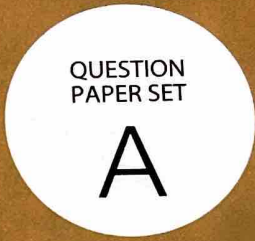
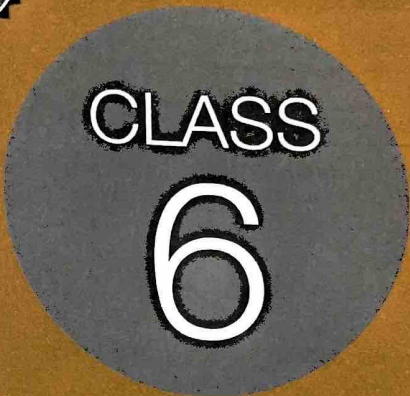




**SOF INTERNATIONAL
MATHEMATICS OLYMPIAD
2023-24**



DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

Total Questions: 50 | Time: 1 hr.

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 your marks / result and other information related to SOF exams 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 before attempting the paper.



Name:.....

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



Inspiring Young Minds Through Knowledge Olympiads



**THE WORLD'S
BIGGEST
OLYMPIADS**

25 Years
of trust

91,000+
Schools

70
Countries

5.6+ Crores
Assessments

7
Olympiads

1. Some letters are coded as follows:

Letters	E	G	C	N	I	T	S	P
Codes	5	%	@	\$	+	3	*	#

Which of the following word is coded as *@+5\$@5?

- A. SCEPTIC
- B. SCIENCE
- C. GENETIC
- D. SEEPING

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



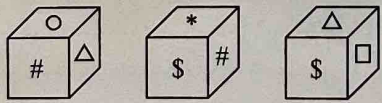
- A.
- B.
- C.
- D.

3. How many such 6's are there in the given arrangement each of which is immediately preceded as well as immediately followed by an alphabet?

H 6 8 L T 6 S 7 5 6 G 6 Y 6 R 2 K 6 9 P 6 B 8

- A. One
- B. Two
- C. Three
- D. More than three

4. Three different positions of a cube are shown below. Which symbol will be at the top, when # is at the bottom?

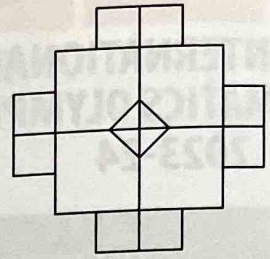


- A. □
- B. *
- C. △
- D. \$

5. Nikhil walks 30 m towards West. Then he turns left and walks 40 m. He again turns left and walks 30 m. Finally, he turns left and walks 10 m. Which direction is he facing now?

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

6. Find the number of squares formed in the given figure.



- A. 12
- B. 13
- C. 14
- D. More than 14

7. Which of the following Venn diagrams best represents the relationship amongst, "Vowels, Alphabets and Natural numbers"?

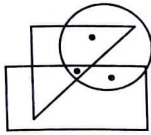
- A.
- B.
- C.
- D.

8. Find the missing number, if a certain rule is followed either row-wise or column-wise.

21	8	11	18
15	10	5	20
17	9	7	?

- A. 19
- B. 16
- C. 21
- D. 14

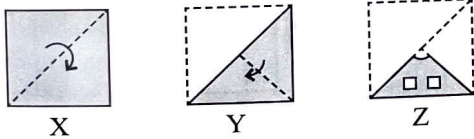
9. Select a figure from the options which satisfies the same conditions of placement of the dots as in the given figure.



- A.
- B.
- C.
- D.

10. L is the mother of P. P is the brother of E and R is the sister of E. How is L related to R?
- A. Aunt
B. Sister
C. Grandmother
D. Mother

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



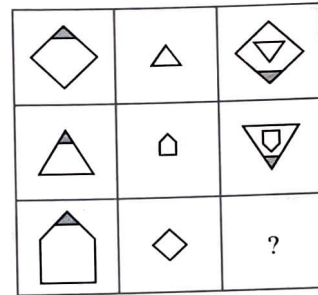
- A.
- B.
- C.
- D.

12. There is a certain relationship between the terms on the either side of ::. Identify the relationship in the left pair and find the missing term.

TMF : VNH :: KVS : ?

- A. MWT
B. LWT
C. MXU
D. MWU

13. Select a figure from the options which will complete the given figure matrix.



- A.
- B.
- C.
- D.

