CBSE Class 10 Mathematics: Student Support Material (2025-26) - Comprehensive Question Bank
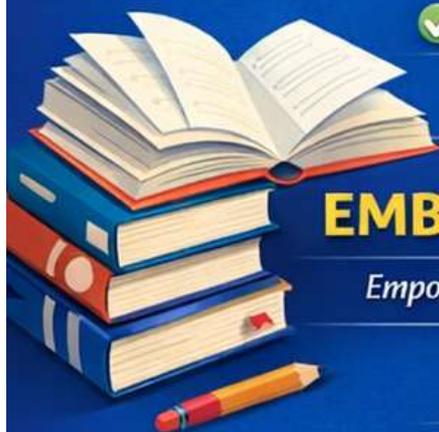
Source: Kendriya Vidyalaya Sangathan (KVS) - ZIET Mysuru Purpose: This document provides a structured collection of 100 objective-type questions, including Multiple Choice Questions (MCQs), Assertion-Reasoning, and Case-Based items, organized by chapter to support Class 10 students in their examination preparation for the 2025-26 academic session.

Chapter 1: Real Numbers

Multiple Choice Questions (MCQs)

1. The HCF and the LCM of 12, 21, 15 respectively is: (a) 3, 140 (b) 12, 420 (c) 3, 420 (d) 420, 3

2. The correct prime factorisation of 98 is: (a) $2^2 \times 7$ (b) $2^3 \times 7$ (c) $2^2 \times 7^2$ (d) 2×7^2

3. The greatest possible speed at which a man can walk 135 km and 225 km in exact number of hours is: (a) 5 km/hr (b) 15 km/hr (c) 65 km/hr (d) 45 km/hr

4. The expression $1 \times 2 \times 3 \times 7 \times 11 + 1$ is a: (a) Prime no. (b) Composite no. (c) Square number (d) Neither prime nor composite

5. Which of the following is an incorrect statement? (a) π is an irrational (b) 2 is a rational (c) Every rational number is a real number (d) Every real number is a rational number

6. LCM of smallest prime number and smallest 2-digit number is: (a) 2 (b) 4 (c) 10 (d) 20

7. If $a = p^2q$ and $b = pq^2$ then LCM will be: (a) p^2q^2 (b) pq (c) pq^2 (d) pq^3

8. Find the product of HCF and LCM of (32, 28) using the relationship between HCF and LCM of two numbers: (a) 256 (b) 840 (c) 832 (d) 896

9. If $a = x^3y^2z^2$, $b = x^2y^2z^3$, and $c = x^3y^2z^n$ and the LCM $(a, b, c) = x^3y^2z^5$ then the value of n is: (a) 3 (b) 2 (c) 5 (d) 1

10. The largest number that will divide 445, 572 and 699 leaving remainders 4, 5 and 6 respectively is: (a) 63 (b) 36 (c) 34 (d) 45

Assertion-Reasoning Questions

Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as: (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A). (c) Assertion (A) is true but Reason (R) is false. (d) Assertion (A) is false but Reason (R) is true.

11. Assertion (A): The H.C.F. of two numbers is 16 and their product is 3072. Then their L.C.M. = 162. Reason (R): If a and b are two positive integers, then H.C.F. × L.C.M. = a × b.

12. Assertion (A): The HCF of two numbers is 2 and their LCM is 15. Reason (R): HCF is a factor of LCM.

13. Assertion (A): 13/3125 is a terminating decimal fraction. Reason (R): If q = 2^n * 5^m where n and m are non-negative integers, then p/q is a terminating decimal fraction.

14. Assertion (A): 2 is an example of a rational number. Reason (R): The square roots of all positive integers are irrational numbers.

15. Assertion (A): If the HCF of two numbers is 5 and their product is 150, then their LCM is 40. Reason (R): For any two positive integers p and q, HCF (p, q) × LCM (p, q) = p × q.

16. Assertion (A): Every positive even integer is a multiple of 2. Reason (R): The Fundamental Theorem of Arithmetic ensures the unique prime factorization of integers greater than 1.

17. Assertion (A): The decimal expansion of 7/8 is terminating. Reason (R): A rational number has a terminating decimal expansion if its denominator has only powers of 2 and/or 5 in prime factorization.

18. Assertion (A): √5 is an irrational number. Reason (R): The square root of any non-perfect square natural number is irrational.

