Renert Rabbit Math Contest 2021

INTELLIGENT LEARNING
RENERT

Instructions:

1. Do not open this booklet until you are told by your teacher to begin.

2. Materials: pencil, paper — no other materials. NO calculators!

3. You will have exactly **60 minutes** to work on the contest.

4. This is a multiple-choice contest. Each question is followed by five possible answers marked A, B, C, D, and E. Only one of the options is correct. After making your choice, fill it in the appropriate circle on the response form.

5. This form has 9 questions in Part A, 9 questions in Part B, and 5 questions in Part C.

6. Scoring:

   - Each correct answer is worth:
     - 3 points in Part A,
     - 4 points in Part B,
     - 6 points in Part C.
   - Each unanswered question is worth 1 point.
   - Incorrect answers are worth 0 points.

Part A (3 points each)

1. $1 + 2 \times 3 + 4 \times 5 + 6 \times 7 + 8 \times 9 =?$

   (A) 45   (B) 141   (C) 4545   (D) 140   (E) 55

2. Which number is the largest?

   (A) $2 \times 0 \times 2 \times 1$ (B) $2 + 0 + 2 + 1$ (C) $2 + 0 \times 2 + 1$ (D) $2 \times 0 \times 2 + 1$ (E) $2 \times 0 + 2 \times 1$

3. Berlin runs clockwise around a hexagon starting at corner A where she lives and passes 18 corners (including the corner A, where she started). If each side of the hexagon is 100 meters long, how many meters did Berlin run?
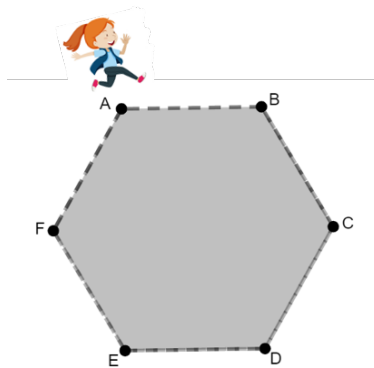

   (A) 1200   (B) 1700   (C) 1800   (D) 1900   (E) 2400

4. What is one-half plus one-third plus one-quarter?

   (A) $\frac{1}{3}$ (B) $\frac{1}{9}$ (C) $\frac{5}{6}$ (D) $\frac{1}{12}$ (E) $\frac{13}{12}$

5. Which of the following numbers is a prime number?

   (A) 35   (B) 51   (C) 67   (D) 77   (E) 91

6. How many different combinations can be made with a 4-digit lock if each digit could be between 1 and 9 inclusive?

   (A) 36   (B) 3024   (C) 5040   (D) 6561   (E) 10000

7. Samira began writing numbers starting from 1, so: 1, 2, 3, 4,... She stops when she reaches the number 50. How many times did she write the digit 2?

   (A) 1   (B) 13   (C) 14   (D) 15   (E) 25

8. What is the sum of all the integers from 23 to 60: $23 + 24 + 25 + \ldots + 59 + 60$?

   (A) 191   (B) 1140   (C) 1577   (D) 1830   (E) 2280

9. The length of a rectangle is 27 paper clips. What is the width of the rectangle in paper clips, if its perimeter is 74 paper clips?

   (A) 20   (B) 54   (C) 47   (D) 101   (E) 10

Part B (4 points each)

10. Neva creates a special triangle made of consecutive odd numbers as below. Millie finds the sum of numbers in each row and discovers a pattern to easily determine the sum in any row. What is the sum of all the numbers in row 10 of Neva's triangle?
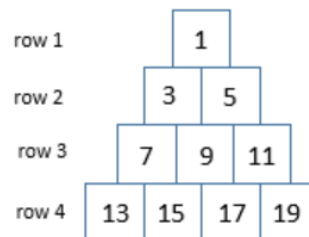
   (A) 100   (B) 500   (C) 1000   (D) 1500   (E) 2021

11. Lauren decides to place a vase with flowers every 1 km from her house to school. She can only carry one vase at a time and has to return home to get the next one. The distance between her house and the school is 8 km. How many kilometers will Lauren have to walk if she will place the last vase at the school and will not return home?

