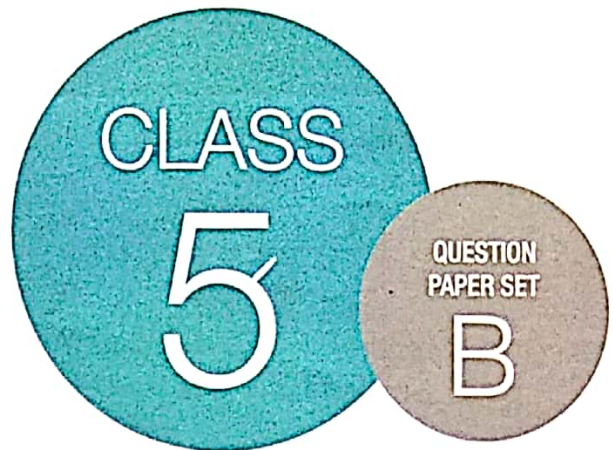


**SOF INTERNATIONAL
MATHEMATICS OLYMPIAD
2019-20**



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 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. 16. ● (B) (C) (D)
- 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.

LOGICAL REASONING

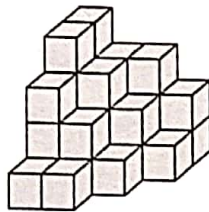
1. Find the missing number, if a certain rule is followed either row-wise or column-wise.

4	11	9
6	2	7
8	5	4
193	?	253

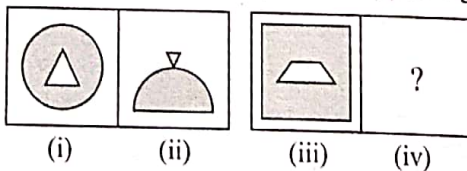
- A. 121
 B. 111
 C. 110
 D. 118
2. Which of the following words cannot be formed from the letters of the given word?

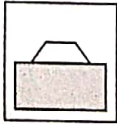
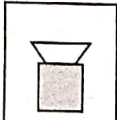
GREATEST

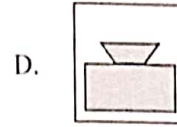
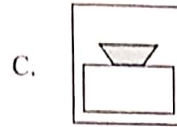
- A. RETASTE
 B. RESTAGE
 C. TARGETS
 D. TOASTER
3. How many cubes are there in the given figure?



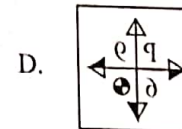
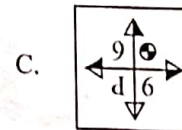
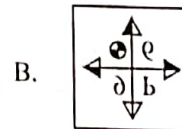
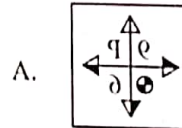
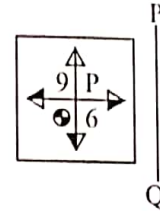
- A. 30
 B. 32
 C. 34
 D. 33
4. There is a certain relationship between figures (i) and (ii). Establish a similar relationship between figures (iii) and (iv) by selecting a suitable figure from the options which will replace the (?) in Fig. (iv).



- A. 
- B. 



5. Select the correct mirror image of the given figure, if the mirror is placed along PQ.



6. Study the given information carefully and answer the following question.

- Swati, Chetna and Rajni like to play badminton.
- Chetna and Rajni like to play hockey.
- Swati and Chetna like to play ludo.
- Swati likes to play hockey and cricket.

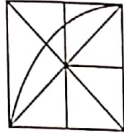
Who among the following likes to play all the four games?

- A. Swati
 B. Chetna
 C. Rajni
 D. Can't be determined

7. Kirti has 8 dolls and 7 hair clips. How many different combinations of 1 doll and 1 hair clip can she make?

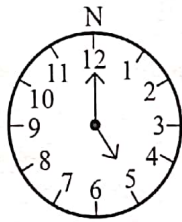
- A. 10
 B. 72
 C. 56
 D. 24

8. Which of the following options is exactly embedded in the given figure as one of its parts?

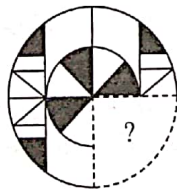


- A.
- B.
- C.
- D.

