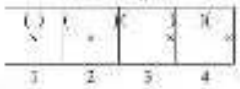
Logical Reasoning

1. Select a figure from the options which will continue the series established by the four problem figures.

Problem Figures



(a)

(b)

(c)

(d)

2. Pointing to a man in a photograph, a woman says, "He is the only son of the only daughter-in-law of my only son's father." How is the man related to the woman?
   (a) Son
   (b) Father
   (c) Son-in-law
   (d) Grandson

3. Which of the following options will complete the pattern in figure (X)?

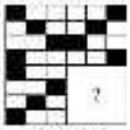


Figure (X)

(a)

(b)

(c)

(d)

4. Arrange the given words in a meaningful sequence and then choose the most appropriate sequence.

1. Cutting 2. Dish 3. Vegetable 4. Market 5. Cooking

(a) 1, 2, 4, 5, 3
(b) 3, 2, 5, 1, 4
(c) 4, 3, 1, 5, 2
(d) 5, 3, 2, 1, 4

5. If in a certain code '56431' is written as 'RSHTU' and '98270' as 'MLKPA', then how will '9517' be written in the same code?

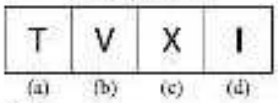
(a) MURP
(b) MRUP
(c) MRPU
(d) MRPT

6. Raman walks 50 m North. Then he turns right and walks 30 m. Then he turns right and walks 35 m. Then he turns left and walks 15 m. Then he again turns right and walks 15 m. In which direction and how many meters away is he from his original position?

(a) 45 metres West
(b) 30 metres East
(c) 30 metres West
(d) 45 metres East

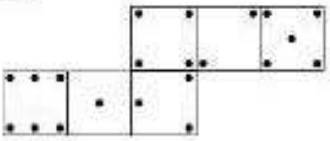
7. Out of the four figures marked (a), (b), (c) and (d) three are similar in a certain manner. However, one figure is not like the other three. Choose the figure which is different from the rest.

Problem Figures



(a) a
(b) b
(c) c
(d) d

8. How many dots lie opposite to the face having three dots, when the given figure is folded to form a cube?



(a) 2
(b) 4
(c) 5
(d) 6

9. Select a figure from the options, which satisfies the same conditions of placement of the dot as in figure (X).

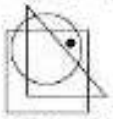
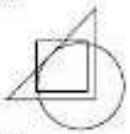
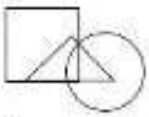


Figure (X)

(a)

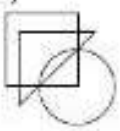


(b)



(c)

(d)



10. Given question consists of a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Fig. (Z) shows the manner in which the folded paper has been cut. Choose a figure from the options which would most closely resemble the unfolded form of piece of paper.

X Y Z

(a)

(b)

(c)

(d)

11. If '×' means 'is father of ', '+' means 'is sister of ', '−' means 'is brother of ', and '÷' means 'is mother of ', then which of the following statements means 'S is grand-daughter of P'?

(a) P×T+R÷S

(b) P÷Q−R÷S−T

(c) P×R−T×S

(d) P÷Q−R×S+T

12. Study the following arrangement carefully and answer the question given below:

R D A K 5 B I 2 M J E N 9 7 U Z V 1 W 3 H 4 F Y 8 P 6 T G

How many such consonants are there in the above arrangement each of which is immediately preceded by a vowel and immediately followed by a number?

(a) None

(b) One

(c) Two

(d) Three

13. There is a square transparent sheet with a given pattern is given. Figure out from the options as to how the pattern would appear when the transparent sheet is folded along the dotted line.

(a)

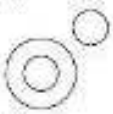
(b)

(c)

(d)

14. Which of the following Venn diagrams best illustrates the relationship among the three classes:
"Truck, Ship, Goods"?

(a)



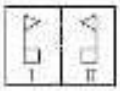
(b)

(c)

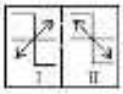
(d)

15. In a certain code language 'in pe ba' means 'he is late', 'le ba se' means 'she is early' and 'pa ta in' means 'he leaves soon'. Which word in that language means late?
(a) pe
(b) in
(c) ba
(d) Data is inadequate

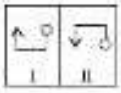
16. Select the pair that has a relationship similar to given pair.



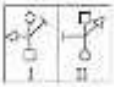
(a)



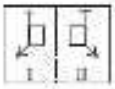
(b)



(c)



(d)



17. Select a figure from the options in which figure (X) is embedded as one of its part.

Figure (X)

(a)

(b)

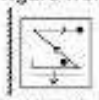
(c)

(d)

18. Which number will replace the question mark in number pattern?

(a) 100
(b) 361
(c) 389
(d) 400

19. Select a figure from the options which is the mirror image of the Problem Figure.



Problem Figure

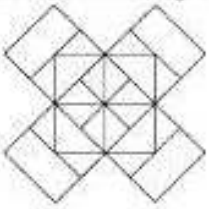
(a)

(b)

(c)

(d)

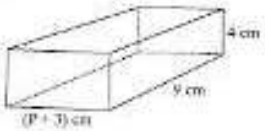
20. Minimum number of straight lines required to form the given figure is _____.



