Class X

Maths Test 1:

(Polynomials, Pair of Linear Eqns)

Duration: 1.45 hrs **TotalMks: 61**

1. If x = $\sqrt{7}$ sinA , y = $\sqrt{7}$ cosA then find the value of $x^2 + y^2$.
2. What is the value of a for which (3, a) lies on 2x – 3y = 5.
3. Find the point of intersection of the lines x – 2y = 6 and y-axis.
4. If the product of the zeroes of the polynomial $ax^2 – 6x – 6$ is 4, find the value of a.
5. If ΔABC ~ ΔQRP, $\frac{ar(ABC)}{ar(PQR)} = \frac{9}{4}$ AB = 18 cm, BC = 15 cm, find the value of PR.
6. Find the other zeroes of the polynomial for $x^4 – 20x^3 + 23x^2 + 5x – 6$, if two of its zeroes are 2 and 3.
7. The diagonals of a trapezium PQRS intersect each other at the point O, PQ||RS and PQ = 3 RS, find the ratio of the areas of ΔPOQ and ΔROS.
8. On dividing $4x^3 – 8x^2 + 8x + 1$ by a polynomial d(x), the quotient and remainder are $(2x^2 – 3x + 2)$ and (x + 3) respectively, find d(x).
9. ABC is right angled at C. Let BC = a, CA = b, AB = c, CD ⊥ AB, CD = p. Prove that
   a. cp = ab
   b. $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$
10. Solve for x & y

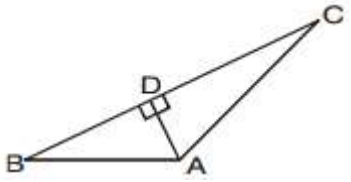
$$\frac{30}{x-y} + \frac{44}{x+y} = 10$$

$$\frac{40}{x-y} + \frac{55}{x+y} = 13$$

11. A person starts his job with a certain monthly salary and earns a fixed increment every year. If his salary was Rs. 4500 after 4 years of service and Rs. 5400 after ten years of service, find his initial salary and the annual increment.
12. After five years the age of Sudama will be three times that of his son. Five years ago Sudama was seven times that of his son. What are their

present ages?

13. If a, b are the zeroes of the polynomial $3x2 + 5x – 2$ then form a quadratic polynomial whose zeroes are 2a and 2b.
14. In Fig. AD ⊥ BC . Prove that $AB^2 + CD^2 = BD^2 + AC^2$:



15. Prove that the area of an equilateral triangle on the side of a square is half the area of an equilateral triangle formed on its diagonal.
16. Find the coordinates of the point where y-axis and the line represented by $\frac{x}{2} + \frac{y}{3} = 1$ intersect.
17. If a and b are the zeros of the quadratic polynomial $f(x) = x^2 – px + q$, then find the value of $\frac{1}{a^2} + \frac{1}{b^2}$.
18. A boatman rows his boat 35 km upstream and 55 km down stream in 12 hours. He can row 30 km. upstream and 44 km downstream in 10 hours. Find the speed of he stream and that of the boat in still water. Hence find the total time taken by the boat man to row 50 cm upstream and 77km downstream.
19. Solve for x & y:

    $139x + 56y = 641$

    $56x + 139y = 724$
20. Solve for p and q

$$\frac{p+q}{pq} = 1 \;\&\; \frac{p-q}{pq} = 6$$