2023-2024 Junior Mathematical Olympiad

Qualifying Round Examination (Grade 4)

NAME_____

GRADE_____

SCHOOL_____

STUDENT CONTACT NUMBER_____

- EACH entry MUST be accompanied by a nominal entry fee of **J$1000**

- All entries must reach the Mathematics Department, U.W.I by
  Wednesday 13 December, 2023

- You may deliver by **(a)** Hand **(b)** Courier **(c)** Local Mail

- The Courier address is
  Mathematics Department, UWI
  Mona
  Kingston 7

- The Mailing address is
  Junior Mathematical Olympiad
  P.O. Box 94
  Mona Post Office
  Kingston 7

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

1. The number of eggs that Suzanne has is 7 less than 7 dozen. How many eggs does Suzanne have?

   (A) 71   (B) 77   (C) 83   (D) 87   (E) 91

2. A pizza is cut into 4 slices and each of the 4 slices is sliced into 4 pieces. Altogether, how many pieces are there?

   (A) 4   (B) 8   (C) 12   (D) 16   (E) 20

3. Of the following, the largest sum is x and the smallest sum is y.

   (i) $1110 + 9990$ (ii) $1101 + 9909$ (iii) $1011 + 9099$ (iv) $1111 + 9999$

   What is the value of $x - y$?

   (A) 10   (B) 90   (C) 100   (D) 110   (E) 1000

4. What is the number that is 50 less than the least whole number greater than 50?

   (A) 0   (B) 1   (C) 51   (D) 100   (E) 101

5. What is the value of W that makes the following true?

   $$444 + 444 + 444 = (4 \times W) + (3 \times 400)$$

   (A) 11   (B) 22   (C) 33   (D) 44   (E) 55

6. If today is a Tuesday, going forward, what day of the week will it be 31 days from today?

   (A) Monday   (B) Tuesday   (C) Wednesday   (D) Thursday   (E) Friday

7. What is the whole number that represents one-half the sum of all the even whole numbers less than 20?

   (A) 45   (B) 50   (C) 55   (D) 60   (E) 65

8. How many 2-digit whole numbers are less than 50?

   (A) 50   (B) 49   (C) 41   (D) 40   (E) 39

9. Which of the following pair of numbers does NOT have an even sum?

    (A) $5167, 678$ (B) $8127, 319$ (C) $1168, 868$ (D) $5713, 497$ (E) $2156, 364$

10. Given that 1 m is the same as 100 cm, we may conclude that 1320 cm is between

    (A) 1 m and 2 m   (B) 10 m and 13 m   (C) 13 m and 14 m

    (D) 130 m and 133 m   (E) 120 m and 130 m

11. Bob has \$1700 in x \$100 dollar notes and y \$50 dollar notes. If the value of x is 9 what is the value of $x + y$?

    (A) 17   (B) 22   (C) 25   (D) 28   (E) 32

12. In how many years' time will you be 4 years older than you were 3 years ago?

    (A) 1   (B) 3   (C) 4   (D) 7   (E) 12

13. Every even number is divisible by

    (A) 0 and 1   (B) 2 but not 1   (C) 2 and 0   (D) 1 and 2
    (E) 0, 1 and 2

14. If an odd number is doubled and then the result is decreased by 2, then the result must be divisible by

    (A) 0   (B) 2   (C) 3   (D) 4   (E) 5

15. Andre's 11th birthday was in 1999. In what year will Andre be 40 years old?

    (A) 2028   (B) 2029   (C) 2030   (D) 2039   (E) 2063

16. Two days ago, Jack saved \$10 and yesterday he saved \$20. Given that on any given day Jack saved twice as many dollars as he saved the day before, in three days from now, how much in total would Jack have saved?

    (A) \$320   (B) \$550   (C) \$630   (D) \$640   (E) \$1270

17. The bar code below, showing the first and last 5 bars, consists of vertical black bars and vertical white bars.
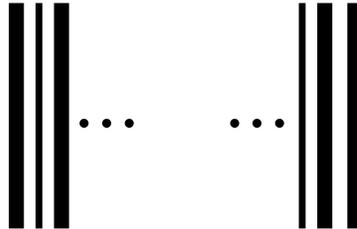
The total number of black bars is 17. There are two types of black bars, fat and slim, and no two black bars are side by side. The first and last bars in the code are black. Given that the number of white bars is 3 more than the number of fat black bars, how many slim black bars are there in the bar code?

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

18. In the product $999,999,999 \times 888,888,888$, what is the hundreds' digit?

(A) 1   (B) 2   (C) 7   (D) 8   (E) 9

19. A square has dimension 12 cm by 12 cm. What is the maximum number of squares with dimension 3 cm by 3 cm that can be obtained by cutting the 12 cm by 12 cm square?

(A) 4   (B) 12   (C) 9   (D) 16   (E) 20

20. Town Alpha has 120 stoplights. For every 5 stoplights in Town Alpha, Town Beta has 6 stoplights. In total, how many stoplights are in Town Beta?

(A) 100   (B) 126   (C) 144   (D) 220   (E) 264

21. Five boys and four girls are standing in a circle. Of the 5 boys only two of the boys can say "Next to me is a boy". How many of the girls can say "Next to me is a girl"?

(A) 0   (B) 1   (C) 2   (D) 3   (E) 4

22. Last February had 28 days and each night in that month Maria had a dream. Some of her dreams involved dogs, some involved cats and some involved no animals at all. You are given that 16 involved dogs, 15 involved cats and 4 involved no animals at all. How many of Maria's dreams involved BOTH dogs and cats?

    (A) 3   (B) 5   (C) 7   (D) 9   (E) 11

23. You have $5000 and each day you spend exactly $60 until you can no longer do so (after day 1 you have $4940 left). On which day, after spending, do you have exactly $1820 left?

    (A) day 41   (B) day 45   (C) day 47   (D) day 49   (E) day 53

24. Tickets for a ride at a fair are sold as "combo" or "per ride". The "combo" ticket which allows for entry and unlimited rides costs $3000. A "per ride" ticket costs $1250 to enter and $300 per ride. For a "combo" ticket to cost less than a "per ride" ticket, a person must go on at least how many rides?

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

25. Monty and Jonas have a total of 120 coins; Bobbie and Korrie have 153; and Monty and Bobbie have 127. In total, how many coins do Jonas and Korrie have?

    (A) 106   (B) 128   (C) 135   (D) 146   (E) 154