



Unified International  
Mathematics Olympiad

**UNIFIED INTERNATIONAL MATHEMATICS OLYMPIAD**

**CLASS - 5**

**Question Paper Code : UM9264**

**KEY**

1	2	3	4	5	6	7	8	9	10
A	A	D	C	C	D	A	B	D	D
11	12	13	14	15	16	17	18	19	20
B	D	B	A	B	B	B	B	D	D
21	22	23	24	25	26	27	28	29	30
A	B	C	B	C	A	B	D	B	B
31	32	33	34	35	36	37	38	39	40
B	C	D	B	C	D	D	C	A	B
41	42	43	44	45	46	47	48	49	50
B	D	C	B	C	D	C	C	A	B

**EXPLANATIONS**

**MATHEMATICS**

01. (A) No. of mangoes and oranges in a box  
= 42  
No. of mangoes in the box is twice the  
number of oranges  
=  $42 \div 3 = 14$   
Mangoes =  $14 \times 2 = 28$   
Oranges = 14  
No. of oranges in 5 such boxes  
=  $14 \times 5 = 70$

02. (A) Sum of two numbers = 56  
One number 3 times the other number  
=  $56 \div 4 = 14$   
one number = 14  
other number =  $14 \times 3 = 42$
03. (D) Area of small rectangle =  $8 \times 5 = 40 \text{ cm}^2$   
Area of big rectangle =  $7 \times 18 = 126 \text{ cm}^2$   
Area of the figure =  $40 + 126 = 166 \text{ cm}^2$

04. (C) 5 days 15 hours

$$\begin{aligned} & 5 \times 24 \text{ hours} + 15 \text{ hours} \\ & = 120 \text{ hours} + 15 \text{ hours} \\ & = 135 \text{ hours} \end{aligned}$$

05. (C)  $L = 100$  and  $M = 0.1$

(A)  $L + M = 100 + 0.1 = 100.1$

(B)  $L \times M = 100 \times 0.1 = 10$

(C)  $L \div M = 100 \div 0.1 = 1000$

(D)  $M \div L = 0.1 \div 100 = 0.001$

06. (D)  $24 \text{ cm} + 18 \text{ cm} = 42 \text{ cm}$

The sum of its length and breadth is 42 cm

$$2 \times 42 \text{ cm} = 84 \text{ cm}$$

The perimeter of this rectangle is 84 cm.

07. (A)  $100\% - 10\% = 90\%$

Percentage of salary spent on food

$$= \frac{30}{100} \times 90 = 27\%$$

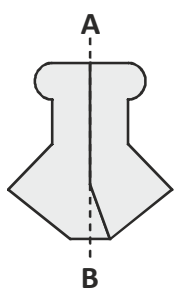
$$\text{Percentage left} = 90 - 27 = 63\%$$

$$63\% \rightarrow ₹1517$$

$$1\% \rightarrow \frac{1575}{63} = ₹25$$

$$\text{His salary} = ₹25 \times 100\% = ₹2500$$

08. (B)  $4 \text{ h } 28 \text{ min} - 45 \text{ min} = 3 \text{ h } 88 \text{ min} - 45 \text{ min}$   
 $= 3 \text{ h } 43 \text{ min}.$



09. (D)

10. (D) Quantity of water in a tank = 1250 ml

Mugs needed to fill the tank completely = 5

$$\text{Capacity of 1 mug} = 450 \text{ ml}$$

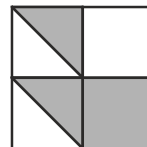
$$\begin{aligned} \text{Capacity of 5 mugs} &= 450 \text{ ml} \times 5 \\ &= 2250 \text{ ml} \end{aligned}$$

Capacity of the tank

$$= 1250 \text{ ml} + 2250 \text{ ml}$$

$$= 3500 \text{ ml} = 3 \text{ l } 500 \text{ ml}$$

11. (B)



12. (D) Total number of boys = 231 (60%)

Total number of girls = 154 (40%)

Number of girls participated

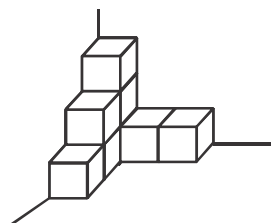
$$= 154 - 40 = 114$$

Number of pupils participated

$$= \frac{80}{100} \times (231 + 154) = 308$$

Number of boys participated

$$= 308 - 114 = 194$$



13. (B)

(A) 7 cubes (B) 8 cubes

(C) 7 cubes (D) 6 cubes

14. (A) Virus was performed on computer

$$A = 7 \text{ hrs } 48 \text{ min}$$

Virus was performed on computer

$$\begin{aligned} B &= 7 \text{ hrs } 48 \text{ min} + 29 \text{ min} + 29 \text{ min} \\ &= 7 \text{ hrs } 106 \text{ min} = 8 \text{ hrs } 46 \text{ min}. \end{aligned}$$

