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UNIFIED COUNCIL OLYMPIADS

UIMO
Unified International Mathematics Olympiad

UNIFIED INTERNATIONAL MATHEMATICS OLYMPIAD (UPDATED)

CLASS - 5

Question Paper Code : 4P114

KEY

1	2	3	4	5	6	7	8	9	10
D	A	C	B	A	D	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 & C

EXPLANATIONS

MATHEMATICS

01. (D) 0°C = 32°F → 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:
12345678910111213141516171819 20
(31 digits)

Delete 24 digits → keep 7 digits.

To get largest number, keep the largest digits in order from left to right.

Pick digits: 9 (from 9), 7, 8, 1, 9, 2, 0 → forms 9781920.

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)

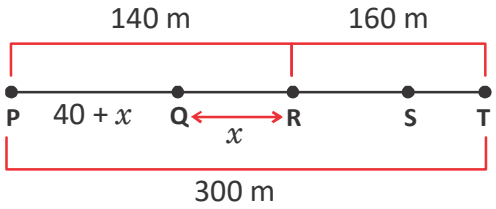
= 6B – 30.

And A = 2B, so 2B + 10 = 6B – 30 = > 10 + 30 = 6B – 2B = > 40 = 4B = > 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.

05. (A)



= 40 + x + x = 140

= 40 + 2x = 140

= 2x = 100

x = 50

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

Ending with 77:

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

Starting with 77:

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

777 has already been counted once.

Total = 10 + 9 = 19

07. (A) Each square has area 25 cm², so side = 5 cm.

Two squares side-by-side form a rectangle of 10 cm × 5 cm.

Perimeter = 2 × (10 + 5) = 30 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 → remaining = 96

Sold 25% of 96 = 24 → remaining = 72

Gave 1 apple to teacher → 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 × 3 = 15 cm

Perimeter of three separate pentagons = 3 × 15 = 45 cm

Two sides are common, each 3 cm, counted twice

Difference = 2 × 3 × 2 = 12 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.

Total = 20 kg → 3 triangles = 21 kg

One triangle = 7 kg

Rectangle = 7 + 2 = 9 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 × 650 = (800 – 8) × 650

= 800 × 650 – 8 × 650

∴ The required option is **8 × 650.**

17. (C) Given

Kitchen area = 64 m^2 → side = 8 m

Bathroom area = 4 m^2 → side = 2 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 m

Foyer width

Foyer + Bathroom width = 20 ⇒ Foyer width = 20 – 2 = 18 m

Foyer area

Foyer area = Width × Height

= 18 × 2 = 36 m^2

18. (C) Total volume = 21 × 27 = 567 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 × 12 = 60

Blue marbles = 3 × 12 = 36

Total = 60 + 36 = 96 marbles

20. (C) Speed = 60 ÷ 2 = 30 km/h.

Distance in 5 hours = 30 × 5 = 150 km.

21. (C) SI = (P × R × T) ÷ 100 → 1800 = (5000 × 6 × T) ÷ 100 → 1800 = (300T) → T = 6 years.

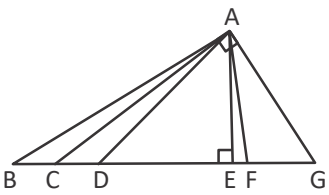
22. (C) 45

Explanation:

One-fourth filled = 60÷4=15 litres.

To fill it, we need 60-15=45 litres more.

23. (C)



ABG, ABE, CAE, DAE, AEG, AEF

24. (C) Screw no. 5 is the shortest screw.

25. (B) Michael takes the fourth tablet 15 × 3 = 45 minutes after 11 : 05 → 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 3×5=15 minutes.

Therefore, at 3:00 p.m. actual time, her watch will show 3:15 p.m.

28. (D) Add 3 to 6 → 6 + 3

Double it → (6 + 3) × 2

Add 1 → (6 + 3) × 2 + 1

29. (C) Largest factor – smallest factor = number – 1 = 98 → number = 98 + 1 = 99

30. (A) A rhombus would need two equal sides in both original triangles, so a rhoumbus is impossible with these triangles.

31. (B) 4375 – 20 = 4355

∴ 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 = $\begin{array}{r} 1000000 \\ - \quad 50 \\ \hline 999950 \end{array}$

34. (D) No. of floors = 4

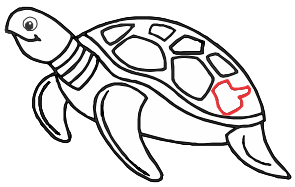
No. of steps = 4 × 18

= 72

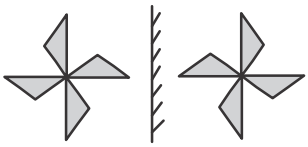
35. (D) Factors of 12 = 1, 2, 3, 4, 6, 12

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

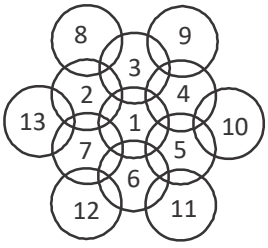
41. (D) 

42. (A) 113455167699(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 ⬡ = △ + □

△ + ⬡ = ⬡ + 5□

△ = 5□

2 ⬡ = 5□ + □

2 ⬡ = 6□

⬡ = 3□

from 3rd balance

3 ⬡ < 2 △

3(3□) < 2(5□)

9□ < 10□

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

49. (B) 2147653

50. (B,C)