9. In the given clock, if the minute hand rotates 270° anti-clockwise, then in which direction will it point?



- A. North-West
- B. East
- C. West
- D. South-East
10. Which of the following options will complete the pattern in the given figure?



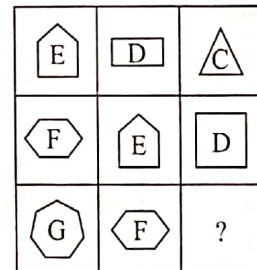
- A.
- B.
- C.
- D.

11. Which of the following alphabet is fourth to the right of ninth element from the right end in the given arrangement?

7 A F 3 Δ X K J 5 R B 2 E I L I G 0

- A. L
- B. X
- C. I
- D. R
12. What will come next in the given alphabetical series?
ABE, FHI, KNM, PTQ, ?
- A. UVY
- B. UZU
- C. UFR
- D. LGQ
13. If in a certain code language, PERSON is written as RHTVQQ, then how will HEIGHT be written in that language?
- A. JHKJKW
- B. JHKJJW
- C. JKHIJW
- D. IKKJIW

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



- A.
- B.
- C.
- D.
15. Which of the following Venn diagrams best represents the relationship amongst, "Birds, Cats and Pigeons"?

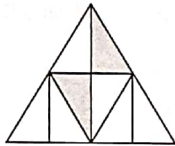
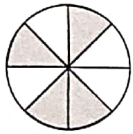
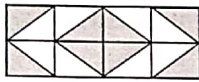
- A.
- B.
- C.
- D.

MATHEMATICAL REASONING

16. Which of the following options will replace the (?) in the same order as in the options, to make the number sentence true?

$$\frac{42}{100} \boxed{?} 3.4 \boxed{?} 5 = 1.1$$

- A. + and -
 B. - and +
 C. + and ÷
 D. × and ÷
17. Which of the following figures shows $\frac{3}{4}$ as unshaded fraction?



- D. None of these
18. In an examination, marks obtained by three boys are as follows :

Tarun : Second multiple of 32

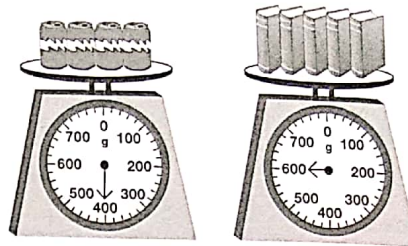
Manish : Fifth multiple of 17

Vishal : Greatest factor of 45

Which of the following shows the correct descending order of boys according to their marks?

- A. Tarun, Manish, Vishal
 B. Manish, Tarun, Vishal
 C. Vishal, Tarun, Manish
 D. Tarun, Vishal, Manish
19. In 636250, the place value of 6 at the thousands place is _____ times the place value of 6 at the lakhs place.
- A. 6
 B. $\frac{1}{1000}$
 C. $\frac{1}{100}$
 D. 100

20. Find the weight of 3 + .



- A. 420 g
 B. 480 g
 C. 500 g
 D. 700 g

21. The value of $CDLVI + CMVII - DXCVI$ is _____.

- A. DCCLXVII
 B. CDLXXVII
 C. CDXXVII
 D. DLXXVII

22. Three water bottles X, Y and Z contain 920 mL of water altogether. Bottle X contains twice as much water as bottle Y. Bottle Z contains 20 mL less water than bottle X. How much quantity of water is there in bottle Z?

- A. 385 mL
 B. 376 mL
 C. 380 mL
 D. 356 mL

23. Which of the following statement(s) is/are true?

- (i) Predecessor of 6 millions is fifty nine lakh ninety nine thousand nine hundred and ninety nine.
 (ii) Estimated value of largest 6-digit number rounded to the nearest hundreds is smallest 7-digit number.

