



**International Vedic Maths Olympiad 2023**  
**Junior**  
**Time allowed - 1 Hour**

*Questions 1 - 25: Score 2 marks for each correct answer.*

1.  $11 - 1.1 + 0.11 - 0.011$

- A 10.909      B 9.099      C 9.909      D 9.999      E 9.889

2. Which of the following is **not** a multiple of 9?

- A 768321      B 224433      C 891548      D 243756      E 830106

3. Which of the following is 5 less than a square number?

- A 192      B 221      C 254      D 289      E 319

4. What is the whole number remainder when 21021 is divided by 876?

- A 0      B 23      C 184      D 373      E 873

5. 2023 has a square factor whose square root ends in 7. What is that square root?

- A 7      B 17      C 27      D 37      E 47

6.  $7946 \times 9992$

- A 72986452      B 783816432      C 79396432      D 74493272      E 79466342

7. The digital root of 673 is 7 and the digital root of 341 is 8. What is the digital root of  $673 \times 341$  ?

- A 1      B 2      C 3      D 4      E 5

8. What is 36.4% of \$25?

- A \$9.10      B \$16.92      C \$18.20      D \$12.64      E \$8.30

9. What is the decimal equivalent of the fraction,  $\frac{642}{750}$ ?

- A 0.726      B 0.856      C 0.786      D 0.846      E 0.824

10. The devinculated form of  $6\bar{2}$  is 58? What is the devinculated form of  $7\bar{2}0\bar{3}4\bar{5}\bar{1}$ ?

- A 6807359      B 6706549      C 6796348      D 6797349      E 6796448

11. The square of a number is 18225. What is the number?

- A 115      B 125      C 135      D 145      E 155

12.  $0.0000426 \times 0.005$

- A 0.00213      B 0.000213      C 0.0000213      D 0.00000213      E 0.000000213

13. The One Day International World Cup Final took place at Narendra Modi Stadium in Ahmedabad on 19th November. It was a sell-out event. The stadium is the largest in the world and can seat 132000 people. Each ticket cost \$353. What was the total amount taken from sale of tickets?

- A \$44 586 000      B \$46 596 000      C \$46 786 000      D \$34 696 000      E \$44 496 000

14.  $62\frac{2}{7} - 34\frac{5}{8}$

- A  $28\frac{19}{56}$       B  $27\frac{19}{56}$       C  $27\frac{37}{56}$       D  $28\frac{19}{56}$       E  $27\frac{29}{56}$

15. Which fraction is the smallest?

- A  $\frac{4}{9}$       B  $\frac{5}{12}$       C  $\frac{7}{18}$       D  $\frac{17}{36}$       E  $\frac{31}{72}$

16. Amrita buys silk cloth to make a sari. She is given a 20% discount at the store and pays 23040 Rupees. What was the original price of the cloth?

- A 28800 Rupees      B 27648 Rupees      C 18432 Rupees      D 27580 Rupees      E 27600 Rupees



24. If  $a=6$ ,  $b=-3$ , and  $c=9$ , what is the value of,

$$2c(a^2 + 9b) - 3(3c - 9b)?$$

- A 0      B 81      C 162      D 243      E 1782

25. Simplify,  $\frac{a(3b)^3}{(2ab)^2}$

- A  $\frac{3b^3}{2a}$       B  $\frac{9b}{2a}$       C  $\frac{27b^3}{2a}$       D  $\frac{9b}{4a}$       E  $\frac{27b}{4a}$

**Questions 26 - 35: Score 3 marks for each correct answer.**

26. Find the value of  $x$  in the equation,

$$\frac{x+1}{3} - \frac{x-2}{6} = \frac{x+4}{9}$$

- A 5      B 2      C -4      D -2      E 4

27. A sequence starts, 2, 8, 14, 20, 26, ....

When it continues, what is the 100th number in the sequence?

- A 582      B 588      C 594      D 596      E 602

28. A set of five different integers have a mean value of 6 and their median is 5. The smallest number is 3 and when all five are multiplied the result is 4800. What is the largest of the five numbers?

- A 9      B 10      C 11      D 12      E 15

29. My roof has a leak so I place a 2 litre bucket on the floor to catch the drips. Each drip has a volume of  $\frac{1}{3}$  of a millilitre. A drip falls into the bucket every 3 seconds. How long does it take for the bucket to be filled? (1 litre = 1000 millilitres)

- A 2 hours      B 3 hours      C 4 hours      D 5 hours      E 6 hours

30. Banko Supermarket sells 8 kg of flour for \$5.76. Bankit Store sells 12 kg of flour for \$6.48. How much will I save when buying 20 kg of flour at Bankit Store by comparison with buying the same amount at Banko Supermarket?

