INDIAN SCHOOL NIZWA - WORKSHEET

MATHEMATICS

4. Quadratic Equations

Name: _____ Date:_____ Class: X Sec:___

1.	If x=3 is one root of the quadratic equation $x^2 - 2kx - 6 = 0$, then find the value of k.
2.	Find the roots of the quadratic equation $\sqrt{3}x^2 - 2x - \sqrt{3} = 0$.
3.	Find the positive root of $\sqrt{3x^2 + 6} = 9$.
4.	If the quadratic equation $px^2 - 2px + 15 = 0$, has two equal roots then find the value of p.
5.	Solve the quadratic equation : $2x^2 + ax - a^2 = 0$
6.	Solve the following quadratic equation : $4x^2 + 4bx - (a^2 - b^2) = 0$
7.	Solve for x: $\frac{x+1}{x-1} + \frac{x-2}{x+2} = 4 - \frac{2x+3}{x-2}$.
8.	If the roots of the quadratic equation $(a-b)x^2 + (b-c)x + (c-a) = 0$ are equal. Prove that 2a=b+c.
9.	Three consecutive natural numbers are such that the square of the middle number exceeds the difference of the squares of the other two by 60. Find the numbers.
10.	Two water taps can fill a tank in 6 hours. The tap of larger diameter takes 9 hours less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank.
11.	A girl is twice as old as her sister. Four years hence, the product of their ages (in years) will be 160. Find their present ages.
12.	Sum of the areas of two squares is 400 sq.cm. If the difference of their perimeters is 16cm, find the sides of two sides.
13.	Solve the quadratic equation $abx^2 = (a+b)^2(x-1)$.
14.	A train travels at a certain average speed for a distance of 63km and then travels at a distance of72 km at an average speed of 6km/hr more than its original speed. If it takes 3 hours to complete total journey , what is the original average speed?
15.	A motor boat whose speed in still water is 18km/hr, takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.
16.	Solve for x: $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$: $a \neq b \neq 0, x \neq 0, x \neq -(a+b)$.

17.	To fill a swimming pool two pipes are used. If the pipe of larger diameter used for 4 hours and the pipe of smaller diameter for 9 hours, only half of the pool can be filled. Find, how long it would take for each pipe to fill the pool separately, if the pipe of smaller diameter takes 10 hours more than the pipe of larger diameter to fill the pool?
18.	A sum of ₹4000 was divided among x persons. Had there been 10 more persons, each would have got ₹ 80 less. Form the quadratic equations for this situation.
19.	Due to some technical problem, plane got delayed by half an hour. To reach the destination 1500km away in time, the speed of the plane was increased by 250km/hr than the usual speed. a) If x represents the usual speed of the plane, form the quadratic equation for the above situation. b) What is the usual speed of the plane? c) Find the increased speed of the plane.
20.	If the equation $(1+m^2)x^2+2mcx+c^2-a^2=0$ has equal roots then show that $c^2=a^2(1+m^2)$.