SOF

SCIENCE OLYMPIAD FOUNDATION

IMO

LEVEL - 2

1. There are 50 passengers in a bus. 6 of them are children while the rest are adults. If $\frac{7}{11}$ of the adults are women, then what fraction of the total passengers in the bus are men?

   A. $\frac{8}{25}$ B. $\frac{16}{25}$

   C. $\frac{6}{25}$ D. $\frac{12}{25}$

2. What is the difference between the place value of 4 in the millions place and the place value of 4 in the thousands place ?

   A. 396000
   B. 399600
   C. 3996000
   D. 999000

3. The given figure (not drawn to scale) is divided into four parts. Area of rectangle *QRST* is 32 sq. cm and area of square *UTWV* is 36 sq. cm. Find the total area of rectangles *PQTU* and *TSXW*.
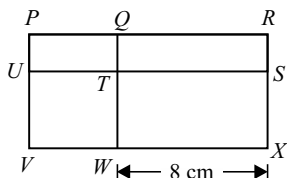
   A. 76 sq. cm
   B. 72 sq. cm
   C. 64 sq. cm
   D. 82 sq. cm

4. Find the sum of the common prime factors of 154 and 224.

   A. 10
   B. 7
   C. 12
   D. 9

5. Round off the sum of 3645279 and 2153467 to the nearest ten thousand.

   A. 5790000
   B. 5800000
   C. 5799000
   D. 5700000

6. If area of 8 identical squares is 392 sq. cm, then find the perimeter of each square.

   A. 35 cm
   B. 21 cm
   C. 28 cm
   D. 32 cm

7. Sneha had two 2000 rupee notes. She spent $\frac{3}{8}$ of it on a dress and bought a pair of heels of ₹ 945. How much money did she have left?

   A. ₹ 2445
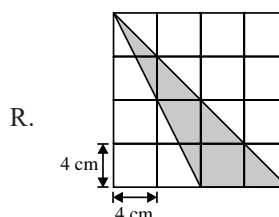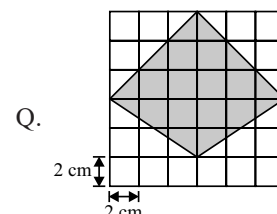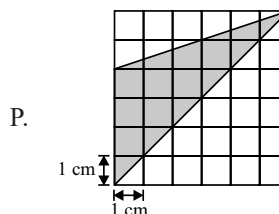   B. ₹ 1955
   C. ₹ 1555
   D. ₹ 2045

8. Sahil travelled 12 km 450 m by train, 8 km 225 m by car and 3 km 450 m by scooter. Find the total distance travelled by Sahil.

   A. $24\frac{1}{8}$ km

   B. $24\frac{1}{4}$ km

   C. $24\frac{3}{8}$ km

   D. $24\frac{3}{4}$ km

9. Which of the following is greater than $\frac{1}{2}$?

   A. $\frac{1}{4}+\frac{1}{4}$

   B. $\frac{5}{6}+\frac{1}{6}$

   C. $\frac{3}{8}+\frac{1}{8}$

   D. $\frac{7}{12}-\frac{1}{12}$

10. Arrange the areas of following figures in ascending order.

    A. P, Q, R
    B. Q, R, P
    C. P, R, Q
    D. R, Q, P

11. Raman had some money. He spent $\frac{1}{5}$ of it on education and $\frac{2}{5}$ of the remainder on food. He saved the rest.
    (a) What fraction of his money was spent on food?
    (b) If Raman spent ₹ 2400 on food, then how much did he save?

