# Atomic Energy Central School, Mysore.

## Session : 2025 – 26

### CLASS X, MATHEMATICS

### Holiday Home Work.

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**Choose the correct answer :**

1. If HCF (72, 120) = 24, then LCM (72, 120) is
   (a) 240 (b) 100 (c) 1728 (d) 2880

2. Given that LCM (91, 26) = 182, then HCF (91, 26) is
   (a) 13 (b) 26 (c) 17 (d) 9

3. If HCF (a, 8) = 4 and LCM (a, 8) = 24, then a is
   (a) 8 (b) 10 (c) 12 (d) 14

4. If the HCF of 65 and 117 is expressible in the form 65m – 117, then the value of m is
   (a) 1 (b) 2 (c) 3 (d) 4

5. If two positive integers p and q can be expressed as $p = ab^2$ and $q = a^2b$, where $a, b$ are prime numbrs then LCM (p, q) is
   (a) ab (b) $a^2b^2$ (c) $a^3b^2$ (d) $a^3b^3$

6. The larget number which divides 70 and 125, leaving remainders 5 and 8 respectively, is
   (a) 13 (b) 65 (c) 875 (d) 1750

7. If $n$ is any natural number, then which of the following numbers ends with 0 :
   (a) $(3 \times 2)^n$ (b) $(5 \times 2)^n$ (c) $(6 \times 2)^n$ (d) $(4 \times 2)^n$

8. If $n$ is natural number, then $12^n$ will always end with an even digit except
   (a) 4 (b) 6 (c) 8 (d) 0

9. The product of the HCF and LCM of the smallest prime number and the smallest composite number is :
   (a) 2 (b) 4 (c) 6 (d) 8

10. The least number that is divisible by all natural numbers from 1 to 10 (both inclusive) is
    (a) 10 (b) 100 (c) 504 (d) 2520

11. Find HCF of 250, 175, 425

12. Explain why the number 7 x 11 x 13 is composite.

13. Check whether $4^n$ can end with the digit 0 for any natural number $n$ or not.

14. Show that $21^n$ cannot end with the digits 0. 2, 4, 6 or 8 for any natural number $n$.

15. Find the LCM of 96 and 360 by using the fundamental theorem of arithmetic.

16. There is a circular path around a sports field. Sonia takes 18 minutes to run one round of the field, while Ravi takes 12 minutes for the same. Suppose they start at the same time and run in the same direction. After how many minutes will they meet again at the starting point ?

**17** . A merchant has 120 litres of oil of one kind, 180 litres of oil of another kind and 240 litres of oil of third kind. He wants to sell the oil by billing the three kinds of oil in tins of equal capacity. What should the greatest capacity of such a tin ?

18. If two positive integers $x$ and $y$ are expressible in terms of primes as $x = p^2q^3$ and $y = p^3q$ What can you say about their LCM and HCF ? Is LCM a multiple of HCF ? Explain.

19. Prove that $\sqrt{2}$ is an irrational number.

20. Show that the number $7 - 2\sqrt{3}$ is an irrational number.

21. The pair $3x + 4y + 2 = 0\ and\ 4x = 5y - 13$ of linear equations has

(a) a single solution (b) two solutions

(c) infinitely many solutions (d) no solution

22. The pair $3x = 7y + 4\ and\ 14y = 6x - 8$ of linear equations represents two lines which are

(a) intersecting (b) coincident

(c) parallel (d) either intersecting or parallel

23. The pair $2x\ \ 3y - 5\ and\ 2y = 5x - 4$ of linear equations represents two lines which are

(a) parallel (b) coincident

(c) intersecting (d) either parallel of coincident

24. The values of $k$ for which the equations $3x - y + 8 = 0\ and\ 6x - ky = -16$ represent coincident lines is

(a) $\frac{1}{2}$ (b) $-\frac{1}{2}$ (c) 2 (d) - 2

25. If the lines represented by $3x + 2ky = 2$ *and* $2x + 5y + 1 = 0$ are parallel, then the value of $k$ is

(a) $-\frac{5}{4}$ (b) $\frac{2}{5}$ (c) $\frac{15}{4}$ (d) $\frac{3}{2}$

26. The value (s) of $k$ for which the pair of linear equations $3x - 2y - 7 = 0$ *and* $6x + ky + 11 = 0$ have a unique solution is (are)

