



Unified International
Mathematics Olympiad

UNIFIED INTERNATIONAL MATHEMATICS OLYMPIAD

CLASS - 5

Question Paper Code : 4P114

KEY

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

EXPLANATIONS

MATHEMATICS

01. (D) $0^{\circ}\text{C} = 32^{\circ}\text{F} \rightarrow$ same temperature
 0°F is colder than 0°C
 32°C is much higher than all the others
02. (A) Of the given statements only (i) is true.
03. (C) Original number:
1234567891011121314151617181920
(31 digits)
Delete 24 digits \rightarrow keep 7 digits.
To get largest number, keep the largest digits in order from left to right.

04. (B) Let's denote:
Aarav = A, Bhavya = B, Chitra = C, Deepa = D.
Given
 $A = 2B$
 $C = B - 5$
 $D = A + 10$
 $D = 6C$

We need to find whose score is 10.

From $D = A + 10$ and $D = 6C$, so

$$A + 10 = 6C.$$

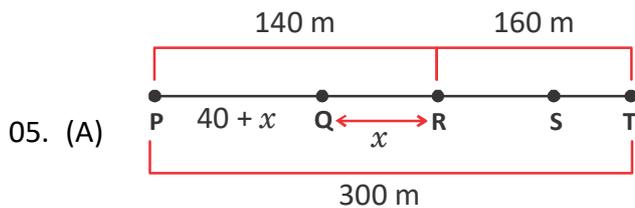
But $C = B - 5$, so $A + 10 = 6(B - 5)$

$$= 6B - 30.$$

$$\text{And } A = 2B, \text{ so } 2B + 10 = 6B - 30 \Rightarrow 10 + 30 = 6B - 2B \Rightarrow 40 = 4B \Rightarrow B = 10.$$

So Bhavya's score is 10.

Check: $B = 10$, then $A = 20$, $C = 5$, $D = 30$, and indeed $D = 6 * 5 = 30$. So Bhavya scored 10.



$$= 40 + x + x = 140$$

$$= 40 + 2x = 140$$

$$= 2x = 100$$

$$x = 50$$

06. (A) Count numbers from 1 to 1000 that contain 77 together.

Ending with 77:

77, 177, 277, 377, 477, 577, 677, 777, 877, 977 \rightarrow 10 numbers

Starting with 77:

770, 771, 772, 773, 774, 775, 776, 778, 779 \rightarrow 9 numbers

777 has already been counted once.

$$\text{Total} = 10 + 9 = 19$$

07. (A) Each square has area 25 cm^2 , so side = 5 cm.

Two squares side-by-side form a rectangle of $10 \text{ cm} \times 5 \text{ cm}$.

$$\text{Perimeter} = 2 \times (10 + 5) = 30 \text{ cm}.$$

08. (B) $1000000000 - 777777777 = 222,222,223$

09. (C) Fibonacci numbers are:

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, ...

Among the options, 377 appears in the sequence.

10. (B) Ravi had 128 apples.

Sold 25% of 128 = 32 \rightarrow remaining = 96

Sold 25% of 96 = 24 \rightarrow remaining = 72

Gave 1 apple to teacher $\rightarrow 72 - 1 = 71$

11. (A) Changing the first digit (1) to 9 gives 0.92345, which is the largest possible number.

12. (D)

$$Q - 2P = \frac{12}{25}$$

$$\Rightarrow \frac{3}{4} - \frac{12}{25} = 2P$$

$$\Rightarrow 2P = \frac{27}{100}$$

$$\Rightarrow P = \frac{27}{200}$$

$$\Rightarrow P + Q = \frac{27}{200} + \frac{3}{4} = \frac{177}{200}$$

13. (A) Perimeter of one pentagon = $5 \times 3 = 15 \text{ cm}$

Perimeter of three separate pentagons = $3 \times 15 = 45 \text{ cm}$

Two sides are common, each 3 cm, counted twice

$$\text{Difference} = 2 \times 3 \times 2 = 12 \text{ cm}$$

14. (C) Rectangles is 2 kg more than triangle.

Oval is 3 kg less than triangle.

So together they weigh 1 kg less than 3 triangles.

$$\text{Total} = 20 \text{ kg} \rightarrow 3 \text{ triangles} = 21 \text{ kg}$$

$$\text{One triangle} = 7 \text{ kg}$$

$$\text{Rectangle} = 7 + 2 = 9 \text{ kg}$$

15. (C) The number on card R is 103. This is determined by assigning each number based on the given conditions: P is divisible by 17 (51), Q is a multiple of 5 (50), R has exactly two divisors (prime, so 103), and S is divisible by 13 (169). Therefore, card R must have the number 103.

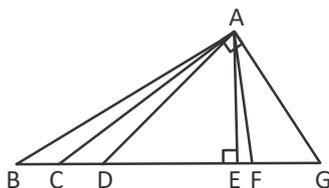
$$16. (D) 792 \times 650 = (800 - 8) \times 650$$

$$= 800 \times 650 - 8 \times 650$$

\therefore The required option is **8 \times 650**.

