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UNIFIED COUNCIL OLYMPIADS

UIMO
Unified International Mathematics Olympiad

# UNIFIED INTERNATIONAL MATHEMATICS OLYMPIAD (UPDATED)

***CLASS - 5***

***Question Paper Code : UM9279***

## KEY

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

## EXPLANATIONS

### MATHEMATICS

01. (A) N is a multiple of 4 and 3

Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32, 36

Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 36, 39

12 + 4 = 16' 24 + 4 = 28; 36 + 4 = 40

Only 28 is a multiple of 7

Hence, N is 24

N – 0 = 24 (not a multiple of 5)

N – 1 = 23 (not a multiple of 5)

N – 2 = 22 (not a multiple of 5)

N – 3 = 21 (not a multiple of 5)

N – 4 = 20 (a multiple of 5, 20 ÷ 5 = 4)

Therefore, the smallest number that should be subtracted is 4

Shortcut: Numbers that are multiples of 5 always have 0 or 5 as the last digit

02. (C) Remaining percentage of his salary

= 100 % – 25% = 75 %

Percentage of his salary he spent

$= 40\% \times 75\% = \frac{40}{100} \times 75\ \%$

= 30%

100 % – 25 % – 30% = 45%

The percentage of his salary that he put into the investment fund was 45%

03. (B) $11-3\frac{2}{3}=7\frac{1}{3}$

$7\frac{1}{3}+2\frac{1}{3}=9\frac{2}{3}$

$=\frac{29}{3}$

04. (B) Volume of a 5-m cube = 5 × 5 × 5

= (5 × 5 × 5) $m^3$

Volume of eight 5-m cubes = $(8\times5\times5\times5)\ m^3$

05. (A) In 30 days, there should be 15 magazines. Lasya has read 10 of them. 15 – 10 = 5

06. (A) Temperature of the rod = 120 °C

Amount of heat lost every minute = 2 °C

∴ Amount of heat lost for 16 minutes = 16 × 2 °C = 32 °C

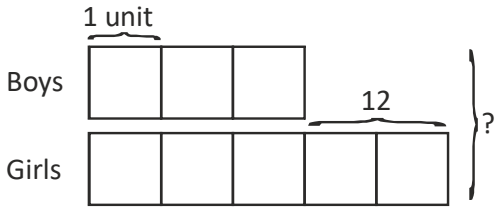
∴ The temperature of the rod after 16 minutes = 120 °C – 32 °C = 88 °C

07. (B) 94210.00 – 0.01 = 94209.99

08. (C) 1215 × 4 = 4860

4860 + 1 = 4861

09. (A)



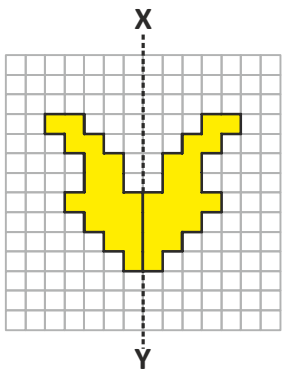

2 units → 12 children

1 unit → 12 ÷ 2 = 6 children

8 units → 6 × 8 = 48 children

10. (B) Vertically opposite angles are equal

11. (C)




12. (B) 80988 + 100 = 81088

80788, 80888, 80988, X

+100 +100 +100

13. (A) 1000 m$l$ = 1 $l$

7040 m$l$ = $\frac{7040}{1000}\ l$ = 7.04 $l$

Amount of water drank in 5 days = 5 × 7.04 = 35.2 $l$

They drink 35.2 $l$ of water in 5 days

14. (C) 5.764 × 12 = 69.168

100.000 – 69.168 = 30.832

30.832 must be added to the product of 5.764 and 12 to get 100

15. (A)

$$\begin{array}{r} 69 \\ \times\ 87 \\ \hline 483 \\ 552\,0 \\ \hline 6003 \end{array}$$