- A. Only (i)
 B. Only (ii)
 C. Both (i) and (ii)
 D. Neither (i) nor (ii)

24. Add the 4th multiple of 52 and the 8th multiple of 37. The value obtained is 700 less than . Find the value of .

- A. 1400
 B. 504
 C. 968
 D. 1204

25. How many given fig

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

26. Devika Friday.

- on Thu
 many
 togeth

- A.
 B.
 C.
 D.

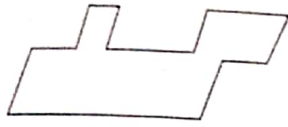
27. If then

- A.
 B.
 C.
 D.

28. For the
 the
 A.
 B.
 C.
 D.

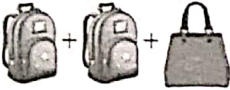
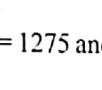




29. W
 of

25. How many angles are greater than right angle in the given figure?



- A. 5
 B. 6
 C. 4
 D. None of these
-
26. Devika works 45 hours in five days from Monday to Friday. If she worked $4\frac{1}{2}$ hours on Tuesday, 9 hours on Thursday and $5\frac{1}{2}$ hours on Friday, then for how many hours did she work on Monday and Wednesday together?

- A. $11\frac{1}{2}$ hours
 B. 26 hours
 C. $18\frac{1}{2}$ hours
 D. 15 hours

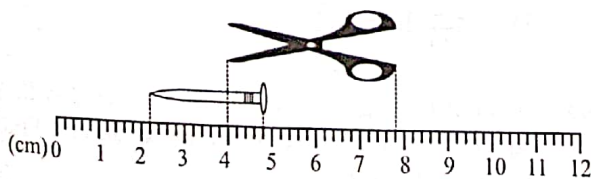
27. If  +  +  = 1275 and  -  = 75, then what is the value of  ?

- A. 400
 B. 475
 C. 465
 D. 480

28. Four-fifth of a number is 20 more than two-third of the same number. Find the number.

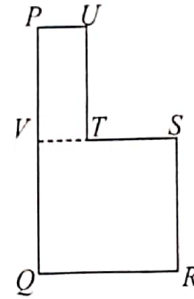
- A. 145
 B. 55
 C. 150
 D. 75

29. What is the difference between the length of the pair of scissors and the nail?



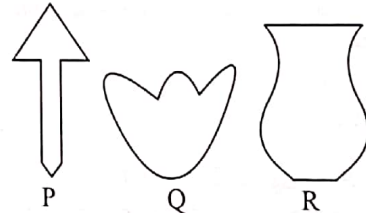
- A. 1.4 cm
 B. 10.5 cm
 C. 0.14 cm
 D. 1.2 cm

30. In the given figure, $VSRQ$ is a square and $PUTV$ is a rectangle. The area of the square $VSRQ$ is 400 cm^2 and the perimeter of the complete figure is 150 cm. Find the length of PQ .



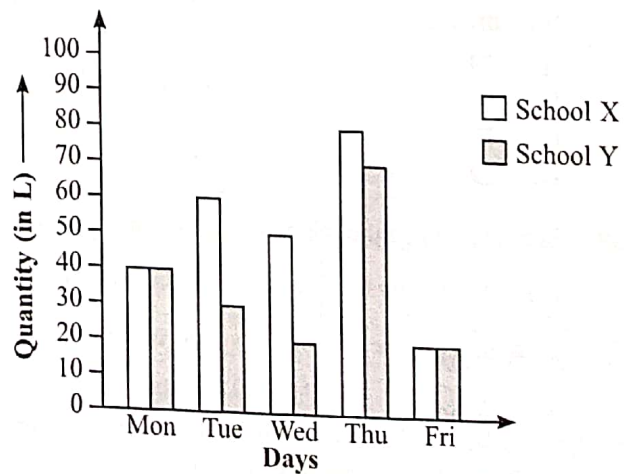
- A. 24 cm
 B. 41 cm
 C. 55 cm
 D. 30 cm

31. Which of the following figures have at least one line of symmetry?



- A. Only P and Q
 B. Only Q and R
 C. Only P and R
 D. All of these

32. The given bar graph shows the quantity of juice consumed by the students of two schools over 5 days. How much more quantity of juice is consumed by School X than School Y?



