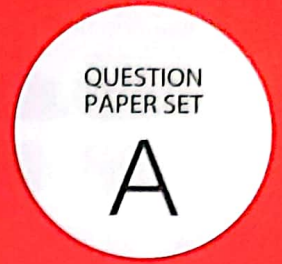


**SOF INTERNATIONAL  
MATHEMATICS OLYMPIAD  
2023-24**



**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.

16.  A  B  C  D

Name:.....

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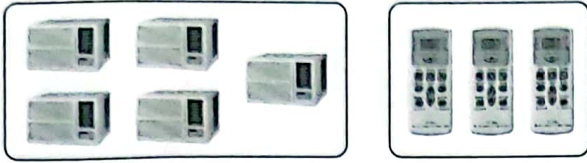
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Countries

**5.6+ Crores**  
Assessments

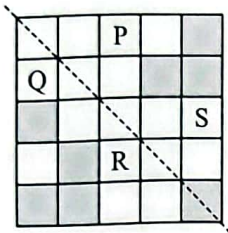
**7**  
Olympiads

## LOGICAL REASONING

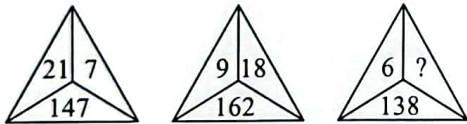
1. How many different combinations of 1 A.C. and 1 remote each can be formed from the given A.C.s and remotes?



- A. 10  
B. 15  
C. 8  
D. 12
2. Which of the following squares must be shaded so that the given figure becomes symmetrical along the dotted line?



- A. S  
B. R  
C. P  
D. Q
3. Find the missing number, if same rule is followed in all the three figures.



- A. 25  
B. 23  
C. 17  
D. 13
4. In a certain code language, if 'DANGER' is written as 'ADEGNR', then how will 'MASTER' be written in the same code language?

- A. AEMTSR  
B. SAMTER  
C. RETSAM  
D. AEMRST

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

WATCH

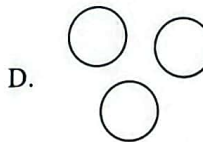
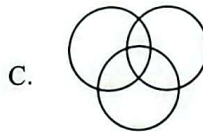
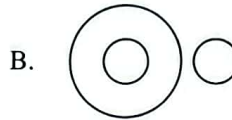
A. WATCH

B. MWLCH

C. MALCH

D. WVTCH

6. Which of the following Venn diagrams best represents the relationship amongst, "Professors, Doctors and Women"?



7. Rashi is facing North. She turns  $135^\circ$  clockwise and then  $270^\circ$  anti-clockwise. In which direction is she facing now?

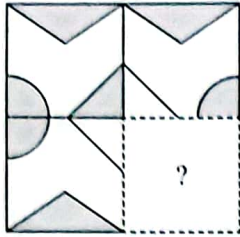
- A. South-East  
B. North-West  
C. East  
D. South-West

8. Some letters are numbered 1, 2, 3, 4, 5 and 6 as given below. Arrange the given letters to form a meaningful English word and select the correct option.

G   S   R   N   E   I  
1   2   3   4   5   6

- A. 4, 2, 6, 3, 5, 1  
B. 2, 6, 4, 1, 5, 3  
C. 4, 2, 6, 1, 3, 5  
D. 2, 4, 6, 5, 1, 3

9. Which of the following options will complete the given figure pattern?

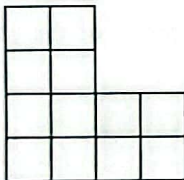


- A.
- B.
- C.
- D.

10. Select the odd one out.

- A. PSV  
B. JMP  
C. CEG  
D. GJM

11. Find the number of squares in the given figure.



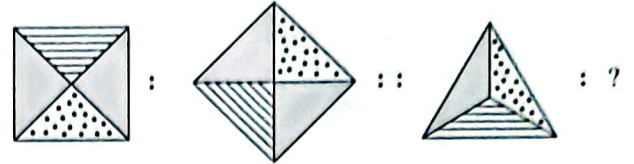
- A. 15  
B. 16  
C. 17  
D. More than 17

12. If all the symbols are removed from the given arrangement, then which of the following elements will third to the left of fifth element from the right end?

J 2 @ 7 3 W K ? P 5 M 9 C % # T 1 \$ 8 Z

- A. C  
B. 5  
C. ?  
D. M

13. There is a certain relationship between the pair of figures on the either side of ::. Identify the relationship on the left pair and find the missing figure.



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

14. Purna's father has to attend a press conference on fifth day from second Friday of June 20XX. On which date did Purna's father attend the conference?

