



# UNIFIED COUNCIL

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Unified International  
Mathematics Olympiad

## UNIFIED INTERNATIONAL MATHEMATICS OLYMPIAD (UPDATED)

CLASS - 6

Question Paper Code : UM9246

### KEY

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

### EXPLANATIONS

#### MATHEMATICS - 1

1: (C) Geeta's marks =  $43 \times 5 - 7 \times 3 = 215 - 21 = 194$

Sita's marks =  $39 \times 5 - 11 \times 3 = 195 - 33 = 162$

Difference of their marks =  $194 - 162 = 32$

2: (A) The value decreases by 1 units on whole number line as we move left side

3: (D) Remaining rope length

$$= \left( 36\frac{1}{3} - 12\frac{2}{5} - 13\frac{1}{2} - 5\frac{1}{6} \right) m$$

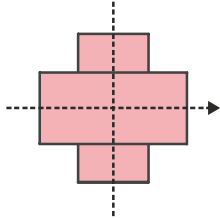
$$= \left( \frac{109}{3} - \frac{62}{5} - \frac{27}{2} - \frac{31}{6} \right) m$$

$$= \left( \frac{1090 - 372 - 405 - 155}{30} \right) m$$

$$= \frac{158}{30} m$$

$$= \frac{79}{15} m = 5\frac{4}{15} m$$

- 4: (A) Predecessor of 80808079 = 80808079 - 1  
= 80808078
- 5: (B)  $89^\circ$  is acute angle.
- 6: (D) Area of each plank =  $6\text{m} \times 3\text{m} = 18\text{m}^2$   
 $\therefore$  Area of 6 planks =  $6 \times 18\text{m} = 108\text{m}^2$
- 7: (A) 23 is a prime which is just after 19
- 8: (C) Given figure has 2 lines of symmetry



- 9: (C) Given  $AB : BC : CA = 2 : 3 : 5 = 2x : 3x : 5x$   
 $\therefore AB = 2x = 10\text{cm}$   
 $\therefore CA - BC = 5x - 3x = 2x = 10\text{cm}$
- 10: (A) Required number =  $a^2 + b^2 - (a^2 - b^2)$   
 $= a^2 + b^2 - a^2 + b^2$   
 $= 2b^2$
- 11: (D) Given  $x : y = 8 : 9$  &  $y : z = 6 : 5$   
LCM of  $y$  ratio = 18  
 $x : y = 2 \times 8 : 9 \times 2 = 16 : 18$   
 $\therefore y : z = 6 \times 3 : 5 \times 3 = 18 : 15$   
 $\therefore x : y : z = 16 : 18 : 15$   
(OR)  
from options option 'D'  
 $x : y = 16 : 18 = 8 : 9$   
 $y : z = 18 : 15 = 6 : 5$
- 12: (A) Value of  $x = -12$   
 $\therefore x - y = -12 - 20 = -32$
- 13: (B) Length of rope left =  $(5.36 + 2.72 - 3.69)\text{m}$   
 $= 4.39\text{ m}$
- 14: (D) Area of rectangle =  $l \times b = (5 + 7)\text{cm} \times (2 + 3)\text{ cm}$   
 $= 60\text{ sq cm}$   
Area of shaded region =  $60\text{ sqcm} - \text{area of unshaded parts}$   
 $= 60\text{ sq cm} - (2 \times 5)\text{ sq cm} - (12 - 8) \times 3\text{ sq cm}$   
 $= 60\text{ sq cm} - 10\text{ sq cm} - 12\text{ sq cm} = 38\text{ sq cm}$

- 15: (B) True statement is  $pq = r$
- 16: (D) Coefficient of  $x$  is  $= -6ay^2$
- 17: (A) Savings in March  
 $= \frac{\text{₹}7200 - \text{₹}1600 - \text{₹}800}{2}$   
 $= \frac{\text{₹}4800}{2}$   
 $= \text{₹}2400$
- 18: (B) Given  $x + 2x + 3x = 180^\circ$   
 $6x = 180^\circ$   
 $x = \frac{180^\circ}{6} = 30^\circ$   
 $3x = 3 \times 30^\circ = 90^\circ$   
 $\therefore$  It is a right angle triangle.
- 19: (A) If  $a = b = 0$  then  $a + b = 0$  is a whole number
- 20: (C) A line segment has one line of symmetry.
- 21: (C)  $1,086,000 = 1,000,000 + 80,000 + 6,000$
- 22: (A) floor of restaurant =  $36 - 33 + 24 = 27$
- 23: (C) Factors of 6 are 1, 2, 3 & 6  
 $\therefore 1 + 2 + 3 + 6 = 12 = 2 \times 6$   
 $\therefore$  '6' is a perfect number  
Similarly 28 is also a perfect number
- 24: (B) LCM of 2, 5 and 9 = 90
- 25: (A)  $\vec{AB} \neq \vec{BA}$
- 26: (C)  $\text{LHS} = \left(\frac{11xy}{2} - \frac{13xy}{7}\right) + \left(\frac{12y}{5} - \frac{11}{2}y\right) + \left(\frac{13x}{7} - \frac{12x}{5}\right)$   
 $= \left(\frac{77xy - 26xy}{14}\right) + \left(\frac{24y - 55y}{10}\right) + \left(\frac{65x - 84x}{35}\right)$   
 $= \frac{51xy}{14} - \frac{31y}{10} - \frac{19x}{35}$
- 27: (C)  $\left(\frac{-9}{7} \times \frac{-1}{3}\right) + \left(\frac{15}{8} \times \frac{-4}{5}\right) - \left(\frac{27}{14} \times \frac{2}{9}\right) = \frac{3}{7} - \frac{3}{2} - \frac{3}{7}$   
 $= \frac{-3}{2}$

