2024-2025 Junior Mathematical Olympiad

Round One Examination (Grade 4) - 10:00am

For each question, determine the letter corresponding to the correct or best response; along with the question number, indicate this letter by shading it on the answer sheet

1. What is the value of
$$\frac{4+35}{8-5}?$$
(A) 11/7 (B) 8 (C) 7/2 (D) 13/2 (E) 13

2. One and only one of the following is a whole number. Which is it?
(A) $25 \div 3$ (B) $26 \div 3$ (C) $27 \div 3$ (D) $28 \div 3$ (E) $29 \div 3$

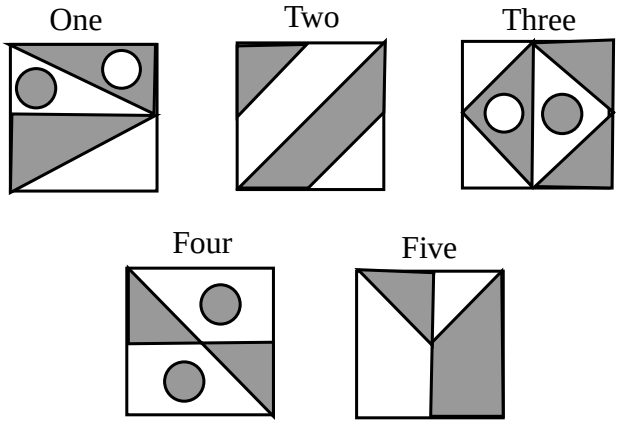
3. If $p + q = 6$ and $p = 2q$, what is the value of the product $p \times q$?
(A) 1 (B) 2 (C) 4 (D) 6 (E) 8

4. Amoya completed two laps of a track without stopping. The first lap took 2 minutes and 47 seconds and the second lap took 3 minutes and 33 seconds. How long did it take Amoya to complete both laps?
(A) 5 minutes 30 seconds (B) 6 minutes 30 seconds (C) 5 minutes 20 seconds (D) 6 minutes 20 seconds (E) 5 minutes 40 seconds.

5. Amy, Ben and Cara are swimming laps in a pool. For every lap Amy swims, Ben swims two laps. For every lap Ben swims, Cara swims three laps. If Amy swam 5 laps, what is the TOTAL number of laps swum by Amy, Ben and Cara?
(A) 25 (B) 30 (C) 35 (D) 40 (E) 45

6. Eva cuts a 42 cm length of string into pieces each of length 2 cm. Jennie cuts a 42 cm length of string into pieces each of length 3 cm. How many more pieces of string does Eva have than Jennie?
(A) 4 (B) 5 (C) 6 (D) 7 (E) 8

7. In four of the five diagrams below, the grey area is equal to the white area.



In which diagram, are the white area and grey area different?

(A) One (B) Two (C) Three (D) Four (E) Five

8. How many \$500-bills have the same value as twenty \$50-bills plus five \$100-bills?

(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

9. A Mathematics examination starts at $2:45$ pm and ends at $5:15$ pm. In minutes, how long is the examination?

(A) 75 (B) 90 (C) 120 (D) 135 (E) 150

10. How many hours are there in one 30-day month?

(A) 30×7 (B) 24×30 (C) 7×24 (D) 60×30 (E) $7 \times 24 \times 30$

11. What is the result after performing the following sum:

$$20 \text{ hundreds} + 2 \text{ tens } + 15 \text{ ones?}$$

(A) 2015 (B) 2205 (C) 2215 (D) 2025 (E) 2035

12. How many 4-digit whole numbers use all the digits $3, 3, 5$ and 5?

(A) 6 (B) 5 (C) 4 (D) 3 (E) 2

13. Thirteen children are playing "Hide and Seek". One of them is the "seeker" and the others hide. After five minutes, 9 children have been found. After 5 minutes, how many children are still hiding?

