

CLASS 10 — MATHEMATICS

Chapter: Pair of Linear Equations in Two Variables

Practice Worksheet | CBSE Pattern

Maximum Marks: 40

Time Allowed: 1 hour 30 minutes

Name: _____

Class/Section: _____ Date: _____

General Instructions:

1. All questions are compulsory.
2. Read each question carefully before answering.
3. Show complete working for questions requiring calculations or proofs.
4. Select only one option for each MCQ.
5. Marks for each question are indicated alongside the question.
6. Write mathematical steps clearly and use appropriate notation.

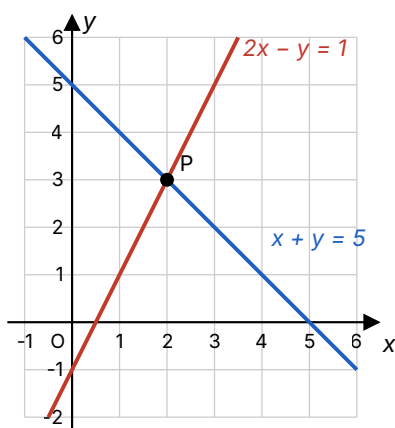
This paper has 21 questions in five sections: A (Q1–Q10, 1 mark each), B (Q11–Q15, 2 marks each), C (Q16–Q19, 3 marks each), D (Q20, 4 marks) and E (Q21, case study, 4 marks).

SECTION A

Multiple Choice Questions — Q1 to Q10 carry 1 mark each.

- Q1.** The pair of linear equations $x + 2y = 5$ and $3x + 6y = 15$ has **[1 mark]**
(A) a unique solution (B) no solution
(C) infinitely many solutions (D) exactly two solutions
- Q2.** The value of k for which the pair of equations $2x + ky = 7$ and $6x - 9y = 1$ has no solution is **[1 mark]**
(A) 3 (B) -3
(C) 6 (D) -6
- Q3.** The lines representing the equations $4x - 5y = 3$ and $8x + 3y = 2$ are **[1 mark]**
(A) intersecting at exactly one point
(B) parallel
(C) coincident
(D) neither intersecting nor parallel
- Q4.** The solution of the pair of equations $x + y = 7$ and $x - y = 3$ is **[1 mark]**
(A) $x = 2, y = 5$ (B) $x = 4, y = 3$
(C) $x = 3, y = 4$ (D) $x = 5, y = 2$
- Q5.** If $x = 2$ and $y = -1$ is a solution of the equation $3x + ky = 8$, then the value of k is **[1 mark]**
(A) 2 (B) -2
(C) 14 (D) -14

- Q6.** The graphs of the equations $x + y = 5$ and $2x - y = 1$ are shown below. The solution of the pair of equations is [1 mark]



- (A) $x = 2, y = 3$ (B) $x = 3, y = 2$
(C) $x = 5, y = 0$ (D) $x = 0, y = 5$
- Q7.** A pair of linear equations in two variables is inconsistent if their graphs are [1 mark]
- (A) intersecting lines (B) coincident lines
(C) parallel lines (D) lines intersecting on the x -axis
- Q8.** The sum of two numbers is 50 and their difference is 10. The larger number is [1 mark]
- (A) 20 (B) 25
(C) 40 (D) 30

In Q9 and Q10, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

- Q9. Assertion (A):** The pair of equations $3x - 4y = 7$ and $6x - 8y = 10$ has no solution. [1 mark]
Reason (R): If $a_1/a_2 = b_1/b_2 \neq c_1/c_2$, the lines are parallel and the pair of equations is inconsistent.
- (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.

Q10. Assertion (A): The pair of equations $x - 2y = 3$ and $2x - 4y = 6$ has a unique solution. **[1 mark]**

Reason (R): If $a_1/a_2 = b_1/b_2 = c_1/c_2$, the pair of equations has infinitely many solutions.

- (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

Very Short Answer Questions — Q11 to Q15 carry 2 marks each.

- Q11.** Solve the following pair of linear equations by the substitution method: **[2 marks]**

$$2x + y = 11 \text{ and } 3x - 2y = 6$$

- Q12.** Solve the following pair of linear equations by the elimination method: **[2 marks]**

$$5x + 3y = 19 \text{ and } 2x - 3y = -5$$

- Q13.** Find the values of k for which the pair of equations $3x + ky = 5$ and $6x + 8y = 11$ has a unique solution. **[2 marks]**
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- Q14.** The cost of 2 notebooks and 3 pens is ₹ 110, and the cost of 3 notebooks and 2 pens is ₹ 115. Find the cost of one notebook and one pen. **[2 marks]**
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- Q15.** The length of a rectangle exceeds its breadth by 5 cm, and its perimeter is 42 cm. Form a pair of linear equations and find the length and breadth of the rectangle. **[2 marks]**
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SECTION C

Short Answer Questions — Q16 to Q19 carry 3 marks each.

