SOF
SCIENCE OLYMPIAD FOUNDATION

IMO
SOF INTERNATIONAL MATHEMATICS OLYMPIAD
2025-26

CLASS 7

QUESTION PAPER SET A

Total Questions : 50

Time : 1 hr.

Guidelines for the Candidate

1. You will get additional ten minutes to fill up information about yourself on the OMR Sheet, before the start of the exam.

2. 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.

3. 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 1 mark each.

4. All questions are compulsory. There is no negative marking. Use of calculator is not permitted.

5. There is only ONE correct answer. Choose only ONE option for an answer.

6. 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: Navya purchased a hand bag for ₹ 345.50, a pair of shoes for ₹ 480.25 and a cap for ₹ 75.50. How much money did she spend in all?

   A. ₹ 901.25   B. ₹ 785.50   C. ₹ 895.75   D. ₹ 920.25

   As the correct answer is option A, you must darken the circle corresponding to option A on the OMR Sheet.

   16. ● Ⓑ Ⓒ Ⓓ

7. Rough work should be done in the blank space provided in the booklet.

8. Return the OMR Sheet to the invigilator at the end of the exam.

9. Please fill in your personal details in the space provided before attempting the paper.

Name:...

SOF Olympiad Roll No.:...

Contact No.:...

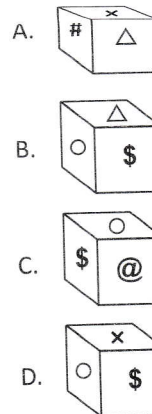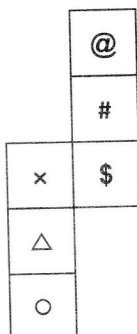## DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

1. Which of the following options does not satisfies the same conditions of placement of the dots as in the given figure?

A.

B.

C.

D.

2. Six persons P, Q, R, S, T and U sitting around a circular dining table for having lunch. S sits to the immediate left of P, who is not an immediate neighbour of Q. T sits third to the left of Q and is not an immediate neighbour of U. What is the position of S with respect to R?

A. Third to the right
B. Third to the left
C. Both A and B
D. Data inadequate

3. Select a box from the options that is similar to the box formed when the given sheet of paper is folded to form a box.
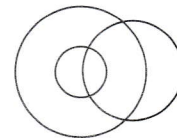

A.

B.

C.

D.

4. Find the missing number which will complete the given number series.
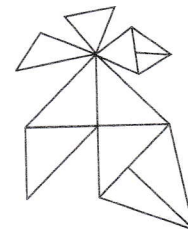
5, 6, 14, 45, ?, 925, 5556

A. 92
B. 135
C. 184
D. 270

5. Which of the following group of elements can be represented by the given Venn diagram?

A. Dancers, Doctors and Living beings
B. Females, Cousins and Sisters
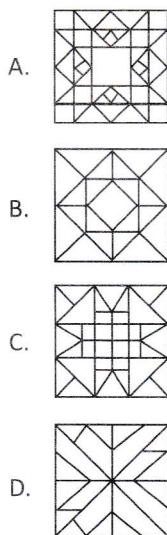C. Animals, Herbivores and Lions
D. Triangles, Rectangles and Circles

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

A. 13
B. 14
C. 15
D. More than 15

7. In a certain code language, 'he is handsome' is written as '278' ; 'she is beautiful' is written as '521' and 'handsome and beautiful' is written as '574'. Which of the following is the code for 'and'?

A. 4
B. 5
C. 7
D. 8

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

A.

B.

C.

D.

9. Pointing towards a girl, a boy said, "The only child of my maternal grandfather is only sister-in-law of girl's only paternal uncle." How is the girl related to the boy?
A. Niece
B. Aunt
C. Sister
D. Can't be determined

10. What will be the measure of largest angle made by hour hand and minute hand of a clock when time is 2 : 40?
A. 160°
B. 200°
C. 240°
D. 80°

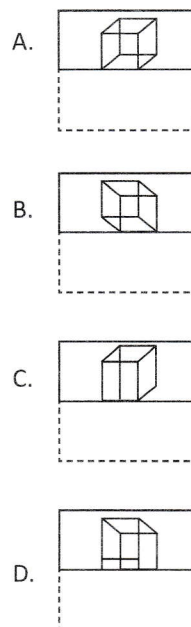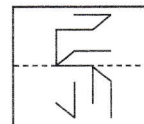11. Which of the following interchanges of signs would make the given equation correct?

$$245 \div 102 + 6 \times 15 - 500 = 0$$

A. ÷ and −
B. + and ×
C. + and −
D. + and ÷

12. Ankit is facing towards East. He rotates 90° clockwise and move 29 m, then he takes a left turn and moves 8 m. Finally he moves 14 m after taking a left turn. How far is he now from his starting point?

