CBSE 10TH CLASS MATHS SA-1 QUESTION PAPER

Section-1 (1 mark each)

Attempt all the questions under this section

1. Express number 156 as product of its prime factors.
2. Without actually performing long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
   (i) 17/8
   (ii) 77/210
3. The LCM of two numbers is 182 and their HCF is 13. If one of the numbers is 26, Find the other.
4. Which of the following is not an A.P.?
   (A) – 1.2, 0.8, 2.8, ……. (B) 3, 3+√2, 3+2√2, …..
   (C) 4/3, 7/3, 9/3, 12/3, ….. (D) -1/5, -2/5, -3/5, …..
5. Find out whether the pair of linear equations **9x + 10y = 42** and **9x - 10y = 14** is consistent or inconsistent.
6. Find out whether the lines representing the following pairs of linear equations **5x - 4y + 8 = 0 and 2x - y + 9 = 0**, intersect at a point, are parallel or coincident.
7. Check whether the equation **(x-2)(x+1) = (x-1)(x+3)** is a quadratic equation or not.
8. Check whether the equation **(x-3)(2x+1) = x(x+5)** is a quadratic equation or not.
9. Find the nature of the roots of the quadratic equation $\mathbf{2x^2 - 6x + 3 = 0}$.
10. Find the value of k for which the following equation **kx(x-2) + 6 = 0** has equal roots.
11. For the AP: 5/4, 3/4, 1/4, -1/4, …… write the first term **a** and the common difference **d**.
12. For the AP: 4, 6.5, 9, 11.5, …… write the first term **a** and the common difference **d**.
13. Find out whether the given list of numbers form an AP or not. If it forms, write down the next two terms.
    (i) 1, -1, -3, -5 ….
    (ii) 3, 3, 3, 5, 5 ....
14. Write the first four terms of the AP, where the first term a = 10 and the common difference d = -3.
15. Write the first four terms of the AP, where the first term a = 1/3 and the common difference d = -1/2.
16. Find out whether the pair of linear equations **2x + y – 6 = 0** and **4x - 2y – 4 = 0** is consistent or inconsistent.
17. Find out whether the lines representing the following pairs of linear equations **6x - 3y + 10 = 0 and 2x - y + 9 = 0**, intersect at a point, are parallel or coincident.
18. Find the HCF and LCM of 6, 72 and 120, using the prime-factorisation method.
19. Find the LCM and HCF of the pair of integers, 26 and 91.

20. Find the roots of the quadratic equation **$100x^2 - 20x + 1 = 0$** by factorisation method.

Section-2 (2 marks each)

Attempt all the questions under this section

1. Romila went to a stationary and purchased 3 pencils and 2 erasers for Rs. 13. Her friend Sonali bought 4 pencils and 3 erasers of the same kind for Rs. 18. Represent the situation algebraically.
2. Given the linear equation $2x + 3y - 8 = 0$, write another linear equation in two variables such that the geometric representation of the so formed is:
   (i) Intersecting lines
   (ii) Parallel lines
3. Find two numbers whose sum is 35 and product is 306.
4. Find the common difference d and three more terms of the following A.Ps.
   (i) 2, 5/2, 3, 7/2….
   (ii) -20, -12.5, -5, 2.5….
5. Find the missing terms in the following A.Ps
   (i) 2, ……, 26
   (ii) 5, ……, ……., 12.5
   (iii) 6, ……, ……., 1.5
   (iv) ……., 13, ……., 3
6. Rohan's mother is 23 years older than him. The product of their ages 3 years from now will be 598. Calculate Rohan's mother's present age.

Section-3 (3 marks each)

Attempt all the questions under this section

1. Check whether 6^n can end with the digit 0 for any natural number n.
2. Use elimination method to find all possible solutions of the following pair of linear equations: (i) $2x + 3y = 8$, $4x + 6y = 7$.
3. Meena went to a bank to withdraw Rs. 2000. She asked the cashier to give her Rs. 50 and Rs. 100 notes only. Meena got 30 notes in total. Find how many notes of Rs.50 and Rs.100, she received.
4. Solve the following quadratic equations by the method of completing the square.
   (i) $2x^2 - 5x + 3$
   (ii) $5x^2 - 6x - 2 = 0$
5. Is it possible to design a rectangular park of perimeter 100 m and Area 600 m^2. If so, find its length and breadth

   (or)

   Find the discriminant of the equation $3x^2 - 2x + 1/3 = 0$ and also the nature of its roots. Find the roots if they are real.
6. Which term of the A.P: 3, 8, 13, 18…..will be 130 more than its 16^{th} term?
7. Determine the A.P whose third term is 16 and the 7^{th} term exceeds the 5^{th} term by 12.

8. Find the sum of first 26 terms of the list of numbers whose n^{th} term is given by $a_n = 7 + 3n$

Section-4 (4 marks each)
Attempt all the questions in this section

1. Prove that √3 is irrational.
2. Explain why 7×11×13+13 and 7×6×5×4×3×2×1+5 are composite numbers.
3. A boat goes 30 km upstream and 44 km downstream in 10 hours. In, 13 hours, it can go 40 km upstream and 55 km downstream. Determine the speed of the current and of the boat in still water.
4. Sum of the areas of two squares is 656 m^2. If the difference of their perimeters is 16 m, find the sides of the two squares.
5. A manufacturer of TV sets produced 600 sets in the third year and 700 in the 7^{th} year. Assuming that the production increases uniformly by a fixed number every year, find:
   (i) The production in the 1^{st} year.
   (ii) The total production in first 7 years
6. 200 logs are stacked in the following manner: 20 logs in the bottom row, 19 in the next row, 18 in the row next to it and so on. In how many rows are the 200 logs placed and how many logs are in the top row?