28: (B) Required value  $= \frac{-2}{3} - \frac{5}{6}$

$$= \frac{-4-5}{6}$$

$$= \frac{-9}{6}$$

$$= \frac{-3}{2}$$

29: (D)  $\frac{2}{3} = 0.66, \frac{4}{5} = 0.8, \frac{5}{6} = 0.83, \frac{3}{4} = 0.75$

$\therefore$  Biggest  $= \frac{5}{6} = 0.83$  & smallest  $= 0.66 = \frac{2}{3}$

$\therefore \frac{5}{6} - \frac{2}{3} = \frac{5-4}{6} = \frac{1}{6}$

30: (A)  $N = \frac{33^3}{3^1} \times \frac{15^3}{11} = 9$

$\frac{M}{N} = \frac{9}{9} = 1$

**MATHEMATICS - 2**

31: (A,B,C)

Options A, B, C have atleast one line of symmetry.

32: (A,B,C)

Sum of two prime numbers need not be even because  $2 + 7 = 9$

33: (A,C,D)

If  $ab = 0$  then  $a = 0$  (or)  $b = 0$  (or)  $a = b = 0$

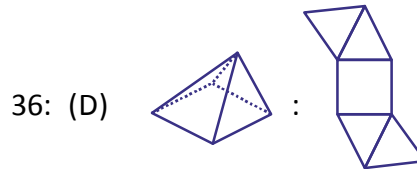
34: (A,B,C)

A triangle can not have both obtuse and right angle

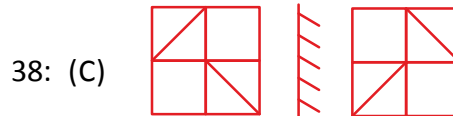
35: (A,C,D)

Statement A, C & D are true about LCM

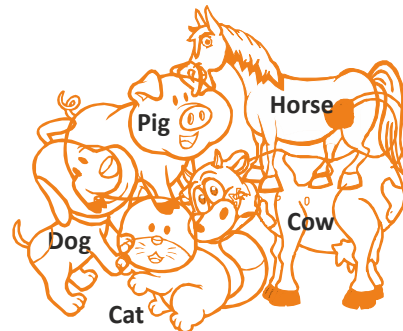
**REASONING**



37: (C) (2) Flipper (3) Flirt (4) Flock (5) Floor (1) Flower



39: (C)



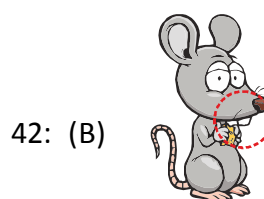
40: (D) Since A did not go to the movie on the same days as B and C. He did not go to the movie on Friday, Sunday, Monday, Wednesday or Thursday. So clearly A went to the movie on Tuesday or Saturday.

	A	B	C
Mon	X		
Tue	✓		
Wed	X		
Thur	X		
Fri	X	✓	
Sat	✓		
Sun	X		✓

41: (B) Putting the proper signs in the given expression,

$$16 + 8 \times 4 \div 2 - 4 = 16 + 8 \times 2 - 4$$

$$= 16 + 16 - 4 = 32 - 4 = 28$$



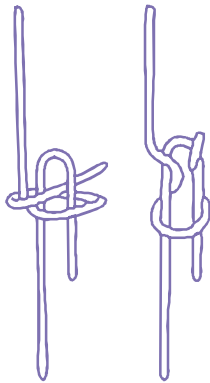
43: (B) Start with A, AB, ABC, ABCD, ABCDE, next series in ABCDEF.

44: (D) The smaller shapes in image 1 become the larger shape in image 2 and the larger shape in image 1 becomes the smaller shape in image 2. Only option D satisfies this analogy.

45: (B) Number of letters in the word  $10 - 1 = 9$ .

**CRITICAL THINKING**

46: (C)



(ii)

(iv)

47: (B) Child, School, College, Employment, Salary.

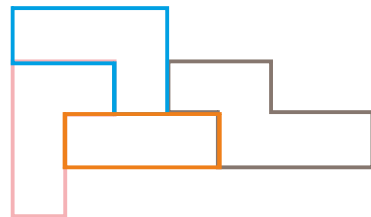
48: (A)

(A) is correct because it is a rewording of the second statement. If "None of John's shoes are green," then "All of John's shoes are not green."

(B) is incorrect because no information is provided about whether John has orange shoes.

(C) is incorrect because no information is provided about whether John has black shoes.

Therefore, the correct answer is (A).



49: (A)

50: (D) Between two persons, a heavier person is also shorter.

There A is heavier than B and taller than C, can be written as (in terms of height)  $B > A > C$ .

Also C is lighter than D and shorter than E, which means, in terms of height,  $E > C > D$ .

Therefore  $B > A > C > D$ . E is taller than C, but we do not know the relation between the heights of A,B and E.

Hence the tallest person cannot be determined.

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*The End*  
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