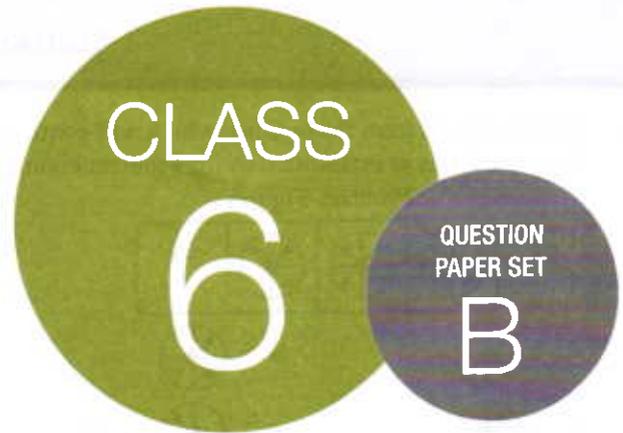


**SOF INTERNATIONAL
MATHEMATICS OLYMPIAD
2018-19**



DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

Total Questions: 50 | Time: 1 hr.

Name:

Section: SOF Olympiad Roll No.: Contact No.:

Guidelines for the Candidate

- You will get additional ten minutes to fill up information about yourself on the OMR Sheet, before the start of the exam.
- Write your **Name, School Code, Class, Section, Roll No.** and **Mobile Number** clearly on the **OMR Sheet** and do not forget to sign it. We will share with you your marks / result on your mobile number.
- The Question Paper comprises four sections:
Logical Reasoning (15 Questions), **Mathematical Reasoning** (20 Questions), **Everyday Mathematics** (10 Questions) and **Achievers Section** (5 Questions)
Each question in Achievers Section carries 3 marks, whereas all other questions carry one mark each.
- All questions are compulsory. There is no negative marking. Use of calculator is not permitted.
- There is only ONE correct answer. Choose only ONE option for an answer.
- To mark your choice of answers by darkening the circles on the OMR Sheet, use **HB Pencil** or **Blue / Black ball point pen** only. E.g.
Q.16: Rahul bought 4 kg 90 g of apples, 2 kg 60 g of grapes and 5 kg 300 g of mangoes. The total weight of all the fruits he bought is _____.
A. 11.450 kg B. 11.000 kg C. 11.350 kg D. 11.250 kg
As the correct answer is option A, you must darken the circle corresponding to option A on the OMR Sheet.
- Rough work should be done in the blank space provided in the booklet.
- Return the OMR Sheet to the invigilator at the end of the exam.
- Please fill in your personal details in the space provided on this page before attempting the paper.

16. ● (B) (C) (D)

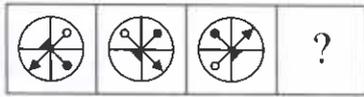


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LOGICAL REASONING

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

Problem Figures

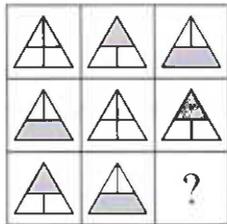


- A. B.
- C. D.

2. How many such even numbers are there in the following sequence of numbers each of which is immediately followed by an even number as well as immediately preceded by an odd number?

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

- A. 1
B. 2
C. 3
D. More than 3
3. Which of the following options will replace the (?) in the given figure matrix?



- A. B.
- C. D.

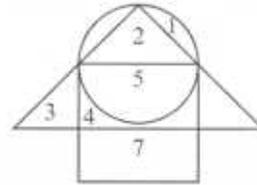
4. If Tarun says, "Deepak's mother is the only daughter-in-law of my father", then how is Tarun related to Deepak?

- A. Father
B. Grandfather
C. Uncle
D. Brother

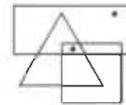
5. Shivam is facing towards North-East. He turns 180° clockwise and then again turns 180° anticlockwise. Finally he turns 315° clockwise. In which direction is he facing now?

- A. North
B. North-West
C. South
D. South-East

6. In the given Venn diagram, Triangle represents people who like playing indoor games, Circle represents people who like playing outdoor games and Square represents people who like watching T.V. Which of the following numbers represents people who like to play indoor as well as outdoor games but do not like to watch T.V.?

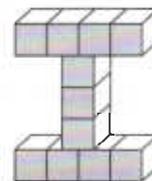


- A. 4
B. 5
C. 2
D. 3
7. If '-' denotes '+', '+' denotes 'x', 'x' denotes '-' and 'x' denotes '+', then find the value of $116 + 9 \div 52 - 4 \times 5$.
- A. 16
B. 8
C. 9
D. 4
8. Select a figure from the options which satisfies the same conditions of placement of the dots as in the given figure.