19. Assertion (A): If the HCF of two numbers is 1, they are said to be co-prime. Reason (R): The LCM of two co-prime numbers is always equal to their product.

20. Assertion (A): The decimal expansion of 1/6 is non-terminating and repeating. Reason (R): A rational number has a non-terminating repeating decimal if the denominator has prime factors other than 2 or 5.

Case-Based Questions

21. A garden has 135 rose plants and 225 marigold plants to be planted in the same number of columns. The maximum number of columns is: (a) 15 (b) 45 (c) 5 (d) 25

22. In the marigold/rose scenario described in Q21, what is the total number of plants? (a) 360 (b) 300 (c) 45 (d) 100

23. In the marigold/rose scenario, what is the total number of rows in which they can be planted? (a) 5 (b) 6 (c) 8 (d) 10

24. In a factor tree, if the top number x branches into 5 and 2783, the value of x is: (a) 13915 (b) 11000 (c) 15000 (d) 12915

25. In the same factor tree, if 2783 branches into y and 253, the value of y is: (a) 7 (b) 13 (c) 11 (d) 17

Chapter 2: Polynomials

Multiple Choice Questions (MCQs)

26. Which of the following is a polynomial? (a) $1/x + 2$ (b) $x^2 + 2x + 1$ (c) $x^2 + 1/x + 1$ (d) $x^{-2} + 3x + 2$

27. What is the degree of the polynomial $5x^4 + 2x^3 - x + 7$? (a) 3 (b) 4 (c) 5 (d) 2

28. The value of the polynomial $f(x) = x^2 - 4x + 4$ at $x = 2$ is: (a) 0 (b) 4 (c) 2 (d) -2

29. If one zero of the polynomial $x^2 + 7x + 12$ is -3, the other is: (a) -4 (b) 4 (c) 3 (d) -2

30. For the polynomial $x^2 - 5x + 6$, the sum of the zeroes is: (a) 5 (b) -5 (c) 6 (d) -6

31. If one zero of $(ax^2 + bx + c)$ is the reciprocal of the other ($a \neq 0$), then: (a) $b = c$ (b) $b^2 = 4ac$ (c) $c = a$ (d) $a = 0$

32. In the polynomial $f(x) = x^3 - 6x^2 + 11x - 6$, which of the following is NOT a zero? (a) 1 (b) 2 (c) 3 (d) 4

33. For what value of k is $2x^3 + 3x^2 - 2x + k$ divisible by $(x - 1)$? (a) -2 (b) -3 (c) 1 (d) 2

34. Which quadratic polynomial has zeroes that are equal and real? (a) $x^2 + 2x + 3$ (b) $x^2 + 4x + 4$ (c) $x^2 + 3x + 5$ (d) $x^2 - 2x + 5$

35. If the sum and product of the zeroes of a quadratic polynomial are both equal to 5, the polynomial is: (a) $x^2 - 5x + 5$ (b) $x^2 + 5x + 5$ (c) $x^2 - 10x + 25$ (d) $x^2 - 5x + 10$

Assertion-Reasoning Questions

Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as: (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A). (c) Assertion (A) is true but Reason (R) is false. (d) Assertion (A) is false but Reason (R) is true.

36. Assertion (A): A graph $y = f(x)$ cuts the X-axis at three points. The number of zeroes is 3. Reason (R): The number of zeroes is the number of points where f(x) cuts or touches the axes.

37. Assertion (A): If both zeroes of $x^2 - 2kx + 2$ are equal in magnitude but opposite in sign, k = 1/2. Reason (R): Sum of zeroes of $ax^2 + bx + c$ is -b/a.

38. Assertion (A): $x^2 + 4x + 5$ has two real zeroes. Reason (R): A quadratic polynomial can have at most two zeroes.

39. Assertion (A): If the sum of zeroes of $x^2 - 2kx + 8$ is 2, then k = 1. Reason (R): Sum of zeroes is -b/a.

40. Assertion (A): $P(x) = 4x^3 - x^2 + 5x^4 + 3$ is a polynomial of degree 3. Reason (R): The highest power of variable is the degree of polynomial.

41. Assertion (A): $x^3 + x$ has only one real zero. Reason (R): A polynomial of n-th degree must have n real zeroes.

42. Assertion (A): Degree of a zero polynomial is not defined. Reason (R): Degree of a non-zero constant polynomial is zero.