17. (C) Given
 Kitchen area = $64 \text{ m}^2 \rightarrow \text{side} = 8 \text{ m}$
 Bathroom area = $4 \text{ m}^2 \rightarrow \text{side} = 2 \text{ m}$
 Dining room area = 96 m^2 , height = 8 m
 width = 12 m
 Total width of house
 Total width = Dining width + Kitchen width
 $= 12 + 8 = 20 \text{ m}$
 Foyer width
 Foyer + Bathroom width = $20 \Rightarrow$ Foyer
 width = $20 - 2 = 18 \text{ m}$
 Foyer area
 Foyer area = Width \times Height
 $= 18 \times 2 = 36 \text{ m}^2$

18. (C) Total volume = $21 \times 27 = 567 \text{ cm}^3$
 19. (C) The difference between 5 parts and 3 parts is 2 parts, which represent 24 marbles.
 So, 1 part = 12 marbles.
 Red marbles = $5 \times 12 = 60$
 Blue marbles = $3 \times 12 = 36$
 Total = $60 + 36 = 96$ marbles
 20. (C) Speed = $60 \div 2 = 30 \text{ km/h}$.
 Distance in 5 hours = $30 \times 5 = 150 \text{ km}$.
 21. (C) $SI = (P \times R \times T) \div 100 \rightarrow 1800 = (5000 \times 6 \times T) \div 100 \rightarrow 1800 = (300T) \rightarrow T = 6$ years.
 22. (C) 45
 Explanation:
 One-fourth filled = $60 \div 4 = 15$ litres.
 To fill it, we need $60 - 15 = 45$ litres more.

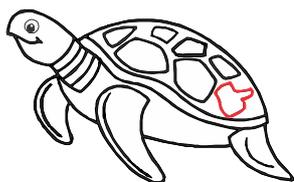


23. (C) ABG, ABE, CAE, DAE, AFG, AEF
 24. (C) Screw no. 5 is the shortest screw.
 25. (B) Michael takes the fourth tablet $15 \times 3 = 45$ minutes after 11 : 05 \rightarrow 11:50

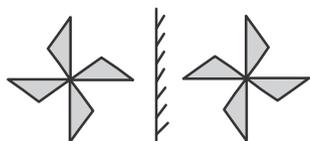
26. Delete
 27. (C) Tina's watch gains 5 minutes each hour. From 12:00 noon to 3:00 p.m. (3 hours), it will be ahead by $3 \times 5 = 15$ minutes.
 Therefore, at 3:00 p.m. actual time, her watch will show 3:15 p.m.
 28. (D) Add 3 to 6 $\rightarrow 6 + 3$
 Double it $\rightarrow (6 + 3) \times 2$
 Add 1 $\rightarrow (6 + 3) \times 2 + 1$
 29. (C) Largest factor – smallest factor = number – 1 = 98 \rightarrow number = $98 + 1 = 99$
 30. (A) A rhombus would need two equal sides in both original triangles, so a rhombus is impossible with these triangles.
 31. (B) $4375 - 20 = 4355$
 \therefore Number of phone cards in each group
 $= \frac{4355}{66} = 67$
 32. (D) Product of 37 and 23 = (37×23)
 $= 851$
 In 851, prime digit = 5 and place value of 5 is 50.
 33. (C) 1 million = 1000000
 50 less than 1 million = $\frac{1000000}{- \quad 50}$
 $\hline 999950$
 34. (D) No. of floors = 4
 No. of steps = 4×18
 $= 72$
 35. (D) Factors of 12 = 1, 2, 3, 4, 6, 12
 Sum = $1 + 2 + 3 + 4 + 6 + 12 = 28$

REASONING

36. (C)



37. (B) Each of the symbols move by one step in order.



38. (B)

39. (C) Position from right = Total – Position from left + 1 = 30 – 14 + 1 = 17

40. (C) Sentence 1 & 2 : common code na → always
Sentence 2 & 3 : common code ti → knowledge
Sentence 1 & 3 : common word truth → code ta

41. (D)

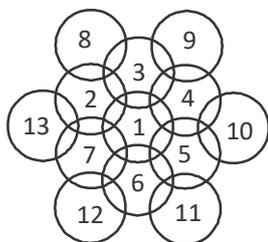


42. (A) 113455167**699**(last 3 digits)

43. (A) Alphabet has 26 letters. Reverse position = 27 – Alphabet position

$$G = 7 \Rightarrow 27 - 7 = 20$$

44. (C) There are 13 circles in the given figure. This is clear from the adjoining figure in which the centres of all the circles in the given figure have been numbered from 1 to 13.



45. (C) Option (C) belong to the group because it consistently follows $\frac{1}{4}$ shaded pattern in all figures.

CRITICAL THINKING

46. (A) 1st throw : Eva → Adam (given)
2nd throw : Adam → another boy → Isaac
3rd throw : Isaac → another boy, not Adam → Urban

4th throw : Urban → another boy, not Isaac → Adam

5th throw : Adam → another boy, not Urban → Isaac

47. (B) Figure B (Q) can reach gate G by moving:

1 grid → right

6 grids → right

1 grid → down

1 grid → right

All moves are along allowed directions and empty squares, so Q can leave through gate G.

48. (A)



$$2 \text{ hexagons} = \text{triangle} + \text{square}$$

$$\text{triangle} + \text{hexagon} = \text{hexagon} + 5 \text{ squares}$$

$$\text{triangle} = 5 \text{ squares}$$

$$2 \text{ hexagons} = 5 \text{ squares} + \text{square}$$

$$2 \text{ hexagons} = 6 \text{ squares}$$

$$\text{hexagon} = 3 \text{ squares}$$

from 3rd balance

$$3 \text{ hexagons} < 2 \text{ triangles}$$

$$3(3 \text{ squares}) < 2(5 \text{ squares})$$

$$9 \text{ squares} < 10 \text{ squares}$$

To make equal both side add 1 square to the lighter side.

49. (B) 2147653

50. (B)

