

CLASS - IX

1) Which of the following expressions is not a perfect square of a real expression?

1) $x^2 - y^2 - z^2 + 2xy + 2yz - 2zx$

2) $x^2 + y^2 + z^2 - 2xy - 2zx + 2yz$

3) $x^8 + y^4 (2x^4 + y^4)$

4) $x^2 + y^2 + z^2 + 2xz + 2zy + 2xy$

2) $x^2 = 7 + \sqrt{48}$, $y^2 = 7 - 2\sqrt{12}$ then $\frac{1}{x} + \frac{1}{y} = \dots$ number

1) Even natural 2) Odd Prime 3) Square root of negative 4) Irrational

3) A right triangle has sides 60, 80, 100 units. The altitude drawn to the largest side from opposite vertex is of length _____ units

1) 42

2) 48

3) 84

4) 68

4) The missing term of the series

$\frac{1}{3}, \frac{1}{11}, \frac{1}{31}, \frac{1}{69}, \frac{1}{131}, \dots, \frac{1}{351}$ is x then $\frac{1}{x} - 220$ is _____

1) 1

2) 7

3) 3

4) 5

5) $2x^2 + 8y^2 = 1$ and $8x^2 + 2y^2 = 1$ then $(x + y)(x - y)^2 + x^2y^{-2} = \dots$

1) 4

2) 8

3) 5

4) 1

6) If x, y are natural numbers such that $7x + y = 15$. Number of ordered pairs (x, y) is

1) 1

2) 2

3) 4

4) Infinite

7) Three angles x°, y° and z° add up to 225° such that x°, y° are supplementary angles and y°, z° are complementary angles. Also $x \geq y \geq z$ then $x^\circ - y^\circ - z^\circ = \dots$

1) 0°

2) 45°

3) -45°

4) -90°

8) If $a = 13.8, b = -1.7, c = -12.1$ then $(a^3 + b^3 + c^3) a^{-1} b^{-1} c^{-1} = \dots$

1) 18.65

2) 14

3) 3

4) 10.41

9) ABC is an equilateral triangle and P is an interior point. PD, PE, PF are perpendiculars drawn to the sides BC, CA and AB respectively and $PD = \sqrt{2} - 1$, $PE = \sqrt{2} + 1$, $PF = \sqrt{2}$ then the perimeter of the triangle ABC is

1) $\sqrt{15}$

2) $\sqrt{216}$

3) $\sqrt{24}$

4) $\sqrt{32}$

10) If $A = (x + y + z)^2$, $B = (x - y + z)^2$, $C = (x + y - z)^2$, $D = (x - y - z)^2$

then $\frac{A + B + C + D}{X^2 + Y^2 + Z^2} = \dots\dots$

- 1) 3 2) 4 3) 6 4) 1

11) If $x^2 + y^2 = 1$ then $\frac{x^2(3 - 4x^2)^2 + (4y^3 - 3y)^2 - 1}{(x^3 + y^3)^2} = \dots\dots$

- 1) 0 2) 1/6 3) 1/4 4) 1

12) If $x = \sqrt{6\sqrt{6\sqrt{6\sqrt{\dots\dots\dots\infty}}}}$, $y = \sqrt{2\sqrt{2\sqrt{2\sqrt{\dots\dots\dots\infty}}}}$

then $\frac{x^2 + y^2}{x + y} + \frac{x - y}{x^2 + y^2} = \dots\dots$

- 1) 2.6 2) 5.1 3) 6.2 4) 1.3

13) If x, y, z are integers and $x\sqrt{2} + y\sqrt{3} + z\sqrt{5} = 0$ then

$\frac{x^2 - y^2 + z^2 + 1}{x - y + z + 2} = \dots\dots\dots$

- 1) 1 2) 0.5 3) 2 4) 0.25

14) Number of prime numbers in the set $\{3, 4, 5, 6, 7, \dots\dots 98\}$ is p. then