(a) 4 (b) all real numbers except 4

(c) - 4 (d) all real numbers except – 4

27. One equation of a pair of dependent linear equations is $-5x + 7y = 2$ . The second equation can be

(a) $10x + 14y + 4 = 0$ (b) $-10x - 14y + 4 = 0$

(c) $-10x + 14y + 4 = 0$ (d) $10x - 14y = -4$

28. A pair of linear equations which has a unique solution $x = 2, y = -3$ *is*

$(a)$ $x + y = -1$
$2x - 3y = -5$

$(b)$ $2x + 5y = -11$
$4x + 10y = -22$

$(c)$ $2x - y = 1$
$3x + 2y = 0$

$(d)$ $x - 4 - 14 = 0$
$5x - y - 13 = 0$

29. The sum of two natural numbers is 25 and their difference is 7. The numbers are

(a) 17 and 8 (b) 16 and 9 (c) 18 and 7 (d) 15 and 10

30. The age of a woman is four times the age of her daughter. Five years hence, the age of the woman will be three times the age of her daughter. The present age of the daughter is

(a) 40 years (b) 20 years (c) 15 years (d) 10 years

31. For all real values of c, the pair of equations

$x - 2y = 8$ and $5x - 10y = c$

Have a unique solution. Justify whether it is true or false.

32. Find the values of $p$ for which the following pairs of linear equations have a unique solution :

(i) $4x + py + 8 = 0$
$2x + 2y + 2 = 0$

(ii) $(p - 2)x - py + 3 = 0$
$2px + y - 5 = 0$

33 Find the value(s) of $k$ for which the following pairs of linear equations will have infinitely many solutions :

(i) $kx + 3y - (k - 3) = 0$
$12x + ky - k = 0$

(ii) $x + (k + 1)y = 5$
$(k - 1)x + 9y = 8k - 1$

34. Solve the following system of linear equations.
$2x - 3y = 1, 3x - 4y = 1$

35. Solve the following pairs of linear equations.
$(i)\ 7x - 15y = 2$
$X + 2y = 3$

36. Solve $2x + 3y = 11$ and $2x - 4y = -24$ . Hence, find the value of 'm' for which $y = mx + 7$.

37. Solve the following pairs of linear equations.

$(i)\ 2x + 3y = 9$
$3x + 4y = 5$

(ii) $3x - 5y = 4$
$9x - 2y = 7$

38. Solve the following pairs of linear equations.
$43x + 67y = -24$
$67x + 43y = 24$

39. A railway half ticket costs half the full fare but the reservation charges are the same of a half – ticket as on a full ticket. One reserved first class ticket from station A to station B costs Rs. 2530. Also, one reserved first class ticket and one reserved half first class ticket from station A to station B costs Rs. 3810. Find the full fare from station A and B and also the reservation charges for a ticket.

40. The students of a class are made to stand in (complete) rows. If 3 students are extra in a row, there would be 1 row less. If 3 students are less in a row, there would be 2 rows more. Find the number of students in the class.

41. The age of the father is twice the sum of ages of his two children. After 20 years, his age will be equal to the sum of the ages of his children. Find the age of the father.

42. The ratio of incomes of two persons is 9 : 7 and the ratio of their expenditure is 4 : 3. If each of them manages to save Rs. 2000 per months, find their monthly incomes.

43. The class IX standard of a certain public school wanted to give a farewell party to the out going students of class X. They decided to purchase two kinds of sweets, one costing Rs. 70 per kg and the other costing Rs. 84 per kg. They estimated that 36 kg of sweets were needed. If total money spent on sweets was Rs. 2800, find how much sweets of each kind they purchased.

44. The auto fare for the first kilometre is fixed and is different from the rate per km for the remaining distance. A man pays Rs. 57 for the distance of 15km and Rs. 92 for a distance of 25 km. Find the auto fare for the first kilometre and for each successive kilometre.

45. In a competitive examination, one mark is awarded for each correct answer while $\frac{1}{2}$ mark is deducted for every wrong answer. Jayanti answered 120 questions and got 90 marks. How many questions did she answer correctly?

46. At a certain time in a deer park, the number of heads and the number of legs of deer and human visitors were counted and it was found that there were 39 heads and 132 legs. Find the number of deer and human visitors in the park.

47. Solve the pair of linear equations $x + 2y + 2 = 0\ and\ 3x + 2y - 2 = 0$ graphically. Shade the triangular region represented by the given equations and the $y$ – axis. Also the area of this region.

48. Solve the following pair of linear equations graphically.

$x + 3y = 6, 2x - 3y = 12$

Also find the area of the triangle formed by the lines representing the given equations with the $y$ – axis.

49. Four years ago, a father was six times as old as his son. Ten years later, the father will be two and a half times as old as his son. Determine the present age of father and his son.

50. A boat takes 2 hours to go 40 km down the stream and it returns in 4 hours. Find the speed of the boat in still water and the speed of the stream.

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