



UNIFIED COUNCIL

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Unified International
Mathematics Olympiad

UNIFIED INTERNATIONAL MATHEMATICS OLYMPIAD (UPDATED)

CLASS - 5

Question Paper Code : UM9009

KEY

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

EXPLANATIONS

MATHEMATICS

1. (C) $\frac{7}{25} \times 100\% = 28\%$

2. (A) $\angle x = \angle y = \angle z = \frac{90^\circ}{3} = 30^\circ$

$\angle w + \angle x = 90^\circ + 30^\circ = 120^\circ$

3. (C) Multiples of 3 = 3, 6, 9, 12, 15, 18, 21 (24)

Multiples of 4 = 4, 8, 12, 16, 20, (24)

Multiples of 6 = 6, 12, 18, (24)

The number bigger than 12 and smaller than 25 and the common multiple of 3, 4 and 6 is 24

4. (D) 13:30 to 18:05 is 4 h 35 min

Duration of time he worked = 1 h 50 min + 2 h 5 min = 3 h 55 min

$4 \text{ h } 35 \text{ min} - 3 \text{ h } 55 \text{ min} = 40 \text{ min}$

His break was 40 min long

5. (A) Length of the ribbon is 39.6 m

It is divided into 300 equal pieces

$39.6 \div 300 = (39.6 \div 3) \div 100$

$= 13.2 \div 100 = 0.132 \text{ m}$

The length of ribbon used to make a bow is 13.2 cm

6. (A) The product $123 \times 124 \times 125 \times 126 \times 127$ is a multiple of 12; moreover, it also has a factor of 2 three times, from 124 ($= 2 \times 2 \times 31$) and from 125 ($= 2 \times 63$). Therefore it is a multiple of $125 \times 2 \times 2 \times 2 = 1000$, and so it must end in 000. alternatively, working from the options, it is easily seen that the product is a certainly and even multiple of 5 - so its unit digit is 0.

7. (A) Taking each option we have $\frac{1 \times 5}{2 \times 4} = \frac{5}{8} = \frac{15}{24}$ so option A is true. For the other options,

B: $\frac{2 \times 4}{3 \times 5} = \frac{8}{15} = \frac{24}{45} < \frac{24}{35}$

C: $\frac{3 \times 3}{4 \times 6} = \frac{9}{24} = \frac{3}{8} < \frac{33}{46}$ since $\frac{3}{8}$ is less than $\frac{1}{2}$

D: $\frac{4 \times 2}{5 \times 7} = \frac{8}{35} < \frac{42}{57}$ since $\frac{8}{35}$ is much less than $\frac{1}{2}$

E: $\frac{5 \times 1}{6 \times 8} = \frac{5}{48} < \frac{51}{68}$ since $\frac{5}{48}$ is much less than $\frac{1}{2}$

8. (A) $1000 \text{ ml} = 1 \text{ l}$

$$7040 \text{ ml} = \frac{7040}{1000} \text{ l} = 7.04 \text{ l}$$

Amount of water they drink in 5 days
 $= 5 \times 7.04 = 35.2 \text{ l}$

9. (A) The given figure becomes a cuboid if it has $4 \times 3 \times 2 = 24$ cubes

The no. of cubes in the given figure = 11

The no. of cubes that must be added to make it a cuboid = $24 - 11 = 13$

Hence, its volume

$$= 13 \times 2 \times 2 \times 2 \text{ cm}^3 = 104 \text{ cm}^3$$

10. (A) Area of unshaded part

$$= (12 \times 6) + (5 \times 21) + (12 \times 21)$$

$$= 72 + 105 + 252 = 429 \text{ cm}^2$$

11. (D) Snoozing for 40 minutes every hour through the day is $\frac{4}{6}$ of every hour and

thus $\frac{4}{6}$ of the day. Of 24 hours, $\frac{4}{6}$ is 16 hours

12. (C) Number of cows the farmer had in the end
 $= 30 - 15 = 15$

Number of cows and goats the farmer had in the end

$$= 15 + 40 = 55$$

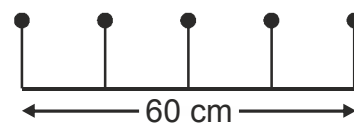
Ratio of the number of cows to the number of cows and goats the former had in the end

$$= 15 : 55 = 3 : 11$$

13. (D) Volume of the given solid = Total volume of the three solids in it

$$= [(2 \times 2 \times 3) + (7 \times 3 \times 5) + (5 \times 3 \times 3)] \text{ cm}^3$$

$$= [12 + 105 + 45] \text{ cm}^3 = 162 \text{ cm}^3$$



14. (D)

Distance between any two consecutive plants = $\frac{60 \text{ cm}}{4} = 15 \text{ cm}$

15. (C) We can tell that one-third of the plum jam weighs $400 - 250 = 150 \text{ g}$ (without the pot itself). Hence the pot on its own weighs $250 - 150 = 100 \text{ g}$. and a full pot of jam weighs $150 \times 3 + 100 = 550 \text{ g}$

