DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

CLASS 8

SET-B
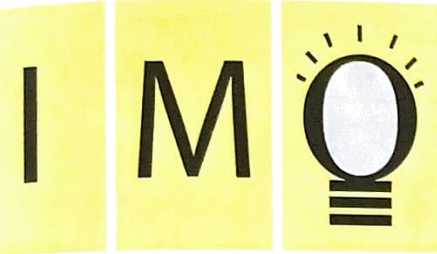
Total Questions : 50 | Time : 1 hr.

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 one 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.:...

LOGICAL REASONING

1. Select the correct water image of the given combination of letters and numbers.

Wake05eARIY

A. ᴍɘʞɕ0ƧɕᴀʁIʎ

B. YIЯAɘƧ0ɘʞɐW

C. ᴍɘʞɕ0ƧɕᴀʁIʎ

D. ʎIЯAɘƧ0ɘʞɐW

2. If it is possible to make only one meaningful English word using 2nd, 4th, 6th, 7th and 10th letters of the word PREVENTION (using each letter only once), then what will be the second letter of the word formed? If no such word can be formed, then give 'X' as your answer and if more than one word can be formed, then give 'Y' as your answer.

A. X
B. T
C. N
D. Y

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

QL14 : JO29 :: MK12 : ?

A. NR24
B. NP40
C. NP27
D. NL25

4. In a certain code language, "ever green song" is written as "Ta Pi Ka", "old is gold" is written as "Mo Ra La" and "very old song" is written as "Pa La Ta". How is "very" written in the same code language?
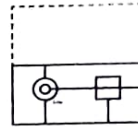
A. La
B. Pa
C. Ta
D. Can't be determined

5. 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.
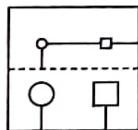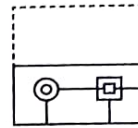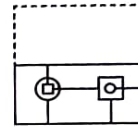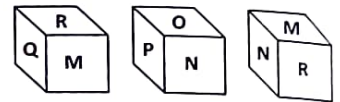

A.
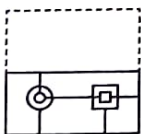
B.

C.

D.

6. Three different positions of a cube are given be... Which letter will be at the top, if the letter N the bottom?
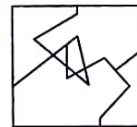

A. O
B. R
C. Q
D. M

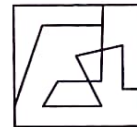**7.** Select a figure from the options in which the g figure is exactly embedded as one of its parts.
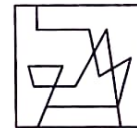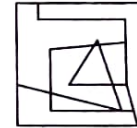

A.

B.

C.

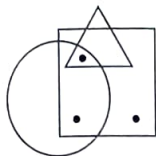D.

8. If 'P + Q' means, 'P is the father of Q', 'P × Q' m... 'P is the husband of Q', 'P # Q' means 'P is the s... of Q' and 'P $ Q' means 'P is the wife of Q', which of the following options indicates that the mother-in-law of F?

A. D$L+K#N+F
B. D$L+K#N×F
C. F+K+L×D#N
D. None of these

9. Select a figure from the options which does not satisfy the same conditions of placement of the dots as in the given figure.

A.

B.

C.

D.

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

A. 14
B. 15
C. 16
D. More than 16

11. Rohan was facing towards South-West, he turns 270° clockwise and then 90° in the same direction. In which direction is he facing now?

