in notes of ₹ 200 and ₹ 500 only, receiving 14 notes in all. How many notes of each kind did he get? (ii) Three pens and 2 notebooks cost ₹ 80, and 6 pens and 4 notebooks cost ₹ 160. Can the cost of a pen be found? Give a reason. 5

SECTION E

This section comprises 2 case study based questions of 4 marks each, with sub-parts of 1, 1 and 2 marks.

18. For a school concert, 2 adult tickets and 3 child tickets cost ₹ 1100, while 3 adult tickets and 2 child tickets cost ₹ 1150.

(i) Write the pair of equations, taking ₹ a and ₹ c as the costs of an adult and a child ticket. [1]

(ii) Find a + c. [1]

(iii) Find the cost of each ticket. [2]

OR

(iii) Find the cost of 4 adult tickets and 5 child tickets. [2]

19. In a basketball match, a team scored 32 points from 14 baskets, each basket being worth 2 points or 3 points.

(i) Write the pair of equations, taking x two-pointers and y three-pointers. [1]

(ii) Does the pair have a unique solution? Give a reason. [1]

(iii) Find the number of each kind of basket. [2]

OR

(iii) If the team had scored 28 points from the same 14 baskets, how many three-pointers would it have scored? [2]

END OF THE QUESTION PAPER

ANSWER KEY — SECTION A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
(C)	(B)	(A)	(D)	(A)	(D)	(B)	(C)	(A)	(D)

MARKING SCHEME AND WORKED SOLUTIONS

Marks for each step are shown in brackets, as in the CBSE marking scheme. Any correct alternative method earns full marks.

Q1. Answer (C). $1/2 = 2/4 = 3/6$: the lines coincide.

Q2. Answer (B). $k/8 = 2/k$ gives $k = \pm 4$; for no solution $2/k \neq 3/6 = 1/2$, so $k \neq 4$ ($k = 4$ makes the lines coincide). Hence $k = -4$.

Q3. Answer (A). Adding, $2x = 22$, so $x = 11$ and $y = 5$.

Q4. Answer (D). $3/6 = 2/4 \neq 5/7$.

Q5. Answer (A). $4 - 9 + k = 0$.

Q6. Answer (D). $x = 3$ is vertical, $y = -2$ horizontal.

Q7. Answer (B). $x + y = 35$, $x - y = 13$ give $x = 24$, $y = 11$.

Q8. Answer (C). Consistent means at least one solution: intersecting (one) or coincident (infinitely many).

Q9. Answer (A). $1/2 = 1/2 = 5/10$: by R the lines coincide, so there are infinitely many solutions. Answer (A).

Q10. Answer (D). $2/4 = 3/6 \neq 5/11$, so there is no solution: A is false, R is true. Answer (D).

Q11. (2 marks) Answer: (a) $x = 2$, $y = 3$, $m = -1/2$; (b) $x = 3$, $y = 2$.
(a) Subtracting, $6y = 18$, $y = 3$; then $3x = 12 - 6$, $x = 2$. [1] $3 = 2m + 4$, so $m = -1/2$. [1]
OR (b) Adding the two equations: $7x = 21$, $x = 3$. [1] Then $2(3) - 3y = 0$, $y = 2$. [1]

Q12. (2 marks) Answer: $k = 2$.
$3/(k + 1) = 4/(2k)$ gives $6k = 4k + 4$, $k = 2$. [1] Check: $4/(2k) = 4/4 = 1$ and $12/(5k + 2) = 12/12 = 1$. So $k = 2$. [1]

Q13. (2 marks) Answer: 19 m × 13 m.
$2(l + w) = 64$ gives $l + w = 32$; $l - w = 6$. [1] $l = 19$ m, $w = 13$ m. [1]

Q14. (3 marks) Answer: (a) (3, 2); vertices (5, 0), (2, 0), (3, 2); (b) mother 54, daughter 14.
(a) $1/2 \neq 1/(-1)$, so the lines intersect: a unique solution. [1] Adding: $3x - 9 = 0$, $x = 3$, $y = 2$. [1] The lines meet the x-axis at (5, 0) and (2, 0): vertices (5, 0), (2, 0), (3, 2). [1]
OR (b) $M - 4 = 5(D - 4)$ and $M + 6 = 3(D + 6)$: $M - 5D = -16$, $M - 3D = 12$. [1½] Subtracting, $2D = 28$: $D = 14$, $M = 54$ years. [1½]

Q15. (3 marks) Answer: 5/8.
$(x + 3)/y = 1$ gives $x - y = -3$; $x/(y + 2) = 1/2$ gives $2x - y = 2$. [1½] Subtracting, $x = 5$, $y = 8$: the fraction is 5/8. [1½]

Q16. (5 marks) Answer: (a) ₹ 20, ₹ 14 per km, ₹ 300; (b) 84.
(a) $f + 8r = 132$, $f + 12r = 188$. [2] Subtracting, $4r = 56$, $r =$ ₹ 14; $f =$ ₹ 20. [2] Fare for 20 km = 20 + 280 = ₹ 300. [1]
OR (b) Let the digits be x (tens) and y (units): $x + y = 12$ [1] and $4(10x + y) = 7(10y + x)$, i.e. $33x = 66y$, $x = 2y$. [2] Then $3y = 12$, $y = 4$, $x = 8$: the number is 84. [2]

Q17. (5 marks) Answer: (i) 10 and 4; (ii) no: there are infinitely many solutions.
(i) $x + y = 14$, $200x + 500y = 4000$ ($2x + 5y = 40$). [1] Since $2x + 2y = 28$, subtracting gives $3y = 12$, $y = 4$, $x = 10$: ten ₹ 200 notes and four ₹ 500 notes. [2]
(ii) $3/6 = 2/4 = 80/160$: the lines coincide, so there are infinitely many solutions and the cost cannot be found uniquely. [2]

Q18. (4 marks) Answer: (i) as shown; (ii) 450; (iii) ₹ 250, ₹ 200, or ₹ 2000.

(i) 2a + 3c = 1100, 3a + 2c = 1150. [1]

(ii) Adding, 5a + 5c = 2250, a + c = 450. [1]

(iii)(a) Subtracting, a − c = 50 [1]; a = ₹ 250, c = ₹ 200. [1]

OR (iii)(b) With a = 250, c = 200 [1]: 1000 + 1000 = ₹ 2000. [1]

Q19. (4 marks) Answer: (i) as shown; (ii) yes; (iii) 10 and 4, or 0.

(i) x + y = 14, 2x + 3y = 32. [1]

(ii) Yes: 1/2 ≠ 1/3, so the lines intersect. [1]

(iii)(a) 2x + 2y = 28; subtracting, y = 4 [1]; x = 10. [1]

OR (iii)(b) 2x + 3y = 28 and 2x + 2y = 28 [1] give y = 0. [1]

All questions are original and © Master Testing Agency. Free to download and use for personal practice; not for resale. Every answer in this paper was checked independently by computer in exact fractions: each pair solved and substituted back, each condition on a parameter tested over a range of values, and each word problem checked by brute force.