	(a)	(b)
A.	1/25	₹ 2400
B.	8/25	₹ 3600
C.	8/25	₹ 2400
D.	1/25	₹ 3600

12. The table below shows the cost of peanuts at stall P, stall Q and stall R.

	Stall P	Stall Q	Stall R
Price of peanuts	₹ 150 per kg	₹ 100 for 600 g	₹ 105 for 700 g

    Which two stalls sell the peanuts at the same price?
    A. P and R
    B. P and Q
    C. R and Q
    D. None of these

13. In 7 + _____ + 0.026 = 7.826, what is the missing fraction in the blank?
    A. $\frac{1}{8}$
    B. $\frac{5}{10}$
    C. $\frac{2}{3}$
    D. $\frac{4}{5}$

14. Match the following :

Column I	Column II
Number	Place value and face value of underlined digit respectively
(a) 36124081	(i) 20000 and 2
(b) 92133302	(ii) 200000 and 2
(c) 512100842	(iii) 2 and 2
(d) 12201485	(iv) 2000000 and 2

	(a)	(b)	(c)	(d)
A.	(i)	(ii)	(iii)	(iv)
B.	(i)	(iii)	(iv)	(ii)
C.	(i)	(iv)	(iii)	(ii)
D.	(iv)	(iii)	(ii)	(i)

15. Which set of numbers gives a sum of 160 and a product of 5775 ?
    A. 55 and 105
    B. 60 and 100
    C. 65 and 95
    D. 170 and 90

16. Difference between the successor of 32760019 and predecessor of 48720000 is _____ .
   A. 15958979
    B. 15959981
    C. 14959981
    D. 15959979

17. Find the value of (P + Q + R) × S in the following addition problem.

    $$\begin{array}{r} 2\ \boxed{P}\ 0\ 6\ 8\ 4\ 1\ 5 \\ +\ 3\ 1\ 2\ \boxed{Q}\ 4\ 2\ 2\ 6 \\ \hline \boxed{S}\ 0\ 2\ 7\ 2\ \boxed{R}\ 4\ 1 \end{array}$$

    A. 90
    B. 75
    C. 70
    D. 80

18. Identify the minuend and subtrahend in the given subtraction problem.

    $$\begin{array}{r} 99{,}99{,}999 \\ -\ 9{,}99{,}999 \\ \hline 90{,}00{,}000 \end{array}$$

 | | Minuend | Subtrahend |
    |---|---------|------------|
    | A. | 99,99,999 | 9,99,999 |
    | B. | 9,99,999 | 99,99,999 |
    | C. | 90,00,000 | 99,99,999 |
    | D. | 9,99,999 | 90,00,000 |

19. Which of the following statements is INCORRECT ?
    A. There is only one centre in a circle.
    B. Radius is the longest chord of any circle.
    C. Half of a circle is called semicircle.
    D. A circle can have many diameters.

20. Count the number of unit cubes in the given solid.
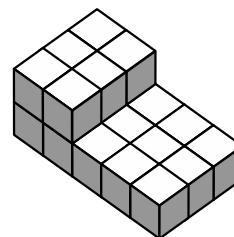
    A. 21
    B. 20
    C. 22
    D. 23

21. There are 35 girls and 15 boys in a badminton club. What fraction of the members are boys ?
    A. 7/10
    B. 3/4
    C. 3/10
    D. 13/20

22. In the given figure, ∠MON is __(i)__ angle, ∠SOQ is __(ii)__ angle and ∠SOP is __(iii)__ angle.
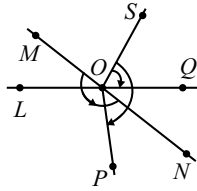
	(i)	(ii)	(iii)
A.	Obtuse	Straight	Acute
B.	Straight	Acute	Obtuse
C.	Acute	Acute	Obtuse
D.	Straight	Obtuse	Acute

23. How many minutes are there in $\frac{1}{20}$ of 6 hours?
    A. 20 mins
    B. 30 mins
    C. 18 mins
    D. 24 mins

24. A certain number when divided by 4 gives a remainder of 3. The same number when divided by 3 gives a remainder of 2. Which of the following can be the number?
    A. 55
    B. 71
    C. 89
    D. 103

