

CLASS - X

- 1) Number rational algebraic factors of $x^8 - 256$ is n then $n^2 - n - 8 =$ _____
 1) 3 2) 4 3) 0 4) 6
- 2) Number of irrational numbers between 2023 and 2024 is _____
 1) 2 2) 0 3) Finite but >4 4) Infinite
- 3) Probability of selecting a prime number in first 100 natural numbers is _____
 1) 0.24 2) 0.25 3) 0.5 4) 0.6
- 4) $x = \sqrt{3} - \sqrt{2}$, $y = \sqrt{12} - \sqrt{18}$, $z = \sqrt{32} - \sqrt{27}$. Then $x^2y^{-1}z^{-1} + y^2x^{-1}z^{-1} + z^2x^{-1}y^{-1} =$ _____
 1) Rational multiple of $\sqrt{3}$ 2) Irrational multiple of 2
 3) Rational multiple of 3 4) Irrational multiple of 5
- 5) 'Which of the following points is nearest to origin ?
 1) $(1, \sqrt{2})$ 2) $(\sqrt{2}, \sqrt{3})$ 3) $\left(1, \frac{1}{\sqrt{2}}\right)$ 4) $\left(-\frac{1}{\sqrt{2}}, 0\right)$
- 6) $p^2 = (1-q)(1+q)$. Then $\left((4p^3 - 3p)^2 + (3q - 4q^3)^2\right)^{\frac{1}{6}} + 4$ is equal to x . Then x is a factor of _____
 1) 12 2) 15 3) 81 4) 16
- 7) The number 333.....(19 times) when divided by 13 leaves a remainder r . Then the maximum number that divides $r^3 - r + 1$ is _____
 1) $(r+2)^2$ 2) $3r-2$ 3) r^2+1 4) $(r-1)^2$
- 8) Last digit in result of 3333^{7777} is _____
 1) 2 2) 3 3) 1 4) 7
- 9) Sum of first thousand odd natural numbers is _____
 1) $2^6 \times 5^{16}$ 2) $5^4 \times 2^7$ 3) $4^3 \times 5^6$ 4) $8^9 \times 9^8$
- 10) $2^2 - 3^2 + 4^2 - 5^2 + 6^2 - 7^2 + \dots + 98^2 - 99^2 =$ _____
 1) $1 - 99 \times 100$ 2) $1 - 98 \times 99$ 3) $1 - 49 \times 100$ 4) $1 - 99 \times 50$

- 11) If α and β are the roots of $x^2 + x + 2 = 0$ then if $\alpha^n - \beta^n = s_n$, the value of $\frac{s_{10} + 2s_8}{s_9} =$ _____
- 1) 0 2) -1 3) 2 4) $\frac{16}{9}$
- 12) Both roots are common for $x^2 + ax + b = 0$ and $x(x+2) - 3 = 0$ Then $3a + 4b + 1 =$ _____
- 1) -5 2) 0 3) 8 4) -4
- 13) Next number in the series 1, 2, 5, 14, 41, 122,.....
- 1) 254 2) 366 3) 364 4) 365
- 14) Define $n! = 1 \times 2 \times 3 \times \dots \times n$ and ${}^pC_q = \frac{p!}{q!(p-q)!}$ the value of ${}^{10}C_3 - {}^{10}C_7 + 1 =$ _____
- 1) 1 2) 0 3) 10 4) 11
- 15) $\{1\}, \{2, 3\}, \{4, 5, 6\}, \{7, 8, 9, 10\}, \dots$The first term in 50th group of above pattern is _____
- 1) 1354 2) 1226 3) 2130 4) 2318
- 16) The points $(a, b+c), (b, c+a), (c, a+b)$ are _____
- 1) Vertices of equilateral triangle 2) Vertices of right angle triangle
3) Points on a circle 4) Collinear points
- 17) if $|x| + |y| = |x + y|$ then
- 1) $xy > 2$ 2) $xy \geq 0$ 3) $xy < -2$ 4) $xy \leq 0$
- 18) $x = 2 + \sqrt{3}$, $xy = 1$, then $x^2 + y^2 =$ _____
- 1) 12 2) 14 3) 16 4) 24
- 19) Which Indian mathematician is called human computer
- 1) Ramanujan 2) Aryabhata 3) Sakuntala Devi 4) Kaprekar
- 20) 14th March is considered as π day in honour of
- 1) Archimedes 2) Rene Deschartes
3) Albert-Einstein 4) Eratosthenes

- 4

33) If $\frac{1}{1^4} + \frac{1}{2^4} + \frac{1}{3^4} + \frac{1}{4^4} + \dots \infty = \frac{\pi^4}{70}$ $\frac{1}{1^4} + \frac{1}{3^4} + \frac{1}{5^4} + \dots \infty =$ _____

1) $\frac{\pi^4}{60}$

2) $\frac{2\pi^4}{131}$

3) $\frac{3\pi^4}{224}$

4) $\frac{\pi^4}{35}$

34) $(666 \dots \text{ndigits})^2 + (888 \dots \text{ndigits}) =$ _____

1) $444 \dots 2n \text{ digits}$

2) $6464 \dots 2n \text{ digits}$

3) $8686 \dots 2n \text{ digits}$

4) $222 \dots 4n \text{ digits}$

35) B and C are points of trisection of segment $\overline{AD}$ Then _____

1) $BC = \frac{1}{2} AD$

2) $BC = \frac{1}{4} AD$

3) $3BC = AD$

4) $AD = BC$

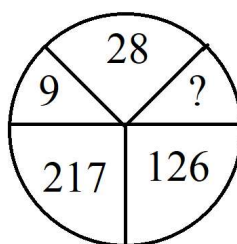
36) Find the missing number

1) 65

2) 64

3) 72

4) 75



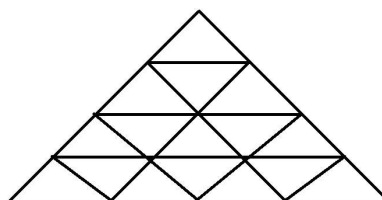
37) Find the number of Triangles In the figure