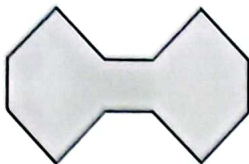
JUNE 20XX						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

- A. 14<sup>th</sup> June  
B. 20<sup>th</sup> June  
C. 13<sup>th</sup> June  
D. 19<sup>th</sup> June

15. Arrange the given words in a meaningful logical order and select the correct option.

1. Education  
2. Job  
3. Child  
4. Infant
- A. 4, 2, 3, 1  
B. 4, 1, 3, 2  
C. 4, 3, 1, 2  
D. 4, 3, 2, 1

16. How many angles inside the given figure are less than a right angle ?



- A. 0  
B. 3  
C. 4  
D. 5
17. Which of the following letters has exactly two lines of symmetry?

- A. G  
B. M  
C. I  
D. F

18. Which of the following fractions are arranged in descending order?

- A.  $\frac{1}{7}, \frac{2}{5}, \frac{2}{7}$   
B.  $\frac{2}{5}, \frac{2}{7}, \frac{1}{7}$   
C.  $\frac{2}{5}, \frac{1}{7}, \frac{2}{7}$   
D.  $\frac{1}{7}, \frac{2}{7}, \frac{2}{5}$

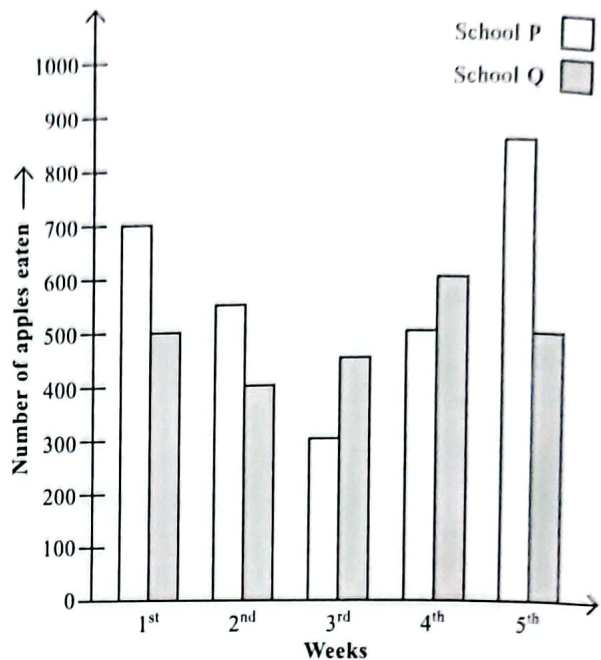
19. Which of the following options shows the smallest 5-digit number that can be formed using the digits 4, 0, 2 and 9 each digit at least once?

- A. 94002  
B. 22049  
C. 94200  
D. 20049

20. How many prime numbers lie between 51 and 120?

- A. 14  
B. 15  
C. 13  
D. 16

**Direction (21-22) :** The given bar graph shows the number of apples eaten by the students of two schools over 5 weeks. Read the graph carefully and answer the following questions.



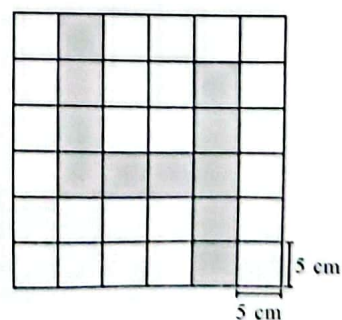
21. In how many weeks, the number of apples eaten by the students of school Q is more than that of school P?

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

22. How many more number of apples eaten by the students of school P than that of school Q in the 1<sup>st</sup>, 2<sup>nd</sup> and 4<sup>th</sup> weeks altogether?

- A. 500  
B. 350  
C. 250  
D. 400

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



- A. 120 cm  
B. 130 cm  
C. 135 cm  
D. None of these

24. Compare and fill the box.

$$15.796 + 21.58 - 5.79 \quad \square \quad 29.825 + 11.81 - 6.912$$

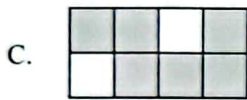
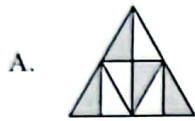
- A. =
- B. >
- C. <
- D. Can't be determined

25. How many letters are there in the given word which have perpendicular lines?

**RIGHT**

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

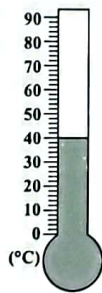
26. Which of the following options shows  $\frac{3}{4}$  as shaded fraction?



