Mathematics

Practice Test Paper 4

(Chapter 4: Quadratic Equations)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. The paper has four sections: A, B, C and D.
2. Section A - 5 marks; Section B - 8 marks; Section C - 9 marks; Section D - 3 marks.
3. Choose one correct option in Section A. Show the necessary steps and reasoning in Sections B, C and D.
4. Use algebraic methods where required. Use of calculators is not allowed.

SECTION A

(5 questions × 1 mark = 5 marks)

1. The repeated root of $x^2 + 10x + 25 = 0$ is:

(A) 5 (B) 10

(C) −10 (D) −5

2. Which is the correct quadratic formula?

(A) $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

(B) $x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a}$

(C) $x = \frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$

(D) $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{a}$

3. For $x^2 + kx + 9 = 0$ to have equal roots, k can be:

(A) 3 (B) 9

(C) 6 (D) 18

4. The equation $x^2 + 4 = 0$ has:

(A) roots 2 and −2 (B) no real roots

(C) a repeated root 2 (D) a repeated root −2

5. The constant term after writing $(x - 3)^2 = 7$ in standard form is:

(A) −7 (B) −2

(C) 9 (D) 2

SECTION B

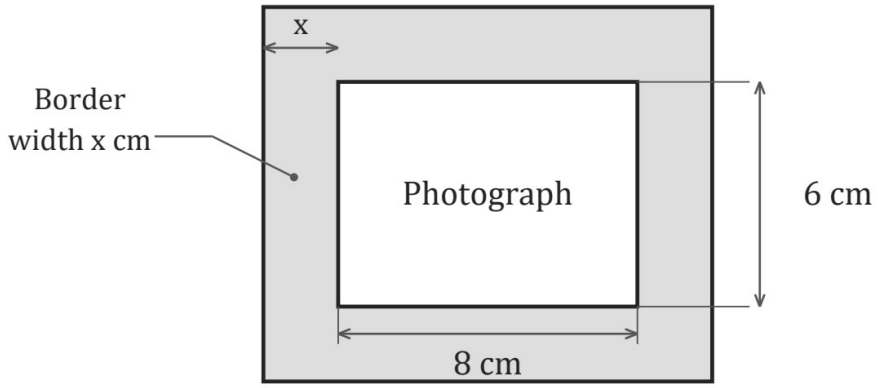
(4 questions × 2 marks = 8 marks)

6. Find k for which $kx(x - 2) + 6 = 0$ has two equal roots.

7. Solve $2x^2 - x + \frac{1}{8} = 0$ by factorisation.

8. A quadratic equation has discriminant 12. What is the discriminant after multiplying every coefficient by 3? Does the nature of its roots change?

9. The photograph has a uniform border of width x cm. The outer area is 120 cm^2. Use the diagram to find x.



Total area = 120 cm^2

SECTION C

(3 questions × 3 marks = 9 marks)

10. A train covers 480 km at a uniform speed. At 8 km/h less, it would take 3 hours longer. Find its original speed.

11. Use the quadratic formula to solve $2x^2 + x - 4 = 0$. Give exact roots.

12. Amisha spent ₹1800 on books. Had she bought 10 more for the same amount, each book would have cost ₹30 less. How many books did she originally buy?

SECTION D

(Application Based Question - 3 marks)

13. A ball is thrown upward from a ledge. Its height in metres above the ground after t seconds is $h = -5t^2 + 20t + 25$, for $t \geq 0$.

(i) What is the initial height in metres?

(ii) Write the quadratic equation for reaching the ground.

(iii) Find the valid time at which the ball reaches the ground.