INTERNATIONAL INDIAN SCHOOL BURAIDAH

Worksheet 2026-27

CLASS: X

SUBJECT: MATHEMATICS

Chapter No:4 – QUADRATIC EQUATIONS

MCQ:

1-The roots of the equation $x^2 - 3x - 9$ are
(a) Real and distinct (b) Real and equal (c)imaginary roots (d)Roots are not equal

2-The discriminant of the quadratic equation $3x^2 - 4x - 2$ is equal to:
(a)40 (b) 20 (c) 24 (d) 48

3-Value of k for which the quadratic equation $2x^2 - kx + k$ =0 has equal roots.
(a) 0 only (b) 8 only (c) 4 (d) 0,8

4-Which of the following is not a quadratic equation
(a)2(x+1)^2= 4x^2 -2x +1 (b) 2x -$x^2 = x^2 + 5$

(c)($\sqrt{2}$x +$\sqrt{3}$x)^2+x^2 = $3x^2 - 5x$ (d) $(x^2 + 2x)^2 = x^4 + 3 + 4x^2$

5-The roots of the quadratic equation $x^2 - 0.04 = 0$
(a) ± 0.2 (b) ± 0.02 (c) 0.4 (d) 2

6-For what value of k ,the equation $kx^2 - 6x - 2 = 0$ has real roots?
(a) k≤ -9/2 (b) k≥ -9/2 (c) k≥ -2 (d) None of these.

7-If the sum of the roots of an equation is 6 and one root is 3-$\sqrt{5}$ then the equation is
(a) $x^2 - 6x + 4$ (b) $x^2 - 4x + 6$ (c) $x^2 - 6x + 5 = 0$ (d) None of these

8-The length of a rectangular field exceeds its breadth by 8 m and the area of the field is 240 sq m . The breadth of the field is
(a) 20 m (b) 30 m (c) 12 m (d) 16 m

Assertion and reasoning :

Direction: In the following questions, a statement of assertion (A) is followed by statement of reason (R). Mark the correct choice as .

a) Both assertion (A) and reason (R) are true and reason R is correct explanation of assertion (A)
(b) Both assertion (A) and reason (R) are true and reason R is not the correct explanation of assertion (A)
(c) Assertion (A) is true but reason (R) is false.
(d)Assertion (A)is false but reason (R) is true.

1-Assertion: If one root of the quadratic equation $6x^2 - x - k = 0$ is 2/3, then the value of k is 2.
Reason: The quadratic equation $ax^2 + bx + c = 0$, a≠0 has atmost two roots.

2-Assertion: The roots of the quadratic equation $x^2 + 2x + 2 = 0$ are imaginary
Reason: If discriminant D= $b^2 - 4ac < 0\ then$ the roots of quadratic equation $ax^2 + bx + c = 0$ are imaginary.

Subjective Questions:

1-Find the nature of roots of the quadratic equation $2x^2 - 4x + 3 = 0$
2-For what value of k, the roots of the equation $x^2 + 4x + k = 0 \quad are\ real$
3-If α and β are the roots of the quadratic equation $x^2 - 7x + 10 = 0$, $\alpha/\beta + \beta/\alpha$
4-If -5 is a root of the quadratic equation $2x^2 + px - 15 = 0$ and the quadratic equation p (x^2+x) +k =0 has equal roots, then find the value of k.
5- A two-digit number is four times the sum of the digits. It is also equal to 3 times the product of the digits. Find the number.

6-Solve the following quadratic equations by factorization method

(a) $3(x^2-4) = 5x$
(b) $3x^2 - 2\sqrt{6}x + 2 = 0$
(c) $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$
(d) $2x^2 - 2x + 1/8 = 0$

7-Find the roots of the following quadratic equations by using quadratic formula

(a) $4x^2 + 4\sqrt{3}x + 3 = 0$
(b) $p^2x^2 + (p^2-q^2)x - q^2 = 0$
(c) $x^2 + 5x - (a^2 + a - 6) = 0$
(d) $abx^2 + (b^2 - ac)x - bc = 0$

8-Find the value of k for which the roots of the equation $3x^2 - 10x + k = 0$ are reciprocal of each other.

9-The sum of two numbers is 15. If the sum of their reciprocals is 3/10, find the two numbers.

10-The sum of the reciprocals of Varun's age (in years) 3 yrs ago and 5 yrs from now is 1/3 Find his present age

11-If the product of the two consecutive odd numbers is 143, then find the numbers

12-Divide 29 into two parts so that the sum of the squares of the parts is 425

13-In a flight of 600km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200km/hr and the time of flight increased by 30 minutes. Find the duration of the flight.

14-A train travels 180km at a uniform speed. If the speed had been 9km/hour more, it would have taken 1 hour less for the same journey. Find the speed of the train

15-If the root of the quadratic equation $(a^2 + b^2)x^2 - 2(ac + bd)x + (c^2 + d^2) = 0$ are equal, prove that ad = bc

16-The hypotenuse of a right-angled triangle is 6m more than twice the length of the shortest side. If the length of the third side is 2m less than the hypotenuse, then find all sides of the triangle.

****