UNIFIED COUNCIL

An ISO 9001:2015 Certified Organisation

Unified International Mathematics Olympiad

UNIFIED INTERNATIONAL MATHEMATICS OLYMPIAD

CLASS - 5

Question Paper Code : UM9248

KEY

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D	B	B	C	C	A	A	C	A	C
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
C	B	C	C	C	D	A	B	B	A
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
B	C	B	B	D	C	D	D	C	B
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B	C	A	D	B	D	B	B	D	A
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C	C	A	C	C	A	C	A	D	B

EXPLANATIONS

MATHEMATICS - 1 (MCQ)

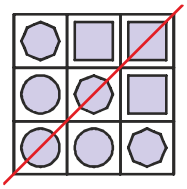
01. (D) Number of breadths (3 cm) to be included in the perimeter = 8

Number of lengths (7 cm) to be included in the perimeter = 10

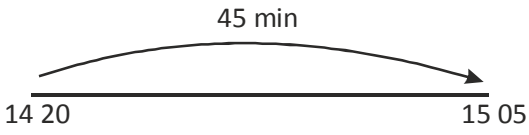
Perimeter = 8 × 3 + 10 × 7

= 24 + 70 = 94 cm

02. (B)



03. (B) 15 05 = 3.05 p.m.



Time he would reach Mumbai filmcity to meet his client = 3.05 p.m.

04. (C) Akhil = 1 (whole)

Rohan = $\frac{1}{3}$ (of Akhil)

$1 + \frac{1}{3} = \frac{4}{3}$

Jay = $\frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$ (of Akhil)

Therefore, 8 units = ₹ 2020

1 unit = ₹ 2020 = ₹ 252.50

15 units = ₹ 252.50 × 15 = ₹ 3787.50

Akhil has ₹ 3787.50

05. (C) 28 is the only number which is both a factor and multiple of 28

Common factors of 36 and 24 are 1, 2, 3, 4, 6 and 12

12 is the 2 digit number which is a common factor of 36 and 24

28 + 12 = 40

06. (A) 1 year = 12 months

$2\frac{1}{2}$ years = 12 + 12 + 6 = 30 months

10 months as a percentage of 30 months

$= \frac{10}{30} \times 100\%$

$= 33\frac{1}{3}\%$

$\approx 33.33\%$

07. (A) 5 pieces = $\frac{15}{8}$ m

1 piece = $\frac{15}{8} \div 5 = \frac{\cancel{15}^{3}}{8} \times \frac{1}{\cancel{5}_{1}} = \frac{3}{8}$ m

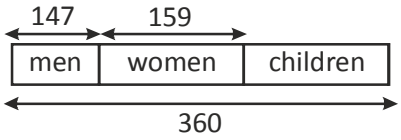
12 pieces = $\frac{3}{\cancel{8}_{2}} \times \cancel{12}^{3} = \frac{9}{2}$ m or $4\frac{1}{2}$ m

08. (C) 5 tens; 3 ones; 8 tenths; 4 hundredths

5 thousandths = 53.845

53.845 = 53.8 (to 1 decimal place)

09. (A)



Number of children = 360 – 147 – 159 = 54

Number of boys = $\frac{2}{3} \times 54 = 36$

Number of girls = 54 – 36 = 18

Percentage of girls = $\frac{18}{360} \times 100\% = 5\%$

10. (C) Multiples of 12: 12, 24, 36, 48, 60, 72...

Multiples of 18: 18, 36, 54, 72...

36 is the first common multiple of 12 and 18

You should note that all other common multiples of 12 and 18 are multiples of 36

500 ÷ 36 = 13 remainder 32

36 × 13 = 468

468 is the biggest common multiple of 12 and 18, within 500.

Thus, the greatest number of stamps I can have is 468.

