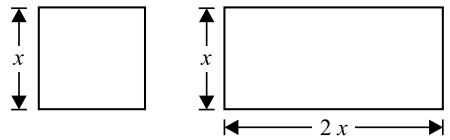
SCIENCE OLYMPIAD FOUNDATION

IMO

LEVEL - 2

Year 2016-17

1. Which one of the following statements is true about the given square and rectangle?



A. Perimeter of square = 2(Perimeter of rectangle)

B. Perimeter of square = $\frac{2}{3}$ (Perimeter of rectangle)

C. Perimeter of square = $\frac{3}{2}$ (Perimeter of rectangle)

D. Perimeter of square = $\frac{1}{2}$ (Perimeter of rectangle)

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2. Which group of numbers are arranged from the largest to the smallest?

A. 0.3, 3.0, 0.03, 0.003

B. 1.4, 0.14, 1.04, 1.004

C. 9.25, 9.95, 9.59, 9.92

D. 4.6, 4.26, 4.16, 4.06

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3. Which of the following numbers is divisible by 2 but not divisible by 3?

A. 1764

B. 2160

C. 4926

D. 3328

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4. Find the value of P + Q – R.

$$24\overline{)5\,1\,3\,7\,8\,(2\boxed{P}4}$$
$$-4\,8$$
$$3\,3$$
$$-2\,4$$
$$\boxed{Q}7$$
$$-9\,6$$
$$\boxed{R}8$$

A. 9

B. 8

C. 7

D. 0

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5. Add 8 tenths to 5 hundreds and 5 hundredths. Subtract the addition of 7 tens and 7 hundredths from the previous result. What will be the answer ?

A. 494.23

B. 430.78

C. 493.73

D. 430.83

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6. If $\square + \square + \square = 2.64$,

$\triangle \times \bigcirc + \square = 2.94$ and

$\triangle \times \square = 1.76$

Find the value of $\triangle + \triangle + \bigcirc$.

A. 3.02

B. 5

C. 2.05

D. 5.03

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7. Find the value of P, Q and R.

$\boxed{P} - \boxed{Q} + \boxed{R} = 16640657$

	P	Q	R
A.	2351687	13562482	5429862
B.	13562482	2351687	5429862
C.	5429862	13562482	2351687
D.	13562482	5429862	2351687

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8. Find the difference between the greatest and smallest 8-digit numbers formed by using the digits 7, 4, 8, 2, 0, 3, 9 (each digit should be used atleast once).

A. 79839531

B. 8833531

C. 89839441

D. 79839441

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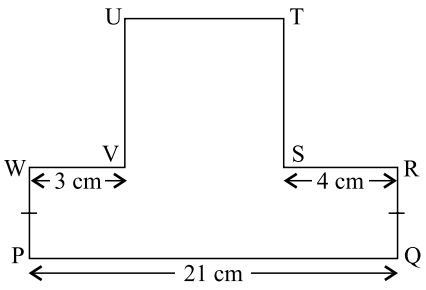
9. Figure PQRSTUVW is made up of a rectangle and a square. Find the length of RQ, if perimeter of rectangle is $\frac{6}{7}$ times of perimeter of square.



A. 3 cm

B. 4 cm

C. 6 cm

D. 2 cm

10. Select the correct match.

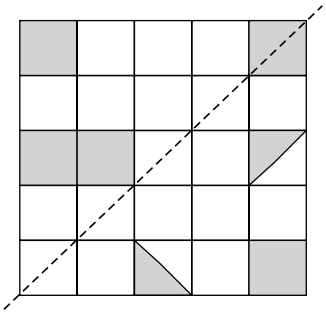
A. $115.32 \times 2 = 23.064$

B. $1272.55 \div 5 = 254.501$

C. $3.15 \times 12 = 37.8$

D. $54.51 \times 51 = 2780.1$

11. How many minimum number of square(s) must be shaded to make the given figure symmetric along the dotted line?



A. 2 B. 3.5

C. 4 D. 4.5

12. If 6 identical squares have a total area of 150 cm^2, then find the perimeter of a square.

A. 50 cm

B. 25 cm

C. 30 cm

D. 20 cm

13. Find the value of P, Q and R.

12-hour clock	24-hour clock
3 : 45 pm	P
12 : 01 am	Q
10 : 06 pm	R

	P	Q	R
A.	03:45 hours	12:01 hours	22:06 hours
B.	03:45 hours	00:01 hours	10:06 hours
C.	15:45 hours	00:01 hours	22:06 hours
D.	15:45 hours	12:01 hours	22:06 hours

