# Logical Reasoning

1. Which of the following indicates similar relationship as 'LOWER' has with 'WORLE'?
   (a) ENTRY : RNYET
   (b) WORDS : ROSWD
   (c) AMONG : OMNAG
   (d) GLAZE : AGELZ

2. If it is possible to make a meaningful word with the second, fourth, sixth and eighth letters of the word UMBRELLA, then which of the following will be the third letter of that word? If more than one such word can be formed, give 'Z' as the answer. If no such word can be formed give 'X' as the answer.
   (a) X
   (b) M
   (c) Z
   (d) R

3. Select a figure from the options which will continue the same series as established by the Problem Figures.

Problem Figures
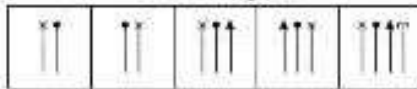
(a)

(b)

(c)

(d)

4. Raman starts from point P and walks towards East and stops at point Q. He now takes a right turn followed by a left turn and stops at point R. He finally takes a left turn and stops at point S. If he walks 5 km before taking each turn, then towards which direction will Raman have to walk from point S to reach point Q?

   (a) North
   (b) South
   (c) West
   (d) East

5. How many such 4's are there in the given below arrangement which are immediately preceded by a pair of numbers whose product is more than the product of pair of numbers immediately following 4?

   4 3 7 8 4 4 5 6 4 3 2 4 1 7 4 4 5 2 1 4 6 8 9 4 8 9 4 7 8 6 4 2 5 4 4 6 2

   (a) 3
   (b) 4
   (c) 5
   (d) 7

6. There is a definite relationship between figures (1) and (2). Establish a similar relationship between figures (3) and (4) by selecting a suitable figure from the options that would replace the (?) in fig. (4).
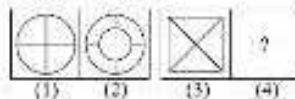
   (a)

   (b)

   (c)

   (d)

7. Aakash, Priya, Shikha, Mohit, Riya, Giya and Mukta are sitting around a circle facing the Centre. Aakash is third to the left of Mukta and to the immediate right of Riya. Priya is second to the left of Giya, who is not an immediate neighbour of Mohit. Who is to the immediate right of Priya?
   (a) Mohit
   (b) Shikha
   (c) Mukta
   (d) Can't be determined

8. Select the correct mirror-image of Fig. (X), if mirror is placed vertically to the left.

Fig. (X)

(a)
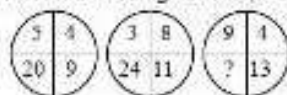

(b)

(c)

(d)

9. Pointing to Kartik, Vivan said, "His mother's brother is the father of my son Nitin." How is Kartik related to Vivan?
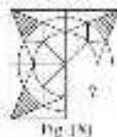   (a) Brother
   (b) Uncle
   (c) Nephew
   (d) Father

(a) Body, Hand, Eatables

(b) Mammal, Nurse, Woman

(c) Star, Moon, Mars

(d) Swimmer, Carpenter, Singer

11. Find the missing number, if the same rule is followed in all the three figures.

(a) 117

(b) 36

(c) 32

(d) 26

12. Select a figure from the options, which when placed in the blank space of Fig. (X) would complete the pattern.

Fig. (X)

(a)

(b)

(c)

(d)

worked out separately based on the following rules and the question below the rows of numbers is to be answered. The operations of numbers progress from left to right.

Rules:

1. If an even number is followed by a prime number, they are to be multiplied.

2. If an even number is followed by a composite odd number, odd number is to be subtracted from the even number

3. If an odd number is followed by a prime number, the first number is to be divided by the second number.

4. If an odd number is followed by an even number which is a perfect square, they are to be added.

5. If an odd number is followed by composite odd number, they are to be added.

23	15	9	64
x	31	15	3

If x is the resultant of the first row, then what is the resultant of the second row?