43. Assertion (A): If the product of zeroes of $x^2 + 3x + k$ is -10, the value of k is -2. Reason (R): Sum of zeroes is -b/a.

44. Assertion (A): $3 - \sqrt{5}$ is one zero of a quadratic polynomial, the other is $3 + \sqrt{5}$. Reason (R): Irrational zeroes always occur in pairs.

45. Assertion (A): A quadratic polynomial with sum of zeroes 12 and product 8 is $x^2 - 20x + 96$. Reason (R): If α, β are zeroes, the polynomial is $x^2 - (\alpha + \beta)x + \alpha\beta$.

Case-Based Questions

46. What is the shape of the path traced by a basketball or soccer ball when thrown? (a) Straight line (b) Parabola (c) Circle (d) Ellipse

47. If a parabola opens downwards in the quadratic expression $ax^2 + bx + c$, then: (a) a > 0 (b) a = 0 (c) a < 0 (d) a = 1

48. If a polynomial graph cuts the X-axis at -3, -1, and 2, how many zeroes are there? (a) 1 (b) 2 (c) 3 (d) 4

49. A long jumper follows a projectile path. If the path is represented by $ax^2 + bx + c$ and it opens downwards, then: (a) a > 0 (b) a < 0 (c) a = 0 (d) b = 0

50. In a yoga pose (like Trikonasana) modeled by a graph with zeroes at -2 and 4, the number of zeroes is: (a) 0 (b) 1 (c) 2 (d) 3

Chapter 3: Pair of Linear Equations in Two Variables

Multiple Choice Questions (MCQs)

51. The solution of the equations x - y = 2 and x + y = 4 is: (a) 3 and 1 (b) 4 and 3 (c) 5 and 1 (d) -1 and -3

52. If the lines 3x + 2ky - 2 = 0 and 2x + 5y + 1 = 0 are parallel, then k is: (a) 4/15 (b) 15/4 (c) 4/5 (d) 5/4

53. The pair of equations 3x - 5y = 7 and -6x + 10y = 7 have: (a) a unique solution (b) infinitely many solutions (c) no solution (d) two solutions

54. If a pair of linear equations is consistent, then the lines will be: (a) always coincident (b) parallel (c) always intersecting (d) intersecting or coincident

55. The pair of equations 5x + 7y = 5 and 2x - 3y = 7 are: (a) consistent (b) inconsistent (c) coincident (d) none of these

56. Which of the following pair of equations are dependent? (a) 2x + 3y = 9 and 4x + 6y = 18 (b) x + y = 2 and 2x - y = 4 (c) 5x + y = 10 and 2x + y = 6 (d) x - y = 0 and x + y = 4

57. For what value of c will cx - y = 2 and 6x - 2y = 3 have infinitely many solutions? (a) 3 (b) -3 (c) -12 (d) No value

58. A fraction becomes 1/3 when 1 is subtracted from the numerator and 1/4 when 8 is added to the denominator. The fraction is: (a) 3/12 (b) 4/12 (c) 5/12 (d) 7/12

59. The graph of equations x + 2y - 4 = 0 and 2x + 4y - 12 = 0 represents: (a) intersecting lines (b) parallel lines (c) coincident lines (d) none

60. Which is the condition for a unique solution of a pair of linear equations? (a) a1/a2 = b1/b2 (b) a1/a2 = b1/b2 = c1/c2 (c) a1/a2 ≠ b1/b2 (d) a1/a2 = b1/b2 ≠ c1/c2

Assertion-Reasoning Questions

Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as: (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A). (c) Assertion (A) is true but Reason (R) is false. (d) Assertion (A) is false but Reason (R) is true.

61. Assertion (A): A pair of linear equations has no solution if it is represented by intersecting lines. Reason (R): Intersecting lines represent a pair of equations having a unique solution.

62. Assertion (A): If the pair of equations has the same solution, then it is called consistent. Reason (R): Consistent system has at least one solution.

63. Assertion (A): The pair of equations $2x + 3y = 6$ and $4x + 6y = 10$ are consistent. Reason (R): They represent parallel lines.

64. Assertion (A): The graph of a pair of linear equations is a pair of parallel lines if there is no solution. Reason (R): Parallel lines never intersect and hence are inconsistent.