14. Rounded off (3169676 + 21934) to nearest thousand.

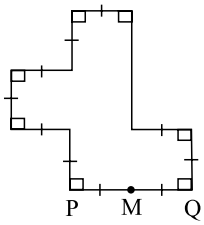
A. 3192000

B. 3182000

C. 3191000

D. 3181000

15. The given figure is formed by identical squares. If area of the figure is 980 cm^2, then find the length of PQ.



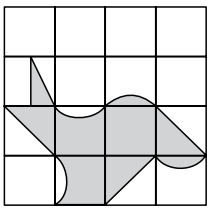
A. 14 m

B. 28 cm

C. 14 cm

D. 24 m

16. What fraction of given figure is unshaded, if all the squares are identical?



A. 20/112

B. 30/64

C. 45/64

D. 40/56

17. Find the sum of the common prime factors of 168 and 252.

A. 11

B. 12

C. 13

D. None of these

18. How many right angles and straight angles are there in $7\frac{1}{2}$ complete turn?

A. 32, 16

B. 8, 7

C. 28, 14

D. 30, 15

19. If $\frac{3}{20}$ of a number is 15 less than the $\frac{1}{5}$ of the same number, then find the number.

A. 300

B. 250

C. 200

D. 350

20. If 7th October falls on Monday, then which day of the week is 1st December?

A. Sunday
B. Saturday
C. Monday
D. Tuesday

21. How many eighths are there in 1.75?

A. 14
B. 16
C. 18
D. 12

22. There are 75 people at a party. 25 of them are men. If $\left(\frac{1}{5}\right)^{th}$ of them are women, then find the fraction of children in the party.

A. $\frac{5}{7}$
B. $\frac{7}{15}$
C. $\frac{8}{15}$
D. $\frac{3}{14}$

23. Identify the number using given clues.

- It is a three digit even number.
- It is common multiple of 16 and 64.
- It has a total of 9 factors.

A. 256
B. 128
C. 320
D. 192

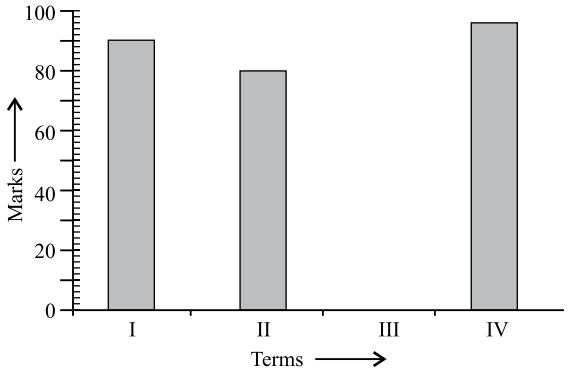
24. In 12,99,897, the place value of the digit '2' is how many times the place value of digit '8'?

A. 250
B. 20000
C. 800
D. 2000

25. Find the value of x.
$99 \times 96 = (99 \times 100) - (x \times 33)$

A. 13
B. 12
C. 63
D. 15

26. The graph shows Priya's marks in Mathematics in four terms. If Priya's total score was 363, how many more marks did she score in Term III than in Term IV.



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

27. Compare and put the sign (< , > or =) in the box.
DCLXXIV + MXLVI ☐ LXXIV + CLXXXIX

A. =
B. <
C. >
D. None of these

28. Trishu has $9\frac{1}{4}$ of pizza. How many quarter pieces can she cut from it ?

A. 37
B. 36
C. 9
D. 27

29. Sam started jogging at 06:20 hours. He jogged 35 minutes before taking 10 mins rest. He then walked and reached home at 9:15 am. How much time did he take to walk home?

A. 1 hour 5 mins
B. 2 hours 50 mins
C. 2 hours 10 mins
D. 2 hours

30. Garima wants to buy a watch which costs ₹31925. She saves ₹2000 every month. How many months does Garima need to save in order to pay for the watch?

A. 12
B. 16
C. 15
D. 10

31. Trishika cut a wire and bent to form 4 similar rectangles. The length of each rectangle is 2 more than the twice its breadth. If the length of a rectangle is 22 cm, what is the original length of the wire she had?

A. 256 cm
B. 200 cm
C. 196 cm
D. 176 cm

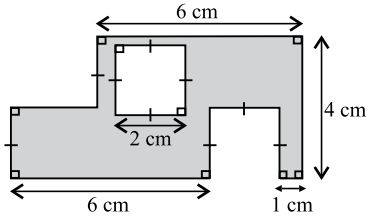
32. 2 oranges cost ₹15 and 4 bananas cost ₹12. Samaksh bought 12 dozen of oranges and 15 dozen of bananas. If he gave ₹2000 to shopkeeper, then how much change did he get back?

A. ₹240
B. ₹150
C. ₹380
D. ₹442

33. Ruchi baked a cake and gave $\frac{2}{3}$ of it to Priyanka and $\frac{1}{8}$ of it to her children. What fraction of cake was left with her ?

A. 5/24
B. 5/19
C. 3/24
D. 1/24

34. Find the shaded area of the given figure.



A. 22 cm^2
B. 50 cm^2
C. 24 cm^2
D. None of these

35. If you add 1 to a number and round it off to the nearest ten, the answer is 1870. If you add 2 to the number and round it off to the nearest ten, the answer is 1880. What is the number?

A. 1873
B. 1863
C. 1874
D. 1864

36. A jacket costs $15\frac{1}{2}$ times as much as a pair of socks. If the jacket costs ₹3472, then how much does it cost to buy 2 jackets and 2 pairs of socks.