- A. 35 L
 B. 85 L
 C. 70 L
 D. 50 L

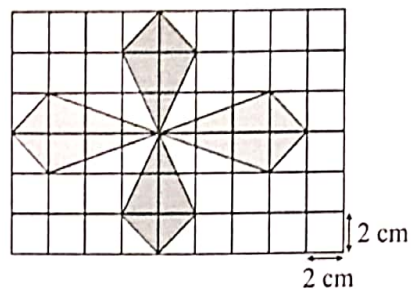
33. Find the product of 5 and the difference between 328 tenths and 4587 thousandths. Round off your answer to 1 decimal place.

- A. 146.9
- B. 141.1
- C. 139.2
- D. 140.2

34. Find the sum of all factors of 243.

- A. 364
- B. 121
- C. 120
- D. 363

35. What is the area of the shaded figure?



- A. 26 sq. cm
- B. 52 sq. cm
- C. 64 sq. cm
- D. 56 sq. cm

EVERYDAY MATHEMATICS

36. A factory manufactures 2530900 pens in a month. The factory got a order to fill 17608 cartons with 144 pens each. How many more pens should it manufacture to complete the order?

- A. 4260
- B. 4652
- C. 3421
- D. 5625

37. An NGO earned ₹ 50480 in a month. If the total expenses were ₹ 36500 per month, then how much money was saved in one year?

- A. ₹ 234060
- B. ₹ 613700
- C. ₹ 167760
- D. ₹ 117340

38. Shivam and Varun ate 95 toffees altogether. Varun and Aakash ate 216 toffees altogether. If Varun ate $\frac{1}{5}$ of what Aakash ate, then how many toffees did Shivam eat?

- A. 59
- B. 65
- C. 70
- D. 79

39. Sonia talked on the telephone to two of her friends. She talked to Shivani for $\frac{1}{4}$ hour and to Geetika for $\frac{1}{3}$ hour. How much time did Sonia spend on the telephone?

- A. $\frac{1}{6}$ hour
- B. $\frac{2}{7}$ hour
- C. $\frac{5}{12}$ hour
- D. $\frac{7}{12}$ hour

40. Jagriti has a novel of 212 pages. If she takes 5 mins 25 secs to read a page, then how long will she take to read the complete novel?

- A. 12 hrs 45 mins
- B. 22 hrs 42 mins
- C. 10 hrs 18 mins 50 secs
- D. 19 hrs 8 mins 20 secs

41. Rekha bought 16.5 m cloth at the rate of ₹ 9 per metre and 5 dozen bangles at the rate of ₹ 12.50 per dozen. What amount does she need to pay?

- A. ₹ 211
- B. ₹ 155.60
- C. ₹ 340
- D. ₹ 220.90

42. Mrs Sharma made 5 litres of chocolate shake in the morning. There was $\frac{6}{11}$ litres of shake left in the evening. How much chocolate shake was used during the day?

- A. $5\frac{4}{11}$ litres
- B. $2\frac{4}{11}$ litres
- C. $4\frac{5}{11}$ litres
- D. $3\frac{2}{11}$ litres

43. A room is 9 m wide. Its floor is covered with 1230 square tiles. Each side of the tile is 30 cm. Find the length of the room.