- D. Both A and C

27. The room temperature is  $10^{\circ}\text{C}$  less than the temperature shown on the thermometer. What is the room temperature?

- A.  $20^{\circ}\text{C}$
- B.  $40^{\circ}\text{C}$
- C.  $30^{\circ}\text{C}$
- D.  $50^{\circ}\text{C}$



28. Find the estimated sum of 412568 and 312895 by rounding off each number to the nearest thousands.

- A. 800000
- B. 730000
- C. 726000
- D. 725500

29. Subtract the sum of 48.215 and 115.117 from the product of 2 and 98.911.

- A. 34.49
- B. 42.13
- C. 38.64
- D. None of these

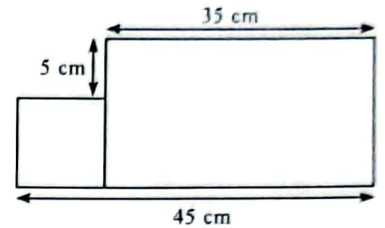
30. Bucket P can hold 15 L 350 mL of water and bucket Q can hold 13 L 170 mL of water. How much total water can the given buckets hold?



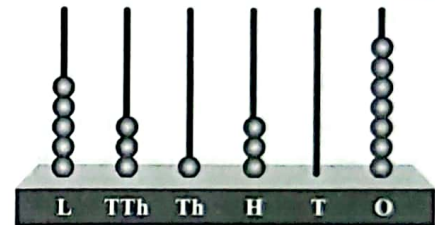
- A. 48.720 L
- B. 57.040 L
- C. 57.40 L
- D. None of these

31. The given figure (not drawn to scale) is made up of a rectangle and a square. Find the total area of the given figure.

- A. 625 sq. cm
- B. 540 sq. cm
- C. 435 sq. cm
- D. 515 sq. cm



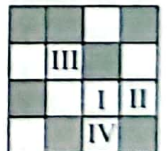
32. The number name for the number shown on the abacus in International system of numeration is \_\_\_\_\_.



- A. Five lakh thirty one thousand three hundred and seven
- B. Fifty three thousand one hundred thirty seven
- C. Five hundred thirty one thousand three hundred and seven
- D. Five hundred three thousand one hundred and thirty seven

33. Which square must be shaded so that the figure has a line of symmetry?

- A. I
- B. II
- C. III
- D. IV



34. The given clocks show the time at which a bus terminated from bus stop P and arrived at bus stop Q. How much time did it take to arrive at bus stop Q?



Termination time



Arrival time

- A. 2 hours 20 minutes
- B. 1 hour 25 minutes
- C. 1 hour 15 minutes
- D. 2 hours 10 minutes

35. Which of the following is the least common multiple of 15, 45 and 150?
- A. 180

- B. 420  
C. 150  
D. 450

## EVERYDAY MATHEMATICS

36. Kanika bought  $3\frac{2}{5}$  m,  $3\frac{1}{3}$  m and  $2\frac{3}{5}$  m of cloth for three dresses. If these three pieces were cut from a 25 m roll of cloth, then how much cloth was left in the roll?

- A.  $10\frac{12}{13}$  m  
B.  $10\frac{13}{15}$  m  
C.  $9\frac{11}{13}$  m  
D. None of these

37. A water tank has a capacity of 48265 litres. If 245 litres of water is supplied to each family, then water for how many families can be supplied from that water tank?

- A. 125  
B. 185  
C. 190  
D. 197

38. Maira and Navya are playing in a rectangular garden which is 8.5 m long and 4.5 m wide. Find the perimeter of the garden.

- A. 26 m  
B. 22.5 m  
C. 28.5 m  
D. 25 m

39. Soham has five balls having digits 4, 2, 3, 1 and 7. The smallest 5-digit odd number that Soham can form using these digits each only once is \_\_\_\_\_.

- A. 74321  
B. 73421  
C. 47312  
D. 12347

40. Arun purchased a book for ₹ 150.45, a pair of shoes for ₹ 280.25 and a shirt for ₹ 175.35. How much total money did he spend in all?

- A. ₹ 590.25  
B. ₹ 606.05

- C. ₹ 660.05  
D. ₹ 670.25

41. Manish saved ₹ 5,24,370 in 2021 and ₹ 7,15,942 in 2022. If he spends ₹ 1,54,718 in the beginning of 2023 from his savings, then how much total money will be left with him?

- A. ₹ 9,17,790  
B. ₹ 8,40,594  
C. ₹ 10,85,594  
D. None of these

42. Perna has to make 6 paintings on a chart paper. The size of each painting should be 48 cm by 15 cm. Find the total area of paper used to make all the paintings.