A. ₹7392
B. ₹6930
C. ₹8580
D. ₹9525

37. In the English alphabets, how many letters have rotational symmetry?

A. 5
B. 8
C. 9
D. None of these

38. If the length of a rectangular garden is 4^{th} multiple of 16 and breadth is $\frac{3}{8}$ of the length, then find the perimeter and the area of the garden respectively.

A. 176 units, 1536 sq. units
B. 44 units, 96 sq. units
C. 176 sq. units, 1536 units
D. 44 sq. units, 96 units

39. The given table shows the number of children that take up different types of sports as their Curriculum Activity.

Types of sport	Number of boys	Number of girls	Total
Badminton	29		45
Basketball		12	38
Bowling	14	22	
Table tennis		25	38

How many more boys take basketball than table tennis?

A. 13
B. 15
C. 26
D. 18

40. How many eighths are there in $1\frac{1}{2}+2\frac{1}{2}+1\frac{1}{4}+2.75$?

A. 56
B. 7
C. 64
D. 14

41. Which of the following shapes can not tessellated?

A. Only P and Q
B. Only Q and R
C. Only R
D. None of these

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42. I cycled 12 km 500 m and then walked 4 km 250 m. What was the total distance travelled by me?

A. $16\frac{3}{4}$ km
B. $16\frac{1}{4}$ km
C. $16\frac{3}{8}$ km
D. $16\frac{7}{50}$ km

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43. If the day before yesterday was Monday, then the day after tomorrow will be_____.

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

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44. Nidhi bought 16 bottles of soft drinks. Each bottle had 650 ml of drink in it. What was the total amount of drinks she bought altogether?

A. 10 L 40 ml
B. 10 L 400 ml
C. 10 L 400 cl
D. 10 L 40 dl

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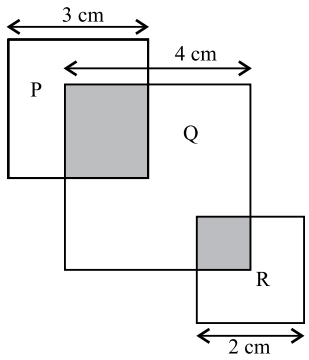
45. The given figure is made up of 3 squares. If $\frac{1}{3}$ of square P and $\frac{1}{4}$ of square Q are shaded, what fraction of square R is shaded?



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

ACHIEVERS SECTION

46. Match the following:

	Column I		Column II
P.	MCMXLVII – MV	(i)	2857
Q.	MCMLVII + CM	(ii)	798
R.	DCLXXVII – XX	(iii)	942
S.	DXCIX + CXCIX	(iv)	657

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

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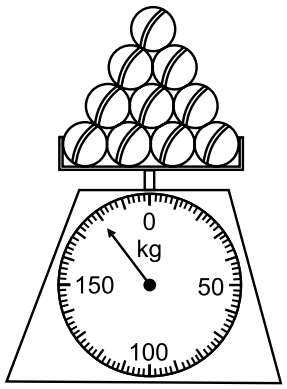
47. If ✡ + O + O + O + O = ✡ + ✡ + ✡ and O = $2\frac{3}{4}$ then ✡ × O = ?

A. $12\frac{3}{4}$
B. $16\frac{1}{4}$
C. $16\frac{1}{8}$
D. $15\frac{1}{8}$

48. Read the statements carefully and select the correct option.

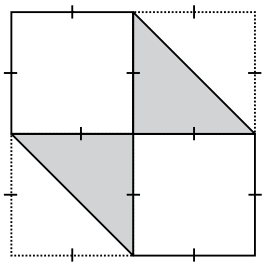


Statement-1 : Weight of three such balls is 36 less than weight of 5 such balls.

Statement-2 : Value of weight of 7 such balls is 6th multiple of 21.

A. Both statement-1 and statement-2 are true.
B. Statement-1 is true and statement-2 is false.
C. Statement-1 is false and statement-2 is true.
D. Both statement-1 and statement-2 are false.

49. A square piece of paper is folded as shown. If the area of each shaded part is 72 cm^2, find the perimeter of the piece of paper when it is unfolded.



A. 98 cm

B. 32 cm

C. 96 cm

D. 56 cm

50. Read the statements carefully and state 'T' for true and 'F' for false.

(i) $\frac{1}{3}+\frac{1}{4}+\frac{1}{5}=\frac{1}{12}+\frac{7}{10}$

(ii) $\frac{3}{4}+\frac{1}{6}-\frac{3}{7}=\frac{1}{3}+\frac{17}{28}$

(iii) $\left(\frac{4}{5}-\frac{3}{14}\right)$ is less than $\left(\frac{3}{4}-\frac{3}{20}\right)$

(iv) $\left(\frac{3}{7}+\frac{1}{3}\right)$ is not less than $\left(\frac{7}{12}+\frac{1}{4}\right)$

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

SPACE FOR ROUGH WORK