14. If '@' denotes '+', '#' denotes '+', '\$' denotes 'x' and '%' denotes '-', then find the value of $21 @ 7 \$ 5 \# 12 \% 9$.

- A. 16
B. 20
C. 18
D. 15

15. Select the correct water image of the given word.

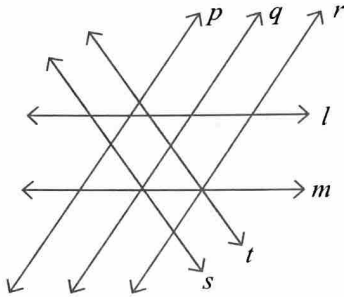
LAUGH

- A. HƆUAJ
B. ƆVŃGH
C. LAUGH
D. HƆŃVƆ

16. The sum of common prime factors of 810 and 950 is

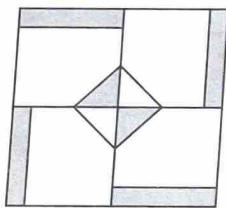
- A. 10
- B. 25
- C. 7
- D. 28

17. How many pairs of parallel lines are there in the given figure?



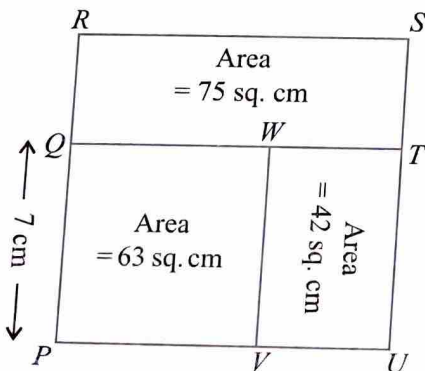
- A. 7
- B. 6
- C. 4
- D. 5

18. How many number of lines of symmetry are there in the given figure?



- A. 0
- B. 1
- C. 2
- D. 3

19. The figure $PRSU$ is made up of three rectangles. The area of each rectangle is given inside the rectangles. If the length of PQ is 7 cm, then find the length of US .



- A. 15 cm
- B. 10 cm
- C. 12 cm
- D. 5 cm

20. How many sixths must be added to $\frac{5}{12}$ to make $3\frac{3}{4}$?

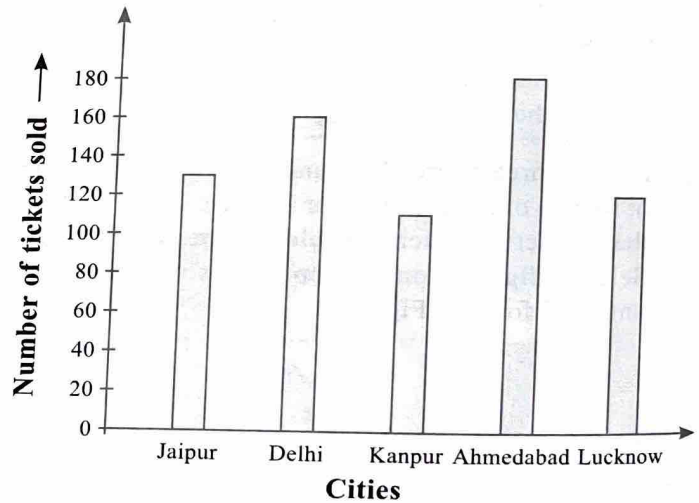
- A. 18
- B. 15
- C. 10
- D. 20

21. Compare and fill the box.

$$\text{MCMXCVII} + \text{DCCLXX} \boxed{} \text{MMDCV} + \text{CDXLVII}$$

- A. >
- B. <
- C. =
- D. Can't be determined

Direction (22-23) : The given bar graph shows the number of railway tickets sold for different cities from a railway ticket counter between 5:00 a.m. and 10:00 a.m. Study the given graph carefully and answer the following questions.



22. What is the ratio of number of tickets sold for Kanpur to the total number of tickets sold for both Jaipur and Lucknow?

- A. 11 : 25
- B. 3 : 11
- C. 11 : 17
- D. 5 : 17

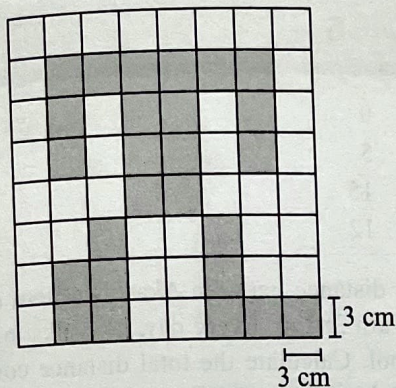
23. If the cost of each ticket of Delhi and Ahmedabad is ₹ 190 and ₹ 250 respectively, then find the total amount collected for the tickets sold for Delhi and Ahmedabad.