- A. B.
- C. D.

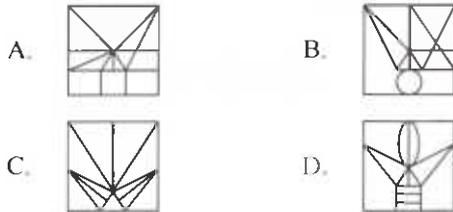
9. How many cubes are required to make the given figure?



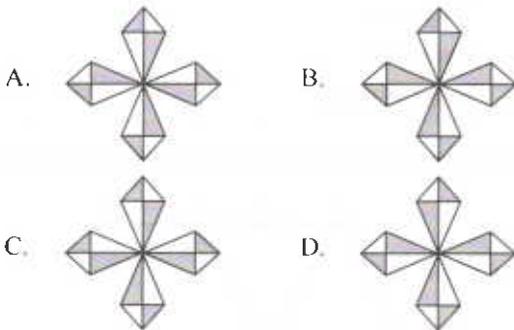
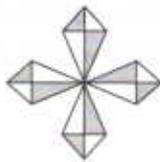
- A. 13
B. 14
C. 10
D. 11

10. In a certain code language, 'SACRED' is written as 'TBDQDC'. How will 'SAFETY' be written in the same language?
- A. TBESDX
B. TBDDSX
C. TBGDSX
D. RBDXYA

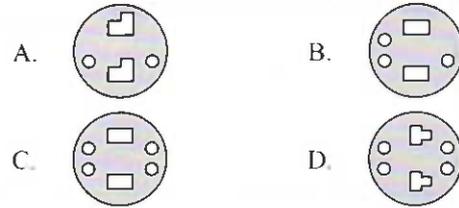
11. Select a figure from the options in which the given figure is exactly embedded as one of its parts.



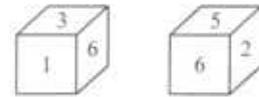
12. Select the correct water image of the given figure.



13. The given question consists of a set of three figures P, Q and R showing a sequence of folding of a piece of paper. Fig. (R) 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. (R).



14. Two positions of a dice are shown here. Which of the following will be at the top when 4 is at the bottom?



- A. 3
B. 6
C. 2
D. 1

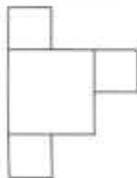
15. Among 5 students, Atul is lighter than Rashi and Anuj. Karan is heavier than Sam and Rashi. Sam is not the lightest. Who among them is the lightest?

- A. Karan
B. Atul
C. Rashi
D. Anuj

MATHEMATICAL REASONING

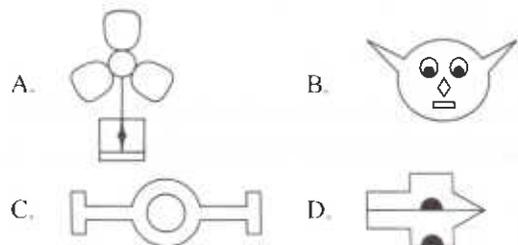
16. Find the sum of $-59, -41, 73, -92, 81, -(-41)$ and -3 .
- A. 3
B. 0
C. 1
D. -2

17. The given figure is made up of one big square of side 5 cm and 3 identical small squares of side x cm each. Find the perimeter of the figure in terms of x .



- A. $(20 + 6x)$ cm
B. $(20 + 5x)$ cm
C. $(18 + 7x)$ cm
D. $(20 + 9x)$ cm

18. Which of the following figures does not have any line of symmetry?



19. The product of a number and the sum of $2\frac{1}{5}$ and $\frac{9}{5}$ is 76. Find the number.
- A. 20
B. 21
C. 19
D. 18

20. If 60 is divided into two parts in the ratio 2 : 3, then the difference between those two parts is _____.
- A. 10
B. 12
C. 5
D. 18

21. The algebraic expression for the statement 'One-fifth of a number x is subtracted from the sum of b and thrice of c ' is _____.
- A. $3(b+c) - \frac{x}{5}$
B. $(b+3c) - \frac{x}{5}$
C. $\frac{x}{5} - (b+3c)$
D. $\frac{x}{5} - 3(b-3c)$

Direction (22-23) : The given table shows the number of chapatis Ms Sharma made on each day in a week.

