



UNIFIED COUNCIL

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Unified International
Mathematics Olympiad

UNIFIED INTERNATIONAL MATHEMATICS OLYMPIAD (UPDATED)

CLASS - 6

Question Paper Code : UM9009

KEY

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

EXPLANATIONS

MATHEMATICS - 1 (MCQ)

1. (A) $3 + \frac{1}{3} = \frac{10}{3}$

2. (C) Charge for first km = ₹ 25
 Charge of each next km = ₹ 18
 \therefore Total charge of a trip of 10 km
 = ₹ 25 + ₹ 18 \times 9
 = ₹ 25 + ₹ 162
 = ₹ 187

3. (B) $6.78 \times 10^5 = 6.78 \times 100000 = 678000$
4. (A) Sum of digits of 345670 = 3 + 4 + 5 + 6 + 7 + 0 = 25
 '2' to be added to 345670 to divided by 3
 \therefore 345672 is divisible by 3 & an even number
 \therefore 345672 is divisible by 6
5. (C) The required number is divisible by 25 and 9
 \therefore 8760375 is divisible by 9 & 25
 \therefore p = 0 & q = 5

6. (A) Total $\odot = \frac{30}{2} = 15$
 Anu's $\odot = 15 - 13 = 2$
7. (D) $3 \times 5 + 7 \times 9 = 15 + 63 = 78$
8. (A) Option 'A' represents the shaded region of 0.4
9. (A) $(3xy)(5x^2 + 2xy + 3y^2) = 15x^3y + 6x^2y^2 + 9xy^3$
10. (C) $90^\circ < 110^\circ < 180^\circ \Rightarrow$ Given triangle is an obtuse angled triangle
11. (A) $5(4 + 3) - 3(3 + 2) = 35 - 15 = 20$
12. (D) Option 'D' is having a line symmetry
13. (B) $37\text{cm} \times \frac{150}{100} = 37\text{cm} \times \frac{3}{2} = \frac{111\text{cm}}{2} = 55.5\text{cm}$
14. (D) $\frac{5555}{6666} = \frac{5}{6} = 0.8\bar{3}$
 $\frac{666}{777} = \frac{6}{7} = 0.8571....$
 $\frac{77}{88} = \frac{7}{8} = 0.875$
 $\frac{8}{9} = 0.8888$
 $\therefore \frac{8}{9}$ has greast value
15. (C) Option 'C' is longest rectangle because
 $\frac{100\text{ cm}^2}{8\text{ cm}} = 12.5\text{ cm}$
16. (B) The ratio of girl & boys = $4 : 3 = 4x : 3x$
 \therefore Girls = $4x$ & boys = $3x$
 Given $4x + 3x = 49$
 $7x = 49$
 $x = 7$
 \therefore Number of girls = $4x = 28$ & number of boys = $3x = 21$
 New ratio of girls & boys = $28 - 4 : 21 = 24 : 21 = 8 : 7$
17. (A) $\frac{2x^4 - 6x^3 + 4x^2 + 10x}{2x} = \frac{2x(x^3 - 3x^2 + 2x + 5)}{2x}$
18. (B) Given $b = (h + 3)\text{ cm}$
 Area of the triangle = $\frac{1}{2}bh = \frac{1}{2}h(h + 3)\text{cm}^2$

19. (C) LCM of 15 & 24 is 120
20. (C) Given $a : b = 3 : 5$ and $b : c = 7 : 8$
 $\therefore a : b : c = 3 \times 7 : 5 \times 7 : 5 \times 8 = 21 : 35 : 40 = 21x : 35x : 40x$
 $\therefore a = 21x$ & $b = 35x$ & $c = 40x$.
 $\therefore 2a : 3b : 7c = 2 \times 21x : 3 \times 35x : 7 \times 40x = 6 : 15 : 40$
21. (D) Largest circle area = small circle area + shaded ring area + outer right area
 = 19 times to small circle area
 \therefore Area ratio of largest circle and smallest circle = $19 : 1$
22. (C) Perimeter = $2(l + b) = 2(1.5 + 0.9)\text{m} = 4.8\text{ m}$
 \therefore The ratio of length and perimeter
 = $1.5\text{ m} : 4.8\text{ m}$
 = $15 : 48$
 = $5 : 16$
23. (C) Number of fruits were sold
 = $(35 + 26 + 45 + 20)\text{ kg}$
 = 126 kg
24. (C) Given All the 'E' integers whose product = 1
 Case i :- All can be -1. then sum can be -b & product is 1.
 Case ii :- Each of integers are four -1 and each of the two integers are 1.
 \therefore Product is 1 & sum = -1
 Case iii :- If sum is zeros Three equal integers shoud be negative and three equal integer should be negative
 $(-1) + (-1) + (-1) + (1) + (1) + (1) = 0$
 But product = $-1 \times 1 \times -1 \times 1 \times 1 = 1$
 Case iv :- Four equal integers each is 1 & remaining equal integers each is -1
 \therefore Product = 1 & sum = 2
25. (B) $(2 + 4 + 6) - (1 + 3 + 5) = 12 - 9 = 3$
26. (A) $\frac{43}{4} = 10.75 \approx 11$
27. (B) $-8 - 8 = -16$