16. (C) The length of the top is 8 cm. The length of the bottom must also equal 8 cm. The entire length of the right side is 4 cm. The entire length of the left side must also equal 4 cm. 8 + 8 + 4 + 4 = 24 cm

17. (A) Volume of P = 12 × 12 × 12 cu m

= 1728 c.cm

Volume of Q = 8 × 6 × 4 cu m = 192 cu.m

∴ P > Q

18. (C) Latha

1 kg = 1000 g

$\frac{4}{4}$ kg → 1000 g

$\frac{1}{4}$ kg → 1000 ÷ 4 = 250 g

$\frac{3}{4}$ kg → 3 × 250 = 750 g

Mass of sugar used → 750 ÷ 5 = 150 g

Mass of sugar she had left

→ 750 – 150 = 600 g

19. (B) Fraction of cooking oil used on Saturday

$= \frac{50}{125} = \frac{2}{5}$

Percentage of cooking oil used on Saturday

$= \frac{2}{5} \times 100\% = 40\%$

Percentage of cooking oil used on Sunday

$\frac{75}{125} = \frac{3}{5}$

$\text{Percentage} = \frac{3}{5} \times 100\% = 60\%$

60 % of the cooking oil was used on Sunday

20. (C) There are 8 tulips. 8 ÷ 2 = 4 tulips that bloomed in one week

There are still 4 tulips left to bloom. The next week $\frac{1}{4}$ of the REMAINING tulips bloomed

4 ÷ 4 = 1 tulip that bloomed the next week

4 + 1 = 5 tulips bloomed in all

21. (B) 14 + 252 ÷ 7 – (21 – 8) × 3

= 14 + 252 ÷ 7 – 13 × 3

= 14 + 36 – 13 × 3

= 14 + 36 – 39

= 11

22. (C) It takes Kiran 990 seconds (16.5 × 60 = 990) to run 3 kms, which means he can run each km in 990/3 = 330 seconds. To run 3 km in 915 seconds (15.25 × 60 = 915), he has to run each km in 915/3 = 305 seconds. Kiran will have to run each km 330 – 305 = 25 seconds faster

(OR)

Difference of time = 16 min 30 sec

= 15 min 15 sec

= 75 seconds

For 3 km = 75 seconds

for 1 km = 75 ÷ 3

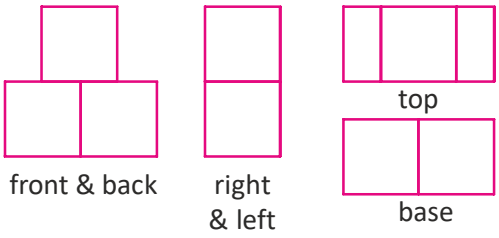
= 25 seconds

23. (A) Smallest number when rounded to the nearest hundred is 300 = 250

Greatest number when rounded to the nearest hundred is 300 = 349

Difference between the smallest and greatest number = 349 – 250 = 99

24. (A)




We will look at the shape from front and back, right and left sides, and from the top and underneath, as shown in the diagrams. The surface area of the front (and of the back) is 3 $cm^2$; the right and left, both 2 $cm^2$; and the top and underneath both 2 $cm^2$, giving a total surface area of 3 + 3 + 2 + 2 + 2 + 2 = 14 $cm^2$

25. (B) Area of Ananth's rectangular field

= 128 × 7 = 896 $m^2$

Area of field used = 896 ÷ 2 = 448 $m^2$

448 $m^2$ of the field was used to grow tomatoes

26. (A) $\frac{7}{9}m + \frac{2}{3}m = \frac{7}{9}m + \frac{6}{9}m = \frac{13}{9}m$

$\frac{7}{9}m + \frac{13}{9}m = \frac{20}{9}m = 2\frac{2}{9}m$

27. (A) 18 × 12 = 216 (Total number of pencils)