15. (B) Capacity of a jug = 3.65 l

$$\text{Capacity of a glass} = 3.65 \div 5 = 0.73 \text{ l}$$

$$\text{Capacity of 2 glasses} = 0.73 \text{ l} \times 2 = 1.46 \text{ l}$$

16. (B) Amount with John = ₹1209

$$\begin{aligned} \text{Amount left with John after} &= \text{buying 8} \\ \text{books} &= ₹1137 \end{aligned}$$

$$\text{Cost of 8 books} = ₹1209 - ₹1137 = ₹72$$

$$\text{Cost of 1 book} = ₹72 \div 8 = ₹9$$

17. (B)  $₹20.90 - ₹14.55 = ₹6.35$

18. (B) No. of days spent in Delhi = 2 weeks = 14 days

No. of days spent in Manali = 6 days

Fraction of holidays spent in Manali

$$= \frac{6}{14+6} = \frac{6}{20} = \frac{3}{10}$$

19. (D) Smallest number when rounded to the nearest hundred is 2800 = 2750  
Greatest number when rounded to the nearest hundred is 2800 = 2849  
Difference between the smallest and greatest number = 2849 – 2750 = 99
20. (D)  $P + Q = 105$ ,  $P - Q = 45$   
 $\Rightarrow P = 75$ ,  $Q = 30$   
 $\therefore P : Q = 75 : 30 = 5 : 2$
21. (A) Multiples of 4 : 4, 8, (12), 16, 20, .....  
Multiples of 6 : 6, (12), 18, 24, .....  
The common multiple of 4 and 6 is 12  
Taking the greatest possible number of children,  $119 : 119 \div 12 = 9 \text{ R } 11$   
 $9 \times 12 = 108$   
The greatest possible number of children that can go for the excursion is 108.
22. (B)  $43622 + 12 = 43634$  which is a palindrome
23. (C) Option (A) :  $\frac{3 \times 2}{8} = \frac{6 \div 2}{8 \div 2} = \frac{3}{4}$   
Option (B) :  $1\frac{1}{2} - \frac{3}{4} = \frac{3}{2} - \frac{3}{4} = \frac{6}{4} - \frac{3}{4} = \frac{3}{4}$   
Option (C) :  $\frac{5 \times 3}{24} = \frac{15 \div 3}{24 \div 3} = \frac{5}{8}$   
Option (D) :  $\frac{5}{12} + \frac{1}{3} = \frac{5}{12} + \frac{4}{12} = \frac{9}{12} = \frac{3}{4}$   
Thus, option (C) gives an answer which is different from the rest.
24. (B) Mass of 1 big barrel = 16789 – 14500 = 2289 kg  
Mass of 2 big barrels = 2289  $\times$  2 = 4578 kg  
The mass of 2 such big barrels is 4578 kg.
25. (C) Width = 4 cubes, Length = 5 cubes,  
Height = 2 cubes  
Number of cubes in the cuboid  
= 4  $\times$  5  $\times$  2 = 40  
Number of cubes needed = 40 – 14 = 26

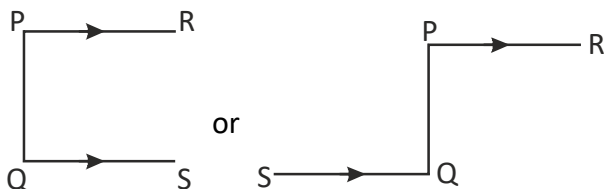
26. (A) Number of boxes of cupcakes  
=  $1500 \div 5 = 300$   
Amount collected from sale of cupcakes  
=  $5 \times ₹240 = ₹1200$   
Total cost of sweets =  $6 \times ₹12 = ₹72$   
 $₹1200 - ₹72 = ₹1128$   
She had 1128 left.
27. (B)  $a \Delta b = (b + b - a) - (a - b)$   
 $9 \Delta 8 = (8 + 8 - 9) - (9 - 8)$   
=  $(16 - 9) - 1 = 7 - 1 = 6$   
 $7 \Delta 5 = (5 + 5 - 7) - (7 - 5)$   
=  $(10 - 7) - (2) = 3 - 2 = 1$   
 $(9 \Delta 8) - (7 \Delta 5) = 6 - 1 = 5$

28. (D) 12:24

Clock	Timings That the Lock Will Chime
1st clock (Chimes every 4 min)	12:04 12:08 12:12 12:16 12:20 (12:24)
2nd clock (Chimes every 8 min)	12:08 12:16 (12:24)
3rd clock (Chimes every 12 min)	12:12 (12:24) 12:36