25. Neena bought a packet of 120 beads. She used $\frac{2}{3}$ of the beads to sew onto a bag and $\frac{1}{12}$ of it to sew onto a top. She then sewed the rest of the beads onto several scarves.
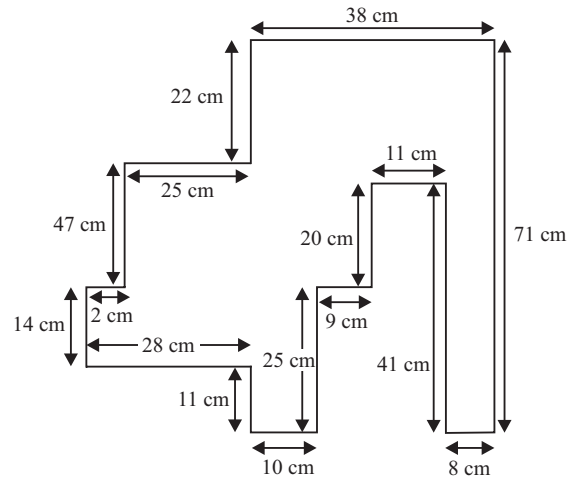   (a) How many beads are used in scarves?
    (b) How many more beads are used to sew a bag than a top ?

	(a)	(b)
A.	30	70
B.	40	60
C.	30	60
D.	40	70

26. When the time in Singapore is 21 : 30, the time in New York is 09 : 30 on the same day. What is the time difference between Singapore and New York?
    A. 9 hrs
    B. 9 hrs 30 mins
    C. 12 hrs
    D. 12 hrs 30 mins

27. Find the perimeter of the whole figure (not drawn to scale).


    A. 364 cm   B. 383 cm
    C. 643 cm   D. None of these

28. Priyank filled a pail with 3 L 125 mL of water, a jug with 2 L 50 mL of water and a bottle with 600 mL of water. How many litres of water did Priyank use altogether?
    A. 5 L 775 mL
    B. 3 L 250 mL
    C. 5 L 50 mL
    D. 6 L 250 mL

29. Teena, Sheena and Veena run on different tracks of a rectangular field. If the dimensions of the tracks are given below, then what is the difference between the length of boundary of track III and track I? (neglecting the width of the track)
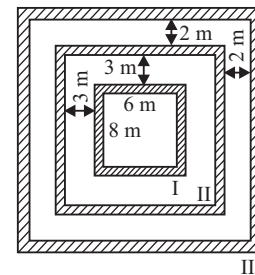
    A. 68 m
    B. 40 m
    C. 24 m
    D. 16 m

30. In a certain state, fifty two lakh sixty one thousand nine hundred eighty nine students were enrolled in various schools. Of these, nineteen lakh sixty five thousand two hundred thirty three were primary school students, twenty lakh six thousand seven hundred fifty six were high school students and the rest attended middle school. What is the number of students enrolled in middle school rounded off to nearest lakh?

A. 2000000
B. 1300000
C. 1200000
D. None of these

31. If each letter represents a different digit, then find P, Q, R, S, T in the following multiplication problem.

$$\begin{array}{r} P\ Q\ R\ S\ T \\ \times\ 5 \\ \hline 1\ 2\ 2\ 6\ 8\ 5 \end{array}$$

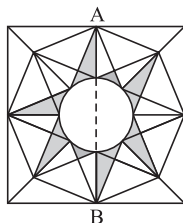|	P	Q	R	S	T
A.	2	4	5	3	7
B.	2	5	4	3	7
C.	2	6	4	3	7
D.	2	4	5	4	7

32. Which of the following shows the correct prime factorisation of 108 ?

A.
```
      108
     /   \
    2     54
         /  \
        2    27
            /  \
           3    9
               / \
              9   1
```
B.
```
      108
     /   \
    3     36
         /  \
        3    12
            /  \
           2    6
```
C.
```
      108
     /   \
    2     54
         /  \
        2    27
            /  \
           3    9
               / \
              3   3
             /|  /|
            3 1 3 1
```
D. Both (A) and (C)