- Q16.** Find the values of a and b for which the following pair of linear equations has infinitely many solutions: **[3 marks]**

$$2x + 3y = 7 \text{ and } (a - b)x + (a + b)y = 3a + b - 2$$

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- Q17.** A fraction becomes $\frac{2}{3}$ when 1 is added to both its numerator and denominator. It becomes $\frac{1}{2}$ when 1 is subtracted from both its numerator and denominator. Find the fraction. **[3 marks]**

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- Q18.** A two-digit number is four times the sum of its digits. If 18 is added to the number, its digits are reversed. Find the number. **[3 marks]**

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- Q19.** A motorboat travels 24 km downstream in 2 hours and returns the same 24 km upstream in 3 hours. Find the speed of the boat in still water and the speed of the stream. **[3 marks]**
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SECTION D

Long Answer Question — Q20 carries 4 marks.

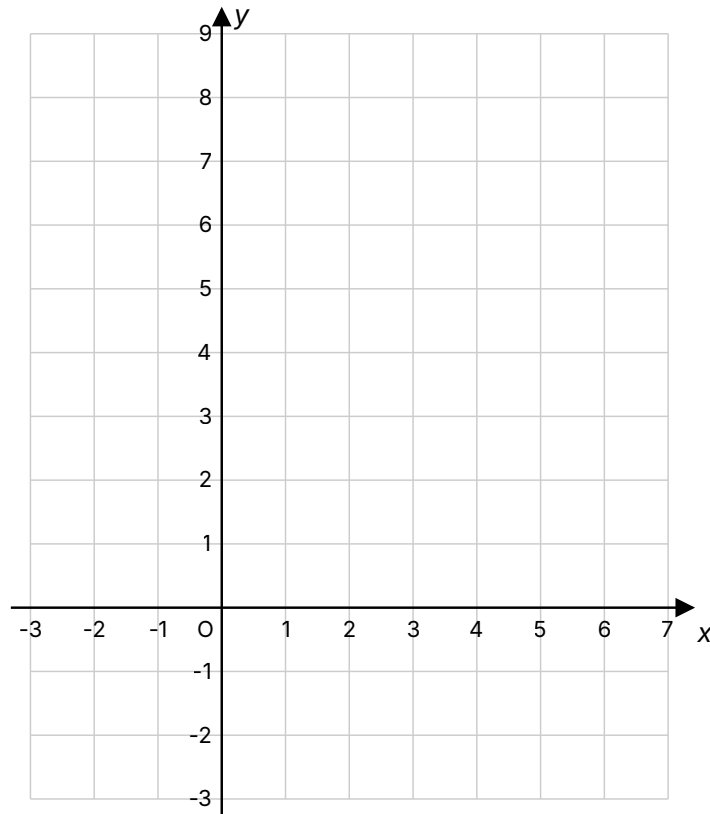
Q20. Solve the following pair of linear equations graphically:

[4 marks]

$$2x + y = 8 \text{ and } x - y = 1$$

Also find the coordinates of the points where these lines meet the y-axis, and the area of the triangle formed by the two lines and the y-axis.

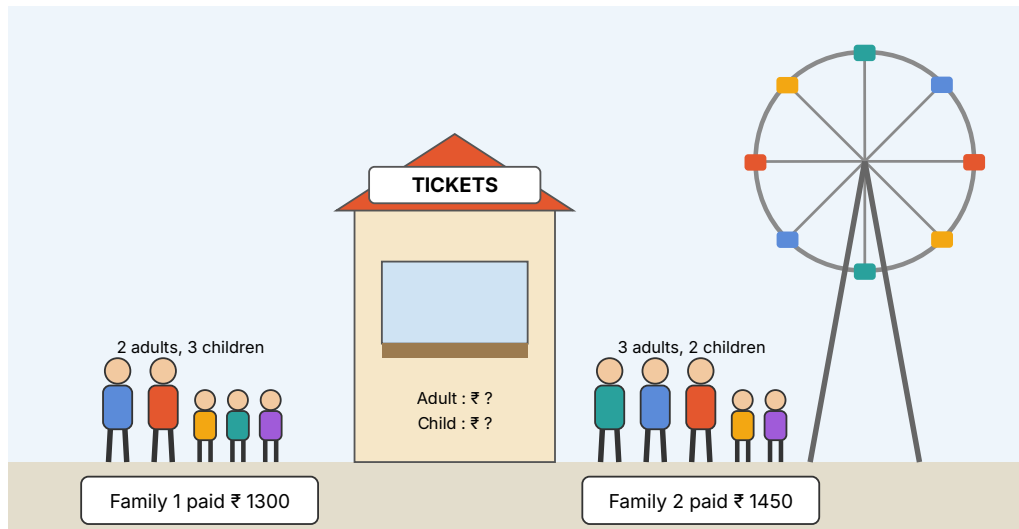
Use the grid below to draw the graphs.



SECTION E

Case Study Based Question — Q21 carries 4 marks.

- Q21.** Two families visited an amusement park. The park charges a fixed price for each adult ticket and a fixed price for each child ticket. **[4 marks]**
Family 1 (2 adults and 3 children) paid ₹ 1300 for tickets, and
Family 2 (3 adults and 2 children) paid ₹ 1450.



Let the price of one adult ticket be ₹ x and the price of one child ticket be ₹ y . Based on the above information, answer the following questions:

- (i) Write the pair of linear equations that represents the situation. **[1 mark]**
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- (ii) By comparing the ratios of the coefficients, state whether the pair of equations has a unique solution, no solution or infinitely many solutions. **[1 mark]**
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- (iii) Find the price of one adult ticket and one child ticket. **[2 marks]**
Hence find the total amount a group of 4 adults and 5 children will pay.

— End of Question Paper —