11. (C) Option (A): 356.64 is less than 356.8

Option (B): 356.79 is less than 356.8

Option (C): All decimals are greater than 356.8

Option (D): 355.99 is less than 356.8

12. (B) After 10 h, the time would be 2 o'clock

In 12 hours the hour-hand moves through 360°

12 h = 360°

1 h = $\frac{360°}{12} = 30°$

10 h = 30° × 10 = 300°

The hour hand will move 300°

13. (C) Selling price of the book = ₹ 720.00

Profit = ₹ 64.50

Cost price = Selling price – Profit

= ₹ 720.00 – ₹ 64.50 = ₹ 655.50

14. (C) $99 \div 11 = 9$

$(2 + 3) + 4 = 5 + 4 = 9$

15. (C) $12 = \textcircled{1} \times 12$

$= \textcircled{2} \times 6$

$= 3 \times 4$

$8 = \textcircled{1} \times 8$

$= \textcircled{2} \times 4$

$30 = \textcircled{1} \times 30$

$= \textcircled{2} \times 15$

Common factors of 12, 8 and 30: 1 and 2

Sum of common factors = 1 + 2 = 3

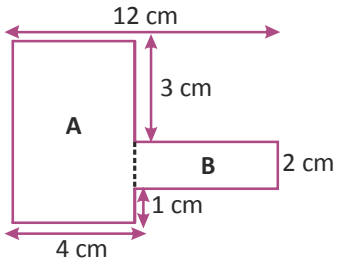
16. (D) Length of rectangle A = 3 + 2 + 1 = 6 cm

Area of rectangle A = $6 \times 4 = 24$ cm^2

Length of rectangle B = 12 – 4 = 8 cm

Area of rectangle B = $8 \times 2 = 16$ cm^2

Area of the figure = 24 + 16 = 40 cm^2



17. (A) $36 \div 12 = 3$ cm

Each side of a square is 3 cm.

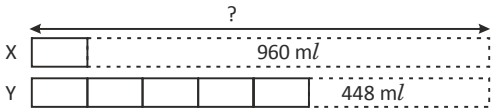
$3 \times 3 = 9$ cm

The area of a square is 9 cm^2.

$9 \times 5 = 45$ cm^2

The area of the figure is 45 cm^2

18. (B)



960 – 448 = 512 mℓ

5 units – 1 unit = 4 units

4 units = 512 mℓ

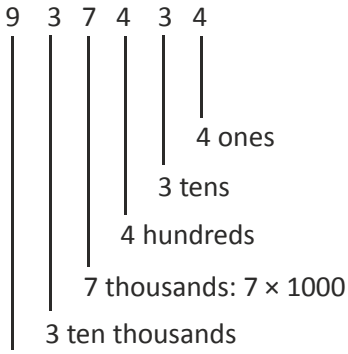
1 unit = 512 ÷ 4 = 128 mℓ

128 + 960 = 1088 mℓ

There was 1088 mℓ of water in container X at first

19. (B) The biggest 4-digit odd number is 9999.

9999 + 927435 = 937434



20. (A) Product of 5.764 & 12 = 69.168

The digit in the thousandths place of 69.168 is 8. Its value is 0.008

The digit in the tenths place is 1. Its value is 0.1

Difference = 0.1 – 0.008

= 0.100 – 0.008

= 0.092

21. (B) 8 divisions = $\frac{1}{2}$

3 divisions = $\frac{1}{2} \div 8 \times 3 = \frac{1}{2} \times \frac{1}{8} \times 3$

Point P = $3\frac{1}{2} + \frac{3}{16} = 3\frac{11}{16}$

22. (C) Total of the 2 other numbers = (82 × 4) – (83 + 90)

= 328 – 173 = 155

Try the options one by one.

(A) : If 82 is the bigger number the other number would be 155 – 82 = 73. This is not possible as all numbers should be bigger than 75

(B) : If the bigger number is 80, the other number would be 155 – 80 = 75 (not possible)

(C) : If the bigger number is 79, the other number is 155 – 79 = 76. This is a possible options

(D) : If 77 is the bigger number, the other number would be 155 – 77 = 78 (which is bigger than 77, leading to a contradiction)

Out of the four options given, only 79 can be the bigger number

23. (B) For pattern 1 there is one marble, for pattern 2 there are 4 × 1 + 1 marbles. For pattern 3 there are 4 × 2 + 1 marbles

For pattern 1001 there are 4 × 1000 + 1

= 4001 marbles

24. (B) $3\frac{5}{6}+4\frac{1}{4}+1\frac{11}{12}=8+\left(\frac{5}{6}+\frac{1}{4}+\frac{11}{12}\right)$

