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CBSE 10th Quadratic Equation Unsolved Paper

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CBSE 10th Quadratic Equation

Unsolved Paper

Question 1:

In each of the following, find the value of k for which the given value is a solution of the given equation:

- (i) $7x^2 + kx - 3 = 0, x = \frac{2}{3}$
- (ii) $x^2 - x(a + b) + k = 0, x = a$
- (iii) $kx^2 + \sqrt{2}x - 4 = 0, x = \sqrt{2}$
- (iv) $x^2 + 3ax + k = 0, x = -a$

Question 2:

The product of two consecutive positive integer is 306. Form the quadratic equation to find the integers, if x denotes the smaller integer.

Question 3:

John and Jivanti together have 45 marbles. Both of them lost 5 marbles each, and the product of the number of marbles they now have is 128. Form the quadratic equation to find how many marbles they had to start with, if John had x marbles.

Question 4:

A cottage industry produces a certain number of toys in a day. The cost of production of each toy (in rupees) was found to be 55 minus the number of articles produced in a day. On a particular day, the total cost of production was Rs. 750. If x denotes the number of toys produced that day, form the quadratic equation.

Question 5:

The height of a right triangle is 7 cm less than its base. If the hypotenuse is 13 cm, form the quadratic equation to find the base of the triangle.

Question 6:

An express train takes 1 hour less than a passenger train to travel 132 km between Mysore and Bangalore. If the average speed of the express train is 11 *km/hr* more than that of the passenger train, form the quadratic equation to find the average speed of express train.

Question 7:

A train travels 360 km at a uniform speed. If the speed had been 5 *km/hr* more, it would have taken 1 hour less for the same journey. Form the quadratic equation to find the speed of the train.

Question 8:

Solve the following quadratic equation by factorization:

1. $(x - 4)(x + 2) = 0$

2. $(2x + 3)(3x - 7) = 0$

3. $4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0$

4. $\sqrt{2}x^2 - 3x - 2\sqrt{2} = 0$

5. $a^2x^2 - 30bx + 2b^2 = 0$

6. $x^2 - (\sqrt{2} + 1)x + \sqrt{2} = 0$

$$7. x^2 - (\sqrt{3} + 1)x + \sqrt{3} = 0$$

$$8. 4x^2 + 4bx - (a^2 - b^2) = 0$$

$$9. \left(x - \frac{1}{2}\right)^2 = 4$$

$$10. x^2 - 4\sqrt{2}x + 6 = 0$$

$$11. \frac{x+3}{x+2} = \frac{3x-7}{2x-3}$$

$$12. \frac{2x}{x-4} + \frac{2x-5}{x-3} = \frac{25}{3}$$

$$13. \frac{x+3}{x-2} - \frac{1-x}{x} = \frac{17}{4}$$

$$14. \frac{x+1}{x-1} - \frac{x-1}{x+1} = \frac{5}{6}, \quad x \neq 1 \text{ and } x \neq -1$$

$$15. \frac{m}{n}x^2 + \frac{n}{m} = 1 - 2x$$

$$16. \frac{1}{(x-1)(x-2)} + \frac{1}{(x-2)(x-3)} + \frac{1}{(x-3)(x-4)} = \frac{1}{6}$$

$$17. x^2 + 2ab = (2a + b)x$$

$$18. (a + b)^2x^2 - (4ab) - (a - b)^2 = 0$$

$$19. x^2 + \left(a + \frac{1}{a}\right)x + 1 = 0$$

$$20. x - \frac{1}{x} = 3, x \neq 0$$

Question 9:

In the following, determine whether the given quadratic equation have real roots and if so, find the roots:

(i) $16x^2 = 24x + 1$

(ii) $x^2 + x + 2 = 0$

(iii) $\sqrt{3}x^2 + 10x - 8\sqrt{3} = 0$

(iv) $3x^2 - 2x + 2 = 0$

(v) $2x^2 - 2\sqrt{6}x + 3 = 0$

(vi) $3a^2x^2 + 8abx + 4b^2 = 0, a \neq 0$

(vii) $3x^2 + 3\sqrt{b}x - b = 0$

(viii) $x^2 - 2x + 1 = 0$

(ix) $2x^2 + 5\sqrt{3} + 6 = 0$

(x) $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$

Question 10:

The sum of the reciprocals of Ram's ages, (in years) 3 years ago and 5 years from now is $\frac{1}{3}$. Find his present age.

Question 11:

In a class test, the sum of Shefali's marks in Mathematics and English is 30. Had she got 2 marks more in Mathematics and 3 marks less in English, the product of their marks would have been 210. Find her marks in the two subjects.

Question 12:

The diagonal of a rectangular field is 60 metres more than the shorter side. If the longer side is 30 metres more than the shorter side, find the sides of the field.

Question 13:

The difference of squares of two numbers is 180. The square of the smaller number is 8 times the larger number. Find the two numbers.

Question 14:

A train travels 360 km at a uniform speed. If the speed had been 5 km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train.

Question 15:

Two water taps together can fill a tank in hours. The tap of larger diameter takes 10 hours less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank.

Question 16:

An Express train takes 1 hour less than a passenger train to travel 132 km between Mysore and Bangalore (without taking into consideration the time they stop at intermediate stations). If the average speeds of the express train is 11 km/h more than that of the passenger train, find the average speed of the two trains.

Question 17:

Sum of the areas of two squares is $468 m^2$. If the difference of their perimeters is 24 m, find the sides of the two squares.

Question 18:

Three consecutive positive integers are such that the sum of the square of the first and the product of other two is 46. Find the integers.

Question 19:

The difference of squares of two numbers is 88. If the larger number is 5 less than twice the smaller number, then find the two numbers.

Question 20:

The difference of square of two numbers is 180 . the square of the smaller number is 8 times the large numbers find two numbers.

Question 21:

The speed of a boat in still water is 8 km/hr. It can go 15km upstream and 22 km downstream in 5 hours. Find the speed of the stream.

Question 22:

A fast train takes one hour less than a slow train for a journey of 200 km. If the speed of the slow train is 10 km/hr less than that of the fast train, find the speed of the two trains.

Question 23:

A passenger train takes one hour less for a journey of 150 km if its speed is increased by 5 km/hr from its usual speed. Find the usual speed of the train.

Question 24:

The time taken by a person to cover 150 km was 2.5 hrs more than the time taken in the return journey. If he returned at a speed of 10 km/hr more than the speed of going, what was the speed per hour in each direction?

Question 25:

A Plane left 40 minutes late due to bad weather and in order to reach its destination, 1600 km away in time, it had to increase its speed by 400 km/hr from its usual speed. Find the usual speed of the plane.

Question 26:

An aeroplane takes 1 hour less for a journey of 1200 km if its speed is increased by 100 km/hr from its usual speed. Find its usual speed.

Question 27:

A passenger train takes 2 hours less for a journey of 300 km if its speed is increased by 5 km/hr from its usual speed. Find the usual speed of the train.

Question 28:

A train covers a distance of 90 km at a uniform speed. Had the speed been 15km/hr more, it would have taken 30 minutes less for the journey. Find the original speed of the train.

Question 29:

A train travels 360 km at a uniform speed. If the speed had been 5 km/hr more, it would have taken 1 hour less for the same journey. Find the speed of the train.

Question 30:

Rs. 9000 were divided equally among a certain number of persons. Had there been 20 more persons, each would have got Rs. 160 less. Find the original number of persons.

Question 31:

The product of Shika's age five years ago and her age 8 years later is 30, her age at both times being given in years. Find her present age.

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