## IAVM

## IVMO 2021 Primary <br> Time allowed-1 Hour

1. How many of the following numbers are divisible by 4 ?
$\begin{array}{lllll}564 & 383 & 796 & 358 & 288\end{array}$
A 1
B 2
C 3
D 4
E 5
2. Which of the following is smallest?
A 0.405
B $45 \%$
C $\frac{45}{100}$
D $\frac{9}{20}$
E 0.045
3. By continual summing the digits of a number, you arrive at the digital root. What is the digital root of 23648157185 ?
A 1
B 3
C 5
D 7
E 9
4. At a very large wedding there are 4261 guests all to be seated at round tables. Each table has nine seats. If all the tables are full except one, how many guests are on the table without nine?
A 4
B 5
C 6
D 7
E 8
5. When using Vertically and crosswise to calculate $234 \times 614$, what is the result of the third step before any carry digits have been added?
A 8
B 13
C 24
D 35
E 36
6. What is the whole number remainder when 247647 is divided by 11 ?
A 4
B 5
C 6
D 7
E 8
7. $6844 \times 5=34220$. Which operation gives a quick method for multiplying numbers by 5 ?
A Halve the number and multiply by 10
B Double the number and divide by 10
C Halve the number and divide by ten
D Double the number and multiply by 10
E None of these
8. A certain number, multiplied by itself, gives 5625 as the result. What is the calculation?
A $45 \times 45$
B $55 \times 55$
C $65 \times 65$
D $75 \times 75$
E $85 \times 85$
9. A large cricket stadium has 100,000 seats. On one day, 87,786 seats are occupied. How many spare seats are there?
A 12404
B 12214
C 12213
D 12348
E 12204
10. What is the whole number remainder when 12131 is divided by 987 ?
A 286
B 287
C 288
D 289
E 290
11. What is the Highest Common Factor of 42 and 63 ?
A 3
B 6
C 7
D 21
E 42
12. What is the Lowest Common Multiple of 42 and 63 ?
A 63
B 98
C 126
D 294
E 378
13. Which calculation gives the largest answer?
A $\frac{7}{8}+\frac{1}{9}$
B $\frac{5}{8}+\frac{4}{9}$
C $\frac{3}{8}+\frac{5}{9}$
D $\frac{1}{8}+\frac{8}{9}$
E $\frac{4}{8}+\frac{4}{9}$
14. Which of the following is exactly divisible by 9 ?
A 3636363636361
B 2342342342347
C 9999999993
D 81818181818181
E 45454572728
15. One of the following shows the correct working for $864 \times 997$ using Nikhilam multiplication. Which one?

$$
\begin{aligned}
& \text { 864-135 864-136 864-135 } \\
& \text { A } \frac{\times 997-003}{861 / 408} \quad \text { B } \frac{\times 997-003}{861 / 408} \quad \text { C } \frac{\times 997-002}{861 / 408} \\
& \text { 864-146 } \\
& \text { 864-246 } \\
& \text { D } \times 997-003 \\
& \text { E } \times 997-003
\end{aligned}
$$

16. 25 squared is $25 \times 25=625$ and is written as $25^{2}$. How many numbers listed below are squares.
$\begin{array}{lllllllll}4 & 16 & 25 & 28 & 56 & 64 & 72 & 121 & 132\end{array}$
A 1
B 2
C 3
D 4
E 5
17. Calculate,

$$
\frac{25}{33} \times \frac{66}{150}
$$

A $\frac{1}{2}$
B $\frac{1}{3}$
C $\frac{1}{4}$
D $\frac{1}{5}$
E $\frac{1}{6}$
18. The product of two prime numbers is 2021 , which can be worked out using the rule, When the final digits add to 10 . What are the two prime numbers?
A $79 \times 61$
B $83 \times 17$
C $37 \times 23$
D $53 \times 67$
E $43 \times 47$
19. Each of the 33 consonants of the Sanskrit alphabet can combine with one of 13 vowels to make a simple syllable. How many syllables does that make?
A 399
B 429
C 529
D 539
E 759
20. A conference hall has 51 rows, each with 53 seats. If 2700 people attend the conference, how many spare seats will there be?
A 3
B 13
C 23
D 33
E 43
21. What are the next two numbers in this sequence?

| 97 | 79 | 64 | 52 |
| :--- | :--- | :--- | :--- |

A $42 \quad 36$
B $44 \quad 38$
C $44 \quad 37$
D $43 \quad 38$
E 4337
22. Two farmers sell a total of 480 watermelons at the market. If one farmer sells $60 \%$ more than the other, how many watermelons did each sell?
A 72 and 408
B 96 and 384
C 120 and 360
D 192 and 288
E 216 and 264
23. Pinocchio's nose doubles in length everytime he tells a lie and halves in length every time he tells a truth. He has told many lies and now his nose is 4.8 metres long.

