GRADE: 7

SUBJECT: Mathematics Lesson: 09 - Linear Equations

DURATION: 2½ hrs
MAX MARKS: 80

Instructions:

- You will not be allowed to write during the first 10 minutes. Use this time to read the question paper.
- All working, including rough work, must be clearly shown on the same sheet as the rest of the answer.
- Answers must be written on the paper provided separately.
- Omission of essential working will result in loss of marks.
- The intended marks for questions or parts of questions are given in brackets **( )**.

SECTION A (4 x 10 = 40 marks)

(Answer all questions)

1. Choose the correct option:

a) The solution of the equation **2x - 3 = 7** is:

- (a) 5
- (b) -5
- (c) 3
- (d) 7

b) If **5y - 2 = 3(y + 2)**, then y = ?

- (a) 4
- (b) 3
- (c) 2
- (d) 1

c) Which of the following is NOT a linear equation in one variable?

- (a) $2x + 5 = 0$
- (b) $3x - 7 = 10$
- (c) $x^2 + 3x - 5 = 0$
- (d) $5 - x = 8$

2. Solve the following equations:

a) $3(x - 4) = 2(x + 1)$
b) $5x + 3 = 2x + 18$

3. Word Problems:

a) The sum of two consecutive even numbers is 42. Find the numbers.
b) The length of a rectangle is 3 units more than its breadth, and its perimeter is 32 units. Find its length and breadth.

4. Graphical Representation:
Plot the solution of $2x - 5 = 3$ on a number line.

SECTION B (4 x 10 = 40 marks)

(Answer any four questions)

5. Solve for x:
a) $4x - 3 = 2x + 5$
b) $(x + 2)/3 = 4$
c) $7x - 4 = 3x + 8$

6. Solve and check your answer:
a) $(3x - 1)/2 = (2x + 5)/3$
b) $5(x - 2) = 2(x + 6)$

7. Word Problems:
a) A father's age is three times that of his son. In 10 years, the father will be twice as old as his son. Find their present ages.

b) The sum of two numbers is 72. One number is twice the other. Find the numbers.

8. Solve the inequality and represent the solution on a number line:
a) $3x - 4 < 8$

b) $5 - 2x \geq 1$

9. Higher-Order Thinking Question:
A purse contains ₹500 and ₹200 notes. The total number of notes is 10, and their total value is ₹3200. Find the number of each type of note.

10. Application-Based Problem:
A school orders a total of 100 books consisting of English and Mathematics books. The cost of an English book is ₹250, and the cost of a Mathematics book is ₹300. If the total cost of the books is ₹27,000, find how many books of each subject were ordered.

END OF THE QUESTION PAPER