- A \$3.60      B \$2.80      C \$2.40      D \$2.20      E \$1.80

31. A £2 coin has a diameter of 28.4 millimetres. If enough £2 coins are set out in a single row 1 kilometer long, approximately what would be the total value?

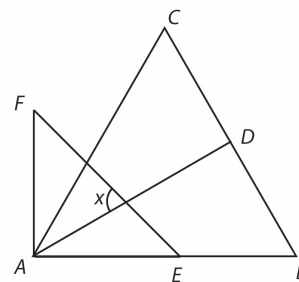
- A £700      B £7000      C £70 000      D £700 000      E £7 000 000

32. I add up all the even numbers between 1 and 101. Then from my total I subtract all the odd numbers from 0 to 100. What is my answer?

- A 0      B 50      C 100      D 255      E 2525

33. Triangle  $ABC$  is equilateral and  $D$  is the midpoint of  $BC$ . Triangle  $AEF$  is right-angled and isosceles. What is the size of angle  $x$ ?

- A  $65^\circ$       B  $70^\circ$       C  $75^\circ$   
 D  $80^\circ$       E  $85^\circ$



34. Dominoes is a game played with small tiles, each with a number of spots from 0 to 9. Each tile has two halves. No two tiles are the same. A complete set of domino tiles uses all possible combinations of spots once. How many dominoes are there in a complete set?

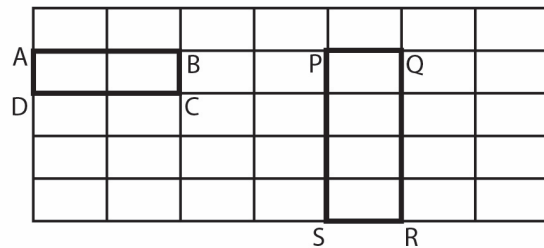
- A 45      B 50      C 55  
 D 65      E 75



35. There are many different types of rectangle to be seen in this grid. ABCD is one type and PQRS is another type.

What is the total number of all types?

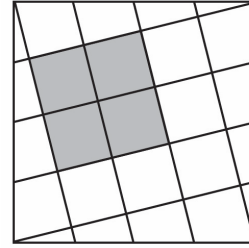
- A 80      B 120      C 280  
 D 360      E 420



Questions 36 - 40: Score 4 marks for each correct answer.

36. What fraction of the square is shaded?

- A  $\frac{1}{4}$     B  $\frac{1}{5}$     C  $\frac{2}{9}$     D  $\frac{4}{17}$     E  $\frac{4}{9}$



37. Images on a computer screen are made up of tiny dots called pixels. Each pixel is a square with edge length  $\frac{1}{96}$  of an inch. A certain screen has 2073600 pixels. What is its area in square inches?

- A 225 sq.in    B 216 sq.in    C 512 sq.in    D 256 sq.in    E 175 sq.in

38. A rectangular field measures 48 metres by 92 metres. A barbed wire fence is to be placed around the field for which wooden posts are needed every 2 metres. How many posts are required altogether?

- A 126    B 128    C 130    D 140    E 144

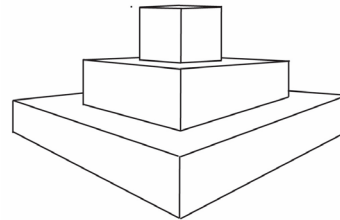
39. One morning, 84 aeroplanes are on stand (parked) at Heathrow airport in London which has two runways. At 6 am aeroplanes start landing at intervals of 90 seconds. At the same time, aeroplanes start taking off at intervals of 120 seconds. How many aeroplanes could there be on stand at 11.30 am?

- A 129    B 139    C 149    D 159    E 169

40. This shape is made from three stacked cuboids as shown. Each cuboid has a square base with edge lengths 15 cm, 10 cm and 5 cm. All three have the same height of 4 cm.

What is the total surface area of the shape, including the base?

- A  $480 \text{ cm}^2$     B  $705 \text{ cm}^2$     C  $730 \text{ cm}^2$   
D  $830 \text{ cm}^2$     E  $930 \text{ cm}^2$



## Answer Key Junior IVMO 2023

Questions 1 - 25: Score 2 marks for each correct answer.

Questions 26 - 35: Score 3 marks for each correct answer.

Questions 36 - 40: Score 4 marks for each correct answer.

1. D	11. C	21. B	31. C
2. C	12. E	22. E	32. B
3. E	13. B	23. E	33. C
4. E	14. C	24. A	34. C
5. B	15. C	25. E	35. E
6. C	16. A	26. C	36. D
7. B	17. E	27. D	37. A
8. A	18. C	28. B	38. D
9. B	19. D	29. D	39. B
10. D	20. E	30. A	40. E

**Answer Sheet Junior IVMO 2023**

Write your name in Block Capitals here

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Write your answers, A, B, C, D or E in the boxes below.

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