   (A) 36   (B) 45   (C) 56   (D) 64   (E) 72

12. You have a 10-sided die with numbers 1 through 10 on it and a 9-sided die with numbers 1 through 9 on it. You roll both dice. What is the probability that the sum of the numbers showing on the two dice is 12?

   (A) 1/90   (B) 6/90   (C) 7/90   (D) 8/90   (E) 19/90

13. The average of the digits of the number 2021 is 1.25 because $(2 + 0 + 2 + 1)/4 = 1.25$. For how many of the years between 2000 and 2099 would the average of the digits be 1.25?

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

14. What number should go in the box?

$$3 + 2\left(5 + \cfrac{46}{47 - \cfrac{60}{62 - \cfrac{8}{\square - 5}}}\right) = 15$$

   (A) 13 (B) 7 (C) 6 (D) 9 (E) 5

15. A dog starts running after a rabbit that is 30 meters away. Both run in a straight line in the same direction. Every second, the dog moves 50 cm and the rabbit moves 30 cm. How many seconds does it take the dog to catch the rabbit?

   (A) 30 (B) 60 (C) 100 (D) 150 (E) 200

16. During a long train ride, Aydin invented an activity where he would count the fingers on his left hand back and forth. He started counting on his left thumb to his left pinky, then back to his thumb, and so on. He will never touch the same finger on two consecutive numbers. Which finger will he land on when he counts 100?
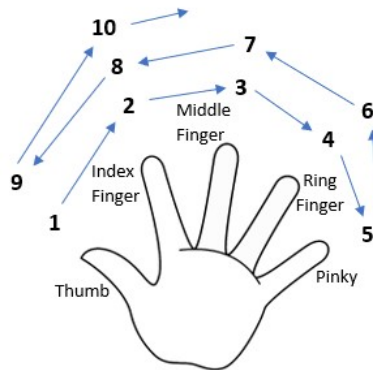
   (A) Thumb (B) Index Finger (C) Middle Finger (D) Ring Finger (E) Pinky

17. Mrs. Wang put 19 apples into 3 baskets and wrote on each basket the number of apples that are in it. One of the baskets has 3 times as many apples as another basket. One of the baskets has 4 times as many apples as another basket. If Mrs. Wang adds all of the digits on all of the baskets, what would she get?

   (A) 7 (B) 9 (C) 10 (D) 19
   (E) Impossible to tell

18. The sum of the digits of a three-digit number is 26. The three-digit number is increased by 1. Which of the following could be the sum of the digits of the new number?

   (A) 25 (B) 9 (C) 10 (D) 19 (E) 3

Part C (6 points each)

19. Which of the following CANNOT be the side lengths of a triangle?

    (A) 26, 27, 28   (B) 35, 27, 8   (C) 3, 4, 5   (D) 16, 23, 8   (E) 1, 1, 1

20. If we multiply the numbers 1 through 5 together, we get 120, which ends with 1 zero. If we multiply the numbers 1 through 50 together, how many zeroes would we get at the end of the number?

    (A) 8   (B) 9   (C) 10   (D) 11   (E) 12

21. Lehrael, a resident of the planet Ghox, has a farm with two kinds of animals: Xays and Yemes. Xays have 2 tails and 3 legs each, while Yemes have 5 tails and 2 legs each. If there are 131 tails and 81 legs on the farm, what is the total number of animals?

    (A) 26   (B) 30   (C) 34   (D) 42   (E) 65

22. In a class of boys and girls, each boy has 1 red marble, 3 blue marbles, and 5 yellow marbles. Every girl has has 6 red marbles, 4 blue marbles, and 2 yellow marbles. The teacher counted all of the marbles in the class and found that the number of red marbles combined with the number of yellow marbles is 100. How many blue marbles are there?

    (A) 38   (B) 44   (C) 50   (D) 54   (E) 58

23. Goofy Simon weighed some objects: a prism, a cone, and a sphere. He used an old scale that always gets it wrong by the same number of grams. When measuring the cone and the prism, the scale showed 234 grams. When measuring the prism and the sphere, the scale showed 236 grams. When measuring the sphere and the cone, the scale showed 240 grams. When measuring the cone only, the scale showed 118 grams. By how many grams was the scale off, and does it show too much or too little?

    (A) 1 gram more   (B) 2 grams more   (C) 3 grams more   (D) 2 grams less   (E) 1 gram less