33. Which of the following sets shows the multiples of 75?

A. (5, 1, 3, 15, 25)
B. (75, 150, 275, 325, 400, 475, 525)
C. (1, 75, 150, 225, 300, 375, 450, 525)
D. (75, 150, 225, 300, 375, 450, 525, 600)

34. How many more triangles must be shaded to make AB as the line of symmetry?
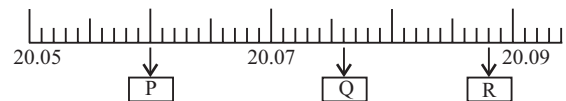

A. 2
B. 3
C. 4
D. 5

35. Compare and fill in the box with '<', '>' or '='.

$\left(\dfrac{4}{5}-\dfrac{3}{14}\right)$ less than $\left(\dfrac{3}{4}-\dfrac{3}{20}\right)$ ☐ $\left(\dfrac{3}{7}+\dfrac{1}{3}\right)$ more than $\left(\dfrac{7}{12}-\dfrac{1}{4}\right)$

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

36. Find the values of missing decimal numbers P, Q and R.

	P	Q	R
A.	20.06	20.076	20.088
B.	20.06	20.08	20.088
C.	20.06	20.09	20.880
D.	20.06	20.216	20.778

37. Solve the following :
(I) I am a 3-digit number between 100 and 120 and a multiple of 6. The sum of my digits is 9. What number am I?
(II) Find the difference between the fourth multiple of 9 and the third multiple of 6.

	(I)	(II)
A.	117	18
B.	108	45
C.	108	18
D.	117	45

38. When ◆ is added to 59 hundreds, the answer is 300 tens more than 11 thousands. How many tens is ◆?
A. 180
B. 140
C. 8100
D. 810

39. Mrs Kapoor bought $2\dfrac{1}{2}$ kg of wheat at ₹ 16 per 200 g. How much money would she have to pay?
A. ₹ 220
B. ₹ 160
C. ₹ 200
D. ₹ 240

40. 25 kg of sugar is packed into packets of weight 125 g each. How many packets of sugar are there?
A. 200
B. 100
C. 125
D. 150

41. The weight of a packet of salt is 1.2 kg. The weight of a packet of flour is 0.3 kg less than the weight of a packet of salt. Find the total weight of 5 such packets of salt and 3 such packets of flour.

    A. 8 kg
    B. 8.2 kg
    C. 8 kg 70 g
    D. 8700 g

42. Aman is 1.42 m tall. His brother is 15 cm taller than Aman. Their total height is_____ m.

    A. 2.57
    B. 1.66
    C. 2.99
    D. 1.37

43. Meenal joined three activities i.e. table tennis, dancing and abacus.

    I.   She went for table tennis class once in every 3 days.
    II. She went for dancing class once in every 4 days.
    III. She went for abacus class once in every 6 days.

    The given calendar shows that Meenal did all the activities on 5th June. On which day will Meenal again do all three activities on the same day?

June 20XX

S	M	T	W	T	F	S
				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. 12th, Monday
    B. 17th, Saturday
    C. 21st, Wednesday
    D. 30th, Friday

44. If $\triangle \times \bigcirc \times \square = 2880$, $\triangle \times \bigcirc = 240$ and $2\triangle = 32$, then find $\triangle + \bigcirc + \square$.