(a) 54

(b) 18

(c) 21

(d) 72

14. A set of three figures X, Y and Z showing a sequence of folding of a piece of paper is given. Fig. (Z) shows the manner in which the folded paper has been cut. Select a figure from the options which would most closely resemble the unfolded form of Fig. (Z)
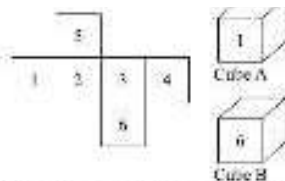

(a)

(b)

(c)

(d)

Find the sum of the number opposite to 1 on Cube A and the number opposite to 6 on Cube B.
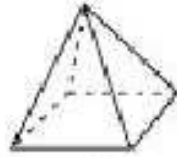
(a) 9
(b) 8
(c) 7
(d) 6

Mathematical Reasoning

16. Solve for x: $\frac{2}{3}(4x-1)-\left(4x-\frac{1-3x}{2}\right)=\frac{x-7}{2}$

    (a) 0
    (b) 1
    (c) 2
    (d) 5

17. If a, b, c are rational numbers, then associativity of rational numbers under addition is given by

    (a) $a + b = b + a$
    (b) $a + (b + c) = (a + b) + c$
    (c) $a \times (b \times c) = (a \times b) \times c$
    (d) $a + (b - c) = (a + b) - c$

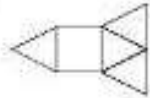18. In the given figure, ACDH is a parallelogram, EFGH is a square and the straight line BEG is parallel to CD. Find $\angle\angle$ CDE.
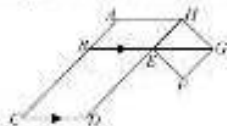
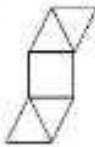   (a) 45°
    (b) 125°
    (c) 135°
    (d) 185°

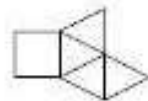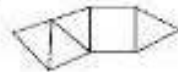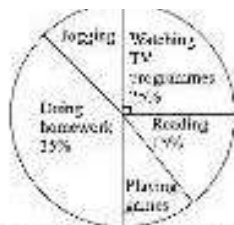Which one of the following CANNOT be the net of the given pyramid?

(a)

(b)

(c)

(d)

20. The value of $\dfrac{(469+174)^2-(469-174)^2}{469\times174}$ is

(a) 2

(b) 4

(c) 689

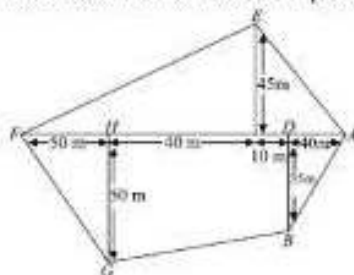(d) 1023

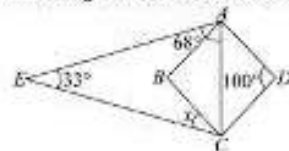If Mini spent 2 hrs 30 mins in watching TV programmes, then how much time she spent on jogging?

(a) 1 hr 15 mins

(b) 1 hr 30 mins

(c) 2 hrs 15 mins

(d) 2 hrs 45 mins

22. The area of the field ABGFEA (not drawn to scale) is

(a) 7225 m²

(b) 7230 m²

(c) 7235 m²

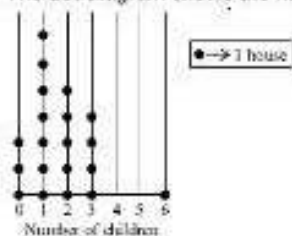(d) 7240 m²

23. In the figure below, ABCD is a rhombus. Find x.

(a) 39°

(b) 40°

(c) 49°

(d) 29°

$x - 5$

(a) 5

(b) 10

(c) 15

(d) $\frac{20}{3}$

25. The dot diagram shows the number of children living in the houses on a certain road.

● → 1 house

Number of children

Find the probability of the house having exactly 2 children.