- A. 6752 sq. cm  
B. 5140 sq. cm  
C. 4150 sq. cm  
D. 4320 sq. cm

43. Surbhi could complete a swimming race in 5 minutes 18 seconds. After some practice, she could complete the same race in 4 minutes 52 seconds. By how much time did her performance improve?

- A. 30 secs  
B. 26 secs  
C. 20 secs  
D. 28 secs

44. A toy company manufactured 475615 toy bikes in a particular month but sold only 215120 out of them. How many toy bikes were left in the company in that month?

- A. 260495  
B. 199715  
C. 275155  
D. 317645

45. There are 34384 sacks of rice in a godown. These sacks were equally supplied to 14 shops. How many sacks were supplied to each shop?

- A. 3152  
B. 2456  
C. 4121  
D. 2962

## ACHIEVERS SECTION

46. Study the given figures carefully and select the correct option.

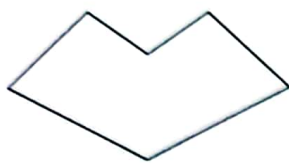


Fig. (i)

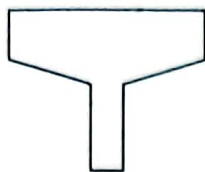


Fig. (ii)

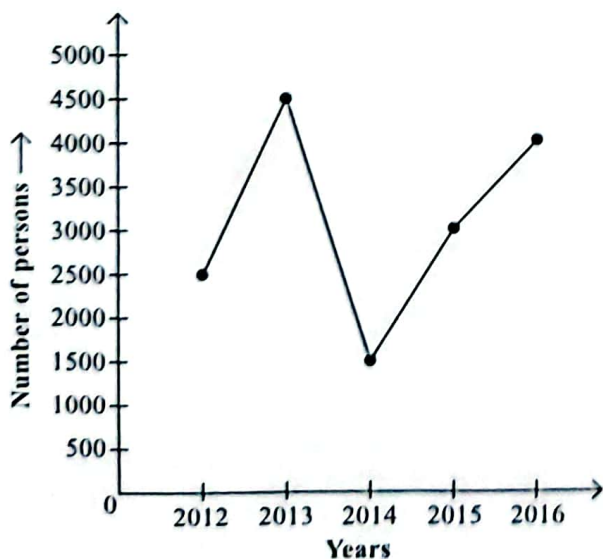
- A. There are total 3 acute angles inside the given figures.  
 B. There are total 10 right angles inside the given figures.  
 C. There is no obtuse angle in the given figures.  
 D. None of these

47. Fill in the blanks and select the correct option.

- (i) The value of MCMLXXIX is P.  
 (ii) In the number 58736, the successor of the place value of digit at hundreds place is Q.  
 (iii) Rounding off the greatest 6-digit number formed by using the digits 5, 3, 1 and 7 each digit at least once to the nearest thousands is R.

	(P)	(Q)	(R)
A.	1979	8	778000
B.	1981	71	780000
C.	1979	701	778000
D.	1981	701	770000

48. The given line graph shows the number of persons who got jobs in the given years. Study the graph carefully and answer the following questions.

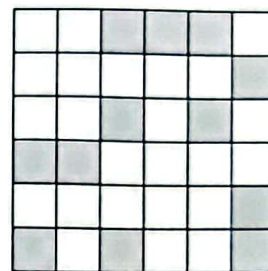


- (i) How many less persons got the jobs in the year 2012 than in the years 2015 and 2016 together?

- (ii) If  $\frac{2}{5}$  of the total persons who got the jobs in the year 2013 are in Government sector, then how many persons were recruited in Private sector in that year?

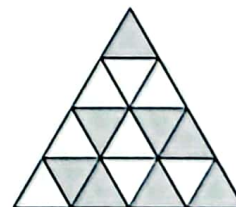
	(i)	(ii)
A.	4000	2500
B.	3500	2800
C.	3000	2000
D.	4500	2700

49. What is the smallest number of squares that must be shaded so that the given figure has a line of symmetry?



- A. 6  
 B. 7  
 C. 8  
 D. 9

50. Read the following statements about the given figure carefully and state 'T' for true and 'F' for false.



- (i) The shaded decimal part of the given figure is 0.5.  
 (ii) If 5 more triangles become shaded, then the unshaded fraction of the given figure is  $\frac{7}{16}$ .  
 (iii) The number of more triangles that must be shaded so that given figure has 0.75 as the shaded decimal part, is 6.

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

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