65. Assertion (A): If $a_1/a_2 = b_1/b_2 \neq c_1/c_2$, the system is inconsistent. Reason (R): Such a system represents parallel lines.

66. Assertion (A): The equations $x + 2y = 3$ and $2x + 4y = 6$ represent intersecting lines. Reason (R): Their slopes are same.

67. Assertion (A): The pair $2x + 3y = 8$ and $4x + 6y = 10$ has a unique solution. Reason (R): Lines with different slopes intersect at one point.

68. Assertion (A): The system $x + y = 5$ and $2x + 2y = 10$ has infinitely many solutions. Reason (R): Both equations represent the same line.

69. Assertion (A): If the graphical representation results in parallel lines, the system is inconsistent. Reason (R): In an inconsistent system, there is no point common to both lines.

70. Assertion (A): A system with infinitely many solutions must be inconsistent. Reason (R): Coincident lines have no unique solution.

Case-Based Questions

71. For a party, fixed costs are x and variable costs per guest are y. If costs for 7 guests is Rs 650 and 11 guests is Rs 970, what is the cost for 15 guests? (a) Rs 1200 (b) Rs 1290 (c) Rs 1100 (d) Rs 1500

72. In the same party scenario with a Rs 1500 budget, the maximum number of guests possible is: (a) 15 (b) 16 (c) 17 (d) 18

73. If 2 tickets to Bangalore and 3 to Yeshwanthpur cost Rs 46, and 3 to Bangalore and 5 to Yeshwanthpur cost Rs 74, what is the fare to Bangalore? (a) Rs 8 (b) Rs 10 (c) Rs 12 (d) Rs 15

74. In the same ticket scenario, what is the fare to Yeshwanthpur? (a) Rs 8 (b) Rs 10 (c) Rs 12 (d) Rs 15

75. A chemist mixing 30% and 70% alcohol to get 40 L of 40% solution needs how much of 30% solution? (a) 10 L (b) 20 L (c) 30 L (d) 40 L

Chapter 4: Quadratic Equations

Multiple Choice Questions (MCQs)

76. If $3x + 1/x = x + 3$ is written in standard form, then: (a) a=3, b=3, c=1 (b) a=3, b=-3, c=1 (c) a=2, b=-3, c=1 (d) a=3, b=-3, c=3

77. For the equation $x^2 + 5x - 1$, which statement is correct? (a) The roots are equal (b) The discriminant is negative (c) The roots are real, distinct and irrational (d) The discriminant is zero

78. If roots of $ax^2 + bx + c$ are real and equal, the relation is: (a) $b^2 = 4ac$ (b) $b^2 = ac$ (c) $b^2 = 2ac$ (d) $b^2 = \sqrt{ac}$

79. If 1/2 is a root of the equation $x^2 - mx - 5/4 = 0$, the value of m is: (a) 2 (b) -2 (c) -3 (d) 3

80. In a right triangle, the altitude is 7 cm less than the base. If the hypotenuse is 13 cm, the other sides are: (a) Base=10cm, Altitude=5cm (b) Base=12cm, Altitude=5cm (c) Base=14cm, Altitude=10cm (d) Base=12cm, Altitude=10cm

81. The sum of a number and its reciprocal is 65/8. The number is: (a) 8 (b) 4 (c) 2 (d) 6

82. If one root of $4x^2 - 2x + k - 4 = 0$ is the reciprocal of the other, k is: (a) -8 (b) 8 (c) -4 (d) 4

83. The value of $\sqrt{6 + \sqrt{6 + \sqrt{6 \ldots}}}$ is: (a) 4 (b) 3 (c) 3.5 (d) -3

84. Which of the following is NOT a quadratic equation? (a) $x^2 + 3x - 5 = 0$ (b) $x^2 + x^3 + 2 = 0$ (c) $3 + x + x^2 = 0$ (d) $x^2 - 9 = 0$

85. If the equation $2x^2 + kx + 3 = 0$ has two equal roots, the value of k is: (a) $\pm \sqrt{6}$ (b) ± 4 (c) $\pm 3\sqrt{2}$ (d) $\pm 2\sqrt{6}$

Assertion-Reasoning Questions

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86. Assertion (A): $3x^2 - 6x + 3 = 0$ has repeated roots. Reason (R): A quadratic equation has repeated roots if discriminant D > 0.