216 ÷ 20 = 10 R 16

Pencils left = 16

28. (C) 18 months = 1 year 6 months

11 years 3 months + 1 year 6 monthss

= 12 years 9 months

29. (C) Base of each triangle

= 17 ÷ 2 = 8.5 cm

Height of each triangle

= 11 ÷ 2 = 5.5 cm

Area of each triangle

$= \frac{1}{2} \times 8.5 \times 5.5 = 23.375$

= 23.38 $cm^2$ (2 decimal places)

30. (D) Total rainfall for the week

= Average rainfall collected over the week × Number of days

= 520 × 7 = 3640 mm

31. (B) Cash remaining with Prashanth = [100% – (65 + 20)%] of total investment

= 15% of total investment

$\therefore$ ₹1305 = $\frac{15}{100}$ × total investment

Hence, the total investment

= ₹ 1305 × $\frac{100}{15}$ = ₹ 8700

32. (B) 571 – 399 = 172

172 ÷ 20 = 8.6

The decimal number that I think of is 8.6

33. (D) $\frac{35}{60} = \frac{7}{12}$

34. (A) Sum of XXIII + XI + XII

23 + 11 + 12 = 46 = XLVI

35. (D) The least common multiple of 5 and 6 is 30

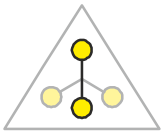
## REASONING

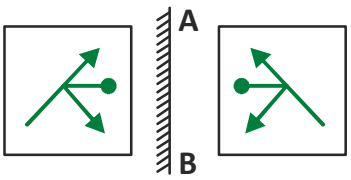
36. (B) 1,2,3 ; 4,5,6 ; 7,8,9

1, 2, 3 are figures composed of two straight lines.

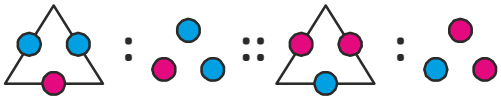
4, 5, 6 are figures composed of three straight lines.

7, 8, 9 are figures composed of four straight lines.

37. (D) 

38. (C) 


39. (C) The second image is obtained by moving the blue and pink circles in previous image to the corners of the shape in the first image while the original shape is removed. The blue and pink circles move in one step clockwise direction.



40. (A) Every time the dot and coloured grid move one step clockwise direction.

41. (B) The number in each option indicates the last alphabetical number in alphabetic order.

D E F G H I J K L M N O

42. (B) From multiples of the opposite number and added it, from that subtract sum of total numbers.

(5 × 4) + (3 × 2) – (5 + 4 + 3 + 2)

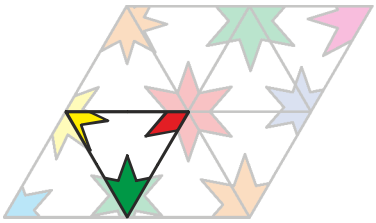
26 – 14 = 12

Similarly (2 × 6) + (5 × 7) – (2 + 5 + 6 + 7)

47 – 20 = 27

43. (D) Relieve, Rightful, Rigour, Ringlet, Rinse

44. (D) In option (D) the word ‘post’ is not arranged in alphabetical order.

45. (A) 

## CRITICAL THINKING

46. (B) 

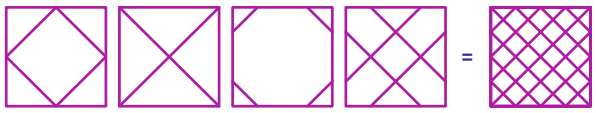
47. (B) False

Lasya runs faster than Sanvi, Sanvi runs faster than Bittu.

So, Lasya runs faster than Bittu.

3rd statement is false.

48. (D) 1, 2, 3 and 4




1 2 3 4 Picture 1

49. (C) 3, 2, 1, 5, 4

| Envelope | Letter | Post-box | Clearance | Delivery |
|---|---|---|---|---|
| 3 | 2 | 1 | 5 | 4 |

50. (A) Move 1 : UNTVELIAS

MOVE 2 : UNIVELRAS

MOVE 3 : UNIVERLAS

MOVE 4 : UNIVERSAL

4 moves are required.