Holidays Home work (2025-26)
Class –X
Subject - Maths

1.The LCM of two numbers is 14 times their HCF. The sum of LCM and HCF is 750. If one number is 250, then find the other number.

2.On a morning walk, three men step off together and their steps measure 54 cm, 60 cm and 48 cm, respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps?

3.The LCM of two numbers is M times their HCF. The sum of LCM and HCF is 750. If one number is 250, then find the other number.

4.Check whether 6^n with the digit 0 for any natural number n.

5. Express each number as a product of its prime factors:
(i) 140 (ii) 156 (iii) 3825 (iv) 5005 (v) 7429

6.Given that HCF (306, 657) = 9, find LCM (306, 657).

7. Prove that $3 + 2\sqrt{5}$ is irrational.

8. What is the HCF of the smallest prime number and the smallest composite number?

9. Find HCF and LCM of 404 and 96 and verify that HCF × LCM = Product of the two given numbers.

10. Find two irrational numbers lying between $\sqrt{2}$ and $\sqrt{3}$.

11. Find the value of "p" from the polynomial $x^2 + 3x + p$, if one of the zeroes of the polynomial is 2.

12. Compute the zeroes of the polynomial $4x^2 - 4x - 8$. Also, establish a relationship between the zeroes and coefficients.

13. Find the quadratic polynomial if its zeroes are 0, $\sqrt{5}$.

14. Find the value of "x" in the polynomial $2a^2 + 2xa + 5a + 10$ if $(a + x)$ is one of its factors.

15. How many zeros does the polynomial $(x - 3)^2 - 4$ have? Also, find its zeroes.

16. α and β are zeroes of the quadratic polynomial $x^2 - 6x + y$. Find the value of 'y' if $3\alpha + 2\beta = 20$.

17. If the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ are $a - b$, a, $a + b$, then find the value of a and b.

18. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes, respectively.
(i) 1/4, -1 (ii) 1, 1 (iii) 4, 1

19. Obtain all other zeroes of $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are $\sqrt{(5/3)}$ and $-\sqrt{(5/3)}$.

20. Find a quadratic polynomial whose zeroes are reciprocals of the zeroes of the polynomial $f(x) = ax^2 + bx + c$, $a \neq 0$, $c \neq 0$.

21. Write whether the following pair of linear equations is consistent or not: $x + y = 14$
$x - y = 4$

22. Find the number of solutions of the following pair of linear equations:
$x + 2y - 8 = 0$ $2x + 4y = 16$

23.. For what value of k, the following pair of linear equations has infinitely many solutions?
$10x + 5y - (k - 5) = 0$; $20x + 10y - k = 0$

24.Find the value of k for which the following pair of linear equations have infinitely many solutions:
$2x + 3y = 7$; $(k - 1)x + (k + 2)y = 3k$

25. For what value of k will the following pair of linear equations have no solution? $2x + 3y = 9$; $6x + (k - 2)y = (3k - 2)$.

26.Find the value(s) of k for which the pair of linear equations $kx + 3y = k - 2$ and $12x + ky = k$ has no solution.

27. Without drawing the graph, find out whether the lines representing the following pair of linear equations intersect at a point, are parallel or coincident: $9x - 10y = 21$, $3\,2x - 5\,3y = 7$

28. The sum of numerator and denominator of a fraction is 3 less than twice the denominator. If each of the numerator and denominator is decreased by 1, the fraction becomes $1\,2$. Find the fraction

29. Solve the following pair of linear equations for x and y: $2(ax - by) + (a + 4b) = 0$; $2(bx + ay) + (b - 4a) = 0$

30. A number consists of two digits. When the number is divided by the sum of its digits, the quotient is 7. If 27 is subtracted from the number, the digits interchange their places. Find the number.
31. Find the distance of the point P (2, 3) from the x-axis.
32. Find a relation between x and y such that the point (x, y) is equidistant from the points (7, 1) and (3, 5).
33. Find the coordinates of the points of trisection (i.e., points dividing into three equal parts) of the line segment joining the points A(2, – 2) and B(– 7, 4).
34. Find the ratio in which the line segment joining the points (– 3, 10) and (6, – 8) is divided by (– 1, 6).
35. Find the value of k if the points A(2, 3), B(4, k) and C(6, –3) are collinear.
36. Name the type of triangle formed by the points A (–5, 6), B (–4, –2) and C (7, 5).
37. If the point C(-1, 2) divides internally the line segment joining A(2, 5) and B(x, y) in the ratio 3 : 4, find the coordinates of B.
38. Find the ratio in which the line x – 3y = 0 divides the line segment joining the points (-2, -5) and (6, 3). Find the coordinates of the point of intersection.
39. Write the coordinates of a point on the x-axis which is equidistant from points A(-2, 0) and B(6, 0).
40. If A(-2, 1), B(a, 0), C(4, b) and D(1, 2) are the vertices of a parallelogram ABCD, find the values of a and b. Hence, find the lengths of its sides.

CASE STUDY 1:

A seminar is being conducted by an Educational Organisation, where the participants will be educators of different subjects. The number of participants in Hindi, English and Mathematics are 60, 84 and 108 respectively.

1. In each room the same number of participants are to be seated and all of them being in the same subject, hence maximum number participants that can accommodated in each room are
2. What is the minimum number of rooms required during the event?
3. The LCM of 60, 84 and 108 is
4. The product of HCF and LCM of 60,84 and 108 is
5. 108 can be expressed as a product of its primes as

Case study question no. 2

A school planned to develop a rectangular garden in front of the main building. The gardening committee decided to keep the length of the garden 3 meters more than its width. They also decided to tile the boundary of the garden with a walking path of uniform width on all sides. Let the width of the garden be x meters.

1. Write the expression for the length of the garden in terms of x.
2. Find the area of the garden as a polynomial in x.
3. If the uniform walking path is 1 meter wide around the garden, write the expression for the total area including the path.
4. Find the area of just the path in terms of x.
5. If the width of the garden is 5 m, find the numerical value of the area of the path.

Case study question no.3

Ravi and his father went to a book fair. Ravi bought 2 pens and 3 notebooks for ₹90. His father bought 3 pens and 2 notebooks for ₹100. They decided to find out the price of one pen and one notebook.

Let the price of a pen be ₹x and that of a notebook be ₹y.

1. Form a pair of linear equations representing the situation.
2. Write the equations in standard form.
3. Use any method (substitution, elimination) to solve the equations.
4. Find the cost of one pen and one notebook.
5. If Ravi wanted to buy 5 pens and 5 notebooks, how much would he have to pay?

Case study question no. 4

A school has installed three CCTV cameras at different corners of its rectangular playground to ensure student safety. The coordinates of the cameras (in meters) are as follows:

- Camera A: (2, 3)
- Camera B: (10, 3)
- Camera C: (10, 8)

To monitor blind spots, the school wants to calculate distances and areas to optimize camera coverage.

Questions:

1. Find the distance between Camera A and Camera B.
2. Find the distance between Camera B and Camera C.
3. Find the distance between Camera C and Camera A.
4. Verify if the triangle formed by these three cameras is a right-angled triangle.

Do the following activities

- To find zeros of the polynomial
- To find solution of linear equation with the two variables

Art integrated project

- Undiscovered monument of Manipur