



MATHEMATICS WITHOUT BORDERS

AGE GROUP 3

SPRING 2019

INSTRUCTIONS

1. Please **DO NOT OPEN** the contest papers until the Exams Officer has given permission.
2. There are 20 questions with an open answer in the test.
3. Please write your answers in the ANSWER SHEET.
4. Each correctly solved problem earns 2 points, a partial solution earns 1 point, and unanswered or wrong answer gets 0 points.
5. The use of calculators or other electronic devices, as well as books containing formulae is NOT allowed during the course of the contest.
6. Working time: not more than 60 minutes. In the case of an equal number of solved problems, the higher ranked participant will be the one who has spent less time solving the problems.
7. No contest papers and draft notes can be taken out by any contestant.
8. Students are NOT allowed to receive help by the Exams Officer or by anyone else during the contest.

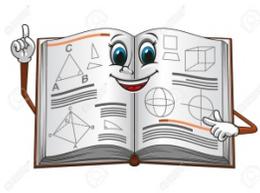
WE WISH YOU ALL SUCCESS!

Problem 1. How many odd numbers are there from 198 to 218?

Problem 2. Calculate: 7 hundreds + 12 tens + 38 ones.

Problem 3. Anya was supposed to find the difference of the number 127 and the number X. Instead, she added them together and got 182. Find the difference.

Problem 4. The pages of a book have been numbered, starting with the number 1 on the first right page. The following pages are numbered 2, 3, 4, etc.



I opened the book and added the numbers of the pages together. What pages did I open the book at if the result I got was 65?

Problem 5. What number is behind the square \square ?

$$\square \times 7 + 498 - \square = 534$$

Problem 6. Some boys and girls are playing in a playground. There are 18 girls. The number of boys is 3 times more than the girls. How many children are playing in total?

Problem 7. I have 8 coins that weigh 84 grams in total. 7 of them are identical and the remaining one is heavier. I chose 6 coins and weighed them. It turned out that they weigh 54 grams in total. How many grams does the heavier coin weigh?

Problem 8. Ivan came up with the following puzzle: $*** - 5 = **$.

(the difference of a three-digit number and 5 is a two-digit number)

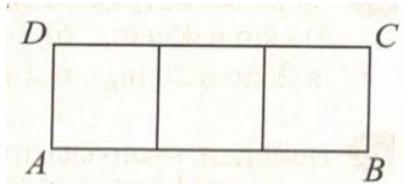
Peter replaced the star symbols with digits and got the following correct equality:

$$100 - 5 = 95.$$

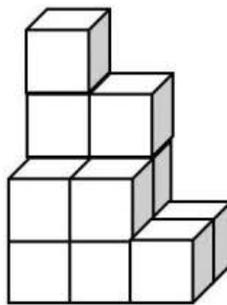
How many other such replacements are possible?

Problem 9. Ivan wrote down 4 numbers. Peter erased one of them, which left them with the numbers 1, 4 and 7. If the sums of each two of the four numbers are equal to three different numbers, find the erased number.

Problem 10. The rectangle ABCD is made up of 3 identical squares. The perimeter of this rectangle is 16 cm. Find the sum of the perimeters of all rectangles shown on the diagram in centimeters (a square is also a rectangle).



Problem 11. The following figure has been built using 13 cubes:



How many of the faces of these cubes are touching?

Problem 12. How many seconds should we subtract from 128 seconds in order to get 2 minutes?

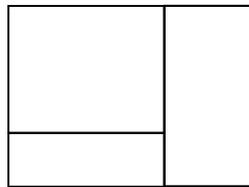
Problem 13. I solve 6 math problems a day and my brother solves three times less problems than me. How many days will it take for both of us to solve 48 problems in total?

Problem 14. A square and an equilateral triangle have the same perimeter – 84 cm. By how many cm is the side length of the triangle larger than the side length of the square?

Problem 15. The numbers from 7 to 20 have been written next to each other. The result was the multi-digit number 7891011121314151617181920. Then, 22 digits were removed in order to get the largest possible number. Find this number.

Problem 16. I have some sweets that I need to distribute among some children. If I give 5 sweets to each of the children, I will have 1 sweet left. If I give 4 sweets to each of them, I will have 3 sweets left. How many children are there?

Problem 17. The figure on the diagram has been made up of 3 rectangles. We must colour them using 4 different colours whilst making sure that no two neighboring rectangles are of the same colour. In how many ways can we do this?



Problem 18. At least how many digits should we remove from the expression $71 \times 72 \times \dots \times 80 \times 81 \times 82$, in order to get the smallest possible product?

Problem 19. There are 42 apples in total in three baskets. The second basket contains twice more apples than the first basket. The third basket contains twice more apples than the second basket. How many apples are there in the second basket?

Problem 20. Four different points have been placed along a straight line. How many line segments are there that have these points as their endpoints?