A. 15 m
B. 14 m
C. 17 m
D. None of these

13. A square transparent sheet with a pattern and a dotted line on it is given. Select a figure 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. Select the correct mirror image of the given combination of letters and numbers, if the mirror is placed vertically to the left.

m 1 2 c 9 D d 3 a 6 M A Z y

A. ʏƐMAɐ6ɐƐbᗡ6ɔ21m
B. ʏƐAMɐƐ6ɐbᗡ6ɔ21m
C. ʏƐAMɘ6ɐ4ᗡbɘɔ21m
D. AʏƐMɐ6ɐƐbᗡ6ɔ21m

15. There is a certain relationship between the terms on the either side of : :. Establish the same relationship in the right pair and find the missing term.
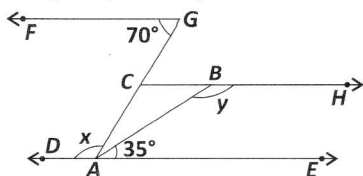
EH : 39 : : ? : 72

A. LO
B. HI
C. GK
D. DE

16. The product of the additive inverse and multiplicative inverse of $\frac{3}{8}+\left(\frac{-2}{5}\right)-\frac{6}{25}$ is
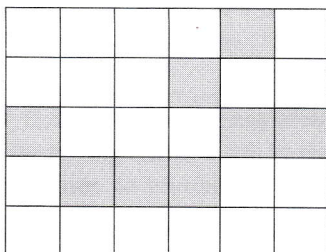
    A. 2
    B. −1
    C. −2
    D. 1

17. In the given figure (not drawn to scale), DAE, CBH, ACG are straight lines and DAE || CBH || FG. Find the value of x and y respectively.

    A. 70°, 35°
    B. 110°, 145°
    C. 110°, 35°
    D. 140°, 20°

18. The given figure is made up of small identical squares. How many more squares will be shaded to show 60% of the whole figure shaded?

    A. 5
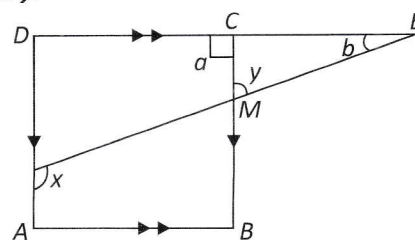   B. 8
    C. 6
    D. 10

19. In the prime factorisation of which of the following numbers, each factor occurs twice?

    A. 11025
    B. 1800
    C. 8712
    D. All of these

20. 150 is divided into two parts such that one-third of one part exceeds one-seventh of the other part by 10. Find the value of both the parts.

    A. 99, 51
    B. 65, 85
    C. 66, 84
    D. 28, 122

21. In the given figure (not drawn to scale), find the sum of x and y.
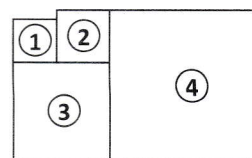

    A. 180°
    B. 90°
    C. 75°
    D. 60°

22. The details of a bank account for the month of November 20XX, is given below.

Balance on 1st November 20XX	₹ 6230
Cash withdrawal	₹ 2008
Cash deposit	₹ 4185
Cash deposit	₹ 3015
Cash withdrawal	₹ 3016

Find the balance in the account after the given transactions.

    A. ₹ 8406
    B. ₹ 11422
    C. ₹ 8400
    D. ₹ 6391

23. In the given figure (not drawn to scale), (1), (2), (3) and (4) are squares. The perimeter of the squares (1) and (2) are respectively 20 cm and 24 cm. Find the area of the entire figure.

    A. 471 sq. cm
    B. 747 sq. cm
    C. 417 sq. cm
    D. 472 sq. cm

24. The value of $\dfrac{50\times(0.3)^2}{0.024}\div(0.5\times0.2)$ is

    A. 125
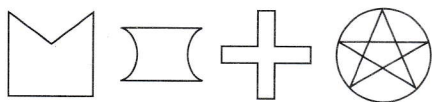   B. 1875
    C. 625
    D. 100

25. The runs scored in a cricket match by 11 players is as follows:

    9, 15, 121, 51, 101, 81, 50, 16, 82, 11, 11

    Find the mean, mode and median respectively of this data.

