# ACHIEVERS FOUNDATION
## QUADRATIC EQUATION

**1**     The nature of the roots of the equation $x^2 - 5x + 7 = 0$ is

(A) No real roots          (B) 1 real root

(C) Can't be determined          (D) None of these

**2**     The roots of $a^2x^2 + abx = b^2$, $a \neq 0$ are :

(A) Equal          (B) Non-real

(C) Unequal          (D) None of these

**3**     The equation $x^2 - px + q = 0$ p, q $\in$ R has no real roots if :

(A) $p^2 > 4q$          (B) $p^2 < 4q$

(C) $p^2 = 4q$          (D) None of these

**4**     Solve the following quadratic equation by factorization method $x^2 - 2ax + a^2 - b^2 = 0$

**5**     Solve the equation $x^2 - (\sqrt{3}+1)x + \sqrt{3} = 0$ by the method of completing the square.

**6**     Find the nature of the roots of the following equations. If the real roots exist, find them.

(i) $2x^2 - 6x + 3 = 0$          (ii) $2x^2 - 3x + 5 = 0$

**7**     Form the quadratic equation in each of the following cases when the roots are :

(i) $2+\sqrt{5} \, 2-\sqrt{5}$          (ii) a and $\dfrac{1}{a}$

**8.**     Find the value of k if the quadratic equation $3x^2 - k\sqrt{3}\,x + 4 = 0$ has real roots.

**9.**     (i) If √2 is a root of the equation $kx^2 + \sqrt{2}x - 4 = 0$, find the value of k.

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(ii) If a is a root of the equation $x^2 - (a + b)x + k = 0$, find the value of k.

**10.    Solve the following equations by factorization:**

1. (i) $x^2 - 3x - 10 = 0$          (ii) $x(2x + 5) = 3$

2. (i) $3x^2 - 5x - 12 = 0$          (ii) $21x^2 - 8x - 4 = 0$

3. (i) $3x^2 = x + 4$          (ii) $x(6x - 1) = 35$

4. (i) $6p^2 + 11p - 10 = 0$          (ii) $2/3x2 - 1/3x = 1$

5. (i) $3(x - 2)^2 = 147$          (ii) $1/7(3x - 5)^2 = 28$

6. $x^2 - 4x - 12 = 0$, when $x \in N$

7. $2x^2 - 9x + 10 = 0$, when     (i) $x \in N$                (ii) $x \in Q$

8. (i) $a^2x^2 + 2ax + 1 = 0$, $a \neq 0$          (ii) $x^2 - (p + q)x + pq = 0$

9. (i) $\sqrt{3}x^2 + 10x + 7\sqrt{3} = 0$          (ii) $4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0$.

10.  (i) $2/x^2 - 5/x + 2 = 0$, $x \neq 0$          (ii) $x^2/15 - x/3 - 10 = 0$.

11. (i) $3x - 8/x = 2$          (ii) $(x + 2)/(x + 3) = (2x - 3)/(3x - 7)$.

12. (i) $8/(x + 3) - 3/(2 - x) = 2$          (ii) $x/(x - 1) + (x - 1)/x = 2½$

13. (i) $(x + 1)/(x - 1) + (x - 2)/(x + 2) = 3$          (ii) $1/(x - 3) - 1/(x + 5) = 1/6$.

14. $1/(x + 6) + 1/(x - 10) = 3/(x - 4)$.