



Divine Public School

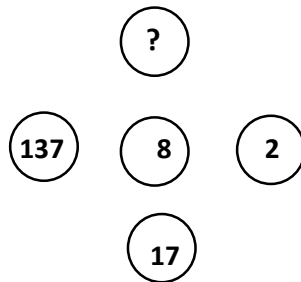
Bichhia, Gorakhpur



RAMANUJAN OLYMPIAD 2022-2023
FOR CLASSES IX & XI

NAME: ADM. NO. CLASS SEC..... TIME : 90 Min.

1.



- a) 9107
b) 1097 ✓

- c) 97
d) 907

2. DELHI = 25
MUMBAI = 36
KOLKATA = 49
CHENNAI = ?

- a) 81
b) 16

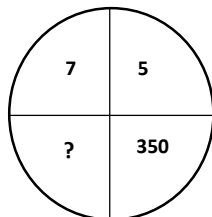
- c) 49 ✓
d) 18

3. $32 \times 34 = 96$
 $25 \times 14 = 29$
 $18 \times 51 = ?$

- a) 58
b) 15

- c) 18
d) 59 ✓

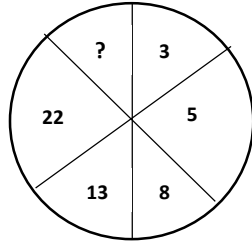
4.



- a) 126
b) 132 ✓

- c) 147
d) 75

5.



- a) 45
b) 29
6. Uncle is to Aunt as Father is to?
a) Nephew
b) Son
c) Daughter
d) Mother ✓
7. Ramanujan was Died in _____?
a) 26 April 1921
b) 19 April 1920
c) 26 April 1920 ✓
d) 9 April 1921
8. A number between 1000 and 2000 which when divided by 30, 36 & 80 gives a remainder 11 in each case is:
a) 1523
b) 1451 ✓
c) 1641
d) 1712
9. If 3^{1989} is divided by 7, then remainder is:
a) 8
b) 7
c) 6 ✓
d) 0
10. In a Zoo, there are rabbits and pigeons. If heads are counted there are 200 in all and if legs are counted there are 580 in all. How many pigeons are there in the Zoo?
a) 90
b) 110 ✓
c) 121
d) 130
11. Eight friends meet at a party. Each one shakes hand with each of the other once. The number of possible handshakes is?
a) 64
b) 56 ✓
c) 48
d) None of these
12. The average age of a husband and his wife was 23 years at the time of their marriage. After 5 years, they have a one-year old child. the average age of the family now is:
a) 19 years ✓
b) 23 years
c) 28.5 years
d) 29.3 years
13. If a person loses 20% on selling price then what percentage of loss will be made on the cost price?
a) 20%
b) 25%
c) $\frac{40}{3}\%$
d) $\frac{50}{3}\%$ ✓
14. If today is Thursday, then what will be the day n 363^{rd} day-
a) Sunday
b) Saturday
c) Thursday
d) Wednesday ✓
15. A, B and C working together can do a piece of work in 8 hours. A alone can do it in 20 hours and B alone can do it in 24 hours. In how many hours will C alone do the same work?
a) 15 hrs.
b) 20 hrs.
c) 30 hrs. ✓
d) 40 hrs.
16. Find a number whose double is 45 greater than its half?
a) 45
b) 40
c) 30 ✓
d) 35
17. Express $23.\overline{43}$ in the rational form.
a) $\frac{216}{3}$
b) $\frac{2320}{99}$ ✓
c) $\frac{14}{85}$
d) $\frac{2310}{87}$

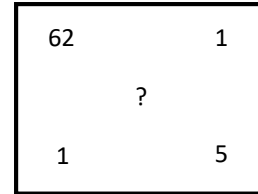
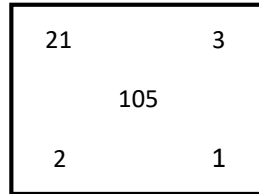
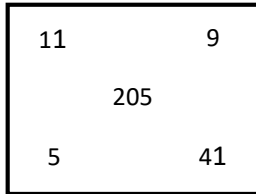
18. If the annual decrease in the population of a town is 15% and the present population of the town is 32000 then what will be the population of the town after 3 years?

- a) 21454
 b) 18042
 c) 19652 ✓
 d) 19008

19. Find the value of $\sqrt{17 + 4\sqrt{13}} - \sqrt{17 - 4\sqrt{13}}$ is :

- a) Positive integer
 b) Negative integer ✓
 c) Irrational number
 d) Rational and Not integer

20. Find the missing number?

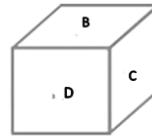
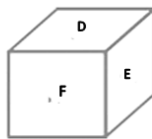
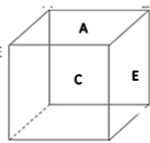


- a) 112
 b) 129 ✓
 c) 140
 d) 156

21. The position of how many digits will remain the same? If the digit in the number 9 7 2 1 5 3 6 8 are rearranged in the descending order?

