Grade 10 - Second Unit Test

Answer Keys

Practice Papers 1 & 2

Mathematics

Based on Maharashtra Board Syllabus (NEP 2025-26) - 2nd Quarter

Note:

This document contains the answer keys for Second Unit Test Practice Paper 1 and Practice Paper 2.

Practice Paper 1 - Answer Key

Section A: Quadratic Equations

1. Discriminant (Δ) = -8 ($\Delta = b^2 - 4ac = (-4)^2 - 4(2)(3) = 16 - 24$)

2. Roots: x = -1, x = -5 ($x^2 + 6x + 5 = 0$. $\Delta = 6^2 - 4(1)(5) = 36 - 20 = 16$. $x = [-b \pm \sqrt{\Delta}] / 2a = [-6 \pm \sqrt{16}] / 2(1) = [-6 \pm 4] / 2$. x1 = (-6 + 4)/2 = -2/2 = -1. x2 = (-6 - 4)/2 = -10/2 = -5)

Section B: Arithmetic Progression

3. Sum (S_{10}) = 110 (a = 2, d = 2, n = 10. $S_{10} = n/2 * [2a + (n-1)d] = 10/2 * [2(2) + (10-1)2] = 5 * [4 + 9*2] = 5 * [4 + 18] = 5 * 22$)

4. Sum (S_{12}) = 348 (a = 7, d = 4, n = 12. S_{12} = n/2 * [2a + (n-1)d] = 12/2 * [2(7) + (12-1)4] = 6 * [14 + 11*4] = 6 * [14 + 44] = 6 * 58)

Section C: Probability

5. Probability = 1/2 (Total outcomes = 2 (Head, Tail). Favorable outcome = 1 (Tail))

6. a) A red ball? = 3/8 (Total balls = 3 + 5 = 8. Red balls = 3)

6. b) A blue ball? = 5/8 (Total balls = 8. Blue balls = 5)

Practice Paper 2 - Answer Key

Section A: Quadratic Equations

1. Discriminant (Δ) = 49 (Δ = b^2 - 4ac = 5^2 - 4(3)(-2) = 25 - (-24) = 25 + 24)

2. Roots: x = 2, x = 5 (x^2 - 7x + 10 = 0. Δ = $(-7)^2$ - 4(1)(10) = 49 - 40 = 9. x = [-b ± √Δ] / 2a = [-(-7) ± √9] / 2(1) = [7 ± 3] / 2. x1 = (7 + 3)/2 = 10/2 = 5. x2 = (7 - 3)/2 = 4/2 = 2)

Section B: Arithmetic Progression

3. Sum (S_8) = 108 (a = 3, d = 3, n = 8. S_8 = n/2 * [2a + (n-1)d] = 8/2 * [2(3) + (8-1)3] = 4 * [6 + 7*3] = 4 * [6 + 21] = 4 * 27)

4. Sum (S_{15}) = -165 (a = 10, d = -3, n = 15. S_{15} = n/2 * [2a + (n-1)d] = 15/2 * [2(10) + (15-1)(-3)] = 15/2 * [20 + 14*(-3)] = 15/2 * [20 - 42] = 15/2 * (-22) = 15 * (-11))

Section C: Probability

5. Probability = 3/6 or 1/2 (Total outcomes = 6 (1, 2, 3, 4, 5, 6). Favorable outcomes = 3 (2, 4, 6))

6. a) A red ball? = 5/12 (Total balls = 5 + 4 + 3 = 12. Red balls = 5)

6. b) A green ball? = 3/12 or 1/4 (Total balls = 12. Green balls = 3)

End of Answer Keys