



ASSIGNMENT
CLASS _ X
QUADRATIC EQUATION

1. Solve:- $\frac{1}{(x-1)(x-2)} + \frac{1}{(x-2)(x-3)} + \frac{1}{(x-3)(x-4)} = \frac{1}{6}$
2. On a pillar 9 cubit high is perched a peacock. From a distance of 27 cubits from the base of the pillar, a snake is coming to its hole at the bottom of the pillar. Seeing the snake, the peacock pounces on it. If their speeds are equal, at what distance from the hole is snake caught?
3. A dealer sells a toy for Rs 24 and gains as much percent as the cost price of a toy. Find the cost price of the toy.
4. If the squared difference of the zeros of the quadratic polynomial $x^2 + px + 45$ is equal to 144, find the value of p.
5. Find two consecutive positive integers, sum of whose squares is 25.
6. Solve for x, using the quadratic formula: $ax^2 - (a^2 + b^2)x + ab = 0$
7. Solve:
 $\sqrt{y+3} + \sqrt{y} = 1$
8. Solve:- $x^2 + \left(\frac{a}{a+b} + \frac{a+b}{a}\right)x + 1 = 0$
9. For what value of k, 3 is the root of the equation $2x^2 + x + k = 0$.
10. If $x^2 - 5x + 1 = 0$, the value of $\left(x + \frac{1}{x}\right)$ is :
11. If one root of the quadratic equation $2x^2 + kx - 6 = 0$ is 2, find the value of k. Also find the other root.
12. Find the roots of the following equation: $\frac{1}{x+3} - \frac{1}{x-6} = \frac{9}{20}$; $x \neq -3, 6$.
13. At present Asha's age (in years) is 2 more than the square of her daughter Nisha's age. When Nisha grows to her mother's present age, Asha's age would be one year less than 10 times the present age of Nisha. Find the present ages of both Asha and Nisha.
14. Two circles touch internally. The sum of their areas is $116\pi \text{ cm}^2$ and distance between their centres is 6 cm. find the radii of the circles.
15. If the roots of the equation $(b - c)x^2 + (c - a)x + (a - b) = 0$ are equal, then prove that $2b = a + c$.
16. Find the roots of the quadratic equation $\sqrt{2}x^2 - 3x - 2\sqrt{2} = 0$ by the method of completing the square.
17. Is the following situation possible? If so, find the speed of stream.
The speed of the boat in still water is 8 km/hr. It can go 15 km upstream and 22 km downstream in 5 hours.
18. Two pipes running together can fill a cistern in 6 minutes. If one pipe takes 5 minutes more than the other to fill the cistern, find the time in which each pipe would fill the cistern.
19. If price of a book is reduced by Rs.5, a person can buy 5 more books for Rs.300. find the original price of the book.
20. The denominator of a fraction is one more than twice the numerator. If the sum of fraction and its reciprocal is $2\frac{16}{21}$, find the fraction.

21. 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 larger one
22. An aeroplane left 50 minutes later than its scheduled time. In order to reach the destination, 1250 km away, in time, it had to increase its speed by 250km/hr from its usual speed. Find its usual speed.
23. In a flight of 2800 km, an aircraft was slowed down due to bad weather. Its average speed was reduced by 100 km / hr and the time increased by 30 minutes. Find the original duration of flight.
24. The equation $5x^2 + (9 + 4p)x + 2p^2 = 0$ and $5x + 9 = 0$ are satisfied by the same value of x . find the value of p .
25. A line segment AB of 2m length is divided at C into two parts such that $AC^2 = AB \times CB$. Find the length of CB.
26. A two digit number is such that the product of its digits is 35. When 18 is added to the number, the digits interchange their places. Find the number.
27. Solve the quadratic equation $(4x^2 - 9) - 2(2x - 3) + x(2x - 3) = 0$ by factorization method.
28. Solve :- $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}, x \neq 0, x \neq -(a + b)$.
29. A train covers a distance of 90 km at a uniform speed. Had the speed been 15 km/hr more, it would have taken 30 minutes less for the journey. Find the original speed of the train.
30. A rectangular field is 20 m long and 14 m wide. There is a path of equal width all around it having an area of 111 sq. metres. Find the width of the path on the outside.
31. A train travels at a certain average speed for a distance of 63 km and then travels a distance of 72 km at an average speed of 6 km/h more than its original speed. If it takes 3 hours to complete the total journey, what is its original average speed?
32. Find a natural number whose square diminished by 84 is equal to thrice of 8 more than the given number.
33. A natural number, when increased by 12, equals 160 times its reciprocal. Find the number.
34. A train, travelling at a uniform speed for 360 km, would have taken 48 minutes less to travel the same distance if its speed were 5 km/h more. Find the original speed of the train.
35. At present Asha's age (in years) is 2 more than the square of her daughter Nisha's age. When Nisha grows to her mother's present age, Asha's age would be one year less than 10 times the present age of Nisha. Find the present ages of both Asha and Nisha.
36. If α, β are the roots of the equation $2x^2 - 6x + a = 0$ and $2\alpha + 5\beta = 12$, find the value of a .
37. If a and b are roots of the equation $2x^2 + 7x + 5 = 0$ then write a quadratic equation whose roots are $2a + 3$ and $2b + 3$.
38. If difference of the roots of the equation $x^2 - 7x + 2k = 0$ is 1 then find the value of k .
39. If α, β are roots of the equation $x^2 + 5x + 5 = 0$ then write a quadratic equation whose roots are $\alpha + 1$ and $\beta + 1$.
40. Find three consecutive positive integers whose product is equal to sixteen times their sum.