(a) 22
(b) 20
(c) 18
(d) 24

Mathematical Reasoning

21. The given figure shows a cuboid with a total surface area $202\,cm^2$. Find the volume of cuboid.



(a) $72\,cm^3$
(b) $36\,cm^3$
(c) $180\,cm^3$
(d) $200\,cm^3$

22. The simplified value of $\frac{2.3^{n+1}+7.3^{n-1}}{3^{n+2}-2\left(\frac{1}{3}\right)^{1-n}}$ is

(a) 1
(b) 3
(c) –1
(d) 0

23. The pie chart shows a percentage breakdown of 1000 votes in student elections. How many votes did Sushanth receive?

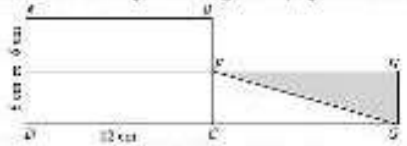
(a) 550
(b) 350
(c) 330
(d) 450

24. The division of rational numbers is
(a) Commutative
(b) Associative
(c) Neither commutative nor associative
(d) Both (a) and (b)

25. If $(a+b):(b+c):(c+a)=6:7:8$ and $a+b+c=14$, then find the value of c.
(a) 6
(b) 8
(c) 14
(d) 7

26. If $4^x+4^x+4^x+4^x+4^x+4^x+4^x+4^x=\frac{1}{512}$, then what is the value of $\frac{-3}{x}$?
(a) 0.50
(b) 0.75
(c) –0.75
(d) –4.25

27. Consider the given diagram. (figure not drawn to scale)



If the area of ABCD is equal to the area of DEHG, then the ratio of area of shaded to unshaded part is _____.

(a) 72 : 113

(b) 1 : 5

(c) 26 : 113

(d) 36 : 113

28. Find the number of coins, 1.5 cm in diameter and 0.2 cm thick, to be melted to form a right circular cylinder with a height of 10 cm and a diameter of 4.5 cm.

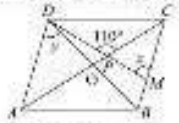
(a) 450

(b) 396

(c) 390

(d) 410

29. In the given figure, ABCD is a rhombus and $\angle BCD = 80^\circ$. Find x and y respectively.



(a) $40^\circ, 20^\circ$

(b) $70^\circ, 50^\circ$

(c) $80^\circ, 30^\circ$

(d) $50^\circ, 40^\circ$

30. The value of $\sqrt{2\frac{1}{4}} \times \left(1\frac{1}{3}\right)^2 + 1 \div \sqrt[3]{3\frac{3}{8}}$ is _____.

(a) $3\frac{1}{3}$

(b) $4\frac{1}{6}$

(c) $1\frac{1}{3}$

(d) $5\frac{1}{2}$

31. Find the square root of $6\frac{115}{289}$.

(a) 2.410
(b) 2.529
(c) 2.113
(d) 2.482

32. Three numbers are in the ratio 3 : 2 : 1. The sum of their cubes is 246924. Find the largest number.

(a) 51
(b) 38
(c) 61
(d) 57

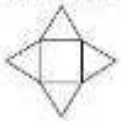
33. The area of a rectangle is given by $6x^2y + 4y^2x$ and the width of the rectangle is given by $2xy$. Find the perimeter of rectangle.

(a) $6x + 8y + 2xy$
(b) $3x + 4y + 2xy$
(c) $8x + 6y + 4xy$
(d) $6x + 4y + 4xy$

34. Difference between smallest 4-digit perfect square and greatest 4-digit perfect square is

(a) 8777
(b) 1012
(c) 9801
(d) 7777

35. Which solid would be formed by the given net?



(a) Triangular Pyramid
(b) Square Pyramid
(c) Hexagonal Pyramid
(d) Rectangular Pyramid

36. A dairyman pays Rs. 6.40 per litre of milk. He adds water and sells the mixture at Rs. 8 per litre, thereby making 37.5% profit. The proportion of water to milk received by the customers is
(a) 1 : 10
(b) 1 : 12
(c) 1 : 15
(d) 1 : 20

37. A fires 5 shots to B's 3 but A kills only once in 3 shots while B kills once in 2 shots. When B has missed 27 times, A has killed
(a) 30 birds
(b) 60 birds
(c) 72 birds
(d) 90 birds

38. Sakshi can do a piece of work in 20 days. Tanya is 25% more efficient than Sakshi. The number of days taken by Tanya to do the same piece of work is
(a) 15
(b) 16
(c) 18
(d) 25