29. (B) Multiples of 6 = 6, 12, 18, 24, 30, 36, 42, 48, 54, 60  
So, 36 is the number when divided by 5, the remainder is 1.
30. (B) Distance = 1 km = 1000 m  
Speed = 8 m/s  
 $\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{1000}{8} = 125 \text{ sec}$
31. (B) From the figure, the 5<sup>th</sup> mark denotes the height of pole P which is 225 cm  
So, each marking is at  $\frac{225}{5} \text{ cm} = 45 \text{ cm}$   
Pole Q is at the 4<sup>th</sup> mark. So, the height of pole Q = 4  $\times$  45 cm = 180 cm  
The difference = 3 m – 180 cm = (300 – 180) cm = 120 cm  
So, pole Q is 120 cm less than 3m

32. (C) Volume of a cube =  $s \times s \times s = 25 \text{ cm} \times 25 \text{ cm} \times 25 \text{ cm} = 15625 \text{ cu.cm}$
33. (D) All prime numbers other than 2 are odd multiples of 3 can be odd (3, 9, 15 etc). Some odd square numbers are 9, 25 and 49. But all Multiples of 30 are even.
34. (B) Greatest 6-digit number that can be formed: 863210  
Smallest 6-digit number that can be formed : 102368  
 $863210 + 102368 = 965578$   
The sum of the greatest and the smallest 6-digit number that can be formed is 965578.
35. (C) PR is parallel to QS. (All other statements can be verified to be false.)



### REASONING

36. (D) (1, 5, 8) ; (2, 3, 4) ; (6, 7, 9)  
Figure (1), (5) and (8) are similar:  
Figure (2), (3) and (4) are similar:  
Figure (6), (7) and (9) are similar:
37. (D) The letters follow below pattern

5	10	15	20	7	12	17	22
E	J	O	T	G	L	Q	V
+5	+5	+5		+5	+5	+5	

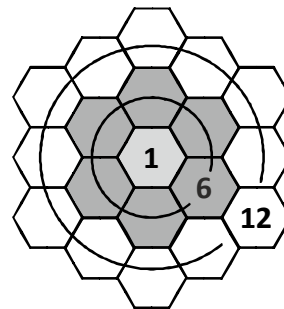
  

3	8	13	18	2	4	6	8
C	H	M	R	B	D	F	H
+5	+5	+5		+2	+2	+2	

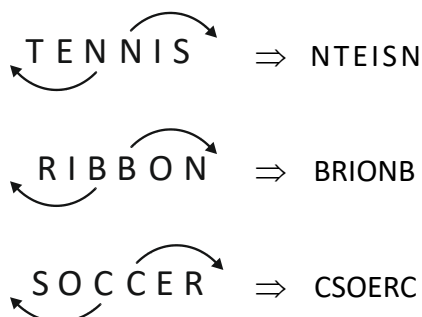
It is clearly seen that, except BDFH all others follow similar pattern but letters' group BDFH follows different pattern. So, BDFH is odd one out.

Hence, option (D) is correct.

38. (C) Adding 1 and 2 images we get 3rd image in first pair. Similar relation is in second pair also.
39. (A) 12 tiles



40. (B) sPHyGMoMANoMEr
41. (B) CSOERC



42. (D)

43. (C) JOOJ  
The correct reflection is  
COOL JOOJ

44. (B)

45. (C) Subash  $\Rightarrow 1 + 1 + 2 + 1 = 5$  members  
Ramesh  $\Rightarrow 1 + 2 + 1 = 4$  members  
Prabhu  $\Rightarrow 1 + 2 + 3 = 6$  members  
Harsha  $\Rightarrow 1 + 2 = 3$  members  
Akhi  $\Rightarrow 1 + 1 + 2 = 4$  members

### CRITICAL THINKING

46. (D) Pain is suffering or hurt, so choice (D) is the essential element. Without hurt, there is no pain. A cut (option C) or a burn (option A) may cause pain, but so do many other types of injury. Nuisance (option B) is an annoyance that may or may not cause pain.

47. (C) From 2 statements

Yesterday → Tuesday

Today → Wednesday

Tomorrow → Thursday

and school closed on Thursdays (Every thursday)

48. (C)



49. (A) The coin in the 1st bucket. At 25 degrees C water is liquid, while at 25 degrees F it turns into ice.

50. (B) (1, 2) (1, 3) (1, 4) (1, 5) (2, 3) (2, 4) (2, 5) (3, 4) (3, 5) (4, 5)

===== The End =====