Days	Number of chapatis
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

22. How many chapatis did she make in the whole week?
- A. 42
B. 67
C. 57
D. 47
23. If each chapati was made using 9 g of flour, then quantity of flour used on Friday was _____ g.
- A. 100
B. 81

- C. 90
D. 99

24. Find the value of 896.72×0.15 correct to the nearest tenths.
- A. 134.51
B. 134.6
C. 134.61
D. 134.5

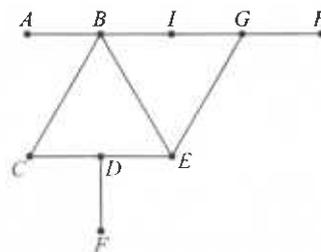
25. Find the value of p and q respectively which satisfies the given equation.

$$p\frac{1}{3} + q\frac{1}{3} = 7\frac{2}{3}$$

- A. 4, 8
B. 2, 3
C. 3, 4
D. 3, 5

26. A quadrilateral shaped photo frame has all sides equal. Which of the following is not a possible shape for the photo frame?
- A. Square
B. Trapezium
C. Rhombus
D. None of these

27. How many line segments are there in the given figure?



- A. 17
B. 20
C. 19
D. 18

28. If a line segment measuring 28.254 cm is divided into three equal parts, then the sum of the measure of the two parts is _____.
- A. 14.112 cm
B. 15.646 cm
C. 19.264 cm
D. 18.836 cm

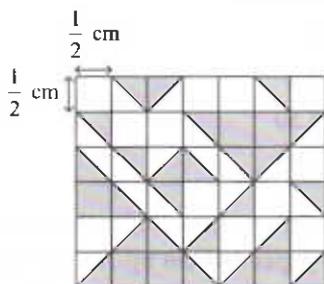
29. Divide the place value of 5 in 256798 by 1 less than the predecessor of 10002.

- A. 501
- B. 50
- C. 5001
- D. 5

30. How many degrees are there in one-third of one-fourth of one complete turn?

- A. 30°
- B. 60°
- C. 90°
- D. 120°

31. Find the area of the unshaded part of the given figure.



- A. 4.5 cm^2
- B. 6 cm^2
- C. 10 cm^2
- D. 6.5 cm^2

32. If $m : n = 3 : 7$, then $(6m - 2n) : (5m + 3n)$ is equal to _____.

- A. 1 : 9
- B. 2 : 45
- C. 9 : 18
- D. 4 : 123

33. The number 90406092 can be written in International System of Numeration as

- A. Nine crore forty lakh sixty thousand ninety two
- B. Ninety million forty lakh six thousand ninety two
- C. Ninety million four hundred six and ninety two
- D. Ninety million four hundred six thousand ninety two

34. A number is always divisible by 180, if

- A. It is divisible by both 45 and 2.
- B. It is divisible by both 36 and 5.
- C. It is divisible by both 18 and 30.
- D. All of these

35. Which of the following options is incorrect?

- A. $\frac{3}{4} > \frac{2}{3}$
- B. $\frac{4}{5} > \frac{1}{3}$
- C. $\frac{9}{7} > 1$
- D. $\frac{1}{2} < \frac{1}{4}$

EVERYDAY MATHEMATICS

36. Samiara bought a raw papaya weighing 8 kg 300 g. Out of this, she gave 2 kg 200 g to her tenant. How much papaya is left with her?

- A. 5 kg 10 g
- B. 5 kg 100 g
- C. 6 kg 100 g
- D. 6 kg 10 g

37. A milkman supplies 34 L of full cream milk and 54 L of toned milk everyday in Palam Vihar. The toned milk costs ₹ 48 per litre and full cream milk costs ₹ 56 per litre. How much money the milkman will earn in the month of June?

- A. ₹ 124640
- B. ₹ 134880
- C. ₹ 101732
- D. ₹ 145650

38. Four mobile phones commence vibrating together and vibrate at an intervals of 16 secs, 9 secs, 8 secs and 4 secs respectively. In 12 minutes, how many times will they vibrate together?

- A. 7
- B. 4
- C. 8
- D. None of these

39. From Shanti Niwas, Mr Saxena takes a left turn and walks 87 steps to reach the community hall. One day, by mistake he turns to right and after walking 35 steps he realised that he is walking in the opposite direction. How many steps he has to walk back to reach the community hall?