$\frac{p}{6} + \frac{48}{p} = \dots\dots\dots$

- 1) 6 2) 8 3) 12 4) 16

15) $(1 + x)(1 + x^2)(1 + x^4)(1 + x^8) = \frac{(1 - x^n)}{(1 - x)} (x \neq 1)$

then $\frac{48}{n} = \dots\dots$

- 1) 8 2) 3 3) 2 4) 6

16) If $p^2 + p + 1 = 0$ then $\frac{p^6 + 1}{p^3} = \dots\dots\dots$

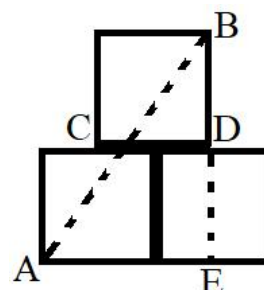
- 1) 2 2) 1 3) 0 4) 3

- 17) $(0, 0)$, $(4, 0)$, $(4, 4)$ and $(0, 4)$ in that order form _____
 1) Rectangle 2) Trapezium 3) Square 4) Rhombus
- 18) Who initiated Co ordinate Geometry
 1) Rene Descartes 2) Bhaskara charya 3) Newton 4) Euclid
- 19) Length of the path formed by $(1, 1)$, $(2, 2)$, $(3, 3)$ in that order is _____ units
 1) $2\sqrt{3}$ 2) $2\sqrt{2}$ 3) $\sqrt{18}$ 4) $\sqrt{3}$
- 20) Which of the following is called Golden ratio ?
 1) $\frac{\sqrt{5} + 1}{2}$ 2) $\frac{\sqrt{5} - 1}{2}$ 3) $\frac{\sqrt{5} - 1}{4}$ 4) $\frac{\sqrt{5} + 1}{4}$
- 21) Digital root of Kaprekar's constant is _____
 1) 21 2) 18 3) 12 4) 9
- 22) Number of rational numbers between 2 and 10 is _____
 1) 7 2) 8 3) 15 4) Infinite
- 23) Who is famous Indian lady Mathematician among following ?
 1) Prasanna Bharathi 2) Shakuntala devi 3) Mary Curie 4) Hypatia
- 24) Sum of products of all possible pairs of numbers from first 10 natural numbers is _____
 1) 1320 2) 2640 3) 5050 4) 4640
- 25) Number of right angled isoscles triangles $\triangle ABC$ that can be formed with one vertex $A = (0, 0)$ and BC along a fixed line L not passing through origin will be _____
 1) 2 2) 0 3) 4 4) 3
- 26) On the black board , draw a triangle ABC. How many points P on this black board will satisfy $\triangle PAB = \triangle PBC = \triangle PCA$ (3 equal areas)
 1) 1 2) 3 3) 4 4) Infinite
- 27) Remainder when $a^4 + a^2 + 1$ is divided by $a^2 + a + 1$ is _____
 1) 1 2) $a^2 - a$ 3) $a^2 - a + 1$ 4) 0

- 28) A circle has centre (3, 4) and a point (0, 0) lies on the circle. Area of this circle is $K.\pi$ square units. then $\sqrt{K + 24} + \sqrt{K + 56} = \dots\dots$
- 1) 16 2) 18 3) 24 4) 25
- 29) G is centroid of ΔABC and AD is a median then $\frac{\Delta BGD}{\Delta ABC} + \frac{\Delta GBC}{\Delta GCD} = \dots\dots$
given $BC = 2000$, $CA = 2024$, $AB = 2025$.
- 1) $13/6$ 2) $18/7$ 3) 20.24 4) 28.62
- 30) Last digit in the expanded number $2^{100} + 3^{100} + 4^{100}$ is _____
- 1) 9 2) 4 3) 2 4) 3
- 31) A point inside the triangle formed by (7 , 24) , (-24 , 7) and ($10\sqrt{6}$, -5) equidistant from these vertices is P. Number of such possible points P will be.....
- 1) 1 2) 3 3) 0 4) Infinite
- 32) Number of lines of symmetry for a circle of radius 2025 units is _____
- 1) 0 2) > 2025 3) < 2020 4) < 1000
- 33) Which of the following is a perfect cube ?
- 1) $2^{18} \times 3^9 \times 4^3$ 2) $881 \times 30 \times 70$ 3) $125 \times 1331 \times 553 \times 25$
4) $25 \times 65 \times 169 \times 20$
- 34) Least Possible sum $x + y + z$, such that $x^2 + y(y - 4) + z(z - 2) - 2(x - 3) = 0$ where x, y, z are integers will be _____
- 1) 5 2) 4 3) 8 4) 3
- 35) a, b, c are real numbers satisfying $a + 8c = 4 + 7b$ and $8a + 4b = 7 + c$ then $a^2 - b^2 + c^2 - 1 =$
- 1) 0 2) 3 3) -2 4) -6
- 36) $A = a4273b$ is a 6 digit number in which a, b are digits. If A is divisible by 72 then _____
- 1) $b = 2a$ 2) $a = 2b$ 3) $2a = b + 4$ 4) $a + b = 13$
- 37) The number of rectangles with area 216 sq cms whose perimeters are distinct and length and breadth are multiples of 3 (integer multiples)
- 1) 7 2) 4 3) 6 4) 2

- 38) The number of digits in the expansion of $(999\ldots 12 \text{ digits})^2$ is _____
 1) 24 2) 26 3) 36 4) 32

- 39) Three equal squares are kept as in this diagram. C,D are mid points of respective sides of the lower squares.
 If $AB = 100$ then area of each square is _____