87. Assertion (A): If one root of $6x^2 - x - k = 0$ is 2/3, then the value of k is 2. Reason (R): A quadratic equation has at most two roots.

88. Assertion (A): $(2x - 1)^2 - 4x^2 + 5 = 0$ is not a quadratic equation. Reason (R): An equation of the form $ax^2 + bx + c = 0$, a ≠ 0 is a quadratic equation.

89. Assertion (A): The roots of the quadratic equation x^2 + 2x + 2 = 0 are imaginary. Reason (R): If D < 0, the roots are imaginary.

90. Assertion (A): The quadratic equation x^2 + 4x + 5 = 0 has no real roots. Reason (R): The discriminant is greater than zero.

91. Assertion (A): The solution of the quadratic equation (x-1)^2 - 5(x-1) - 6 = 0 is 7. Reason (R): The solution of the equation x^2 + 5x - (a^2 + a - 6) = 0 is a + 3.

92. Assertion (A): Every quadratic equation has exactly one root. Reason (R): Every quadratic equation has at most two roots.

93. Assertion (A): If the x^2 coefficient and constant term have opposite signs, then roots are real. Reason (R): Every quadratic equation has at least two roots.

94. Assertion (A): The equation x^2 + 4x + 5 = 0 has two equal roots. Reason (R): If discriminant D = 0, the roots are equal.

95. Assertion (A): The roots of the quadratic equation x^2 + 2x + 2 = 0 are imaginary. Reason (R): If discriminant D < 0, the roots are imaginary.

Case-Based/HOTS Questions

96. Raj's car travels at speed x km/h. Ajay's car is 5 km/h faster. The distance covered by Ajay in 2 hours is: (a) 2x (b) 2x + 5 (c) 2(x + 5) (d) x + 10

97. In a 400 km journey where Raj takes 4 hours more than Ajay, the speed of Raj's car is: (a) 20 km/h (b) 25 km/h (c) 30 km/h (d) 40 km/h

98. A motorboat speed is 20 km/h in still water. If stream speed is x, its speed upstream is: (a) 20 + x (b) 20 - x (c) x - 20 (d) 20x

99. If a motorboat takes 1 hour more for 15 km upstream than downstream, the speed of the current is: (a) 5 km/h (b) 10 km/h (c) 15 km/h (d) 20 km/h

100. For a picnic with budget Rs 480, if x students plan to go, but 8 fail, the new cost per student is: (a) 480/x (b) 480/(x-8) (c) 480/8 (d) x/480

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Consolidated Answer Key

Answer Key: Real Numbers

Q. No.	Answer	Q. No.	Answer
1	(c)	14	(c)
2	(d)	15	(d)
3	(d)	16	(b)
4	(b)	17	(a)
5	(d)	18	(a)
6	(c)	19	(a)
7	(a)	20	(a)
8	(d)	21	(b)
9	(c)	22	(a)
10	(a)	23	(c)
11	(d)	24	(a)
12	(d)	25	(c)
13	(a)		

Answer Key: Polynomials

Q. No.	Answer	Q. No.	Answer
26	(b)	39	(a)
27	(b)	40	(d)
28	(a)	41	(c)
29	(a)	42	(b)
30	(a)	43	(d)
31	(c)	44	(a)
32	(d)	45	(d)
33	(b)	46	(b)
34	(b)	47	(c)
35	(a)	48	(c)
36	(a)	49	(b)
37	(d)	50	(c)
38	(d)		

Answer Key: Pair of Linear Equations in Two Variables

Q. No.	Answer	Q. No.	Answer
51	(a)	64	(a)
52	(b)	65	(a)
53	(c)	66	(d)
54	(d)	67	(d)
55	(a)	68	(a)
56	(a)	69	(a)
57	(d)	70	(d)
58	(c)	71	(b)
59	(b)	72	(c)

60	(c)	73	(a)
61	(d)	74	(b)
62	(a)	75	(c)
63	(d)		

Answer Key: Quadratic Equations

Q. No.	Answer	Q. No.	Answer
76	(c)	89	(a)
77	(c)	90	(c)
78	(a)	91	(c)
79	(b)	92	(d)
80	(b)	93	(c)
81	(a)	94	(a)
82	(b)	95	(a)
83	(b)	96	(c)
84	(b)	97	(a)
85	(d)	98	(b)
86	(c)	99	(b)
87	(b)	100	(b)
88	(a)		