1) 20

2) 27

3) 32

4) 48



38) $(1^3 + 2^3 + 3^3 + \dots + 99^3)^{\frac{1}{2}} =$ _____

1) 4950

2) 5050

3) 6250

4) 3850

39) A student finds the average of 10 positive integers. Each integer has two digits. He mistakes one number ab instead of ba and the new average is 1.8 less than the previous average. Then $|a - b| =$ _____

1) 4

2) 2

3) 3

4) 8

40) In $\triangle PQR$, $\angle RPQ = 90^\circ$, $\overline{PR} = 6\text{cm}$, $\overline{PQ} = 8\text{cm}$ Then the radius of circumcircle of $\triangle PQR$ is _____

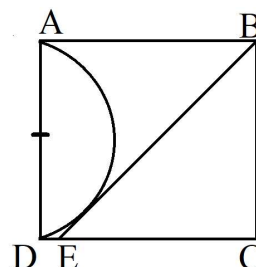
1) 5 cm

2) 3 cm

3) 4 cm

4) 4.5 cm

- 41) P is sitting 18th from the left end and S is 10th from the right end. If there are 7 students between them, the total number of students in the row is _____
 1) 35 2) 28 3) 42 4) 20
- 42) A triangle with base two angles both are 72° , is exactly called _____ triangle.
 1) Isosceles 2) Equilateral
 3) Golden 4) Right angled
- 43) The angle between hour hand and minutes hand in the clock when the time is 9:38pm is _____
 1) 60° 2) 61° 3) 59° 4) 62°
- 44) The value of x satisfying $4^x - 3^{x-\frac{1}{2}} = 3^{x+\frac{1}{2}} - 2^{2x-1}$ is $\frac{a}{b}$ where G.C.D (a,b) = 1. The value of $\frac{a+b}{a-b} =$ _____
 1) 7 2) -5 3) 4 4) 5
- 45) Number of circles passing through all the three points (2, 3), (1, 4) and (1, -6) will be _____
 1) 1 2) 3 3) 0 4) infinite
- 46) If $a = \sqrt{2024}$, $b = \sqrt{2025}$ then $2(ab)^{\frac{1}{2}}(a+b)^{-1} \left\{ 1 + \frac{1}{4} \left(\frac{\sqrt{a}}{\sqrt{b}} - \frac{\sqrt{b}}{\sqrt{a}} \right)^2 \right\}^{\frac{1}{2}}$ equals
 1) 1 2) 2 3) -1 4) 0
- 47) In a parallelogram sides are 3, 4, 3, 4 In that order. Sum of squares of its diagonals is _____
 1) 38 2) 17 3) 50 4) 48
- 48) ABCD is a square. BE is tangent to semicircle on AD as diameter. The area of $\triangle BCE$ is 216 cm^2 . The radius of semicircle(in cm) is _____
 1) 12 2) 16
 3) 6 4) 9



- 49) For $\triangle ABC$; D, E, F are mid points of sides then if $\triangle DEF = 506 \text{ sq.cm}$. Then area of $\triangle GBC =$ _____ sq.cm where G is centroid of $\triangle ABC$
 1) 630 nearly 2) 675 nearly 3) 764 nearly 4) 768 nearly

- 50) How many times 5 appears in counting numbers 1, 2,.....100?
 1) 20 2) 30 3) 24 4) 32
- 51) In a particular manner : STAND $\rightarrow$ URCLF and BRAIN $\rightarrow$ DPCGP then
 POLAR $\rightarrow$ _____
 1) ZTJCP 2) OPKBQ 3) QNMZS 4) RMNYT
- 52) Which is called ARMSTRONG's number in the following ?
 1) 121 2) 6174 3) 1729 4) 153
- 53) If x & y are unequal and $x^3 + y^3 - 3xyz = z^3$ then $\frac{x}{z-y} + \frac{x+y}{z} =$ _____
 1) 1 2) 2 3) 0 4) -4
- 54) What is the name of polygon with 15 sides ?
 1) Decapentagon 2) Quindecagon
 3) Pentadecagon 4) Both 2 and 3
- 55) India's first satellite was named after.....
 1) Bhaskara 2) Aryabhatta 3) Brahmagupta 4) Mahaveera
- 56) A circle is inscribed in a square of diagonal $\sqrt{8}$. Area of that circle will be ____
 1) 12.6 nearly 2) 3.14 nearly 3) 10 nearly 4) 12 nearly
- 57) Name the mathematician who worked on Cramer-rao inequality and Fisher-Rao theorem :
 1) P. C. Mahalanobin 2) Albert- Einstein
 3) C. R Rao 4) G. H Harday
- 58) Two of the sides of a triangle are 5 and 6 and third side is also a integer length. Then number of such triangles can be
 1) 9 2) 12 3) 11 4) 14
- 59) The number of smallest squares in a chess board is _____
 1) 256 2) 64 3) 128 4) 32
- 60) If the vertices of a $\triangle ABC$ are all integer co-ordinates then the triangle cannot be _____
 1) Right angled scalene 2) Obtuse angled
 3) Equilateral 4) Right angled isosceles

