

2022-2023 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 $2 \times 0 + 2 \times 3$?

- (A) 6 (B) 0 (C) 8 (D) 12 (E) 7

2. What is the value of

$$\frac{1}{2} + \frac{2}{4} + \frac{4}{8} + \frac{8}{16}?$$

- (A) 1/4 (B) 1/2 (C) 0 (D) 4 (E) 2

3. How many natural numbers (whole numbers) are between $2\frac{1}{2}$ and $20\frac{1}{2}$?

- (A) 16 (B) 17 (C) 18 (D) 19 (E) 20

4. Starting at 72, Sydoni counts down by 11s:

$$72, 61, 50, \dots$$

What is the last number greater than 0 that Sydoni will count?

- (A) 4 (B) 5 (C) 6 (D) 7 (E) 8

5. A farmer has 30 cows, some chickens and no other animals on her farm. The total number of chicken legs is equal to the total number of cow legs. How many animals are on her farm?

- (A) 60 (B) 90 (C) 120 (D) 180 (E) 240

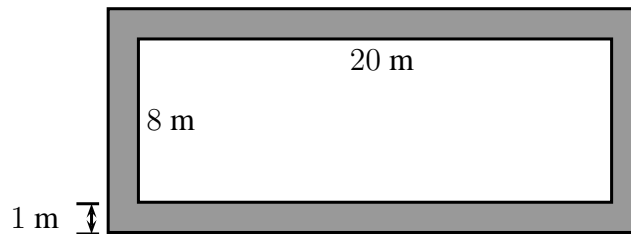
6. For every birthday, Mary gets as many toys as she is years old on that day. For her first birthday she got 1 toy. For her second birthday she got 2 toys and so on. How many toys in TOTAL has Mary got (from birthdays) on the day after her sixth birthday?

- (A) 19 (B) 20 (C) 21 (D) 22 (E) 23

7. John is walking. He walked at 52 steps in 60 seconds. Walking at the same rate, how many steps will John make in 75 seconds?

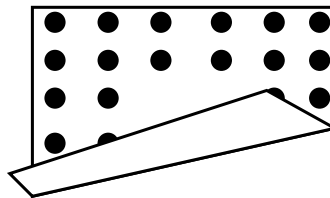
- (A) 66 (B) 52 (C) 65 (D) 67 (E) 73

8. Four young boys have \$150, \$200, \$250 and \$400 respectively. The boys decided to combine the moneys and divide it equally among themselves. After dividing, how much money do they each now have?
 (A) \$50 (B) \$100 (C) \$150 (D) \$200 (E) \$250
9. Marcus has a sack of coins worth \$2.00, consisting of 10 cents coins and 25 cents coins. \$1.00 worth is 10 cents coins and \$1.00 worth is 25 cents coins. What is the total number of coins (10 cents coins and 25 cents coins) in the sack?
 (A) 8 (B) 10 (C) 12 (D) 14 (E) 16
10. The ages of six siblings are 2, 4, 5, 6, 8 and 10 years old. When the ages of four of them are added, the result is 22 years old. How old are the other two children?
 (A) 2 and 8 (B) 4 and 5 (C) 5 and 8 (D) 6 and 8 (E) 6 and 10
11. A rectangular pool measures 20 metres by 8 metres. There is a 1 metre wide walkway around the outside of the pool, as shown by the shaded region.



In square metres, what is the area of the walkway?

- (A) 56 (B) 60 (C) 29 (D) 52 (E) 50
12. A lemonade recipe calls for 4 times as much water as sugar and twice as much sugar as lemon juice. If 3 cups of lemon juice was used, how many cups of water was used?
 (A) 6 (B) 8 (C) 12 (D) 18 (E) 24
13. Mom's carpet has the shape of a square. Along each edge there are two rows of dots (see diagram).



The number of dots is the same along each edge. How many dots in total does the carpet have?

- (A) 32 (B) 36 (C) 40 (D) 44 (E) 48

14. A rectangular garden measures 6 metres by 8 metres. The entire garden is planted with tomato plants with 4 tomato plants per square metre. On average, each plant yields 10 tomatoes. How many tomatoes should be expected to harvest from the garden?
- (A) 560 (B) 960 (C) 1120 (D) 1920 (E) 3840

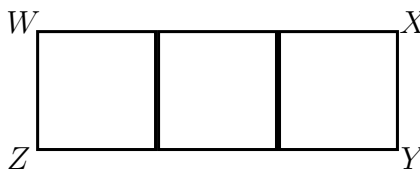
15. The number of dots in diagram n is

$$1 + 3 \times n \times (n - 1).$$

How many dots are in diagram 4?

- (A) 37 (B) 31 (C) 25 (D) 13 (E) 48
16. A bridge is built over a river that is 120 m wide. One quarter of the bridge continues on land on the left bank of the river and one quarter of the bridge continues on land on the right bank. How long is the bridge?
- (A) 150 m (B) 180 m (C) 210 m (D) 240 m (E) 270 m
17. Three quarters ($3/4$) of a jug is filled with orange juice. The jug is emptied by pouring an equal amount of juice into each of 5 cups. What fraction of the total capacity of the jug did each cup receive?
- (A) $1/20$ (B) $1/10$ (C) $3/20$ (D) $1/5$ (E) $1/4$
18. Two factors of 42 are 6 and 7 because $6 \times 7 = 42$. How many (positive) factors of 42 are there?
- (A) 2 (B) 4 (C) 6 (D) 8 (E) 10
19. How many two-digit numbers have at least one digit that is a 7?
- (A) 17 (B) 11 (C) 18 (D) 10 (E) 19
20. Salt is sold at a fixed price per gram. 250 grams of salt is sold for \$7.50. What mass of salt sells for \$1.80?
- (A) 6 grams (B) 54 grams (C) 60 grams (D) 120 grams (E) 190 grams
21. Three football teams are taking part in a tournament. Each team plays each other team once. For a win the team scores 3 points, the other team 0 points. For a draw both teams get 1 point each. Which number of points is NOT possible, for any team to reach at the end of this tournament?
- (A) 1 (B) 2 (C) 4 (D) 5 (E) 6

22. $WXYZ$ is a rectangle formed from three identical squares as shown



- Given that the perimeter of $WXYZ$ is 56 m, what is the area (in m^2) of the rectangle $WXYZ$?
- (A) 66 (B) 147 (C) 168 (D) 196 (E) 348
23. A public holiday is on the third Wednesday of a certain month. In that month, the holiday **cannot** occur on which of the following days?
- (A) 16th (B) 22nd (C) 18th (D) 19th (E) 21st
24. Maxwell's 300 km trip from Port Antonio to Negril passed through Falmouth. Maxwell started in Port Antonio at 7 a.m. and drove until stopping for a 40 minutes break in Falmouth. Maxwell arrived in Negril at 11 a.m. Not including the break, what was Maxwell's average speed for the trip?
- (A) 83 km/h (B) 94 km/h (C) 90 km/h (D) 95 km/h (E) 64 km/h
25. On a Sunday, Chip started to read a book which is 290 pages. He reads 25 pages on Sundays and 4 pages on all other days until he completes the book. How many days does it take him to complete reading the book?
- (A) 5 (B) 46 (C) 40 (D) 35 (E) 41