CBSE SAMPLE PAPER

MATHS

CLASS 10

1. For what value(s) of 'a' quadratic equation $30ax^2 - 6x + 1 = 0$ has no real roots?

2. If one root of the quadratic equation $3x^2 + px + 4 = 0$ is 2/3, then find the value of p and the other root of the equation.

3. The roots α and β of the quadratic equation $x^2 - 5x + 3(k - 1) = 0$ are such that α-β=1. Find the value k.

4. An AP 5, 8, 11…has 40 terms. Find the last term. Also find the sum of the last 10 terms.

5. Solve for x: 9x² - 6px + (p² - q²) = 0

6. If Ritu were younger by 5 years than what she really is, then the square of her age would have been 11 more than five times her present age. What is her present age?

7. How many terms of the AP 24, 21, 18, ... must be taken so that their sum is 78?

8. If the co-ordinates of points A and B are (-2,- 2)and (2, - 4) respectively, find the co-ordinates of P such that $AP = \frac{3}{7}AB$ where P lies on the line segment AB.

9. Find a quadratic polynomial whose zeroes are 5-3√2 and 5+3√2.

10. 3 bells ring at an interval of 4,7 and 14 minutes. All three bell rang at 6 am, when the three balls will the ring together next?

11. Find the value of k for which the quadratic equation $\mathbf{2\,x^2 - kx + k = 0}$ has equal roots.

12. If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$; x and y are prime numbers then HCF(a, b) is _____.

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13. HCF OF 52 and 130 by Division algorithm method_____.

14. The ratio of LCM and HCF of the least composite and the least prime numbers is :
    (A) 1:2   (B) 2:1   (C)1:1   (D) 1:3

15. If one root of the polynomial $p(y) = 5y^2 + 13y + m$ is reciprocal of other,then find the value of 'm'.

16. Find the roots of i) $8\sqrt{3}\,x^2 - 2\sqrt{3}x - \sqrt{3}$ ii) $16x - 4x^2$

17. For what value of k, the pair of equations 4x – 3y = 9, 2x + ky = 11 has no solution?

18.   Five years hence, the age of Jacob will be three times that of his son. Five years ago, Jacob's age was seven times that of his son. What are their present ages?

19.   Speed of a boat in still water is 15 km/h. It goes 30 km upstream and returns back at the same point in 4 hours 30 minutes. Find the speed of the stream.

20. Do the equations 4x + 3y – 1 = 5 and 12x + 9y = 15 represent a pair of coincident lines?

21. The father's age is six times his son's age. Four years hence, the age of the father will be four times his son's age. The present ages, in years, of the son and the father are, respectively.

22. Find the roots of $x - \frac{1}{x} = 3,\ x \neq 0$

23. A takes 6 days less than the time taken by B to finish a piece of work. If both A and B together can finish it in 4 days, find the taken by B to finish the work.

24. Sum of the areas of two squares is 400 cm^2. If the difference of their perimeters is 16 cm, find the sides of the two squares.

25. The roots of the quadratic equation $x^2 + 5x - (\alpha + 1)(\alpha + 6) = 0$, where α is a constant.

26. The difference of two numbers is 4. If the difference of their reciprocals is $\frac{4}{21}$, find the two numbers.

27. A motor boat whose speed is 18 km/hr in still water takes 1 hour more to go 24km upstream than to return the same point. Find the speed of the stream.

28. The perimeter of a right triangle is 60 cm. Its hypotenuse is 25 cm. Find the area of the triangle.

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29. Find two consecutive odd positive integers, sum of whose squares is 290.

30. The mid point of the line segment joining A(2a,4) and B(-2,3b) is (1,2a+1). Find the values of and b.

31. Find the distance of the point (-3, 4) from the x-axis.

32. Three vertices of a parallelogram taken in order are (-1, 0), (3, 1) and (2, 2) respectively. Find the coordinates of fourth vertex.

33. Find the ratio in which the line 3x + 4y . 9 = 0 divides the line segment joining the points (1, 3) and (2, 7). Given that 5 is irrational, prove that $2\sqrt{5} - 3$ is an irrational number.

34. Find the value(s) of k so that the pair of equations x + 2y = 5 and 3x + ky + 15 = 0 has a unique solution.