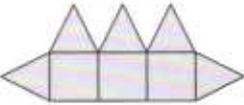
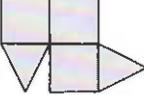
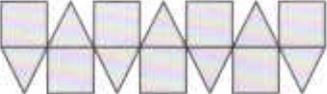
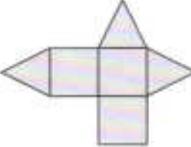
- A. 122
- B. 52
- C. 59
- D. 120

40. Vipin, Tushar and Vikas are living in a room on rent. In a month Tushar decided to pay one-fifth of the total rent and Vikas decided to pay two-fourth of the total rent. How much will Vipin pay, if the rent of the room is ₹ 12500 per month?
- A. ₹ 6250
B. ₹ 3750
C. ₹ 2500
D. ₹ 2560
-
41. A bag contains one rupee, 50 paise and 25 paise coins in the ratio 5 : 6 : 8. If the total amount is ₹ 420, then find the total number of coins.
- A. 798
B. 789
C. 978
D. 987
-
42. Manju runs around a rectangular park of length 35 m and breadth 20 m. Meenu runs around a square park of side 30 m. Who covers less distance and by how much, if Meenu takes 4 rounds and Manju takes 3 rounds completely?
- A. Meenu, 150 m
B. Manju, 120 m
C. Manju, 150 m
D. Meenu, 120 m
-
43. A bus starts its journey at 5:30 a.m. and reaches its destination at 9:15 p.m. with a stoppage time of 2 hours. Find the ratio of the stoppage time to the total journey period.
- A. 12 : 95
B. 8 : 63
C. 4 : 73
D. 9 : 85
-
44. Mr Ahuja purchased two Maths books for ₹ 167.50 each, three Science books for ₹ 1375.75 and four Computer Science books for ₹ 168.55 each. He gave 5 notes of ₹ 500 each to the shopkeeper. How much amount will he get back?
- A. ₹ 335
B. ₹ 674.2
C. ₹ 175.50
D. ₹ 115.05
-
45. Find the number of envelopes that can be made out of a sheet of paper 384 cm by 168 cm, if each envelope requires a piece of paper of size 16 cm by 12 cm.
- A. 340
B. 344
C. 336
D. 342

ACHIEVERS SECTION

46. Study the given statements carefully. State 'T' for true and 'F' for false and select the correct option.
- (i) If a number is a factor of each of the given two numbers, then it must be a factor of their difference.
- (ii) If a number is divisible by another number, then it must be divisible by each of the factors of that number.
- (iii) If a number is divisible by another number, then it is also divisible by all the multiples of that number.
- (iv) No prime number other than 2 is even but every odd number is necessarily a prime number.
- | | (i) | (ii) | (iii) | (iv) |
|----|-----|------|-------|------|
| A. | T | F | T | F |
| B. | T | T | F | F |
| C. | F | T | F | T |
| D. | F | F | F | F |
47. Solve the following and select the correct option.
- (i) $-\left(-5\frac{2}{3}\right)$ of $6\frac{3}{8} - 0.696 \times 10.00 + 3\frac{5}{4} + (-6.663)$
- (ii) $4\frac{3}{5} - \left(-4\frac{1}{6}\right) + \left(-3\frac{7}{6}\right) + \frac{(-6)}{7} - \left(-1\frac{4}{5}\right) + 4\frac{5}{7}$
- | | (i) | | (ii) |
|----|--------|--|------------------|
| A. | 26.752 | | $10\frac{9}{35}$ |
| B. | 26.767 | | $12\frac{3}{45}$ |
| C. | 28.837 | | $10\frac{9}{35}$ |
| D. | 26.752 | | $6\frac{19}{35}$ |

48. Select the incorrect match, if figures (not drawn to scale) are made up of identical squares and identical equilateral triangles of side 3 cm each.

	Figures	Perimeter (in cm)
A.		39
B.		30
C.		105
D.		36

49. Find the value of P, Q, R and S.

Shapes	Sum of number of faces and vertices	Difference of number of edges and vertices
Hexagonal Prism	P	Q
Pentagonal Pyramid	R	S

	P	Q	R	S
A.	20	6	12	4
B.	20	12	6	6
C.	20	12	6	9
D.	8	12	6	12

50. Match the following and select the correct option.

Column-I	Column-II
(P) 40 lakhs = _____ millions	(i) 865
(Q) The value of $V \times C \times M \times X$ is _____.	(ii) 5000000
(R) Product of 4444 and a number is three million eight hundred forty four thousand and sixty. The number is _____.	(iii) 200000
(S) Estimated product of 2038 and 123 is _____.	(iv) 4

A. (P) → (iv), (Q) → (ii), (R) → (iii), (S) → (i)
 B. (P) → (ii), (Q) → (iv), (R) → (i), (S) → (iii)
 C. (P) → (ii), (Q) → (iv), (R) → (iii), (S) → (i)
 D. (P) → (iv), (Q) → (ii), (R) → (i), (S) → (iii)

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