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

12. If 10th February in a non-leap year is 7th day after Wednesday, then what day will be 13th March in the same year?

A. Wednesday
B. Friday
C. Thursday
D. Saturday

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

3	5	5
1	4	?
2	3	4
216	1728	1331

A. 3
B. 4
C. 2
D. 1

14. If M − N = M + N and M × N = M ÷ N, then the value of (343 × 49) − (306 × 6) is _____.

A. 44
B. 58
C. −44
D. None of these

15. Arrange the following words as they occur in the dictionary and select the CORRECT option.

1. Narration   2. Narrow
3. Narrative   4. Native
5. National

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

MATHEMATICAL REASONING

16. If $p = \dfrac{3a-1}{3}$, $q = \dfrac{6a-2}{5}$ and $3(p-q)=1$, then find the value of a.

A. $\dfrac{4}{3}$

B. -5

C. $\dfrac{-3}{4}$

D. $\dfrac{-4}{3}$

17. Find the value of $\sqrt[3]{68.921} + \sqrt[3]{0.068921} + \sqrt[3]{68921}$.

A. 48.61
B. 45.51
C. 40.51
D. None of these

18. Which of the following is FALSE?

A. The product of two rational numbers is always a rational number.

B. $\frac{1}{3}\times\left(\frac{4}{3}-\frac{3}{4}\right)=\frac{1}{3}\times\frac{4}{3}-\frac{1}{3}\times\frac{3}{4}$ is the distributive property of subtraction over multiplication in rational numbers.

C. 0 is the additive identity of rational numbers.

D. 1 is the multiplicative identity of rational numbers.

19. In the given figure (not drawn to scale), if $DE \parallel BC$, $\angle ABC = 118°$, $\angle DAB = 42°$,then $\angle ADE$ is equal to
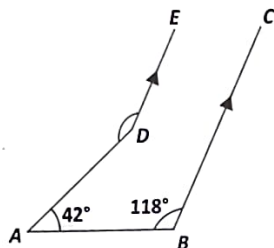
A. 118°

B. 42°

C. 138°

D. 160°

20. Which of the following figures has a line of symmetry?

A.

B.

C.

D.

21. Find the product of $\left(\frac{2}{5}x^2-\frac{1}{6}y^2\right)$ and $(7x^2 + 2y^2)$, when $x = 2$ and $y = -3$.

A. $2\frac{1}{3}$
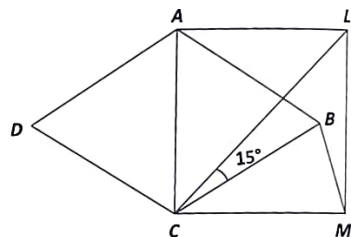
B. $3\frac{2}{5}$

C. $3\frac{1}{2}$

D. $4\frac{3}{5}$

22. The factorisation of $x^2 + 6xy - z^2 + 9y^2$ is

A. $(x + 3y - z) (x + 3y + z)$

B. $(x - 3y + z) (x - 3y - z)$

C. $(x + 3y + z) (x + 3y + z)$

D. None of these

23. Find the value of $\frac{54.68-25.35}{54.68+25.35}\div\frac{546.8-253.5}{5.468+2.535}$.

A. 100

B. $\frac{1}{100}$

C. 10

D. $\frac{1}{10}$

24. In the given figure (not drawn to scale), ABC a rhombus and $ALMC$ is a square, $AC = BC$. F $\angle MBC$.

A. 60°

B. 75°

C. 30°

D. 45°

DIRECTIONS (25-26) : The given pie chart shows percentage of students who like different sports. St the given pie chart carefully and answer the follow questions.

Total number of students = 800
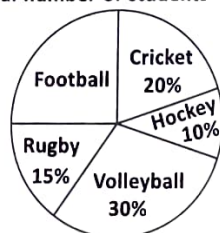
25. How many more students like football than students who like rugby?

A. 80

B. 150

C. 280

D. 310

26. Find the ratio of number of students who like cricket and volleyball together to the number of students who like hockey and rugby together.

A. $1:2$
B. $2:3$
C. $2:1$
D. $3:2$

27. If the sum of two integers is −30 and one of them is 42, then what is the product of two integers?

A. −2084
B. 1096
C. −3024
D. None of these

28. If $\sqrt{1+\dfrac{77}{1444}}=\dfrac{5+x}{19}$, then the value of x is

A. $14\dfrac{2}{3}$
B. $14\dfrac{1}{2}$
C. $13\dfrac{1}{2}$
D. $15\dfrac{2}{3}$

29. If x and $3y$ vary directly and $x = 12$ when $y = 4$, then find y when $x = 18$.

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

30. The outer dimensions of an open box are 50 cm × 40 cm × 20 cm. Its thickness is 5 cm. If 1 cm³ of metal used in the box weighs 0.5 g, then find the weight of the metal used.