28. (B) Given $x : y = 3 : 5$ & $y = z = 5 : 7$

$$\therefore x : y : z = 3 : 5 : 7 \text{ (or)}$$

$$\therefore x : y : z = 3 \times 5 : 5 \times 5 : 7 \times 5 = 15 : 25 : 35 = 3 : 5 : 7$$

$$= 3a : 5a : 7a$$

$$\therefore y - x : x + z = 5a - 3a : 3a + 7a = 2a : 10a = 1 : 5$$

29. (C) LCM \times HCF = Product of the given two number

$$\therefore \text{LCM} \times 1 = pq$$

$$\text{LCM} = pq$$

30. (B) Option 'B' has 4 shaded parts of total 12 parts

$$\therefore \text{Shaded part} = \frac{4}{12} = \frac{1}{3}$$

MATHEMATICS - 2 (MAQ)

31. (A, C) Addition of whole number and multiplication of whole numbers follow closure property

$$32. (A, C, D) \quad 1\frac{1}{2} + \frac{5}{2} = \frac{3}{2} + \frac{5}{2} = \frac{3+5}{2} = \frac{8}{2} = 4 \in \mathbb{Z}$$

$$\frac{12}{17} - \frac{7}{34} = \frac{24-7}{34} = \frac{17}{34} = \frac{1}{2} \notin \mathbb{Z}$$

$$-2 - \frac{1}{2} + \frac{3}{2} = \frac{-4-1+3}{2} = \frac{-2}{2} = -1 \in \mathbb{Z},$$

$$10 - \left(-\frac{12}{3}\right) = 10 + 4 = 14 \in \mathbb{Z}$$

33. (A, B, C) Even \times odd \times odd = even & Even \times even \times even = even

$$\text{Even} \times \text{odd} \times \text{even} = \text{even}$$

34. (A, B, C, D) All options are solids

35. (B, D) If one angle of a triangle is 50° then other angle can be 50°

$$\therefore \text{Third angle} = 180^\circ - 50^\circ - 50^\circ = 80^\circ \text{ (OR)}$$

If one angle of a triangle is 50° then the other two angle are equal

$$\therefore 50^\circ + x + x = 180^\circ$$

$$\Rightarrow 2x = 130^\circ \Rightarrow x = 65^\circ$$

REASONING

36. (C) BCDEFGHIJKLMNOPQRSTUVWXYZ

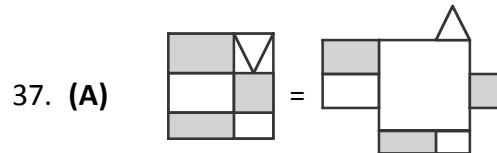
'Y' is 9th letter from P.

'R' is 9th letter from I.

'K' is 9th letter from B.

But 'G' is next letter to 'F'.

Hence FG is odd one out.



38. (B)



39. (B) Furniture is made of wood. But in this context, 'wood' is called as 'straw'. So Furniture is made of straw.

40. (C) Alternate numbers added 4

$$9 + 4 = 13$$

$$13 + 4 = 17$$

$$17 + 4 = 21$$

41. (C)

42. (A) MANGO

$$43. (C) \quad 8 \times 4 = \frac{84}{2} = 42$$

$$6 \times 6 = \frac{66}{2} = 33$$

$$2 \times 2 = \frac{22}{2} = 11$$

$$4 \times 6 = \frac{46}{2} = 23$$

$$2 \times 8 = \frac{28}{2} = 14$$

44. (A) A B C D E F G H

3rd right to C is F

E is immediate left to F

G is two to the right of letter E.

So, the answer is 'G'.

$$45. (B) \quad \frac{574}{7} = 82$$

CRITICAL THINKING

46. **(D)**
47. **(B)** 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377
48. **(B)** 21st August → Monday.
21st Next year → Tuesday.
21st Next year → Wednesday.
21st Next year → Thursday.
49. **(C)**
50. **(B)** Bring the matter to the notice of mess incharge.

==== *The End* =====