AL BARKAAT PUBLIC SCHOOL

HOME ASSIGNMENT: CLASS X
SUBJECT : MATHEMATICS

🔷 Part 1: Real Numbers (10 Questions)

1. Find the HCF of 96 and 404.
2. Prove that √2 is an irrational number.
3. Express 360 as a product of its prime factors.
4. Find the LCM and HCF of 12, 15, and 21 by prime factorization method.
5. If HCF(306, 657) = 9, find LCM(306, 657).
6. Show that 5 – √3 is irrational.
7. Write the decimal expansion of 7/8 and state whether it is terminating or non-terminating.
8. Without actual division, state whether 987/10500 will have a terminating decimal expansion or not.
9. Prove that there are infinitely many prime numbers.
10. Find the smallest number which when divided by 12, 15, and 18 leaves remainder 4 in each case.

🔷 Part 2: Polynomials (10 Questions)

1. Find the zeroes of the quadratic polynomial $x^2 - 5x + 6$ and verify the relationship between the zeroes and coefficients.
2. Construct a quadratic polynomial whose zeroes are 4 and –3.
3. If the zeroes of the quadratic polynomial $x^2 + px + 12$ are –3 and –4, find the value of p.
4. Find a quadratic polynomial whose zeroes are reciprocal of each other and one of the zeroes is 2.
5. Divide $2x^2 + 5x + 3$ by $x + 1$ and find the quotient and remainder.
6. If α and β are the zeroes of the polynomial $ax^2 + bx + c$, express the polynomial in terms of α and β.
7. Find the zeroes of the polynomial $4x^2 - 4\sqrt{3}x + 3$ and verify the relationship between the zeroes and coefficients.
8. Write a quadratic polynomial whose sum and product of the zeroes are 1 and –6 respectively.
9. If one zero of the polynomial $kx^2 - 5x + 6$ is 2, find the value of k.
10. Show that $x = 2$ and $x = -1$ are the zeroes of the polynomial $x^2 - x - 2$. Verify the relationship between the zeroes and coefficients.

Part 3: Pair Linear Equation in Two Variables(10 Questions)

1. Solve the pair of equations:
   $2x + 3y = 12$
   $4x - y = 5$
2. Solve the system of equations by substitution method:
   $x + y = 7,$
   $x - y = 3$
3. Solve using the elimination method:
   $3x + 4y = 10,$
   $2x - 4y = 2$
4. Find the value of k for which the system has infinitely many solutions:
   $kx + 3y = k - 3,$
   $12x + ky = k$
5. A number consists of two digits. If the sum of the digits is 9 and the digits are reversed, the new number is 27 more than the original. Find the number.
6. The sum of the ages of a father and son is 45 years. Five years ago, the father's age was 4 times the son's age. Find their present ages.
7. Form a pair of linear equations and solve:
   "The cost of 2 pens and 3 pencils is ₹12 and the cost of 4 pens and 6 pencils is ₹24."
8. Draw the graphs of the equations $x + y = 6$ and $x - y = 2$. Find the point of intersection.
9. Determine the nature of the solutions for the following pair of equations:
   $3x + 2y = 6$
   $6x + 4y = 12$
10. Ritu can row downstream 20 km in 2 hours and upstream 4 km in 2 hours. Find the speed of the boat in still water and the speed of the stream.