A. 10 kg
B. 15 kg
C. 12 kg
D. 11 kg

31. A number is randomly picked from the list of first 30 natural numbers. What is the probability of getting an odd composite number?

A. $\dfrac{1}{5}$
B. $\dfrac{1}{6}$
C. $\dfrac{2}{5}$
D. $\dfrac{3}{5}$

32. Which of the following is the top view of the given figure?

A.

B.

C.

D.
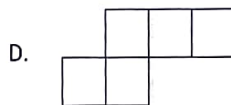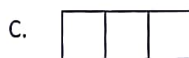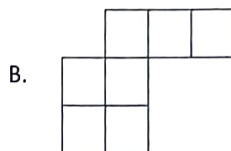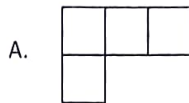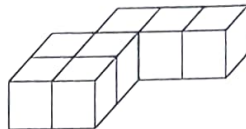
33. Which of the following is the cube of even natural number?

A. 6059
B. 2197
C. 4913
D. 1728

34. Select the CORRECT option.

A. A right angled triangle can be equilateral.
B. If an exterior angle of a triangle is 130° and one of the interior opposite angle is 75°, then the other interior opposite angle is 55°.
C. If the square of the hypotenuse of an isosceles right angled triangle is 72 cm², then the length of each equal side is 8 cm.
D. Both A and B

35. If the number A and B are respectively 25% and 50% less than the number C, then what % of A is B?

A. $33\dfrac{1}{3}\%$
B. $66\dfrac{1}{3}\%$
C. $66\dfrac{2}{3}\%$
D. None of these

36. The present age of a boy is two-fifth the age of his mother. After 8 years, he will be half the age of his mother. The present age of mother is _____.

   A.   70 years
   B.   60 years
   C.   50 years
   D.   40 years

37. Aman can do a piece of work in 20 days and Vivaan can do it in 40 days. Aman begins the work and thereafter they work alternatively on each day. On which day will the work be completed?

   A. 25th day
   B. 27th day
   C. 26th day
   D.   None of these

38. A General arranges his soldiers in rows to form a perfect square. He finds that in doing so, 60 soldiers are left out. If the total number of soldiers be 8160, then find the number of soldiers in each row.

   A.   81
   B.   90
   C.   80
   D.   91

39. Two cylindrical vessels with radii 20 cm and 15 cm and heights 30 cm and 30 cm respectively are filled with water. If all the water is poured into a cylindrical container of height 30 cm up to its brim, then find the radius of the container.

   A.   16 cm
   B.   35 cm
   C.   25 cm
   D.   15 cm

40. Aarav bought a television set whose marked price was ₹ 60000. He then gets a discount of 20% and pays a GST of 12%. How much does he pay for the television set?

   A.   ₹ 33660
   B.   ₹ 43650
   C.   ₹ 47250
   D.   ₹ 53760

41. In an office, $\dfrac{3}{5}$ of the employees are males and rest are females. If $\dfrac{2}{9}$ of the males and $\dfrac{1}{4}$ of the females are absent, then what part of the total number of employees is present?

   A. $\dfrac{21}{17}$
   B. $\dfrac{3}{5}$
   C. $\dfrac{23}{27}$
   D. $\dfrac{23}{30}$

42. A bag contains 9 white balls, 5 red balls and green balls. One ball is drawn at random from bag. What is the probability that the ball draw not green?

   A. $\dfrac{4}{15}$
   B. $\dfrac{8}{15}$
   C. $\dfrac{3}{5}$
   D. $\dfrac{7}{15}$

43. Kartik loses 35% of his money. After spending 1 of the remaining, he is left with ₹ 884. What amo of money did he originally have?