(a) $\frac{1}{4}$

(b) $\frac{2}{3}$

(c) $\frac{3}{4}$

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

26. Find the value of x, if $3^{3.5} \times 21^2 \times 42^{2.5} \div 2^{2.5} \times 7^{3.5} = (21)^x$

(a) 8

(b) 10

(c) 12.5

(d) 6.5

27. The population of a town is 176400. It increases annually at the rate of 5% p.a. What will be its population after 2 years? What was it 2 years ago?

(a) 194481, 159201

(b) 160000, 194480

(c) 194950, 159286

(d) 194481, 160000

(a) $-5x^2$

(b) $4x^2$

(c) $-6x^2$

(d) $-3x^2$

29. Shirish purchased a watch at 20% discount on its marked price but sold it at the marked price. Find the gain percent of Shirish in the transaction.

(a) 10%

(b) 20%

(c) 25%

(d) 35%

30. The value of $\sqrt{\dfrac{0.00001225}{0.00005329}} - \sqrt[3]{\sqrt{0.000064}} =$

(a) 0.2

(b) 0.279

(c) 0.479

(d) 0

31. Which of the following statements is true?

(i) $\dfrac{-5}{0}$ is a negative rational number.

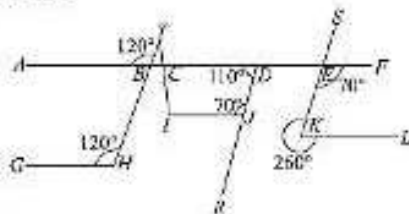(ii) The reciprocal of $\dfrac{1}{a}$, if $a = 0$ is $\dfrac{1}{0}$.

(iii) $1 \div \left(-\dfrac{1}{4}\right) = -4$
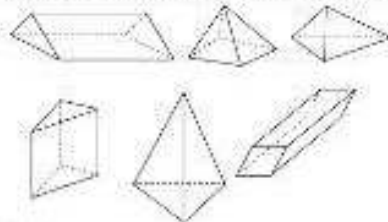
(iv) $x \div (y + z) = x \div y + x \div z$

(a) Both (i) and (ii)

(b) Only (iii)

(c) (i), (ii) and (iv)

(d) (ii), (iii) and (iv)

(a) $a - b = \dfrac{x}{100}$

(b) $b = a + 100x$

(c) $a = \dfrac{bx}{(100 + x)}$

(d) $a = \left(b + \dfrac{bx}{100} \right)$

33. The figure below is not drawn to scale. If all lines are straight lines, then which of the following options is FALSE?

(a) AB ∥ GH
(b) CD ∥ IJ
(c) DR ∥ SK
(d) EF ∥ KL

34. How many of the given solids are pyramids?

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

(a) The identity for addition of rational numbers.

(b) The identity for subtraction of rational numbers.

(c) The identity for multiplication of rational numbers.

(d) The identity for division of rational numbers.

Everyday Mathematics

36. In the last three months Mr. Sharma lost $5\frac{1}{2}$ kg, gained $2\frac{1}{4}$ kg and then lost $3\frac{3}{4}$ kg weight. If he now weighs 95 kg, then how much did Mr. Sharma weighs in beginning?

(a) 100 kg

(b) 102 kg

(c) 106.5 kg

(d) 104 kg

37. The length and the breadth of a rectangular hall are 24 m and 18 m, respectively. What is the length of the largest straight line that can be drawn on the floor of the hall?

(a) 24 m

(b) 28 m

(c) 30 m

(d) 34 m

38. A bookshop owner purchased 100 notebooks for ₹15 each. However, 5 notebooks had to be return as few pages were torn from them. The remaining notebooks were sold at ₹18 each. Find the gain or loss percent.