39. Adam borrowed some money at the rate of 6% p.a. for the first two years, at the rate of 9% p.a. for the next three years, and at the rate of 14% p.a. for the period beyond five years. If he pays a total interest of Rs. 11,400 at the end of nine years, how much money did he borrow?
(a) Rs. 12,000
(b) Rs. 13,000
(c) Rs. 11,000
(d) Rs. 14,000

40. A man walking at the speed of 4 km/hr crosses a square field diagonally in 3 minutes. The area of the field is
(a) 18000 m^2
(b) 19000 m^2
(c) 20000 m^2
(d) 25000 m^2

41. A group of students decided to collect as many paise from each member of the group as is the number of members. If the total collection amounts to Rs. 59.29, the number of members in the group is
(a) 57
(b) 67
(c) 77
(d) 87

42. Hitesh is 40 years old and Rohit is 60 years old. How many years ago was the ratio of their ages 3 : 5?
(a) 5 years
(b) 10 years
(c) 20 years
(d) 37 years

43. Monika purchased a pressure cooker at $\left(\frac{9}{10}\right)^{th}$ of its selling price and sold it at 8% more than its S.P. Find her gain percent.
(a) 20%
(b) 10%
(c) 30%
(d) 40%

44. Sanket earns twice as much in the month of March as in each of the other months of the year. What part of his entire annual earnings was earned in March?
(a) $\frac{1}{7}$
(b) $\frac{1}{6}$
(c) $\frac{2}{11}$
(d) $\frac{2}{13}$

45. A pineapple costs Rs. 7 each. A watermelon costs Rs. 5 each. X spends Rs. 38 on these fruits. The number of pineapples purchased is
(a) 2
(b) 3
(c) 4
(d) Data is inadequate

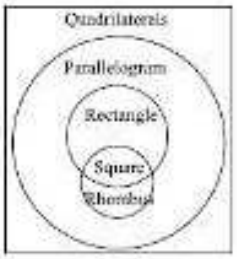
Achievers Section

46. Select the INCORRECT match with respect to the representation of numbers on the number line.

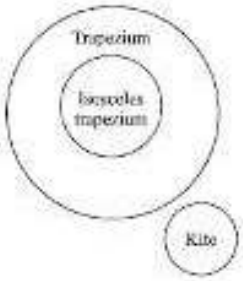
(a) Natural Numbers	The line extends indefinitely only to the right side of 1.
(b) Whole Numbers	The line extends indefinitely to the right, but from 0. There are no numbers to the left of 0.
(c) Integers	The line extends indefinitely on both sides and you can see numbers between $-1, 0; 0, 1$ etc.
(d) Rational Numbers	The line extends indefinitely on both sides and you can see numbers between $-1, 0; 0, 1$ etc.

47. Which of the following Venn diagrams is right?

I



II



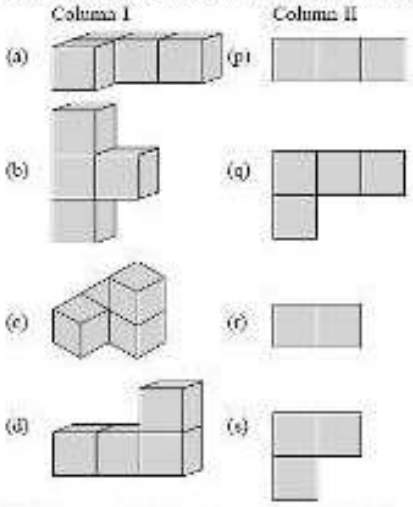
(a) Only I right
(b) Only II right
(c) Both I and II are right
(d) Both I and II are wrong.

48. A school has 8 tables of dimensions 1 m by 1 m, 26 tables of dimensions x m by 1 m and 15 tables of dimensions x m by x m. All the tables are of equal height.
Based on this information answer the question given below:
If the tables are placed together to form a large rectangular table, then the dimension of the table formed is _____.

(a) $(3x+4)(5x+2)$
(b) $(3x-4)(5x-4)$
(c) $(5x-4)(4x-4)$
(d) $(5x-4)(5x+4)$

49. Study the two statements given below carefully.
Statement 1: A pyramid is a polyhedron whose base and top are congruent polygons and whose other faces i.e., lateral faces are parallelograms in shape.
Statement 2: A prism is a polyhedron whose base is a polygon (of any number of sides) and whose lateral faces are triangles with a common vertex.
(a) Statement-1 is true and Statement-2 is false.
(b) Statement-1 is false and Statement-1 is true.
(c) Both the statements are true.
(d) Both the statements are false.

50. Match the solids in Column-I with their top view in Column-II.



(a) (a) → (p); (b) → (q); (c) → (r); (d) → (s)
(b) (a) → (q); (b) → (p); (c) → (r); (d) → (s)
(c) (a) → (q); (b) → (r); (c) → (s); (d) → (p)
(d) (a) → (q); (b) → (r); (c) → (p); (d) → (s)