$=8+\left(\frac{10}{12}+\frac{3}{12}+\frac{11}{12}\right)$

$= 8 + \frac{24}{12}$

= 8 + 2 = 10

$\frac{5}{12}\times 12=5$

There are 12 $\frac{5}{12}$'s in 5

Hence, there are 12 × 2 or 24 five-twelths in 10

25. (D) 3 workers = 8 days

1 worker = 3 × 8 = 24 days

No. of days to finish job = $\frac{8}{4}$ = 2

No. of extra workers needed = $\frac{24}{2} - 3 = 9$

26. (C) Total mass of all the vegetables

$= 12 \times 1\frac{2}{3}$

$= \cancel{12}^{4} \times \frac{5}{\cancel{3}_{1}}$

= 20 kg

Total cost of all the vegetables

= 20 × ₹ 50 = ₹ 1000

27. (D) Total number of cakes and puffs sold in the morning

= 56 + 28 = 84

Total number of cakes and puffs sold in the afternoon

= 14 + 12 = 26

Ratio of the total number of cakes and puffs sold in the morning to the total number of cakes and puffs sold in the afternoon

= 84 : 26

= 42 : 13

28. (D) Capacity of the cube = 22 × 22 × 22

= 10648 cm^3 ÷ 1000 = 10.648 l

10.648 – 10 = 0.648 l × 1000

= 648 ml

There was 648 ml of seawater in the cube at first

29. (C) 1050 + 3080 = 4130 m

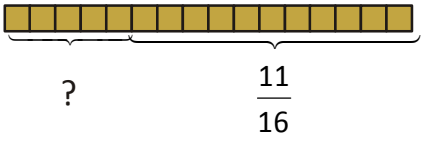
5 km = 5000 m

5000 – 4130 = 870 m

1050 m + 3080 ml is <u>870 m less</u> than 5 km

30. (B) Fraction of square coloured yellow = $1 - \frac{11}{16} = \frac{5}{16}$

$\frac{5}{16}$ of the square was coloured yellow



31. (B) $\frac{9}{9}$ of the passengers $\rightarrow$ 171

$\frac{1}{9}$ of the passengers $\rightarrow 171 \div 9 = 19$

$\frac{9}{9} - \frac{5}{9} = \frac{4}{9}$ (women)

$\frac{4}{9}$ of the passengers $\rightarrow 19 \times 4 = 76$

32. (C) Number of sweets Moksha had = Twice of Sakshi

Number of sweets Moksha had = 32

Then, Sakshi = 32 ÷ 2 = 16

Raksha = thrice of Sakshi = 3 × 16 = 48

Total = 32 + 16 + 48 = 96

33. (A) $\angle a \rightarrow 90° - 45° = 45°$

$\angle b \rightarrow 90° - 45° = 45°$

$\angle a + \angle b \rightarrow 45° + 45°$

$= 90°$

34. (D) The difference 1575 = A × 50 – A × 15

Using the grouping concept of multiplication

(A × 50) – (A × 15) = A × 35. Use this to find A first.

50 A – 15 A = 1575

35 A = 1575

A = 1575 ÷ 35 = 45

A × 5 +5 = 45 × 5 + 5 = 230

35. (B) Number of children in group B = 132 ÷ 11 × 7 = 184

	A	:	B	
× 12 =	11	:	7	× 12
	132	:	?	

132 – 84 = 48

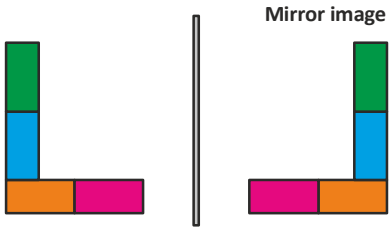
There are 48 more children in group A than in group B

REASONING

36. (D) 

37. (B) 

38. (B) In mirror image the left side will appear in right side and vice versa.



39. (D) A bird has feathers while an aeroplane has wings.

40. (A) The squence is ABCD, CABD, BCAD, ABCD. Every time 3rd letter comes 1st.

41. (C) All other are furniture except computer. Computer is an electronic device.

42. (C) Students in the rows are 2, 4, 6, 8, 10 = total 30.

So 0 students will be left out.

43. (A) In the code, the letters of the word are put in the reverse order of positions.

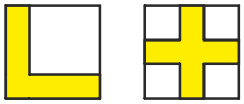
44. (C) Option A is the correct answer. The order of the words is Nature, Nausea, Necessary, Nest.

45. (C) Clearly, number of boys in the row = (6 + 10 + x) = 24

x = 24 – 16

= 8

CRITICAL THINKING

46. (A) 2 

47. (C) 2 + 3 = 5

48. (A) If A = B + 500

B = C – 1000

A = C – 500

These two statements tells C > A > B

49. (D) All lawyers are either men or women. Some teachers and students can be boys. All bananas are fruits.Therefore there is some relation between at least two or more of the elements in options A, B and C. Therefore option D is the correct answer.

50. (B) 5 + 4 + 3 + 2 + 1 = 15 handshakes.

The End