(a) 10% gain

(b) 14% gain

(c) 12% loss

(d) 8% loss

39. Atharv bought a television set whose marked price was ₹45,000. He then gets a discount of 15% and pays a sales tax of 12%. How much does he pay for the television set?

(a) ₹33,660

(b) ₹43,650

(c) ₹47,250

(d) ₹42,840

cubic metre. The weight of the beam is
(a) 56 kg
(b) 48 kg
(c) 36 kg
(d) 27 kg

41. The probability of getting an even number on spinning the wheel is $\frac{1}{2}$ and that of a prime number is $\frac{4}{6}$.


What could be the missing number on the wheel?
(a) 1
(b) 2
(c) 4
(d) 9

42. Each child from a certain school can make 5 items of handicraft in a day. If 1125 handicraft items are to be displayed in an exhibition, then in how many days can 25 children make these items?
(a) 6 days
(b) 7 days
(c) 8 days
(d) 9 days

43. Shikha invested ₹6400 for 3 years at the rate of 10% per annum compounded annually. Sneha invested the same amount at the same rate for the same time but on simple interest. Who gets more interest and by how much?
(a) Sneha, ₹198.40
(b) Sneha, ₹146.50
(c) Shikha, ₹146.50
(d) Shikha, ₹198.40

still left with ₹9,000, then what did he originally have?

(a) ₹14,000

(b) ₹ 19,845

(c) ₹ 20,000

(d) ₹ 25,409

45. A group of students decided to collect as many paise from each member of the group as is the number of members in the group. If the total collection amounts to ₹22.09, the number of members in the group is
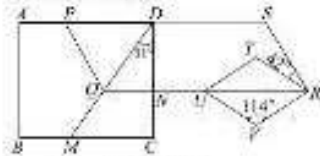
(a) 37

(b) 47

(c) 39

(d) 49

Achievers Section

46. Select the INCORRECT match.

	Shape	Faces	Vertices	Edges
(a)		7	10	15
(b)		10	16	24
(c)		7	7	14
(d)		5	5	8

DQM is a straight line. Then find
(i) ∠∠QPS,
(ii) ∠∠PQD and
(iii) ∠∠MQN.

	(i)	(ii)	(iii)
(a)	45°	98°	105°
(b)	36°	42°	121°
(c)	75°	46°	121°
(d)	70°	43°	105°

48. Suppose for the principal P, rate R% and time T years the simple interest is S and compound interest is C.

Consider the possibilities:

(i) C > S

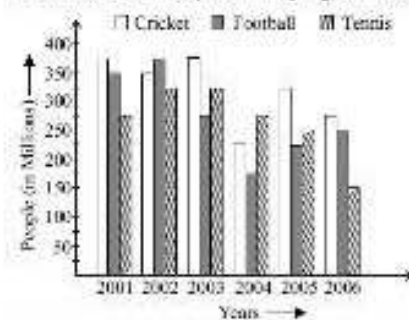(ii) C = S

(iii) C < S

Which of the following options hold?

(a) Only (i) is correct.

(b) Either (i) or (ii) is correct.

(c) Either (ii) or (iii) is correct.

(d) Only (iii) is correct.

49. Study the bar graph given below.

Preferences of People in Playing Different Games Over the Years.

preferring to play Tennis in the year 2003?

(a) 14 : 15

(b) 15 : 13

(c) 15 : 17

(d) 13 : 15

50. Arrange the following steps in correct order in constructing a square whose one diagonal is 5 cm.

Step 1 : Let PQ cut AC at O.

Step 2 : Draw a diagonal AC = 5 cm.

Step 3 : Join AB, BC, CD and DA. Then ABCD is the required square.

Step 4 : Draw PQ the perpendicular bisector of AC.

Step 5 : With O as centre and OA radius draw a circle. Let this circle cut QP at points B and D.

(a) 2, 1, 4, 5, 3

(b) 2, 5, 4, 1, 3

(c) 2, 4, 5, 1, 3

(d) 2, 4, 1, 5, 3