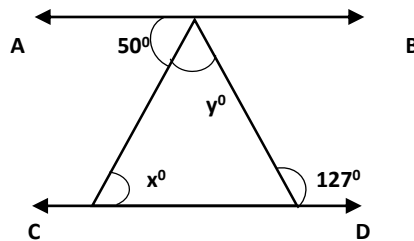
- a) None
 b) One
 c) Two
 d) Three ✓

22. Three positions of a dice are shown below. Which of the following alphabet is on the face opposite to the face having alphabet B?



- a) F
 b) E ✓
 c) A
 d) C

23. In the given figure if $AB \parallel CD$, then X and Y respectively are:



- a) $40^\circ, 30^\circ$
 b) $50^\circ, 77^\circ$ ✓
 c) $30^\circ, 45^\circ$
 d) $90^\circ, 30^\circ$

24. Find the value of reciprocal of $(a+b)^{-1} \cdot (a^{-1}+b^{-1})$

- a) ab ✓
 b) a/b
 c) $1/ab$
 d) $(ab)^2$

25. The Quadrilateral formed by joining the mid points of the sides of a quadrilateral PQRS, taken in order, is a rectangle if:

- a) PQRS is rectangle
 b) PQRS is a parallelogram
 c) Diagonal of PQRS are equal
 d) Diagonal of PQRS are at right angles ✓

26. Find the value of: $\sqrt{20 + \sqrt{204}} + \sqrt{20 - \sqrt{204}}$

- a) 0
 b) 1
 c) $\sqrt{68}$ ✓
 d) $\sqrt{24}$

27. If $a + b + c = 0$, then $\frac{a^4 + b^4 + c^4}{a^2b^2 + b^2c^2 + c^2a^2}$ is equal to:

- a) 4
b) 2 ✓
c) 1
d) 16

28. Find the number of two digit numbers divisible by the product of the digits.

- a) 7
b) 11
c) 4
d) 5 ✓

29. The number $107^{90} - 76^{90}$ is not divisible by:

- a) 61
b) 93
c) 183
d) 69 ✓

30. Each of the sides of a triangle is 8 cm less than the sum of its other two side. Area of triangle (cm^2) is:

- a) 8
b) $8\sqrt{3}$
c) 16
d) $16\sqrt{3}$ ✓

31. Let P be an interior point of a triangle ABC. Let Q and R be the reflection of P in AB and AC, respectively. If Q, A, R are collinear then $\angle A$ equals:

- a) 30°
b) 60°
c) 90° ✓
d) 120°

32. The coefficients of x^7 in the Polynomial expansion of $(1 + 2x - x^2)^4$ is:

- a) -8 ✓
b) 12
c) 6
d) -12

33. The number of Solid cones with integer radius and height each having its volume numerically equal to its surface area is:

- a) 0
b) 1 ✓
c) 2
d) infinite

34. In a Rhombus ABCD, $\angle A = 60^\circ$, the ratio of diagonals AC and BD is:

- a) $\sqrt{2} : 1$
b) $1 : \sqrt{2}$
c) $1 : \sqrt{3}$
d) $\sqrt{3} : 1$ ✓

35. A man gives 50% of his money to his son and 30% to his daughter. 80% of the rest is donated to a trust. If he is left with ₹ 16,000 now, how much money did he have in the beginning?

- a) ₹ 4,00,000 ✓
b) ₹ 40,000
c) ₹ 8,00,000
d) ₹ 80,000

36. The greatest among the numbers : $\sqrt[4]{3}$, $\sqrt[5]{4}$, $\sqrt[10]{12}$, $\sqrt[20]{30}$ is:

- a) $\sqrt[20]{30}$
b) $\sqrt[5]{4}$ ✓
c) $\sqrt[4]{3}$
d) $\sqrt[10]{12}$

37. If A means +, B means -, C means \times , D means \div , then what is the meaning of 100 D 20 C 3 A 10 B 5 ?

- a) 15
b) 25
c) 30
d) 20 ✓

38. If + means Multiply, \times means Divide, - means Add & \div means Subtract, then, $20 - 8 \times 4 \div 3 + 2 = ?$

- a) 16 ✓
b) 20
c) 18
d) 31

39. If + means \times , - means \div , \times means - & \div means +, then, $6 \div 36 - 4 \times 2 + 2 = ?$

- a) 6
b) 8
c) 11 ✓
d) 17

40. Look at this series : 36, 34, 30, 28, 24, What number should come next?

- a) 20
b) 22 ✓
c) 23
d) 26