    A. 53
    B. 23
    C. 43
    D. 63

45. Form the greatest seven digit number using all the digits 9, 4, 6, 3 and 2 atleast once.

    A. 9999999
    B. 9996432
    C. 9999996
    D. 9643299

ACHIEVERS SECTION

46. Match the columns.

	Column-I		Column-II
(a)	MCMXCIX – MDXLIX	(i)	MMMDCXIV
(b)	MMXLV + MDLXIX	(ii)	CCCIX
(c)	MCMLVIII – MCDXCIX	(iii)	CDLIX
(d)	MDXXXIX – MCCXXX	(iv)	CDL

	(a)	(b)	(c)	(d)
A.	(i)	(ii)	(iii)	(iv)
B.	(ii)	(iii)	(i)	(iv)
C.	(iv)	(i)	(iii)	(ii)
D.	(iv)	(iii)	(ii)	(i)

47. Which of the following statements is CORRECT?

    A. The fraction $\dfrac{6}{25}$ is equal to 0.24.

    B. The fraction $2\dfrac{2}{25}$ is equal to 2.8.

    C. The fraction $7\dfrac{4}{24}$ is equal to 7.15.
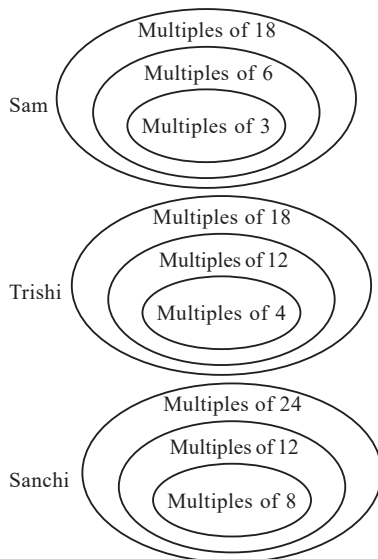
    D. The fraction $1\dfrac{1}{50}$ is equal to 1.25.

48. Fill in the blanks.

    • The area of figure P is __(i)__ sq. cm.
    • Area of figure Q is __(ii)__ sq. cm.
    • Area of figure R is __(iii)__ sq. cm.
    • Sum of areas of figure P and figure R together is __(iv)__ sq. cm more than the area of figure Q.
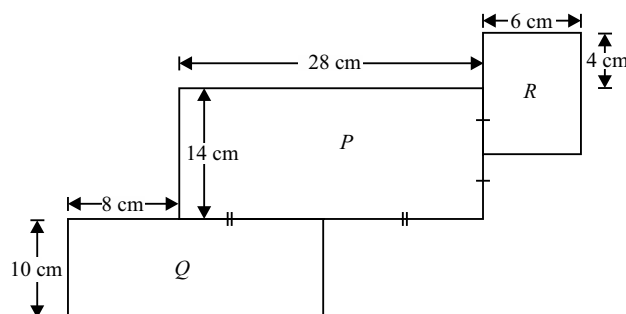
	(i)	(ii)	(iii)	(iv)
A.	392	220	660	47
B.	327	320	66	420
C.	392	220	66	392
D.	392	220	66	238

49. Three friends drew Venn diagram for the multiples. Who drew the correct picture?

Sam

Multiples of 18
Multiples of 6
Multiples of 3

Trishi

Multiples of 18
Multiples of 12
Multiples of 4

Sanchi

Multiples of 24
Multiples of 12
Multiples of 8

A. Sam
B. Trishi
C. Sanchi
D. None of these

50. Divyank parked his bike from 10 a.m. to 6:50 p.m. on Monday and Sunday. The charges of parking are given below:

Time	Charges (Weekdays)	Charges (Saturday/Sunday/ Public holidays)
6 a.m. to 11 a.m.	₹ 250 per hour	₹ 120 per hour
11 a.m. to 5 p.m.	₹ 350 per hour	₹ 180 per hour
5 p.m. onwards	₹ 10 every 1/2 hour or part thereof	₹ 10 per half hour or part thereof

(a) How much did Divyank have to pay in total for the parking charges on Monday?

(b) How much cheaper did he pay for the parking charges on Sunday than on Monday?

	(a)	(b)
A.	₹ 1240	₹ 2390
B.	₹ 2390	₹ 1240
C.	₹ 2390	₹ 1150
D.	₹ 1150	₹ 2390

SPACE FOR ROUGH WORK