National Institute of Open Schooling (NIOS)
Secondary Course : Mathematics
Lesson 6 : Quadratic Equations
Worksheet - 6

1. Write any two quadratic equations from the product of any two linear equations.
2. Write any two quadratic equations in its standard form. Also write any two quadratic equations which are not in standard form, express them in standard form.
3. Without determining the roots of the following quadratic equations, comment on the nature and number of solutions of the quadratic equations:
   i. $x^2 - 3x - 10 = 0$
   ii. $2x^2 + 4x + 2 = 0$
4. If α, β are the roots of the equation $x^2 - px + q = 0$, then find the value of $\alpha^3 + \beta^3$.
5. If the roots of the quadratic equation $ax^2 + bx + c = 0$ are reciprocal to each other, then find the relationship between 'a' and 'c'.
6. Develop the quadratic equations whose roots are
   (i) 3 and – 5
   (ii) – 5 and 3
   (iii) – 7, – 5
7. If a and b are the roots of the equation $x^2 - 6x + 6 = 0$, then find the value of $(a^2 + b^2)$
8. If the quadratic equation $x^2 - 5x + P = 0$ has equal roots, then find the value of $p + \frac{1}{p}$.
9. In the quadratic equation $ax^2 + bx + c = 0$, p and q be the roots of the equation.

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Then find out the value of $p^2 + q^2$.

10. Develop any two quadratic equations in which discriminant (D) is a perfect square.

Write your observations on the nature of the roots.