- A. 14.6 m
- B. 11 m
- C. 12.3 m
- D. 11.07 m

44. In a garden, there are 403354 plants in 329 rows. If each row has the same number of plants, then how many plants are there in 115 rows?
- A. 104099 B. 149900
C. 149090 D. 140990

45. The given table shows the prices of 3 different types of eggs. $\frac{1}{4}$ of the eggs Priyanka bought were chicken eggs. $\frac{1}{8}$ of them were century eggs and the

rest were quail eggs. If Priyanka spent a total amount of ₹ 6.50 on the chicken and century eggs, then how much did she spend on the quail eggs?

Chicken eggs	20 paise each
Century eggs	90 paise each
Quail eggs	5 paise each

- A. ₹ 1.25
B. ₹ 1.40
C. ₹ 1.65
D. ₹ 1.80

ACHIEVERS SECTION

46. A basket with 60 apples weighs 21 kg 800 g. The same basket with 8 apples weighs 3 kg 600 g. If each apple in the basket has the same weight, then
- (a) What is the weight of the empty basket?
(b) What is the weight of the basket with 18 apples?
- | | |
|----------|--------|
| (a) | (b) |
| A. 800 g | 7100 g |
| B. 400 g | 1150 g |
| C. 300 g | 2550 g |
| D. 800 g | 6300 g |

47. Read the given statements carefully and state 'T' for True and 'F' for False.
- (i) While writing a number in Indian System of numeration, commas are inserted after each digit.
(ii) There is no roman numeral to represent 0.
(iii) Greatest 6-digit odd number that can be formed using the digits 8, 3, 0, 2, 4 and 5 (using each digit only once) is 854023.
- | | | | |
|----|-----|------|-------|
| | (i) | (ii) | (iii) |
| A. | T | F | T |
| B. | F | T | T |
| C. | T | F | F |
| D. | F | T | F |

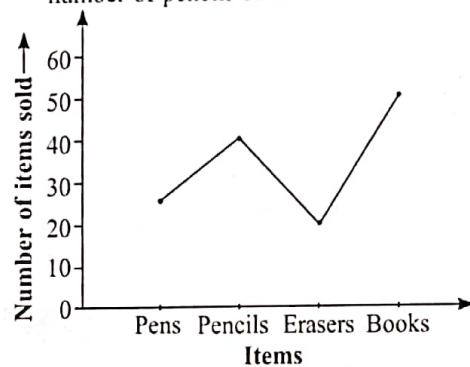
48. Find the value of $\frac{(Q+R) \div (P-S)}{S}$.

$$\begin{array}{r}
 1\overline{)49\overline{)2309\overline{)42}} \\
 \underline{-132} \\
 989 \\
 \underline{-92\overline{)Q}} \\
 6\overline{)S}5 \\
 \underline{-528} \\
 12\overline{)P}4 \\
 \underline{-1188} \\
 8\overline{)R}2 \\
 \underline{-792} \\
 70
 \end{array}$$

- A. 5 B. 1
C. 10 D. 2

49. The given line graph shows the sale of certain stationery items by a book shop. Study it carefully and answer the following questions.

- (i) How many fewer erasers were sold than pens?
(ii) If a pencil costs ₹ 5, then how much money was collected from their sale?
(iii) Find the fraction of number of books sold to the number of pencils sold.



- | | | | |
|----|-----|-------|---------------|
| | (i) | (ii) | (iii) |
| A. | 6 | ₹ 150 | $\frac{3}{7}$ |
| B. | 5 | ₹ 200 | $\frac{5}{4}$ |
| C. | 8 | ₹ 110 | $\frac{4}{5}$ |
| D. | 5 | ₹ 100 | $\frac{4}{7}$ |

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

Statement-I : If the dimensions of a rectangle having length 16 m and breadth 13 m are doubled, then its new perimeter is 106 m.

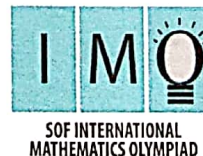
Statement-II : The sum of all sides of a square field is 144 m, then the sum of opposite two sides of the field is 72 m.

- 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.

SPACE FOR ROUGH WORK



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