    A. 48, 11, 51
    B. 49.82, 11, 51
    C. 49.90, 11, 50
    D. 49.82, 11, 50

26. How many of the given figures have rotational symmetry of order more than 1?

    A. 0
    B. 3
    C. 4
    D. 2

27. If A be the area of a right angled triangle and b is the length of one of the sides containing the right angle, then the length of the altitude on the hypotenuse is

    A. $\dfrac{2Ab}{\sqrt{b^2 + 4A^2}}$

    B. $\dfrac{2Ab}{b^2 + 4A^2}$

    C. $\dfrac{2Ab}{\sqrt{b^4 + 4A^4}}$

    D. $\dfrac{2Ab}{\sqrt{b^4 + 4A^2}}$

28. Which of the following sequence is obtained on adding pairs of consecutive triangular numbers?

    A. 3, 5, 7, 9,...
    B. 4, 9, 16, 25, 36, ...
    C. 8, 27, 64, 125, ...
    D. 4, 6, 8, 10, 12, ...

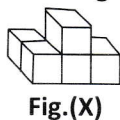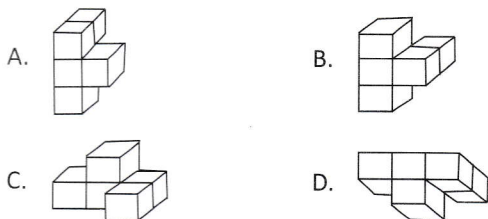29. The given Fig. (X) is turned to a different position. Which of these CANNOT be the figure after it is turned?

    Fig.(X)

    A.
    B.
    C.
    D.

30. If 55% of 1000 ÷ 60% of 2000 = k : ($2k$ + 2), then find the sum of digits of k.

    A. 4
    B. 2

C. 5
D. 3

31. Which of the following is the 5-digit largest palindromic number whose digit sum is 16?

    A. 61216
    B. 62026
    C. 80080
    D. None of these

32. If $3^x = 9^y = 27^z$ and $\dfrac{1}{2x} + \dfrac{1}{4y} + \dfrac{1}{6z} = 24$, then find the value of z.

    A. $\dfrac{1}{48}$

    B. 48

    C. $\dfrac{1}{24}$

    D. 24

33. The given table represents the number of different types of cakes baked in a bakery. The total number of cakes baked were 240.

Cakes	Number of cakes baked
Mango	
Blueberry	
Vanilla	
Strawberry	
Chocolate	

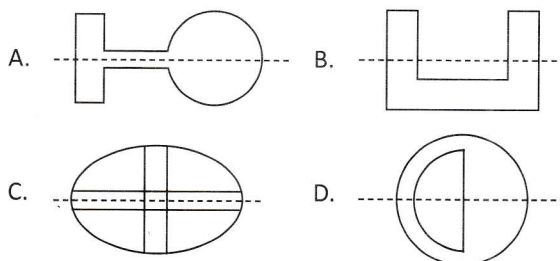   If each = 10 cakes and each = 5 cakes, then how many are required to represent chocolate cakes?

    A. 5
    B. 3
    C. 6
    D. 4

34. Find the value of $(4b^2) \times (5xb + x^2 - 6b^2)$, when $x = 1$ and $b = -2$.

    A. 710
    B. 615
    C. −528
    D. None of these

35. Which of the following figures has no reflection symmetry about the dotted line?

    A.
    B.
    C.
    D.

36. In a shopping mall, $\frac{1}{2}$ of the people were women and $\frac{2}{3}$ of these women were house wives. If the total people were 1200 in number, then how many were house wives?
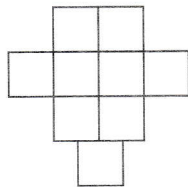
A. 600
B. 400
C. 900
D. 700

37. Sujata went for shopping with ₹ 2500.50. After spending half of it on 3 skirts, she spent the rest of the money on 2 pairs of shoes. How much did Sujata pay for a skirt and 2 pairs of shoes, if cost of each skirt is same?

A. ₹ 1667
B. ₹ 1800
C. ₹ 1457
D. ₹ 1250.25

38. Akshay is trying to open a safe having a digital lock. The safe opens when a 3-digit palindromic number whose digit sum is 13 is entered into it. What could be the number of the digital lock?

A. 282
B. 525
C. 616
D. None of these

39. Asha is playing in the garden made of similar squares as given below. If the area of the garden is 1521 m², then find its perimeter.

A. 169 m
B. 182 m
C. 208 m
D. 206 m

40. One-fourth of a pole is painted red, two-fifth is painted blue and the remaining 21 m is painted green. Find the height of the pole.

A. 40 m
B. 60 m

C. 80 m
D. 90 m

41. 3,500,000,000,000 prescription drug orders were filled in India in the year 2015. If the average price of each prescription was roughly ₹ 65, then how much (in ₹) did India pay for prescription drugs in 2015?

A. 2.275×10^{14}
B. 2.275×10^{12}
C. 2.275×10^{10}
D. None of these

42. Sushma sells an article at a loss of 12%. If she had sold it for ₹ 50.80 more, then she would have earned a profit of 8%. Find the cost price of the article.

A. ₹ 260
B. ₹ 250
C. ₹ 254
D. ₹ 244

43. Ritika is suppose to select a 3-digit number to get a special discount. The rule says, "the digit sum of the number is divisible by 8 and the number is also divisible by 8". Which of the following could be the number Ritika should select?