Pinocchio then decides to only tell the truth. How long will his nose be after telling five truths?
A 7.5 cm
B 15 cm
C 25 cm
D 30 cm
E 48 cm

24. Human beings blink their eyes about 15 times each minute. One of the slowest blinkers in the animal kingdom is the Senegal Bush Baby and blinks 50 times slower than humans. On average, how many blinks does a Bush Baby make in one hour?
A 12
B 15
C 18
D 20
E 24

25. How many lines of symmetry does a regular dodecagon ( 12 sides) have?
A 8
B 12
C 16
D 24
E 36
26. On the circle of nine points, if a line is drawn joining each pair of numbers that sum to a multiple of 3 , how many lines will there be?
A 12
B 11
C 10
D 9
E 8

27. Harry the hedgehog was timed walking from one end of the garden to the other. He covered 11 metres in 19.6 seconds. Approximately, how fast is this in km per hour?
A 0.5
B 1
C 2
D 4
E 8
28. If three bags of rice weigh 3.51 kg , what do five bags of the same rice weigh?
A $\quad 4.75 \mathrm{~kg}$
B 4.85 kg
C $\quad 4.95 \mathrm{~kg}$
D $\quad 5.85 \mathrm{~kg}$
E $\quad 5.95 \mathrm{~kg}$
29. What is $46 \%$ of $\$ 64$ plus $36 \%$ of $\$ 46$ ?
A $\$ 44.18$
B $\$ 43.80$
C $\$ 42.00$
D $\quad \$ 46.00$
E $\$ 46.24$
30. Rishabh plants one seed in every 16 square centimetres of his field. His field has an area of $80 \mathrm{~m}^{2}$. How many seeds does he plant?
A 500
B 5000
C 50,000
D 500,000
E 5,000,000
31. How many two-digits numbers will give an answer between 7478 and 9876 when multiplied by 99 ?
A 21
B 22
C 23
D 24
E 25
32. What is the least number of squares you need to shade to make this grid have two lines of symmetry?
A 1
B 2
C 3
D 4
E 5

33. What fraction of the square is shaded?
A $\frac{1}{6}$
B $\frac{1}{5}$
C $\frac{1}{4}$
D $\frac{1}{3}$
E $\frac{1}{2}$

34. A rectangle has two identical rectangles cut away from it with measurements as shown in the figure.
What is the perimeter of the whole shape in centimetres?

A 34
B 44
C 46.8
D 48
E 54
35. The large square in the figure has edge length 96 cm . The smaller square is formed by joining the midpoints of the sides of the large square. What is the area of the small square in $\mathrm{cm}^{2}$ ?
A 4804
B 4406
C 4468
D 4408
E 4608

36. The world's longest train journey is the Trans-Siberian Express covering 5772 miles from Moscow to Vladivostok. If the train travels 962 miles per day, how many days does it take to complete the journey?
A 4
B 5
C 6
D 7
E 8
37. What is the sum of the first ten odd numbers?
A 20
B 50
C 55
D 100
E 144
38. Kali chooses three prime numbers. Their mean is 8 . The difference between the two smaller prime numbers is also a prime number.
What is the largest prime number she chooses?
A 11
B 13
C 17
D 19
E 23
39. Pedro asked his Granny how old she is. Rather than giving a straight answer, she gave him a puzzle. She said,
"I have 6 children, and there is 4 years between each one and the next. I had my first child when I was 19 and my youngest is now 19."
How old is Granny?
A 54
B 58
C 62
D 66
E 70
40. If it takes 8 bricklayers 12 days to build a particular wall, how long will it take 6 bricklayers, working at the same rate?
A 14
B 15
C 16
D 18
E 20
41. Each of the six rectangles has width 7 cm and height 3 cm . What is the outer perimeter of the whole shape in centimetres?

A 50
B 57
C 60
D 63
E Not enough information
42. Which of the following is divisible by all of the integers from 1 to 10 , inclusive?
A $23 \times 34$
B $34 \times 45$
C $45 \times 56$
D $56 \times 67$
E $67 \times 78$
43. In a knock-out tennis competition, each match has a winner and a loser and a winner goes through to the next round. Rounds continue until there are two players left in the final. In the women's singles at Wimbledon there are 128 players at the start. How many matches are there altogether?
A 256
B 129
C 128
D 127
E 64
44. A digital 24 hour clockshows the time as $20: 36$. How many minutes will it take until all the digits are first the same?
A 86
B 94
C 96
D 106
E 204
45. Each shape stands for a number. What is the value of the triangle?

$$
\begin{aligned}
& \square+\bigcirc-\triangle=8 \\
& \bigcirc+\triangle-\square=10 \\
& \square+\bigcirc+\triangle=24
\end{aligned}
$$

A 8
B 9
C 10
D 11
E 12
$\Delta=?$
46. Dougie has six dogs to walk. If he takes two at a time, how many different pairs of dogs can he take?
A 6
B 9
C 12
D 15
E 18

47. The sum of two numbers is 1892 . The first number is divisible by 10 . Removing the ones digit of the first number produces the second number. What is the difference between the two numbers?
A 1458
B 1548
C 1358
D 1648
E 1658
48. If I travel to Ashington, the distance is $182 \frac{2}{5}$ miles and if I travel to Babbington, the distance is $176 \frac{5}{8}$ miles. How much closer is Babbington than Ashington?
A $4 \frac{9}{40}$
B $4 \frac{31}{40}$
C $5 \frac{9}{40}$
D $5 \frac{31}{40}$
E $\quad 6 \frac{29}{40}$

D
49. How many rectangles of all types are in the figure?

|  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

A 21
B 30
C 60
D 120
E 150
50. Five cogs are connected as shown below with the numbers of teeth on each cog indicated.


When $\operatorname{cog}$ A makes 4 turns clockwise, how many clockwise turns will $\operatorname{cog} \mathrm{E}$ make?
A 4
B 6
C 9
D 12
E None, as it will turn anticlockwise

## Answer Key - Primary IVMO 2021

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

## Answer Sheet

1. 





41.
42.

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