UIMO
Unified International Mathematics Olympiad

UNIFIED INTERNATIONAL MATHEMATICS OLYMPIAD

> **CLASS - 4**
> **Question Paper Code : UM9274**

KEY

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

EXPLANATIONS

MATHEMATICS

01. (B) By removing block K there will be no change in perimeter.

02. (B) To convert $1\frac{4}{5}$ to an improper fraction:

Number of fifths from the whole number part (1) = 1 × 5 = 5 fifths

Number of fifths from the fractional part $\frac{4}{5}$ = 4 fifths

Total fifths = 5 + 4 = 9

Therefore, the correct answer is 9.

03. (D)

$$
\begin{array}{r|l}
3 & 2145 \\
\hline
5 & 715 \\
\hline
11 & 143 \\
\hline
& 13
\end{array}
$$

2145 = 3 × 5 × 11 × 13

(3, 5); (11, 13) are twin primes,

i.e., P and R are the required twin primes.

04. (B) 1 complete turn have 4 right angle

∴ 2½ complete turn = 4 + 4 + 2 = 10

05. (A) Product of 999 999 999 × 888 888 888

Multiply only the last 3 - digits of each

999 × 888 = 887112

The digit in the hundreds place is 1.

06. (D) The time at which the movie ended

= 8: 23 p.m.

Duration of the movie = 2 h 16 min

∴ The time at which the movie began

= 8: 23 p.m. − 2 h 16 min = 6: 07 p.m.

07. (A) The product of two even numbers is an even number. An even number can be divided into two equal parts with no remainder.

08. (C) Quantity of water in Tank B and Tank C = 90 l

Quantity of water in Tank A and Tank C = 87 l

Quantity of water in Tank A = 43 l

⇒ Quantity of water in Tank

C = (87 − 43) l = 44 l

and quantity of water in Tank B

= 90 l − 44 l = 46 l

∴ Total quantity of water in the three tanks

= (43 + 46 + 44) l

= 133 l

⇒ $\frac{1}{7}$ of the total quantity of water

= $\frac{1}{7} \times 133 l$ = 19 l

09. (C) (3456 × 2 = 6912)

10. (A) Compare the digits at the same place value, which is the units digit in this case. The units digit is 8 in 345,678 and 9 in 345,679.

11. (B) A + B + 45896 = 96023 + B

A = 96023 − 45896

= 50127

12. (B) Option (A) : C − X = 100 − 10

= 90 = XC (Correct)

Option (B) : XI − IX = (10 + 1) − (10 − 1)

= 11 − 9 = 2 XX (Wrong)

Option (C) : DC − C = 500 + 100 − 100

= 500 = D (Correct)

Option (D) : LXI − LIX = [50+ 10 + 1] − [50 + (10 − 1)] = 61 − 59 = 2 = II (Correct)

13. (C) 777 ÷ 21 = 37

14. (B) Equilateral triangle is a polygon.

15. (C) 4 × 8 × 12 × 16 × 20 × 24

16. (B) The number of ways we can combine the weights to get 2 kg

1 kg + 500 g + 500 g = 2 kg

1 kg + 500 g + 250 g + 250 = 2 kg

1 kg + 500 g + 250 g + 100 g + 100 g + 50 g = 2 kg

In 3 different ways we can combine the weights

17. (D) 103 is not divisible by 3 but remaining options all are divisible by 3.

18. (C)
$$\begin{array}{r} 4\ 4\ \boxed{1}\ 3 \\ -\ 3\ 3\ 4\ 6 \\ \hline 1\ 0\ 6\ 7 \end{array}$$

Hence, missing number is (D)

19. (D) 41 − 12 − 12 = 18 cm

18 ÷ 2 = 9 cm

The breadth is 9 cm

12 × 9 = 108 cm²

The area is 108 cm².

20. (C) 4020 ml + 4530 ml

= 8550 ml = 8 l 550 ml

21. (A) 48 = 3 × 16 is a multiple of 16

64 = 4 × 16 is a multiple of 16

80 = 5 × 16 is a multiple of 16

44 = 2 × 2 × 11 is not a multiple of 16

42 = 6 × 7 is a not a multiple of 16

66 = 3 × 2 × 11 is not a multiple of 16

86 = 2 × 43 is not a multiple of 16

46 = 2 × 23 is not a multiple of 16

68 = 2 × 2 × 17 is a multiple of 16

88 = 2 × 2 × 2 × 11 is not a multiple of 16.

22. (A) $\frac{3}{8}$ lies between J and L.

23. (B) 2 × 36 × 3 = 12 × 1 × 18

= 9 × **6** × 4.

So, the missing number is 6.

24. (B) Million is the seventh place in the international system of numeration.