   A.   ₹ 1200
   B.   ₹ 1500
   C.   ₹ 1600
   D.   ₹ 1800

44. A man sold two watches each for ₹ 495. If he gai 10% on one watch and suffered 10% loss on the otl what is the profit/loss% in the whole transactic

   A.   1% profit
   B. $\dfrac{100}{99}$ % loss
   C.   1% loss
   D. $\dfrac{100}{99}$ % profit

45. At the end of the 20th century, the world's popula was approximately 6.125×10^9. Express this popula in usual form.

   A. 6.125×10^{10}
   B.   6125000000
   C. 6125×10^5
   D.   61250000

ACHIEVERS SECTION

46. Match the expression given in Column-I with one of their factors in Column-II and select the CORRECT option.

Column-I		Column-II
P.	$x^2 + 2x - 48$	(i) $x + 3y$
Q.	$2xya^2 + 10y + 3a^2x + 15$	(ii) $6x^2 - 7y^2$
R.	$3x^2 + 7xy - 6y^2$	(iii) $x - 6$
S.	$36x^4 - 84x^2y^2 + 49y^4$	(iv) $2y + 3$

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

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

Statement-I : P, Q and R complete a work in 10, 12 and 15 days respectively. They started the work together, but P left the work before 5 days of its completion. If Q also left the work 2 days after P left, then in 7 days the work was completed.

Statement-II : 10 boys and 15 girls can finish a work in 6 days. If 1 boy alone finishes the work in 100 days, then 1 girl will finish the work in 200 days.

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.

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

(i) The least number which must be subtracted from 10420 to make it a perfect square, is __P__ .

(ii) The number whose square is equal to the difference of the squares of 25.25 and 20.2, is __Q__ .

(iii) If $\sqrt{0.004 \times 0.4 \times x} = 0.004 \times 0.4 \times \sqrt{y}$, then the value of $\dfrac{x}{y}$ is __R__ .

	P	Q	R
A.	18	15.15	0.0016
B.	16	15.25	0.0004
C.	20	20.20	0.0160
D.	16	15.15	0.0016

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

(i) The absolute value of sum of $\dfrac{1}{7}, \dfrac{-1}{10}$ and $\dfrac{1}{5}$ is $\dfrac{13}{70}$.

(ii) The rational number $\dfrac{3}{16}$ lies between $\dfrac{-1}{2}$ and $\dfrac{1}{6}$.

(iii) The rational number x, such that $\left(\dfrac{-7}{11} + \dfrac{13}{15}\right) \div x = \dfrac{13}{11}$, is $\dfrac{38}{195}$.

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

50. The given double line graph shows the number of motorbikes manufactured by two companies over the given six months of a year. Study the given graph carefully and answer the following questions.
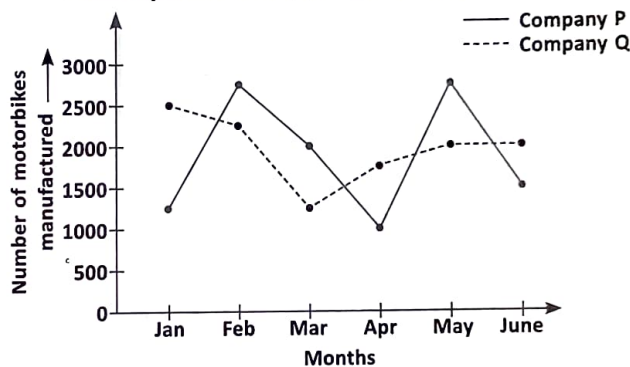
(i) What is the ratio of number of motorbikes manufactured by company P in January, March and June altogether to the number of motorbikes manufactured by company Q in February, April and May altogether?

(ii) What is the average of number of motorbikes manufactured by company P?

	(i)	(ii)
A.	21 : 26	1500
B.	19 : 24	1875
C.	21 : 26	1875
D.	19 : 24	1890

SPACE FOR ROUGH WORK