- A. ₹ 72000
- B. ₹ 75400
- C. ₹ 68000
- D. ₹ 67200

24. The largest 4-digit and smallest 4-digit numbers formed by using the digits 4, 0, 3, 7 (each digit used only once) respectively are _____.

- A. 4370, 4307
- B. 3740, 3047
- C. 7403, 3704
- D. 7430, 3047

25. Find the perimeter of the shaded part of the given figure.



- A. 150 cm
- B. 138 cm
- C. 142 cm
- D. None of these

26. What type of angle is formed by the hands of the given clock?



- A. Acute angle
- B. Obtuse angle
- C. Reflex angle
- D. Straight angle

27. On a book shelf, books with green cover and that with brown cover are in the ratio 2 : 7. If there are 56 books with brown cover, then find the number of books with green cover.

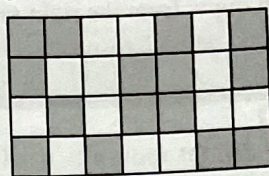
- A. 18
- B. 20
- C. 16
- D. 28

28. If 301 is the successor of X and Y is the predecessor of -500 , then find the value of $X + Y$.

- A. 202
- B. -201

- C. -203
- D. None of these

29. How many more squares must be unshaded so that the given figure has 0.25 as shaded decimal part?



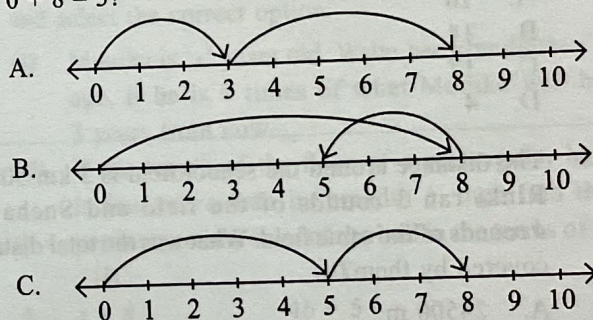
- A. 10
- B. 8
- C. 9
- D. 6

30. Which of the following equations justify the given statement?

"When x is divided by y , the quotient is added to the product of x and y ".

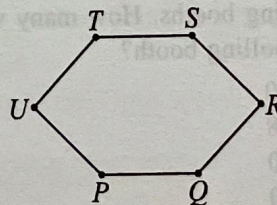
- A. $x + \frac{y}{x}$
- B. $\frac{y}{x} + yx$
- C. $yx + \frac{2x}{y}$
- D. $\frac{x}{y} + xy$

31. Which of the following number lines represents $0 + 8 - 3$?



- D. None of these

32. The number of diagonals that can be drawn in the given figure is _____.



- A. 8
- B. 7
- C. 9
- D. 11

33. Which of the following statement(s) is/are true?
- P. The place value of encircled digit in 58 **(7)** 632 is 70000.
- Q. In Indian system of numeration, the commas after 3 and 6 digits from the right separates ones and thousands periods respectively.
- A. Only P
B. Only Q
C. Both P and Q
D. Neither P nor Q

34. The total weight of two baskets P and Q of fruits is 9 kg 120 g. If the weight of fruit basket P is 2 kg

more than that of fruit basket Q, then what is the weight of fruit basket Q?

- A. 3170 g
B. 3560 g
C. 5240 g
D. 4350 g

35. Find the value of $415 - 719 + 1014 - 2015$.

- A. - 1305
B. 1810
C. - 1105
D. 1715

EVERYDAY MATHEMATICS

36. The cost of an air ticket of a passenger named Ramesh is ₹ 5170.50. He also had to pay an excess baggage charge of ₹ 515.75. If he gives ₹ 6000 at the counter, then how much change does Ramesh get back?

- A. ₹ 245.75
B. ₹ 313.75
C. ₹ 520.25
D. ₹ 372.25

37. Three sets of Science, Sanskrit and Computer books have 96, 240 and 336 books respectively. If they have to be stacked in such a way that all the books are stored subject wise and the height of each stack is the same, then find the number of stacks.