A. 404
B. 152
C. 422
D. None of these

44. Vishal lent a sum of money for 3 years at 10% p.a. gives ₹ 1800 as simple interest. If the same sum was lent at 12% p.a. for the same period of time, then how much more interest would he earn?

A. ₹ 360
B. ₹ 600
C. ₹ 720
D. ₹ 540

45. The cost of turfing a triangular field at ₹ 60 per 100 m² is ₹ 960. If twice the base equals 4 times the height, then find the height of the triangle.

A. 20 m
B. 36 m
C. 32 m
D. 40 m

46. Match the following and select the CORRECT option.

Column-I		Column-II
(p)	$\dfrac{(x^{a+b})^3 \times (x^{b+c})^3 \times (x^{c+a})^3}{(x^a \times x^b \times x^c)^6} =$	(i) 27
(q)	$\dfrac{3^n \times 3^{2n+1}}{9^n \times 3^{n-1}} =$	(ii) 1
(r)	If $\dfrac{9^n \times 3^5 \times (27)^3}{3 \times (81)^4} = 27$, then n is equal to	(iii) 9
(s)	If $3^z - 3^{z-1} = 18$, then the value of z^z is	(iv) 3

A. (p) → (iv), (q) → (iii), (r) → (ii), (s) → (i)
B. (p) → (ii), (q) → (iv), (r) → (iii), (s) → (i)
C. (p) → (ii), (q) → (iii), (r) → (i), (s) → (iv)
D. (p) → (ii), (q) → (iii), (r) → (iv), (s) → (i)

47. Solve the following and select the CORRECT option.

(i) A man goes to a garden and turns in the following manner. From the starting point, he goes West 25 m, then due North 60 m, then due East 80 m and finally due South 12 m. Find the distance between the finishing point and the starting point.

(ii) The angles of a triangle are arranged in descending order. If the difference between two consecutive angles is 25°. Find the measure of the largest angle.

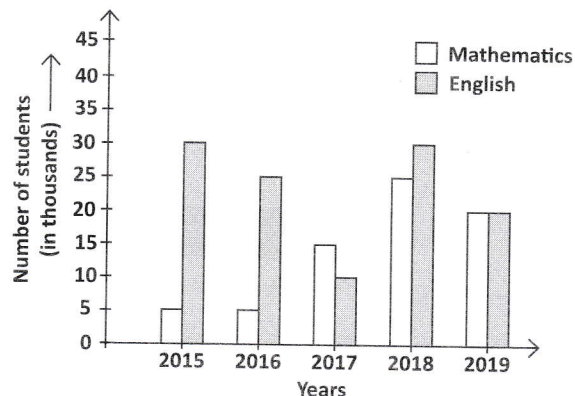|	(i)	(ii)
A.	73 m	85°
B.	73 m	90°
C.	63 m	85°
D.	63 m	90°

48. Read the given statements carefully and select the CORRECT option.

Statement-I : Mukul borrowed ₹ 900 at 4% per annum and ₹ 1100 at 5% per annum for the same duration. If he had to pay ₹ 364 in all as simple interest, then the time period is 4 years.

Statement-II : Ramesh credits 15% of his salary in his fixed deposit plan and spends 30% of the remaining amount on groceries. If the cash in hand is ₹ 2380, then his salary is ₹ 5000.

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.

49. The given double bar graph shows the number of students (in thousands) who opted for two different specialization during the given 5 years in a university. Study the given graph carefully and answer the following questions.

(i) Out of the total number of students who opted for English in the year 2015, 38% were girls. How many boys opted for English in the same year?

(ii) What is the ratio of number of students who opted for English in the years 2016 and 2018 together to the number of students who opted for Mathematics in the years 2015 and 2019 together?

	(i)	(ii)
A.	18600	5 : 11
B.	12400	11 : 5
C.	18600	11 : 5
D.	12400	5 : 11

50. Fill in the blanks and select the CORRECT option.

(i) The value of $ax^2 + bx + c$ at $x = \dfrac{b}{a}$ is _____.

(ii) If $A = 4x^2 - 3x + 2$; $B = 8x^2 + 4x - 5$ and $C = 7x^2 + 9x - 4$, then the value of $A - B + C$ when $x = -1$ is _____.

(iii) The coefficient of $5x^2$ in $-25x^3y^2$ is _____.

	(i)	(ii)	(iii)
A.	$c + \dfrac{2b^2}{a}$	2	$-5xy^2$
B.	$c + \dfrac{2b^2}{a}$	4	$-5xy^2$
C.	$\dfrac{b^2}{a} + c$	4	$5xy^2$
D.	$\dfrac{b^2}{a} + c$	2	$5xy^2$