25. (C)

Ribbon A — ? — 135 cm

Ribbon B
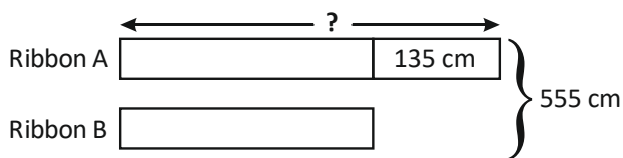
555 cm

2 units → 555 cm − 135 cm

= 420 cm

1 unit → 420 cm ÷ 2

= 210 cm

210 cm + 135 cm = 345 cm

26. (A) XLIX = 49, LXXI = 71, XCI = 91, XLII = 42, XCV = 95
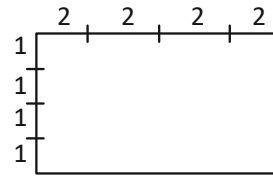
27. (A) 47, 59, 29, 31 are prime numbers and have only two factors.

28. (A) On Monday.

29. (B) length = 2 + 2 + 2 + 2 = 8 cm

Breadth = 4 cm

Perimeter = 2(l + b) = 2 × 12 cm = 24 cm

30. (B) 5 × 25 min = 125 min

= 120 min + 5 in

= 2 h 5 min

She takes 2 h 5 min to sew 5 dresses.

8.30 a.m. → 8 h 30 min

8 h 30 min + 2 h 5 min = 10 h 35 min

→ 10.35 a.m.

She will have sewn 5 dresses at 10.35 a.m.

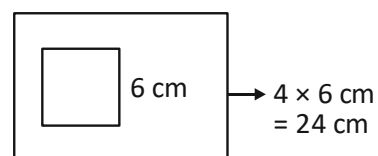31. (B) The line segments formed are AB, BD, CD, AC, AD and CB, which are 6 in number.

32. (C) Sally is busy for 8 + 4 = 12 hours. The remaining time is 24 − 12 = 12 hours.

Fraction = $\frac{\text{Remaining Time}}{\text{Total Time}} = \frac{12}{24} = \frac{1}{2}$

So, the correct answer is (C) $\frac{1}{2}$.

33. (A) Inner square (P) = 24 cm

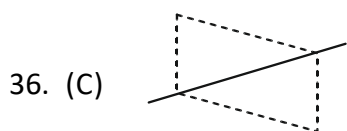$l = \frac{24 \text{ cm}}{4}$ = 6 cm

6 cm → 4 × 6 cm = 24 cm

34. (C) 3 : 30 cannot be taken as thirteen minutes past six, as 30 minutes passed after 3

35. (B) Correct answer is 5100 m

Total distance = 2 km + 3000 m + 10,000 cm = 2000 m + 3000 m + 100 m = 5100 m

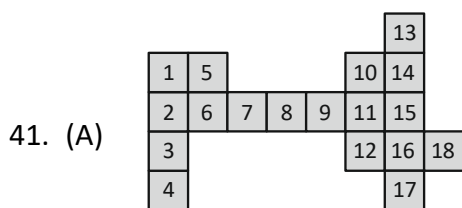| REASONING	CRITICAL THINKING

REASONING

36. (C)

37. (D) ANT , BAT , CAT, DOT, EAT

A14T, B1T, C1T, D15T, E1T

38. (C) The last two digits interchange the position in an order also first and last two digits as a pair again interchange the position.
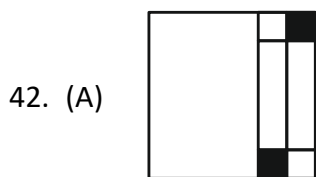
39. (B)

H U N D R E D
−1 +1 −1 +1 −1 +1 −1
G V M E Q F C

T H O U S A N D
−1 +1 −1 +1 −1 +1 −1 +1
S I N V R B M E

40. (A) 5

(Words, Tokyo, Writer, Hippo, Artist)

41. (A)

Hence, the number of ☐ shapes is 18.
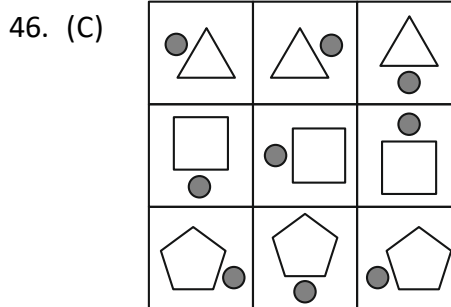
42. (A)

43. (B) The sequence is number of lines.

1, 2, 3, 4, 5

i.e., R, P, T, Q, S

44. (D)

45. (C) In option (C) only there are similar in outer image and inner image.

CRITICAL THINKING

46. (C)

47. (B)

1	2	3	4	5	6
20	21	22	23	24	7
19	32	33	34	25	8
18	31	36	35	26	9
17	30	29	28	27	10
16	15	14	13	12	11

48. (D) All pairs can pass through the cutouts.

49. (C) The correct answer is: C. The middle point is always less bumpy as, like a see-saw, the middle moves the least.

50. (D) Both the statements I and II are effects of independent causes.