

# Mathematics — Ganita Manjari

## Chapter 2 Test 6

### Introduction to Linear Polynomials

Class IX | 2026–27

Time Allowed: 45 Minutes

Maximum Marks: 25

#### General Instructions

1. All 13 questions are compulsory. Choose one option in A; show working in B–D.
2. Show the main steps and give reasons where asked. Calculators are not allowed.
3. Read graph scales carefully and state units where appropriate.

#### SECTION A

(5 questions × 1 mark = 5 marks)

1. The polynomial  $-9s + 14$  has degree:

- (A) 0 (B) 1  
(C) 9 (D) 14

2. For the input-output rule  $y = 2x - 7$ , input 5 gives output:

- (A) -3 (B) 10  
(C) 3 (D) 17

3. With equal scales on both axes, which line slopes down most steeply from left to right?

- (A)  $y = -x$   
(B)  $y = -2x$   
(C)  $y = 3x$   
(D)  $y = -4x$

4. The y-intercept of  $5y = 10x - 15$  is:

- (A) -3 (B) -15  
(C) 2 (D) 3

5. For a tile pattern  $N(n) = 6n + 5$ , how many tiles are added from one stage to the next?

- (A) 5 (B) 6  
(C) 11 (D) n

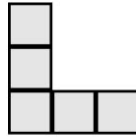
## SECTION B

(4 questions  $\times$  2 marks = 8 marks)

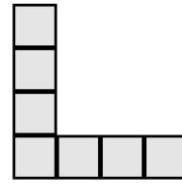
6. Each new stage extends both arms of the L by one square. Count the tiles in stages 1, 2 and 3, and write the stage-n rule.



Stage 1



Stage 2



Stage 3

7. Check whether  $(-3, -8)$  and  $(2, 8)$  lie on  $y = 3x + 1$ .

8. A club's total charge is  $C(m) = 350 + 45m$  rupees for  $m$  matches. Explain what 350 and 45 represent, and find the cost of 6 matches.

9. Write one cubic polynomial in  $t$  with coefficient of  $t^2$  equal to  $-6$ , coefficient of  $t$  equal to 0 and constant term 9.

## SECTION C

(3 questions  $\times$  3 marks = 9 marks)

10. A pattern grows by a fixed number of beads at each stage. It has 23 beads at stage 4 and 43 at stage 9. Find the rule and the first stage containing more than 70 beads.

11. A battery's charge is modelled by  $B(t) = 100 - 8t$  percent after  $t$  hours. Find its charge after 7 hours, when it reaches 20%, and the time interval for which this model gives a non-negative charge.

12. For  $p(x) = 2x + 7$  and  $q(x) = 2x - 4$ , show that  $p(x) - q(x)$  is constant. Explain what this says about their graphs, and find  $p(5)$  and  $q(5)$ .

## SECTION D

(1 application question  $\times$  3 marks = 3 marks)

13. A rectangular enclosure has perimeter 210 m. Its length is 4 m less than three times its width. Find both dimensions and the cost of fencing it at ₹85 per metre.