- 1) 1600 2) 900
 3) 2500 4) 1200

- 40) The smallest multiple of 9 with no odd digit is N . Then sum of digits of N is ____
 1) 24 2) 18 3) 20 4) 16

- 41) P is an interior point of a rectangle ABCD, then $\frac{PA^2 + PC^2 - PB^2}{PD^2} + 4 = \dots$
 1) 5 2) 0 3) 1 4) 4

- 42) Who was Srinivasa Ramanujans mentor in Cambridge University, London?
 1) A.P. POLGERV 2) P.C.MAHALANOBIS 3) G.H. HARDY 4) C.R.RAO

- 43) Number of integer solutions of the equation $(x^2 - 4x + 4)^x = 1$ is ____
 1) 3 2) 0 3) 1 4) Infinite

- 44) If x is an integer such that $(x + 1)(x + 2) + 2 = 0$, number of all such solutions x will be _____
 1) 2 2) 1 3) 0 4) 4

- 45) If first and second perfect numbers in natural numbers are a and b ($a < b$)
 then $(a + b - 30)^2 + 4 =$ _____
 1) 20 2) 5 3) 18 4) 48

- 46) Who is the famous Indian Statistician Professor of recent times who lived more than 100 years?
 1) C.R.Rao 2) B.C.S.Prakasa rao 3) S.K.Dubey 4) R.C. Gupta

- 47) $S(n) = 1 \times 2 \times 3 \times 4 \times \dots \times n$ then $S(1) + 2S(2) + 3S(3) + \dots + 50S(50) =$
 1) $S(52)$ 2) $S(51) - 1$ 3) $S(51) - 51$ 4) $S(52) - S(51)$

48) A square is inscribed in a circle of radius 7 cm. Perimeter of this square is ___ cm

- 1) $3\sqrt{96}$ 2) $4\sqrt{57}$ 3) $4\sqrt{98}$ 4) $\sqrt{168}$

49) If $x + y + z = 8$, $x^2 + y^2 + z^2 = 26$, $x^3 + y^3 + z^3 = 92$ the value of $x^4 + y^4 + z^4 =$

- 1) 338 2) 448 3) 247 4) 554

50) ABCD is a scalene quadrilateral and EFGH is the quadrilateral formed by mid

points of sides ABCD in that order, then $\left(\frac{EF}{GH} + \frac{FG}{HE}\right)^2 + \left(\frac{EF - GH}{GF - HE}\right)^2 =$ ___

- 1) 4 2) 16 3) 8 4) 32

51) $X + Y + XY - 11 = 0$, $Y + Z + YZ = 19$, $14 - Z = X(1 + Z)$ where X, Y, Z are positive integers then $(X - Y)(Y - Z)(Z - X) =$ ____

- 1) 8 2) 14 3) 2 4) 0

52) $(1 + \sqrt{2} + \sqrt{3})(1 - \sqrt{2} + \sqrt{3})(1 + \sqrt{2} - \sqrt{3})(1 - \sqrt{2} - \sqrt{3}) + 10 =$ ____

- 1) 6 2) $(10 - \sqrt{2} - \sqrt{3})$ 3) $(4 + \sqrt{2} - \sqrt{3})$ 4) 2

53) $2^2 - 3^2 + 4^2 - 5^2 + 6^2 - 7^2 - 8^2 + \dots + 98^2 - 99^2 + 100^2 =$

- 1) 5050 2) 5051 3) 10100 4) 10111

54) Product of 4 consecutive natural numbers is P. then $(P + 1)^2$ must bepower

- 1) perfect 6th 2) perfect cube 3) perfect 4th 4) perfect 5th

55) Number of natural number triplets (x, y, z) satisfying $x + y + z = 8$ will be

- 1) 21 2) 24 3) 8 4) 36

56) If n is the natural number $n^2 + n + 41$ is _____

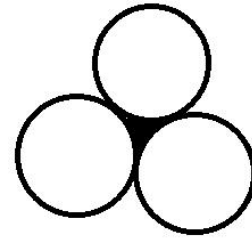
- 1) Prime number for exactly 41 values of n
2) Prime number for exactly 40 values of n
3) Prime number for exactly 44 values of n
4) Composite number for atleast 2 values of n

57) If $8x^3 + 6xy + y^3 = 1$ then a possible value of $2x + y$ can be _____

- 1) 6 2) -4 3) 2 4) -2

58) Three circles of unit radius each are kept intact such that each touches other 2 externally. The area of shaded region is _____ approximately.

- 1) 0.314 2) 0.176
3) 0.162 4) 0.288



59) A polygon with n sides is called quin - decagon if $n =$ _____

- 1) 1000 2) 15 3) 10 4) 1010

60) In a code language, If BOOK = 43 , BAG = 10 then AIMED =

- 1) 35 2) 32 3) 33 4) 34.