16. (B) $2\frac{2}{3}$ hours to 64 minutes

1 hour = 60 minutes

$$2\frac{2}{3} \text{ hours} = 120 \text{ minutes} + 40 \text{ minutes}$$

$$= 160 \text{ minutes}$$

$$= 160 : 64 = 20 : 8 = 5 : 2$$

17. (B) Area of triangle A: Area of Rectangle B = 3 : 8

$$\frac{1}{2} \times b \times h : B = 3 : 8$$

$$\frac{1}{2} \times 9 \times 6^3 : B = 3 : 8$$

$$27 : B = 3 : 8$$

$$3B = 27 \times 8$$

$$B = \frac{27^9 \times 8}{3}$$






$$B = 72 \text{ cm}^2$$

Area of rectangle B = 72 cm^2

18. (B) Area of bigger triangle = $\frac{1}{2} \times 20 \times (18+6)$
 $= 240 \text{ m}^2$
 Area of smaller triangle = $\frac{1}{2} \times 20 \times 6 = 60 \text{ m}^2$
 Area of shaded part = $240 - 60 = 180 \text{ m}^2$
19. (A) A chess board has $8 \times 8 = 64$
 squares of which 32 are black.
 Hence, the percentage of black squares
 $= \frac{32}{64} \times 100\% = 50\%$
20. (C) 2 units $\rightarrow 1476890 - 1500 = 1475390$
 1 units $\rightarrow 1475390 \div 2 = 737695$
 Greater number = $737695 + 1500$
 $= 739195$
21. (B) $0.3 \text{ m} = 0.3 \times 100$
 $= 30 \text{ cm}$
 $4.3 \text{ m} = 4 \text{ m } 30 \text{ cm}$
22. (B) $\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{150 \text{ km}}{5 \text{ h}} = 30 \text{ km/h}$
23. (A) Discount = 15% of ₹ 175
 $= \frac{15}{100} \times ₹ 175$
 $= ₹ 26.25$
24. (A) Amount = ₹ 8800, Interest = ₹ 1000
 $P = \text{Amount} - \text{Interest}$
 $= ₹ 8800 - ₹ 1000 = ₹ 7800$
25. (D) $S.I = \frac{PTR}{100}$
 $P = \frac{100 \times S.I}{T \times R}$
 $= \frac{100^{25} \times 800^{200}}{\cancel{A} \times \cancel{A}} = ₹ 5000$
26. (D) The temperature indicated on the given thermometer is 37°C , which is the normal body temperature of a human being

27. (D) From fig.1 we get $2P = 6Q \rightarrow P = 3Q \dots(1)$
 From fig.2 we get $6Q = 3R \rightarrow R = 2Q \dots(2)$
 $P + R = 3Q + 2R = 5Q$
 Hence 5 blocks of Q must be placed to balanced the scale
28. (B) $\frac{5}{6}$ of a complete turn
 $= \frac{5}{6} \times 360^\circ = 5 \times 60^\circ = 300^\circ$
29. (A) Capacity of water, container A holds
 $= 5 \text{ l } 50 \text{ ml} = 5050 \text{ ml}$
 Capacity of water, container B holds = 2790 ml
 $= 5050 - 2790 = 2260 \text{ ml}$
 $= 2 \text{ l } 260 \text{ ml}$
30. (B) Time = Distance \div Speed
 $= 1040 \div 160$
 $= 6.5 \text{ h}$
31. (A) C.P = ₹ 5600 = ₹ 6500
 Since $SP > C.P$
 Therefore Nishanth makes a profit
 Profit = S.P – C.P
 $= 6500 - 5600 = ₹ 900$
32. (A) 1 decalitre = 10 litres
 15 decalitres = ?
 $15 \times 10 = 150 \text{ litres}$
33. (D) As $2805 \div 2.55 = 1100$,
 $280.5 \div 25.5 = \frac{1100}{100} = 11$
34. (B) Capacity of water in Neha's aquarium = 2400 cu.cm
 Length = 20 cm, width = 12 cm
 $V = l \times w \times h$
 $2400 = 20 \times 12 \times h$
 $2400 = 240 \times h$
 $h = 2400 / 240 = 10 \text{ cm}$
 The height of water in Neha's aquarium is 10 cm
35. (A) $28.5 \times 7 - 27 \times 3 - 29 \times 3 = 31.5^\circ\text{C}$

REASONING

36. (D) Rotate outer image 90° in anti-clockwise direction. Inner triangle points to downward and upward alternatively.
37. (C) Ganesh > Rakesh > Manoj > Ashok > Sanjeev
38. (A,D) $(7 + 4) - (3 + 3) = 5$
 $6 + 8 - (5 + 0) = 9$
 (or)
 $[(7 \times 4) + 2] \div (3 + 3) = 5$
 $[(6 \times 8) + 2] \div (5 + 0) = 10$
39. (D) ATIONFOUND
 ↓
 6th letters
40. (D) 'D' is coded for plane figures.
 Slanting liner are coded as 'F'.
 is coded as R.
 Hence answer is RD.
41. (B) Outside figure has '1' more side than inside figure in A, C, D options, whereas in option B, outside figure is one side less than inside figure.
42. (A) $60 - 78, 82 - 102, 93 - 115, 106 - 130$
 +18 +20 +22 +24
43. (D) 
44. (B)   
45. (C) Total number of students in the class
 $16 + 29 - 1 + 6 + 5 = 55$

CRITICAL THINKING

46. (B) BG BG BG BG BG BG BG BG

$$\frac{1}{3^{rd}} \text{ Boys} = \frac{1}{2^{nd}} \text{ girls}$$

$$\frac{B}{G} = \frac{3}{2} \Rightarrow B : G = 3 : 2$$

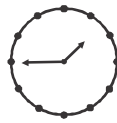
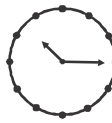
$$3x + 2x = 20$$

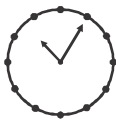
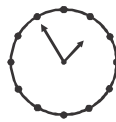
$$x = 4$$

$$\therefore \text{Number of boys} = 3 \times 4 = 12$$

47. (D)

48. (B) Book, Chapter, Paragraph, Sentence, Word, Letter,

49. (D)  
 Question figure

50. (C)  

- Option (C) resembles the given figure.

==== The End =====