- A. 16
B. 14
C. 17
D. 4

38. The distance around the school field is 3 km 500 m. Rinki ran 3 rounds of the field and Sneha ran 4 rounds of the same field. What was the total distance covered by them?

- A. 24500 m
B. 28500 m
C. 23000 m
D. None of these

39. 2226560 voters are to be equally distributed among 245 polling booths. How many voters will be there in each polling booth?

- A. 8250
B. 9088
C. 9120
D. 8470

40. A gardener has 389 saplings to be planted in 16 rows. How many saplings will he not be able to plant, if he can accommodate only 24 saplings in each of the 16 rows?

- A. 9
B. 5
C. 15
D. 12

41. The distance between Akash's school and his home is 2 km 385 m. Every day, he walks to and from the school. Calculate the total distance covered by him from Monday to Friday.

- A. 23 km 870 m
B. 23 km 850 m
C. 21 km 860 m
D. 20 km 850 m

42. A truck requires 78 litres of diesel for covering a distance of 702 km. How much diesel will be required by the truck to cover a distance of 2340 km?

- A. 215 litres
B. 260 litres
C. 195 litres
D. 310 litres

43. A floor is 10 m long and 7.5 m wide. A square carpet of side 3.5 m is laid on the floor. Find the area of the floor that is not carpeted.

- A. 58.25 sq. m
B. 60.75 sq. m
C. 62.75 sq. m
D. None of these

44. The population of a town was 52845 in the year 2005 and 77561 in the year 2015. Estimate the increase in population by rounding off each population to nearest hundreds.

- A. 25800
B. 24800
C. 30000
D. 20000

45. The length of a rectangular park is 350 m and breadth is $\frac{3}{5}$ times of its length. Find the cost of fencing the rectangular park at the rate of ₹ 15 per metre.

- A. ₹ 16800
 B. ₹ 18500
 C. ₹ 15600
 D. None of these

ACHIEVERS SECTION

46. Read the given statements carefully and state T for true and F for false.

- (i) The least number which when divided by 26, 56 and 104 leaves the remainder 1 in each case is 729.
 (ii) The least value of x , when $57x897$ is exactly divisible by 3, is 7.
 (iii) Number of pairs of twin prime numbers between 10 and 30 is 2.

	(i)	(ii)	(iii)
A.	F	F	T
B.	F	T	F
C.	T	T	F
D.	T	F	T

47. Uncle Tom spends $\frac{1}{5}$ of his household expenses on groceries and $\frac{1}{3}$ of it on utilities. The rest of his household expenses is spent on pet grooming.

- (a) If each pet uses $\frac{1}{15}$ of his household expenses, then how many pets does Uncle Tom have?
 (b) If he spends ₹ 2100 on pet grooming, then how much is household expenses?

	(a)	(b)
A.	7	₹ 3000
B.	7	₹ 4500
C.	12	₹ 3500
D.	10	₹ 2400

48. Which of the following statements is false?

- A. The number of right angles through which the

hour hand of a clock turned, when it goes from 2 to 8 is 2.

- B. If you start facing East and make $2\frac{1}{2}$ of a revolution clockwise, then you will face North.
 C. When the sum of measures of two angles is a right angle, then each one of them is an acute angle.
 D. None of these

49. Read the given statements carefully and select the correct option.

Statement-I : If three friends share the profit of ₹ 15000 in the ratio 2 : 3 : 5, then their shares are ₹ 3000, ₹ 4500 and ₹ 7500 respectively.

Statement-II : If 8, 24, x , 36 are in proportion, then the value of x is 15.

- A. Both Statement-I and Statement-II are true.
 B. Both Statement-I and Statement-II are false.
 C. Statement-I is true but Statement-II is false.
 D. Statement-I is false but Statement-II is true.

50. Find the algebraic expressions for each of the following and select the correct option.

(i) Monika is ' x ' years old. Write her grandfather's age, if he is 8 times of what Monika will be 3 years from now.

(ii) If the length of the floor of a rectangular hall is four more than its breadth b , then find the perimeter of the floor of the hall in the terms of b .

	(i)	(ii)
A.	$x + 8$	$4b + 5$
B.	$8x + 16$	$4b + 4$
C.	$8x + 24$	$4b + 8$
D.	$8x$	$3b + 8$

SPACE FOR ROUGH WORK