(A) 3 (B) 4 (C) 5 (D) 9 (E) 22

14. Mrs Miller teaches 126 students in total. Of all the students that Mrs Miller teaches, Joanna is the second tallest. How many of Mrs Miller's students are shorter than Joanna?

    (A) 1 (B) 2 (C) 123 (D) 124 (E) 125

15. The positive whole numbers a, b, c are all different and are all less than 10. Which of the following CANNOT be the value of $a + b + c$?

    (A) 23 (B) 24 (C) 25 (D) 7 (E) 6

16. Two 3-digits numbers are constructed from the digits $1, 2, 3, 4, 5$ and 6, where each digit is used only once. When the two 3-digit numbers are added, what is the smallest possible sum?

    (A) 381 (B) 579 (C) 333 (D) 388 (E) 246

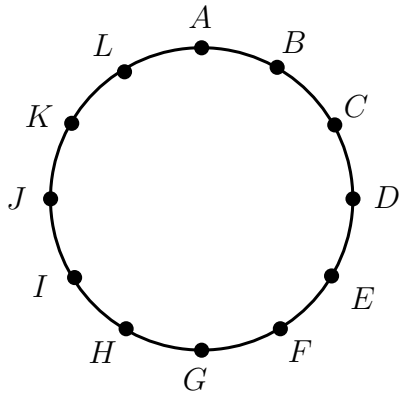
17. Wie is 21 years old and her brother Lui is 7 years old. The sum of their ages now is 28 years. In how many years will the sum of their ages be double what it is now?

    (A) 7 (B) 8 (C) 11 (D) 14 (E) 15

18. What is the largest number of Mondays that can be observed in the first 52 days of a year?

    (A) 9 (B) 8 (C) 7 (D) 6 (E) 5

19. Twelve balloons are arranged in a circle as shown.



    Going in a clockwise direction, every third balloon is popped. C is the first one popped. This continues around the circle until two unpopped balloons remain. The last two remaining balloons are

    (A) E, J (B) B, G (C) A, E (D) B, H (E) F, K

20. Mom bought a year's supply of cat food for $\$48,720$. On average, how much per month did it cost Mom to buy cat food?

    (A) \$4860 (B) \$4600 (C) \$4660 (D) \$4800 (E) \$4060

21. Hanibal runs the Animal School. In one class, there are 3 cats, 4 chickens, 2 ducks, some goats and Teacher Owl who is an owl. The total number of legs in this class is 46. How many goats are there in this class?

    (A) 1 (B) 2 (C) 3 (D) 4 (E) 5

22. Tim has 10 coins consisting of \$5 coins, \$10 coins and \$20 coins. 7 of the coins are either \$10 coins or \$20 coins and 8 of the coins are either \$5 coins or \$10 coins. How many \$10 coins does Tim have?

    (A) 3 (B) 4 (C) 5 (D) 6 (E) 7

23. Last week Mia bought 1 school pin (her first pin). The number of pins she buys doubles each week. If Mia keeps all the pins she buys, how many pins does she have 3 weeks from now?

    (A) 7 (B) 15 (C) 16 (D) 31 (E) 32

24. Consider the sequence (list) of numbers where the first term is 1, the second term is 3, the third term is $1 + 3 = 4$, the fourth term is the sum of the immediately previous numbers $3 + 4 = 7$. All subsequent terms are the sums of the two numbers before them.

    $$1, 3, 4, 7, \ldots$$

    The next term that is not listed is the 5th term with value $4 + 7 = 11$. Which of the following appears in the sequence?

    (A) 76 (B) 77 (C) 78 (D) 79 (E) 80

25. The JMO Bookstore sells pens that come in one of three colours: red, blue or green. Each pen carries one of four numbers: $1, 2, 3$ or 4. Byron bought n of these pens with no two pens having the same colour **and** the same number. What is the greatest possible value of n?

    (A) 7 (B) 8 (C) 11 (D) 12 (E) 13